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TO: Johnny Collin, Wall Walla District Ranger, Umatilla NF
VIA: https://cara.fs2c.usda.gov/Public/CommentInput?Project=67275

Subject: Mottet Vegetation Management Project — scoping comments

Please accept the following scoping comments from Oregon Wild concerning the Mottet Vegetation Management Project, https://www.fs.usda.gov/r06/umatilla/projects/67275. Oregon Wild represents 20,000 members and supporters who share our mission to protect and restore Oregon's wildlands, wildlife, and water as an enduring legacy. Our goal is to protect areas that remain intact while striving to restore areas that have been degraded. This can be accomplished by moving over-represented ecosystem elements (such as logged and roaded areas) toward characteristics that are currently under-represented (such as roadless areas and complex old forest).

This proposal involves:

Table 2. Preliminary Proposed Treatments

Proposed Treatment	Acres
Commercial Harvest	
Ground Based	15,141
Cable/ Cable Assist	3,836
Total Commercial	18,977
Non-Commercial Thinning	
Mechanized	4,996
Hand	1,097
Total Non-Commercial	6,093
Total	**25,070**
Prescribed Fire (Minus overlap with other proposed actions)	2,821
Total Treatment Acres	**27,891**

- Lookingglass Creek Watershed
- Inventoried roadless areas: Jaussaud Corral, Lookinglass, WallaWalla River
- commercial logging, using a variety of logging systems, including tethered logging on steep slopes.
- The primary land allocations in the project area include viewshed (A3), wildlife habitat (C4), and timber/big game (E2)

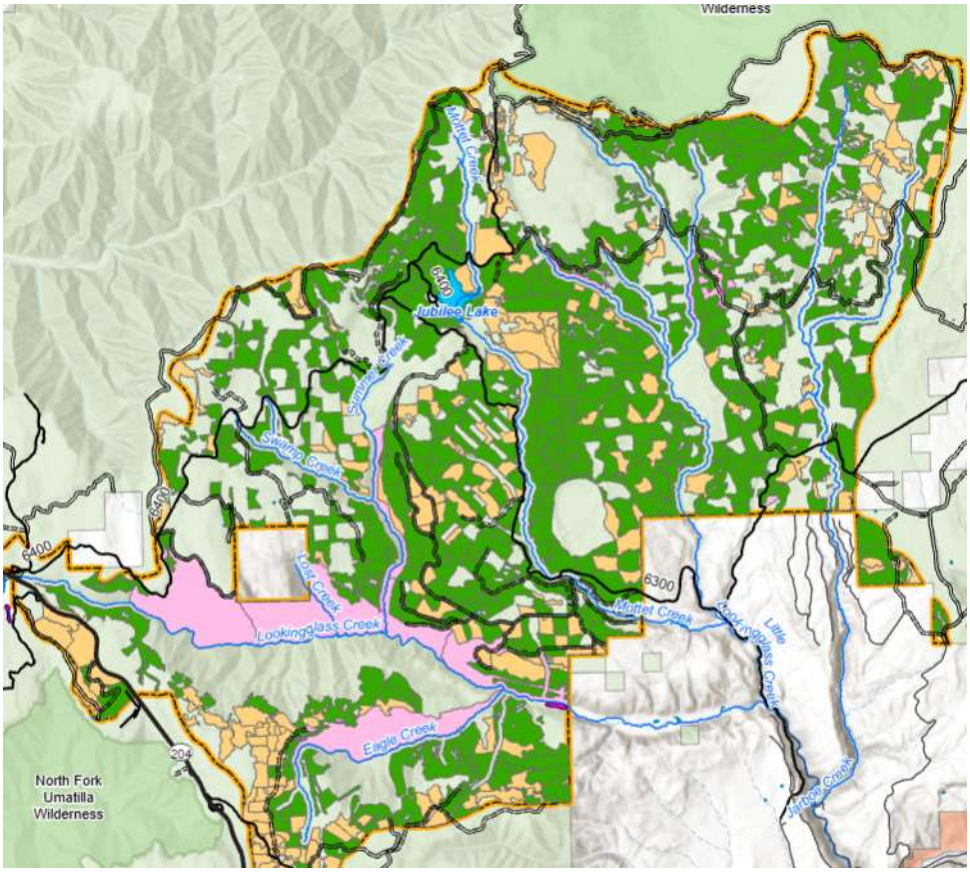
- This project will rely on an Emergency Determination to waive the NEPA requirement to consider all alternatives, and the public right to administratively object to this project.

This is a very large logging project with potentially significant effects on soil, water, fish & wildlife, snag recruitment, carbon, recreation, scenery, and fire hazard. An Environmental Impact Statement should be prepared. We also strongly urge the Forest Service to provide an opportunity for public comment on a more informative NEPA document. If this scoping period is the only opportunity for public comment, that would be a travesty.

Conserve Unroaded Areas

The FS should manage for resilience by restoring the historic range of variability for large blocks of unroaded habitat. The Forest Service should develop an action alternative that avoids commercial logging and roads in unroaded areas, especially those over 1,000 acres that are ecologically significant and where logging will disproportionately degrade public values associated with unroaded areas (soil, water, wildlife, fish, carbon, recreation, scenery, natural fire regimes, etc). Unroaded areas are shown in purple below:

There appears to be significant overlap of commercial logging (in green below) with these unroaded areas:



Unroaded areas >1,000 acres (or contiguous with inventoried roadless areas or wilderness) are ecologically significant, under-represented on the landscape, and an important part of the natural range of variability. Protecting and restoring large unroaded blocks of habitat should be part of the purpose and need, just like restoring tree density, forest species composition, etc. Logging in unroaded areas may have significant effects on soil, water, fish & wildlife, carbon storage, fire resilience, recreation, and other values. The EIS failed to take a hard look at the adverse effects of logging and roads in unroaded areas.

Even if the Forest Service does not have a policy requiring conservation of unroaded areas 1,000-5,000 acres, they still have a NEPA obligation to disclose the effects of logging and roads in those areas, especially because logging will have disproportionate adverse effects on the disproportionate benefits of unroaded areas, e.g., biodiversity, water quality, carbon storage, and other ecosystem services.

The NEPA analysis should discuss whether the project will push the landscape toward or away from the natural range of variability for large-scale habitat patches. Landscape analysis based on historic disturbance patterns suggests that historically the majority of old forest occurred in large patches.[1] These large patches of older forests that native fish and wildlife species evolved

[1] Wimberly, M. 2002. Spatial simulation of historical landscape patterns in coastal forests of the Pacific Northwest. Can. J. For. Res. 32:13-16-1328 (2002) https://research.fs.usda.gov/treesearch/5630 (72% of the total mature forest in the Oregon Coast Range was concentrated in patches >1,000 ha).

with are now severely underrepresented on the forest landscape and must be protected and restored.

Before logging roadless areas the agency should consider the impacts to all the values of roadless areas, including:

> (1) High quality or undisturbed soil, water, and air;
> (2) Sources of public drinking water;
> (3) Diversity of plant and animal communities;
> (4) Habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land;
> (5) Primitive, semi-primitive non-motorized and semi-primitive motorized classes of dispersed recreation;
> (6) Reference landscapes;
> (7) Natural appearing landscapes with high scenic quality;
> (8) Traditional cultural properties and sacred sites; and
> (9) Other locally identified unique characteristics.[2]

World Wildlife Fund and the Conservation Biology Institute summarized the important attributes of small roadless areas (1,000-5,000 acres).

> Small roadless areas share many of attributes in common with larger ones, including:
> • Essential habitat for species key to the recovery of forests following disturbance such as herbaceous plants, lichens, and mycorrhizal fungi
> • Habitat refugia for threatened species and those with restricted distributions (endemics)
> • Aquatic strongholds for salmonids
> • Undisturbed habitats for mollusks and amphibians
> • Remaining pockets of old-growth forests
> • Overwintering habitat for resident birds and ungulates
> • Dispersal "stepping stones" for wildlife movement across fragmented landscapes.[3]

In a 1997 letter to President Clinton, 136 scientists said:

> There is a growing consensus among academic and agency scientists that existing roadless areas–irrespective of size–contribute substantially to maintaining biodiversity and ecological integrity on the national forests. The Eastside Forests Scientific Societies Panel, including representatives from the American Fisheries Society, American Ornithologists' Union, Ecological Society of America, Society for Conservation Biology, and The Wildlife Society, recommended a prohibition on the construction of new roads and logging within existing (1) roadless regions larger than 1,000 acres, and (2) roadless regions smaller than 1,000 acres that are biologically significant.... Other scientists have also recommended protection of all roadless areas greater than 1,000 acres, at least until landscapes degraded by past management have recovered.... As you have acknowledged, a national policy prohibiting road building and other forms of development in roadless areas represents a major step towards balancing sustainable forest management with conserving environmental values on federal lands. In our view, a scientifically based policy for roadless areas on public lands should, at a minimum, protect from

[2] 36 CFR §294.11 (2001). https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5050459.pdf.

[3] DellaSala, Dominick and James Strittholt. 2002. Scientific Basis For Roadless Area Conservation. World Wildlife Fund. Ashland, OR; Conservation Biology Institute. (June 2002 - Updated October 2003) https://consbio.org/wp-content/uploads/2022/05/Scientific_Basis_For_Roadless_Area_Conservation.pdf.

development all roadless areas larger than 1,000 acres and those smaller areas that have special ecological significance because of their contributions to regional landscapes.[4]

An IUCN Policy Statement on Primary Forests says:

> "While primary forests of all extents have conservation value, areas of greater extent warrant particular attention where they persist, as they support more biodiversity, contain larger carbon stocks, provide more ecosystem services, encompass larger-scaled natural processes, and are more resilient to external stresses. The significance of large areas of primary forests has been highlighted by the global mapping of Intact Forest Landscapes (IFL) greater than 500 km2 in extent. While suitable for many purposes, other thresholds may be more suitable at regional and national levels that reflect local ecological factors."[5]

Follow the LRMP and the Eastside Screens

The NEPA analysis should disclose the desired future condition and standards & guidelines for each of the affected land allocations, and carefully follow those requirements.

The primary land allocations in the project area include:

- **viewshed (A3):**

  "Viewsheds will be managed primarily to meet the visual quality objectives of retention and partial retention. An attractive, natural appearing landscape will be created or maintained …

  "Management activities will be done with the highest sensitivity to people's concern for scenic quality. Vegetative manipulation will be conducted so that Forest management activities are not usually noticeable in the foreground and remain visually subordinate in the middle ground viewing area. All viewsheds will have vegetative management plans. Timber harvest areas will be sized and shaped to be compatible with the natural surroundings …

  "Emphasis will be on viewing large diameter trees and multi-age stands … T hinnings and plantings in the foreground will leave irregularly spaced trees. … Fuel treatments in foreground areas should be planned, timed, and implemented to avoid being highly visible and to minimize adverse visual effects … "

- **wildlife habitat (C4):**

  GOAL

  MANAGE FOREST LANDS TO PROVIDE HIGH LEVELS OF POTENTIAL HABITAT EFFECTIVENESS FOR BIG GAME AND OTHER WILDLIFE SPECIES WITH EMPHASIS ON SIZE AND DISTRIBUTION OF HABITAT COMPONENTS (FORAGE AND COVER AREAS FOR ELK, AND SNAGS AND DEAD AND DOWN MATERIALS FOR ALL CAVITY USERS) UNIQUE WILDLIFE HABITATS AND KEY USE AREAS WILL BE RETAINED OR PROTECTED.

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[4] Letter to President Clinton from 136 scientists (Dec. 10, 1997).

https://drive.google.com/file/d/0B4L_-RD-MJwrRzhFcm5QcFR0MHM/view?usp=sharing&resourcekey=0-2-sbGMN3bOUBQGGMDBQM1Q.

[5] IUCN Policy Statement on Primary Forests, https://www.iucn.org/sites/dev/files/content/documents/iucn_pf-ifl_policy_2020_approved_version.pdf.

...
Emphasis will be apparent on managing roads, providing security for big game, protecting important calving and fawning areas, and providing for a quality hunting experience. Road closures and other management techniques will result in a noticeable amount of travel restrictions across the area. Dispersed recreation opportunities of all types will be available, but motorized access may be limited Emphasis will be apparent on managing roads, providing security for big game, protecting important calving and fawning areas, and providing for a quality hunting experience. Road closures and other management techniques will result in a noticeable amount of travel restrictions across the area. Dispersed recreation opportunities of all types will be available, but motorized access may be limited.
...
The selected silvicultural systems applied to timber stands within suitable forest lands will be based on a site-specific examination and analysis, and will be designed to achieve management goals.
...
The concept of a time limited or "sunset" strategy may be used on designated areas within C4 under conditions listed in the Forest-wide Standards and Guidelines. This concept applies to the Jaussaud Corral Roadless Area (about 4,000 acres). Timber harvest volumes will be scheduled for such areas. Areas will revert from C4 to an A2 or other agreed upon designation by the year 2000. Areas may remain in C4 status pending NEPA review and decision. The area of application in Jaussaud Corral is west of Little Lookingglass Creek running north/south along east boundary of section 2 to Timothy Guard Station on the Walla Walla Ranger District. The designated area will remain in the scheduled cut until the year 2000, at which time, it will follow a 'sunset strategy' and revert to an A2 designation, without scheduled harvest.
...
Roads will be limited to minimum standards necessary for timber harvesting.
Roads will be closed to meet big game habitat and/or recreation objectives. Roads will be closed upon completion of harvest activities or when open timber sales are inactive.

- **timber/big game (E2):**
  GOAL
  MANAGE FOREST LANDS TO EMPHASIZE PRODUCTION OF WOOD FIBER (TIMBER), ENCOURAGE FORAGE PRODUCTION, AND MAINTAIN A MODERATE LEVEL OF BIG GAME AND OTHER WILDLIFE HABITAT.

Note: all of the above desired future conditions are amended by the Eastside Screens requirements to protect large trees, manage toward LOS, and protect connectivity corridors.

The Eastside Screens require the Forest Service to protect large trees, identify LOS and identify connectivity corridors 400' wide that connect LOS in at least 2 directions and conserve high canopy cover in those areas, manage non-LOS forest toward LOS conditions.

Heavy thinning and regen will likely not meet the requirement to manage toward LOS because it will remove too many green trees needed for LOS forest functions, and future recruitment of large trees and large snags that are essential features of LOS forests.

For over 20 years the Screens have been consistently interpreted to require retention of large trees both inside and outside LOS forests. The Trump Admin seems to be embarking on a radical new policy that would allow removal of large trees inside LOS, the very forests that best poised to correct the deficit of LOS forests in the region. This is arbitrary and capricious. The NEPA analysis needs to analyze the effect of applying new guidance on implementing the Eastside Screens which deviate substantially from long-standing policy.

Protect and Conserve Cultural Values

This area of the Umatilla Forest is very important to the indigenous people of the region. The Forest Service should avoid commercial logging in "the sinks" that occur in this area.

We hope that this project can enhance the cultural and environmental interests of native people, especially related to cultural use of native plants & wildlife, and cultural practices, such as seasonal burning, and gathering food and craft supplies. We hope there are opportunities for sharing and using traditional ecological knowledge (TEK) and we hope native people be involved in both planning and implementation of this project, where appropriate.

We strongly support greater coordination and engagement between the federal land management agencies and tribal governments and tribal members. We also feel the agencies need to ensure the general public is informed and understands the importance of this coordination, and that it is happening. The general public is not always well informed about treaty rights or the importance of agencies like the Forest Service consulting and engaging with tribes on land management decisions, and failure to adequately inform the public can lead to unnecessary conflict. We urge that tribal consultation and application of TEK be done within a transparent NEPA framework, so that the general public can also be informed and involved in management of public lands.

We encourage the federal land management agencies to work toward a meaningful harmonization of tribal interests and the interests of the public. Oregon Wild strongly supports tribal involvement in public land management, and the protection and restoration of fisheries, wildlife, native plants, wetlands, and clean water needed to sustain tribal treaty rights and interests. We also want to ensure continued public notice and public involvement, and fulfillment of conservation goals reflected in the L/RMPs, and other policies. We hope the agency can identify the significant overlap among these diverse interests and manage accordingly.

Emergency Determination

The agency intends to use the Emergency Action Determination (EAD) authority to avoid some public processes. Just because the agency thinks it has the authority does not mean it's a good idea. Bypassing public process undermines public trust in the agency.

Given the complex effects of logging on fire and fuels, we think it is wise to use the NEPA process to consider alternatives that resolve complex trade-offs in different ways. It is absurd to think there is only one way to get this project done, and to pretend there are no trade-offs from using commercial logging as the tool for the job here.

The agency's assertions that logging helps reduces hazardous fuels and fire danger are not scientifically supported:

- Logging will make fire hazard worse, not better, by making the stands hotter/drier/windier, moving hazardous fuels from the canopy to the ground where they are more hazardous, stimulating growth of hazardous fuels, and making future maintenance treatments more expensive.
- Logging will make the forest less resilient because species that depend on dead wood will be put at further risk, carbon emissions will exacerbate global climate change and worsen weather extremes that the forests must endure. Road construction also makes the watershed less resilience hydrologically and may increase the risk of fire ignitions.
- Natural mortality processes, are solutions, not problems. Logging can make insect problems worse.
- Regen logging is not an emergency. Regen harvest not only violates the Eastside Screens requirement to manage toward LOS, but it also creates a MORE hazardous fuel condition (by fostering the establishment of dense contiguous fuels close to the ground, with virtually no microclimate control from tall trees).[6]
- To the extent this project area contains moist mixed conifer forests, those forests should not be subject to the emergency declaration. Moist mixed forests are naturally dense, naturally build-up fuels in between relatively infrequent wildfires, and fires in moist/mixed forests tend to be mixed severity, unless driven by high winds, which is only made worse by thinning that allows greater wind penetration.
- Building roads also conflicts with the emergency because roads are known to increase the risk of fire ignition, adversely modify microclimate, and stimulate growth of hazardous ladder fuels.

The emergency is based on the idea that trees are stressed by competition for below-ground moisture. The Forest Service needs to carefully consider that logging may make things worse, not better. Logging will increase penetration of warm dry air into the stand and expose trees to greater vapor pressure deficit. There is new evidence that drought stress experienced by Douglas-fir trees is less a function of soil water availability, but is rather strongly related to atmospheric water availability, specifically vapor pressure deficit. Tree density and thinning may have some minor effect on soil water, but will have no beneficial effect on atmospheric water availability, so thinning is much less likely to provide beneficial effects on tree stress than previously believed. In fact, thinning likely increases drought stress on trees by increasing penetration of warm dry air within thinned forest stands. Lighter thinning would partially mitigate the effect compared to heavy thinning. The agency should consider and disclose these

[6] Steel, Z.L., Jones, G.M., Collins, B.M., Green, R., Koltunov, A., Purcell, K.L., Sawyer, S.C., Slaton, M.R., Stephens, S.L., Stine, P. and Thompson, C. (2022), Mega-disturbances cause rapid decline of mature conifer forest habitat in California. Ecological Applications. Accepted Author Manuscript e2763. https://www.fs.usda.gov/rm/pubs_journals/2022/rmrs_2022_steel_z001.pdf ("Areas with high initial canopy cover and without tall trees were most vulnerable to canopy cover declines [due to wildfire] … The effect of large tree height on relative canopy cover decline was negative … indicating the presence of large, tall trees had a moderating effect on disturbance. …")

effects and consider a mitigating alternative with light non-commercial thinning of the understory.

Atmospheric water demand, not soil moisture availability, appears to be the primary cause of tree water stress in the late summer. Temperature-driven increases in vapor pressure deficit from climate change are likely to reduce forest productivity regardless of soil moisture availability.

> ...
> "How in the world can the trees be water stressed if they haven't used all the water available in the soil?" Wondzell recalls pondering. "We spent a lot of time at the whiteboard asking ourselves, 'Is this data actually correct?'" recalls Bladon.
> ...
> In 2018, Jarecke read up on other studies that researched why trees might experience drought stress. What she learned was that the drought stress could be coming from aboveground. "New studies were emphasizing the impact of increasing vapor pressure deficit on tree water stress," she explains. "And there's a misconception in forest management on how we've been thinking about water stress being all about the belowground drought stress."
>
> Jarecke describes vapor pressure deficit (VPD) as the "drying power of the atmosphere" or phrased another way, how much water vapor or humidity is needed to saturate the air at a given temperature. Hot air can hold more moisture than cold air, which means as temperatures increase without a corresponding increase in humidity, VPD increases. So, how does VPD affect trees? "You can think of a tree as a cluster of tiny straws," explains Wondzell. "As the soil dries out, the tree finds it harder and harder to pull soil water into the bottom of these straws. Conversely, aboveground it is the dryness of the air that does the pulling. And as the air gets drier, it pulls harder and harder on the water at the top of the straws."
> ...
> Latewood carbon isotope composition was most strongly correlated to mean daytime VPD between May and September and total rainfall between May and August. The researchers noticed that increased VPD during June, when there was still plenty of soil moisture, decreased the latewood growth, which lent weight to the hypothesis that VPD limits growth even when soil moisture is plentiful.
>
> ... Karla's research strongly suggests that at her study site, these trees are highly sensitive to vapor pressure deficit," Wondzell says. "Of course, they're also sensitive to rainfall, but it's actually vapor pressure deficit that is by far and away the bigger driver."
> ...
> If vapor pressure deficit is a primary cause of water stress and a primary limitation to tree growth during the long, dry summers typical of western Oregon, thinning could prove ineffective, or even counterproductive, for increasing drought resilience. Thinning a stand could allow penetration of hot, dry air deeper into the canopy, potentially increasing tree water stress.[7]

[7] Watts, Andrea; Wondzell, Steve; Jarecke, Karla; Bladon, Kevin. 2024. Hot air or dry dirt: Investigating the greater drought risk to forests in the Pacific Northwest. Science Findings 268. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 6 p. https://www.fs.usda.gov/pnw/sciencef/scifi268.pdf. See also, Karla M. Jarecke, Linnia R. Hawkins, Kevin D. Bladon, Steven M. Wondzell 2023. Carbon uptake by Douglas-fir is more sensitive to increased temperature and vapor pressure deficit than reduced rainfall in the western Cascade Mountains, Oregon, USA. Agricultural and Forest Meteorology, Volume 329, 15 February 2023, 109267. https://www.sciencedirect.com/science/article/abs/pii/S0168192322004543; Watts, Andrea; Wondzell, Steve; Jarecke, Karla; Bladon, Kevin. 2024. Hot air or dry dirt: Investigating the greater drought risk to forests in the Pacific

The airmass warming and drying effect caused by logging adds cumulatively to the already significant increase in AED (atmospheric evaporative demand) caused by global warming.[8]

High air temperatures caused by thinning can even cause plants to lose water through their cuticle, even when their stomata are closed. Garen et al. (2025) "found that the pathway of water loss varied with temperature, such that the cuticular pathway increasingly dominated at higher temperatures. … We further found that as temperature increased, the proportion of water escaping the leaf via the cuticle typically increased … Such high-temperature increases in gcw may be due to phase transitions in the cuticular wax, or thermal expansion of the cuticular matrix resulting in the opening of additional pathways for diffusion in the cuticle surface, … "[9]

Similarly, thinning often also transitions stands from being sun limited to water limited. It may be counter-intuitive, but even in a dry landscape, a stand that is "overstocked" may not be limited by moisture. The competition for sunlight slows growth before it's limited by water, but solar limits are not lethal. Silviculturists often suggest "opening up the stand" to reduce competition for resources including water. However, they might "release" the trees from the solar limitation to the point that they bump into the water limitation, which is in fact lethal, and also likely exacerbated by increased solar radiation and wind heating and drying soils faster.

> Recent findings that stands with higher density do not necessarily exhibit greater physiological stress (Keeling, Sala & DeLuca 2011) or experience lower tree mortality in extreme drought events (e.g. Floyd et al. 2009; van Mantgem et al. 2009; Ganey & Vojita 2011) lend support to this idea but other studies have shown the opposite relationship between density and mortality (Negron et al. 2009; Kane & Kolb 2014) or that this relationship is inconsistent and context dependent (Meddens et al. 2015; Van Gunst et al. 2016).[10]

The relationship between stand density and mortality may be intuitively appealing but is not well-supported by the evidence. Recent comments from the Center for Biological Diversity to the California Department of Forestry explained --

> A study in the Douglas fir forests of northeastern Washington found that competition [i.e., higher density] did not affect tree responses to extreme drought. Importantly, trees with more competition from neighbors appeared to have higher drought resistance (i.e., a significantly higher proportion of sapwood area in latewood, which is a trait associated with drought resistance). The authors suggested that "a tree's ability to cope with environmental variability is driven not just by the proximate effects of neighbours on

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Northwest. Science Findings 268. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 6 p. https://www.fs.usda.gov/pnw/sciencef/scifi268.pdf.

[8] Gebrechorkos, S. H., Sheffield, J., M., S., Funk, C., Miralles, D. G., Peng, J., Dyer, E., Talib, J., Beck, H. E., Singer, M. B., & Dadson, S. J. (2025). Warming accelerates global drought severity. *Nature*, 1-8. https://doi.org/10.1038/s41586-025-09047-2, pdf. ("… by developing an ensemble of high-resolution global drought datasets for 1901–2022, we find an increasing trend in drought severity worldwide. Our findings suggest that AED has increased drought severity by an average of 40% globally. Not only are typically dry regions becoming drier but also wet areas are experiencing drying trends.")

[9] Garen, J. C., & Michaletz, S. T. (2025). Temperature governs the relative contributions of cuticle and stomata to leaf minimum conductance. *New Phytologist*, *245*(5), 1911-1923. https://doi.org/10.1111/nph.20346; https://nph.onlinelibrary.wiley.com/doi/epdf/10.1111/nph.20346.

[10] Carnwath, G.C. and C.R. Nelson. 2016. The effect of competition on response to drought and interannual climate variability of a dominant conifer tree of western North America. Journal of Ecology 104: 1421-1431. https://besjournals.onlinelibrary.wiley.com/doi/pdfdirect/10.1111/1365-2745.12604.

resource availability, but also by phenotypic plasticity and long-term adaptations to competitive stress."

A study that directly investigated the lack of fire on the physiological status of oldgrowth ponderosa pine trees in unlogged forests in Idaho found that, contrary to predictions, oldgrowth trees in stands that were unburned for at least 70 years showed no significant differences in multiple stress indicators compared to non-fire-suppressed stands, indicating that these trees may be "more resilient to increased stand density associated with the lack of fire than previously thought."[11]

The emergency is also based on the idea that logging will fix problems with insects and disease. Logging is contraindicated for insects and diseases. These are natural disturbance processes that are actually solving problems, not creating them. These forces of natural are reducing competition, and naturally thinning the forest. The NEPA analysis needs to show that logging can make insect problems worse.

Thinning activities attracting beetles to the area through the release of terpenes from fresh wood chips, slash, or wounded green trees. Commercial logging can actually facilitate the spread of beetles that reproduced in piles of dead material when they were left for more than a season. If insect attack is a concern, the agency must consider and disclose the factors that tend to attract insects and determine whether thinning will make things better or worse.

Results of the fire surrogates study "indicate that the probability of mortality of large-diameter ponderosa pine from bark beetles and wood borers was directly related to surface fire severity and bole charring, which in turn depended on fire intensity, which was greater in units where thinning increased large woody fuels."[12]

A recent study showed that thinning can increase mortality from bark beetles and increase fuel loading and crown fire behavior.

> We simulated management scenarios with and without thinning over 60 years, coupled with a mountain pine beetle outbreak (at 30 years) to examine how thinning might affect bark beetle impacts, potential fire behavior, and their interactions on a 16 000-ha landscape in northeastern Oregon. We employed the Forest Vegetation Simulator, along with submodels including the Parallel Processing Extension, Fire and Fuels Extension, and Westwide Pine Beetle Model. We also compared responses to treatment scenarios of two bark beetle-caused tree mortality susceptibility rating systems. … **[C]ontrary to expectations, the Westwide Pine Beetle Model predicted higher beetle outbreak-caused mortality in thinned versus unthinned scenarios. Likewise, susceptibility ratings were also higher for thinned stands.** Thinning treatments favored retention of early seral species such as ponderosa pine, leading to increases in

[11] Center for Biological Diversity et al., March 17, 2017 comments on the California Forest Carbon Plan (January 20, 2017 Draft). http://www.biologicaldiversity.org/campaigns/debunking_the_biomass_myth/pdfs/Forest_Carbon_Plan_Comments.pdf *citing* Carnwath, G.C. and C.R. Nelson. 2016. The effect of competition on response to drought and interannual climate variability of a dominant conifer tree of western North America. Journal of Ecology 104: 1421-1431, and Keeling, E.G. et al. 2011. Lack of fire has limited physiological impact on old-growth ponderosa pine in dry montane forests of north-central Idaho. Ecological Applications 21: 3227-3237. https://besjournals.onlinelibrary.wiley.com/doi/pdfdirect/10.1111/1365-2745.12604.

[12] Andrew Youngblood, James B. Grace, And James D. Mciver. 2009. Delayed conifer mortality after fuel reduction treatments: interactive effects of fuel, fire intensity, and bark beetles. Ecological Applications, 19(2), 2009, pp. 321–337 http://www.esajournals.org/doi/pdf/10.1890/07-1751.1.

proportion and average diameter of host trees. **Increased surface fuel loadings and incidence of potential crown fire behavior were predicted postoutbreak**; ...[13]

Timber Sales Not the Appropriate Tool

Commercial logging can be a useful tool to achieve some restoration and fuel reduction objectives, but commercial logging is also a vastly overused tool that has significant trade-offs that often conflict with the underlying objectives of the project. NEPA analysis is needed to carefully consider all these trade-offs, and alternatives that mitigate these trade-offs. It is often the case that non-commercial thinning can produce results that are as good or better than commercial logging, and with much fewer trade-offs, so the net benefits far exceed those from commercial logging.

Trade-offs from commercial logging include:

- Reducing canopy cover makes fire hazard worse, not better. Canopy should be retained to help moderate microclimate effects, and help suppress growth of hazardous surface and ladder fuels. Logging makes the stand hotter, drier, and windier, which (i) dries fuels, (ii) creates more hazardous conditions for fire. Commercial logging of canopy trees not only creates more hazardous slash that must be treated, it also stimulates the growth of future hazardous surface and ladder fuels, and makes future retreatment more expensive.
- Removing canopy also exposes wildlife to greater risk of predation, increases barriers to safe movement across roads and fuel treatment areas, and degrades the microclimate refugia that diverse wildlife need to survive extreme weather during this climate emergency.
- Commercial logging has far greater impact on soil and water and weeds due to greater use of roads and heavy equipment that disturbs soil, cause erosion, and expose mineral soil where weeds can establish.
- Commercial logging creates unnatural habitat conditions with long-term reduced recruitment of large trees and large snags and dead wood.

Non-commercial thinning of small trees and retention of higher canopy cover mitigates all these adverse effects and still achieves fuel reduction objectives. Most fires move along the ground, not through the canopy, so fuel reduction focused on surface and ladder fuels is most effective. Canopy fuels are rarely continuous. Virtually every road serves as a break in canopy continuity, and there is a dense road network on public lands. Retaining canopy also helps suppress the growth of future surface and ladder fuels, which means that future retreatment can be more affordable, with less frequent need for treatment and less accumulated fuels to deal with.

Records from a 2023 meeting of the Federal Timber Purchasers Committee show that the agencies obsession with meeting timber production goals leads them to blend timber and fuel goals in ways that likely compromise fire hazard reduction goals and these are not disclosed in NEPA:

> "Are you working with the fuels management staff to identify projects which can use timber harvest to achieve hazardous fuels reductions? ... How well are you working with the fuels management staff in your region to identify and offer fuels reduction projects which also produce merchantable timber? ... Yes, timber and fuels staff work together at the Regional and Forest level to develop ... the Region and Forests recognize the importance of local infrastructure and build outyear plans that aim to meet needs on the

[13] Ager, A.A.; McMahan, A.; Hayes, J.L.; Smith, E.L. 2007. Modeling the effects of thinning on bark beetle impacts and wildfire potential in the Blue Mountains of eastern Oregon. Landscape and Urban Planning. 80: 301–311.

> ground while providing reliable quantities of timber to local industry … we have been creative in doing fuels reduction that produces volume and forest products. … IRA. Fuels and Veg management are symbiotic in nature. … Natural Resources and Fire and Aviation Management in the Region are highly integrated and work together frequently on an integrated program of work that produces mutually beneficial outcomes for risk reduction and contribution to timber volume outputs … Fuels treatment is critical but shouldn't squeeze out the timber program. … Fuels funding also goes to forestry projects when they are designed as integrated which most are."[14]

The agencies clearly use timber sales as a way to accomplish fuel objectives, and that would be fine if they limited timber sales to removing just the small fuels that need to be removed to reduce fire hazard, while leaving the medium and larger trees in the forest. But that is not what they do. The reality is that the agencies conduct timber sales that remove too many medium and large trees, and the effect of those timber sales is to make fire hazard worse, instead of better, and the agencies fail to conduct NEPA analysis that honestly discloses the conflict between timber production and fuel reduction, especially when medium and large trees are removed. The agencies pretend as if there is great harmony between timber objectives and fuel objectives, when in reality too much logging makes fire hazard worse, but this fact is hidden for the public and the decision-maker.

Use Best Science to Consider the Complex Effects of Logging on Fuel/Fire Hazard.

Logging has complex effects on fuels, fire hazard, a forest resilience. The NEPA analysis needs to explain that logging can actually make things worse instead of better.

A review of studies of fuel treatment effectiveness brings into question the effectiveness of fuel reduction, especially when it is accomplished with commercial timber sales. The NEPA analysis needs to clearly disclose the extent to which commercial log extraction undermines fuel hazard reduction objectives.

> Ex et al. (2019) addressed a question that is applicable to many montane landscapes in western North America that contain a patchwork of cover types associated with different topographic settings. They asked whether it would be more effective to treat more mesic north-facing slopes dominated by Douglas fir versus more xeric south-facing slopes dominated by ponderosa pine, given a one-time treatment opportunity at the start of a 50-year simulation. The south-facing slope strategy was initially more effective, but after the first decade, effects of the two strategies became more similar, and both strategies were ultimately less effective than the untreated control at reducing the ratio of crown fire to surface fire (Ex et al. 2019).
>
> …
>
> Studies that compared fuel treatment scenarios with scenarios where the main objective was commercial timber harvest (or a combination of harvest and fuel reduction) showed that harvest-oriented scenarios tended to be less effective at reducing fire impacts (Fig. 11; Merzenich et al. 2003; Ganz et al. 2007; Kim et al. 2009; Cassell 2018; Krofcheck et al. 2019b) and sometimes even resulted in increased fire impacts compared to untreated scenarios (Merzenich et al. 2003) … Prescriptions aimed at restoring historical forest structure also tended to be less effective …

[14] USFS 2023. Fall Federal Timber Purchasers Committee Q&A. Erie, PA. Nov. 13-17, 2023, https://drive.google.com/file/d/1ZXnJXhLuBCIQalNRJBKkZRoufoXrepFt/view.

> …
> Sturtevant et al. (2009) found that eliminating ignitions caused by debris burning had a greater effect than fuel treatments on reducing area burned by wildfire on a forested landscape in northern Wisconsin.
> …
> Tradeoffs between wildfire protection and other management objectives such as commercial harvest, forest restoration, habitat protection, and carbon sequestration may need to be addressed on many managed landscapes (Stockmann et al. 2010; Ager et al. 2016, 2019; Stevens et al. 2016; James et al. 2018). Potential strategies for dealing with these tradeoffs include adjustments to harvesting procedures or restoration prescriptions to make them better aligned with fuel reduction goals (Acuna et al. 2010; Stephens et al. 2021) or the use of optimization algorithms to identify management solutions that could maximize a set of competing benefits (Hummel and Calkin 2005; Bagdon et al. 2016; Kreitler et al. 2020).
> … [S]ingle-year studies did not capture feedbacks between fuel treatments, wildfire, and vegetation succession, such as the possibility that short-term reductions in wildfire due to treatments allow greater fuel buildup leading to more damaging subsequent wildfires (Calkin et al. 2015; Parks et al. 2016; McKenzie and Littell 2017).[15]

Hakkenberg et al. (2024) showed that ladder fuels were the main driver of wildfire severity, whereas dense, high canopy fuels tend to reduce fire severity, even during extreme fire conditions.

> Here we employed GEDI space-borne lidar to consistently assess how pre-fire forest fuel structure affected wildfire severity across 42 California wildfires between 2019–2021. Using a spatial-hierarchical modeling framework, we found a positive concave-down relationship between GEDI-derived fuel structure and wildfire severity, marked by increasing severity with greater fuel loads until a decline in severity in the tallest and most voluminous forest canopies. Critically, indicators of canopy fuel volumes (like biomass and height) became decoupled from severity patterns in extreme topographic and weather conditions (slopes >20°; winds > 9.3 m/s). On the other hand, vertical continuity metrics like layering and ladder fuels more consistently predicted severity in extreme conditions – especially ladder fuels, where sparse understories were uniformly associated with lower severity levels.
> …
> Vertical fuel continuity is especially important for lower stratum ladder fuels, where greater continuity may enable flames to transition from ground and surface fires to higher canopy strata, thereby increasing contagion … [W]e observed that steep slopes, dry conditions and high winds overwhelmed most fuel structural conditions to constrain landscape severity patterns. Importantly, the sole exception to this pattern occurred with ladder fuels …
> … This finding suggests that high-intensity fuel treatments (which target entire forest canopies rather than focusing on lower stratum ladder fuels only) may have a limited effect on wildfire severity in extreme conditions. Conversely, sparse understories (<10 m) – even those that concurrently possess robust mid- strata (>10 m) – were associated with reduced wildfire severity. This result has important management implications,

[15] Ott, J.E., Kilkenny, F.F. & Jain, T.B. Fuel treatment effectiveness at the landscape scale: a systematic review of simulation studies comparing treatment scenarios in North America. fire ecol 19, 10 (2023). https://doi.org/10.1186/s42408-022-00163-2. https://fireecology.springeropen.com/counter/pdf/10.1186/s42408-022-00163-2.pdf *citing* Ex, S.A., J.P. Ziegler, W.T. Tinkham, and C.M. Hoffman. 2019. Long-term impacts of fuel treatment placement with respect to forest cover type on potential fire behavior across a mountainous landscape. Forests 10 (5): 438. https://doi.org/10.3390/f10050438.

> especially for treatment interventions that focus on vertical fuel continuity such as understory thinning or cultural burns, which have been found to be effective in reducing high-severity burns2. Understory treatments have also been found to lessen externalities associated with more intensive thinning operations71 and simultaneously promote culturally- and ecologically-beneficial wildfire outcomes across a wide variety of topographic, weather and climate contexts1,72.[16]

The NEPA failed to address the fact that there is very little scientific support for aggressive thinning to reduce fire hazard. In fact, there is mounting scientific evidence that thinning can make the fuel hazard worse instead of better. Thinning makes forests "Hotter, Drier and Winder." Science still has a long way to go to be able to confidently predict the consequences of various combinations of thinning and other treatments. “Detailed site-specific data on anything beyond basic forest structure and fuel properties are rare, limiting our analytical capability to prescribe management actions to achieve desired conditions for altering fuels and fire hazard.”[17]

The agency must recognize that canopy thinning in particular has complex effects on fuel and fire hazard. Canopy thinning makes the stand hotter, drier, windier, produces lots of slash, and stimulates the growth of ladder fuels.

> In many forests, latent ladder fuels exist in the form of advance regeneration—seedlings and saplings occurring in the understory that are capable of accelerated growth upon disturbance to (or cutting of) the overstory. … [D]ry mixed conifer forests often include species with high or moderate shade tolerance, and
> advance regeneration of those species beneath a ponderosa pine dominated canopy is common. The rate of accelerated growth upon treatment is proportional to site quality and thinning intensity.
>
> Ladder fuel growth is governed by the number and sizes of overstory trees. [Overstory trees] can help fuel managers identify cutting levels that meet fuels management goals yet suppress seedling (ladder fuel) growth.
> … [R]etaining more and larger trees serves to suppress ladder fuel development.
> …
> Fuel treatments directly affect the recruitment of ladder fuels by the extent to which bare mineral soil is exposed. Treatments that burn or scarify the forest floor will generally result in the accelerated recruitment of new ladder fuels. Commercial thinning, for example, scarifies the forest floor and provides a mineral soil seedbed that enhances ponderosa pine seedling germination and survival (Oliver and Ryker 1990), increases light to the forest floor that facilitates litter decomposition, and enhances the growth and fecundity of residual trees that can result in greater seed production. … [M]echanical and prescribed fire treatments that result in greater ground disturbance will typically result in less longevity than treatments that minimize forest floor scarification.

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[16] Hakkenberg, C. R., Clark, M. L., Bailey, T., Burns, P., & Goetz, S. J. (2024). Ladder fuels rather than canopy volumes consistently predict wildfire severity even in extreme topographic-weather conditions. *Communications Earth & Environment*, *5*(1), 1-11. https://doi.org/10.1038/s43247-024-01893-8; pdf.

[17] Graham, Russell T.; McCaffrey, Sarah; Jain, Theresa B.(tech. eds.) 2004. Science basis for changing forest structure to modify wildfire behavior and severity. Gen. Tech. Rep. RMRS-GTR-120. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 43 p. https://www.fs.usda.gov/rm/pubs/rmrs_gtr120.pdf.

Figure 12.2. Thinning intensity in canopy fuel treatment often involves a trade-off between immediate treatment impact and treatment longevity. In this example from central Oregon, heavy thinning in a ponderosa pine /mixed-conifer stand successfully reduced canopy bulk density. However, it stalled crown recession and promoted the development of ladder fuels, thereby reducing the capacity of the stand to sustain a reduced torching potential over time.[18]

Road construction is controversial, causes significant cumulative impacts and requires an EIS.

Road management inevitably involves tradeoffs between the benefits of increased access that roads provide versus the ecological and economic costs associated with roads (Gucinski et al. 2001, Forman et al. 2003). Because the U.S. Department of Agriculture, Forest Service manages about 10 percent of the public road system in the United States (Forman et al. 2003), road-management decisions made by that agency strongly influence current road systems. Forest Service policy regarding road closures and construction continues to engender controversy, exemplified by the multi-year debate over the national Roadless Rule. The rule, first published in the Federal Register in

[18] Jain, Theresa B.; Battaglia, Mike A.; Han, Han-Sup; Graham, Russell T.; Keyes, Christopher R.; Fried, Jeremy S.; Sandquist, Jonathan E. 2012. A comprehensive guide to fuel management practices for dry mixed conifer forests in the northwestern United States. USDA Forest Service Gen. Tech. Rep. RMRS-GTR-292. 2012 https://www.fs.usda.gov/rm/pubs/rmrs_gtr292.pdf. A meta-analysis of the effects of partial cutting showed that understory growth was stimulated in all cases. D. Zhou, S. Q. Zhao, S. Liu, and J. Oeding. 2013. A meta-analysis on the impacts of partial cutting on forest structure and carbon storage. Biogeosciences, 10, 3691–3703, 2013. https://www.biogeosciences.net/10/3691/2013/bg-10-3691-2013.pdf. ("Understory C was stimulated significantly by partial cutting in all of the studies. This stimulation can be mostly attributed to an increase in the availability of light, water, and nutrients to the understory because of tree removal (Aussenac, 2000; Kleintjes et al., 2004; Deal, 2007)").

> January 2001 (U.S. Government 2001), has been challenged by at least nine lawsuits in federal district courts. Decisions about roads, including construction, reconstruction, closure, obliteration, or decommissioning, are complex because they affect a multitude of resources, not just wildlife. All resource values in a watershed must be evaluated when making decisions about roads; these may include human safety (e.g., access to combat wildfires), soils, recreation, commercial timber harvest, and restoration activities. In addition, decisions about roads are closely tied to available funding. Expenses are involved both in constructing and maintaining roads and in decommissioning roads and enforcing road closures (Forman et al. 2003). Complicating the issue of evaluating effects of roads is that roads in forested ecosystems currently are not well inventoried (Gucinski et al. 2001).[19]

The NEPA analysis must address the significant cumulative watershed effects caused by past, present and foreseeable future road construction. Roads are "exotic structures" that have no equivalent in the historic record, yet they have strong influence on watershed processes by rerouting water in various ways. Since roads are nearly ubiquitous across the landscape, they often have significant cumulative impacts that must be considered.

Roads may act directly or indirectly on wildlife population viability and/or ecosystem process as follows:

- Dispersal bottlenecks for fragmentation sensitive species (well documented and summarized below)
- Conduits for the dispersal of invasive species (e.g., roads and associated vehicular traffic are a major contributor to the spread of root rot fungus *Phytophoris lateralis* into Port Orford cedar forest-- well documented. Road maintenance can accelerate the spread of weeds.[20]
- Impediments to hydrological properties and processes, particularly changes in drainage patterns and stream morphology (e.g., higher peak flows of streams and rivers, more localized flooding events, floodplain alterations -- see Eaglin and Hubert 1993, Roth et al. 1996, Haskins and Mayhood 1997-- also on moist slopes inadequate culvert size, location, or number causes a higher and lower water table upslope and downslope, respectively (Stoeckeler 1965).[21]
- Degradation of fish habitat (well documented -- also minimizing road impacts is a major component of salmonid recovery plans in the west and the Northwest Forest Plan)[22]

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[19] Rowland, M. M., M. J. Wisdom, B. K. Johnson, and M. A. Penninger. 2004. Effects of Roads on Elk: Implications for Management in Forested Ecosystems. Transactions of the North American Wildlife and Natural Resource Conference 69: in press. https://web.archive.org/web/20150226151909/http://www.fs.fed.us/pnw/lagrande/starkey_na/PDFs_Preprints/ms-04_Rowland.pdf.

[20] Rural Road Maintenance May Accidentally Push Spread of Invasive Plants. ScienceDaily (Aug. 15, 2011) http://www.sciencedaily.com/releases/2011/08/110809144513.htm.

[21] McCabe, C. L., Matthaei, C. D., & Tonkin, J. D. (2025). The ecological benefits of more room for rivers. *Nature Water*, *3*(3), 260-270. https://doi.org/10.1038/s44221-025-00403-0.

[22] Firman, Julie C., Steel, E. Ashley, Jensen, David W., Burnett, Kelly M., Christiansen, Kelly, Feist, Blake E., Larsen, David P., and Anlauf, Kara (2011) "Landscape Models of Adult Coho Salmon Density Examined at Four Spatial Extents," Transactions of the American Fisheries Society, 140: 2,440 - 455, First published on: 13 April 2011. URL: http://dx.doi.org/lO.lo80!00028487.2011.567854; http://noaa.academia.edu/BlakeFeist/Papers/580465/Landscape_models_of_adult_coho_salmon_density_examined_at_four_spatial_extents. ("Predictor variables indicative of land management, cattle density, and road density were negatively associated with peak spawner densities in many of our models. These results are consistent with a

- Mass wasting events and slope instability (particularly road building on steep slopes)
- Poaching, over-hunting, and trapping of wildlife (well documented)
- Collisions with wildlife (Lalo (1997) estimates more than 1 million vertebrates nation-wide are killed by collisions with vehicles -- roadkill is the leading cause of death of the endangered Florida panther and key deer; Harris and Gallagher 1989)
- Alteration of fire patterns (e.g., increased risk of arson due to human access exacerbated by roads -- according to the Forest Service national fire statistics in 1995, human-caused fires (arson or accidental) accounted for up to 90% of all forest fires nation-wide; DellaSala et al. 1995) Between 1986 and 2003, there have been an average of 1098 fires per year in Oregon. Of those, more than twice as many are human caused versus lightning caused.[23]
- Soil and water pollution, air pollution, particularly a buildup of nitrous oxides in soils and streams that has been associated with the spread of exotics (Schowalter 1988, Tyser and Worley 1992), erosion, sedimentation of streams, edge effects, over collecting of rare plants and animals (e.g., cacti and reptiles), elimination of snags for firewood or road safety, and a number of indirect and cumulative effects (Bennett 1991, Noss and Cooperrider 1994).
- "[T]reatments that create more open stands in areas where user-created trails already exist invite development of more user-created trails." Unfortunately, this problem is not well understood because "a proliferation of user-created trails that made the GIS layers an unreliable data source for tracking these metrics." Deschutes Collaborative Forest Project 2022. A Decade of Learning 10-Year Monitoring Report. Mamut Consulting, 6-30-2020. http://deschutescollaborativeforest.org/ The NEPA analysis needs to carefully consider these issues.

The cumulative effect of all these impacts is significant.

In forested ecosystems, roads can contribute to cumulative impacts that when combined with other anthropogenic disturbances reduce habitat suitability for a number of taxa, including ungulates (moose: Crete et al. 1981, Timmermann and Gallath 1982, white-tailed deer: Sage et al. 1983, and Rocky Mountain elk: Rost and Bailey 1979, Lyon 1983), large carnivores (see *Conservation Biology* Vol 10 No. 4, 1996), mountain goats (citations below), small mammals (citations below), carabid beetles (Niemela et al. 1993), breeding birds (increased predation and cowbird parasitism along edges of roads-- see Burkey 1993 -- also noise impacts within 656-984 feet of roads (even during low vehicle traffic) has been associated with loss of forest interior species see Reijnen 1995), and reptiles (see Rosen and Lowe 1994).

Roads and Habitat Fragmentation - in a recent study of forest fragmentation, Wilcove (BioScience 1998) **states "roads are the single greatest impact to the movement of sensitive species."** While collectively only two percent of the conterminous United States is covered by roads, the ecological effect is much larger than the area cleared for roads (Forman 1996). The bottleneck effect of roads on wildlife has been well documented by Wilcove, Forman, and many other researchers.

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rich literature documenting the types of effects and pathways by which livestock grazing (e.g. Platta 1991; Belsky et al. 1999) and roads (e.g. Everest et al. 1987; Beechie et al. 1994; Paulsen and Fisher 2001) may degrade salmonid freshwater habitats" p. 451); Gary Carnefix and Chris Frissell. Aquatic and Other Environmental Impacts of Roads: The Case for Road Density as Indicator of Human Disturbance and Road-Density Reduction as Restoration Target; A Concise Review. Pacific Rivers Council. http://pacificrivers.org/science-research/resources-publications/road-density-as-indicator/?searchterm=road%20density.

[23] http://web.archive.org/web/20030312161211/http://www.odf.state.or.us/DIVISIONS/protection/fire_protection/stats/firecharts.asp?id=3070105.

Avoid unnecessary construction of temporary roads

Temporary roads still cause serious adverse impacts to soil, water, wildlife, fire ignition risk, carbon, and spread weeds. Decommissioning such roads is not entirely successful and the soil compaction effects can last for decades. The agency should consider avoiding building spurs by treating some areas non-commercially (e.g. thin lightly, create lots of snags, and leave the material on site).

We urge the agency to avoid road construction, including temporary road construction. The ecological costs of road construction almost always outweigh any benefits of the associated commercial logging activity. Since an optimal landscape restoration plan includes a mix of treated and untreated areas, the agency can easily avoid road construction by co-locating untreated areas and inaccessible areas.

Temporary roads have many of the same impacts as permanent roads, including complete vegetation removal, severe soil disturbance and compaction, severe modification of the flow of water and air through the soil, impairment of soil biological activity, wildlife habitat fragmentation (especially for microfauna), and wildlife cover loss. In spite of the fact that some roads may only be used by heavy equipment on a temporary basis, the biophysical effects of temporary roads can be long-lasting. The FS may even come back and use these temporary roads for future vegetation management or fire management. The temporal effects of temp roads can also be extended by legal or illegal use by off highway vehicles, woodcutters, hunters, mushroom collectors, etc.

The November 2000 National Forest Roadless Area Conservation FEIS p 3-30 says that temporary roads are not designed and constructed to the same standard as classified roads and therefore result in a "higher risk of environmental impacts." The NEPA analysis must account for this increased risk of temporary roads compared to permanent roads.

The Roadless FEIS also says:

> Temporary roads present most of the same risks posed by permanent roads, although some may be of shorter duration. Many of these roads are designed to lower standards than permanent roads, are typically not maintained to the same standards, and are associated with additional ground disturbance during their removal. Also, use of temporary roads in a watershed to support timber harvest or other activities often involves construction of multiple roads over time, providing a more continuous disturbance to the watershed than a single, well-designed, maintained, and use-regulated road. While temporary roads may be used temporarily, for periods ranging up to 10 years before decommissioning, their short- and long-term effects on aquatic species and habitats can be extensive. [The FEIS has similar disclosures citing extensive impacts to terrestrial species and habitats, and rare plant populations.][24]

Other NEPA analyses agree:

> "Temporary roads are constructed with no engineering specifications since they are targeted to be used for a short time (ideally a single season), and then obliterated. This lack of construction design makes it particularly important to follow Project Design Criteria for avoiding potentially unstable slopes, even with potentially short time frame

[24] Roadless Area Conservation FEIS — Specialist Report for Terrestrial and Aquatic Habitats and Species prepared by Seona Brown and Ron Archuleta, EIS Team Biologists http://web.archive.org/web/20040515020554/http://roadless.fs.fed.us/documents/feis/specrep/xbio_spec_rpt.pdf.

> of use. That is because even temporary roads which are constructed with road cuts in steep, unstable terrain can trigger debris avalanches and slope failures by removing downslope support and interfering with surface and subsurface water flows that can weaken slopes."[25]

For the semi-permanent roads that will be tilled, BLM's own soils scientist has little faith in the restorative value of this technique. He says: "What I have seen so far have been nothing more than modified rock rippers and little lateral fracture of the soil occurs and the extent of de-compacting is very limited." Coos Bay BLM, Big Creek Analysis file, section F, Soils Report. page 4.

Please consider George Wuerthner's summary of the many problems with so-called temporary roads.[26]

The agency typically assumes that temporary roads will have little or no effect because they are temporary. The agency has shown no scientific evidence to support this assumption. In fact, scientific research has shown exactly the opposite. Research results, published in *Restoration Ecology,* shows there is nothing temporary about temporary roads, and that ripping out a road is NOT equal to never building a road to begin with.

> The saturated hydraulic conductivity of a ripped road following three rainfall events was significantly greater than that of the road surface before ripping... most saturated hydraulic conductivities after the third rainfall event on a ripped road were in the range of 22 to 35 mm/hr for the belt series and 7 to 25 mm/hr for the granitics. These conductivities are modest compared to the saturated hydraulic conductivity of a lightly disturbed forest soil of 60 to 80 mm/hr." id. Even this poor showing of restoring pre-road hydrologic effects worsened with repeated rainfall. "Hydraulic conductivity values for the ripped treatment on the granitic soil decreased about 50% with added rainfall (p(K1=K2)=0.0015). This corresponded to field observations of soil settlement and large clods of soil created by the fracture of the road surface dissolving under the rainfall... The saturated hydraulic conductivity of the ripped belt series soils also dropped from its initial value. Initially, and for much of the first event, the ripped plots on the belt series soil showed no runoff. During these periods, run-off from higher areas flowed to low areas and into macropores.... Erosion of fine sediment and small gravel eventually clogged these macropores... Anecdotal observations of roads ripped in earlier years revealed that after one winter, the surfaces were nearly as solid and dense as the original road surfaces." Id. Even though ripped roads increase water infiltration over un-ripped roads, it does not restore the forest to a pre-road condition. "These increases do not represent 'hydrologic recovery' for the treated areas, however, and a risk of erosion and concentration of water into unstable areas still exists.[27]

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[25] USDA 2020. Stella Landscape Restoration Project Draft Environmental Impact Statement. Page III-30. Rogue River Siskiyou National Forest. https://www.fs.usda.gov/project/?project=53241.

[26] George Wuerthner 2009. Temporary Roads Are Like Low Fat Ice Cream, NewWest. 3-17-09. http://www.newwest.net/topic/article/temporary_roads_are_like_low_fat_ice_cream/C564/L564/ ("The problem is that temporary roads have most of the same environmental impacts as regular roads."). See also, Wuerthner's April 2020 blog post showing the persistent impacts of temporary roads. http://www.thewildlifenews.com/2020/04/22/are-temporarily-roads-ecologically-invisible/.

[27] Luce, C.H., 1997. Effectiveness of Road Ripping in Restoring Infiltration Capacity of Forest Roads, Restoration Ecology; 5(3):265-270. https://www.fs.usda.gov/t-d/programs/im/road_decomission/forms/luce_ripping_97_preprint.pdf.

The Rogue River-Siskiyou National Forest's Rustler EA (2010) says:

> Temporary roads are also expected to have an irretrievable reduction in soil productivity since they are bladed (soil is mixed and displaced) and compacted. Even once rehabilitated, the soil profile is modified to a degree that may take many years to return to the productive state of the undisturbed forest soils adjacent to it.[28]

To help weigh trade-offs, the agency should do an analysis that illuminates how many acres of accessed by each road segment so that we can distinguish between short segments of spur that allow access to large areas (large accomplishment of goals, with small cost/trade-off) and long spurs that access small areas (small accomplishment, large cost/trade-off). This can help inform the decision-maker's balancing of the costs and benefits of logging and roading.

The 1994 NWFP ROD (p 68) says "Standards and guidelines for Alternative 9 require that new road construction be substantially limited. Any road construction associated with silvicultural treatments inside late-successional reserve would be subject to the overall 'beneficial' requirement for such activities. That is, if the value of a thinning was negated by the habitat lost through road construction to the thinning, the activity should not proceed."

The Coos Bay BLM's Brummit Creek Density Management EA (2005) includes a useful table showing the length of each road (new, renovated, improved), the unit acres that are accessed by each road, and the acres of unit per mile of road. This is a useful way to evaluate and prioritize road work relative the expected benefits of thinning.

Roads and Fire

The science is very clear, fire danger is higher in areas with existing roads and it increases dramatically with construction of new roads. Downing et al. (2022) said "We observed a strong positive association between private ignitions and road density, and a weak positive association with average temperature. For the USFS ignitions model, road density was the most important variable and demonstrated a strong positive association with ignitions."[29]

WildEarth Guardians created a fact sheet summarizing the influence of roads on fire hazard.

> **Forest Roads Increase Wildfires**
>
> - A review of 1.5 million fire records over 20 years found human-caused fires were responsible for 84% of wildfires and 44% of the total area burned.
> - Road density has been linked with increases in human-caused wildfires, as the density of roads increases so does the number of fire ignitions.
> - Roads change microclimates far into the forest which increases wildfire risks by making areas drier, hotter and windier.
> - An increase in lightning-caused fires in roaded areas may be due to roadside edge effects.
> - Roaded areas create a distinct fire fuels profile which may influence ignition risk and burn severity

[28] https://www.fs.usda.gov/project/rogue-siskiyou/?project=26575.

[29] Downing, W.M., Dunn, C.J., Thompson, M.P. et al. Human ignitions on private lands drive USFS cross-boundary wildfire transmission and community impacts in the western US. Sci Rep 12, 2624 (2022). https://doi.org/10.1038/s41598-022-06002-3, https://www.nature.com/articles/s41598-022-06002-3.pdf.

Ecological Impacts

- Forest roads can change where and when fires burn, which harms ecological communities.
- After a wildfire, roads are susceptible to erosion and catastrophic culvert failures, which delivers sediment to streams and reduces the quality of aquatic habitat.
- Post-burn roads are prone to noxious weed invasions.
- After a wildfire, roads that were previously well vegetated often burn or are bladed for fire suppression access or firebreaks, which reduces wildlife habitat security for at-risk and big game species.
- Heavily roaded watersheds typically have received intensive management in the past leaving forests in a condition of high fire vulnerability[30]

In the Western United States, most of the more than 378,000 miles (608,000 km) of national forest roads traverse heavily managed forests with the greatest potential for high-severity fire. According to the Forest Service, more than 90 percent of wildland fires are the result of human activity, and ignitions are almost twice as likely to occur in roaded areas as they are in roadless. *See* DellaSala and Frost, An Ecologically Based Strategy for Fire and Fuels Management in National Forest Roadless Areas, Fire Management Today Vol. 61 No. 2 (2001:13) (*citing*: USDA Forest Service. 1998. 1991-1997 wildland fire statistics. Washington, DC: USDA Forest Service, Fire and Aviation Management; *also citing*: USDA Forest Service. 2000. Forest Service roadless area conservation. Draft environmental impact statement. Vol. 1. Washington, DC: USDA Forest Service).

The fact that roads increase fire hazard goes back a long time. A 50 year old publication of the USDA says:

> "**Logging and logging roads** open the forest canopy and **increase the temperature** of the air, the ground and the forest fuels, which accelerate the rate of burning of surface fires. **Logging and logging roads** open the forest canopy and **lower humidity** of forest fuels, which **increases the flammability of forest fuels** and critically influences the behavior of wildland fires. **Logging and logging roads open the forest canopy and may cause rapid and intense fire spread."**[31]

Recent science from Canada suggests that there is a positive association between lightning fire frequency and road density. Scientists suggest that, in the face of projected road developments, the potential exists for important changes to the regional fire regime.[32]

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[30] WEG 2020. Factsheet: Wildfire and Forest Roads. http://pdf.wildearthguardians.org/site/DocServer/Roads-and-Wildfire-Fact-Sheet-Sept-2020.pdf *citing* https://guardiansaction.org/roads-lit-review.

[31] Mark J. Schroeder & Charles C. Buck. 1977. FIRE WEATHER... A Guide For Application Of Meteorological Information To Forest Fire Control Operations. U.S. Government Printing Office: 0-244 : 923, first printed in May 1970. AGRICULTURE HANDBOOK 360. Reviewed and approved for reprinting August 1977. Stock No. 001-000-0193-0 / Catalog No. A 1.76:360. https://www.frames.gov/documents/behaveplus/publications/Schroeder_and_Buck_1970_PMS-425-1_NFES-1174_Fire_Wx_all.pdf.

[32] M. Cecelia Arienti, et al. Road network density correlated with increased lightning fire incidence in the Canadian western boreal forest, International Journal of Wildland Fire 2009, 18, 970–982. http://www.researchgate.net/profile/Maria_Latham/publication/240506317_Road_network_density_correlated_with_increased_lightning_fire_incidence_in_the_Canadian_western_boreal_forest/links/00b4952d213a4e1460000000.pdf.

The Forest Service itself has said: "A potential factor in the increase in fire size and severity may be related to increased incidence of human-caused ignition. Human access is likely to be increased by roads, a factor that will greatly increase the chances of both accidental and intentional human ignitions."[33]

Recent studies in the U.S. also suggest correlations between roads and fire. For example, in his study of the effects of roads on wildfires in national forests in California, Robert F. Johnson concluded that over 52 percent of human-caused fires occurred within 33 feet of a road edge.[34] Other studies showed similar results, reinforcing the correlation between roads and wildfire. *See* Show, S.B., C.A. Abell, R.L. Deering, and P.D. Itchson. 1941. A planning basis for adequate fire control on the southern California national forests. Fire Control Notes 5: 1-59; *see also* California Division of Forestry and USDA Forest Service, Region 5. 1968. Fire hazard reduction guide for roadsides. Calif. Dep. Conserv. and USDA (concluding that showed that 74 percent of all fires on national forests in California occurred within 10 feet of a road edge). *See also* Stephens, Scott L. 2005. Forest fire causes and extent on United States Forest Service lands. *International Journal of Wildland Fire*14:213-222 ("Human-caused fires commonly occur near transportation corridors.").

A large percentage of wildfires are human caused and roads are closely associated with increased fire hazard. The agency should reduce fire hazard by avoiding road construction and reducing road density. Balch et al. (2017) said "Public dialog and ongoing research have focused on increasing wildfire risk because of climate warming, overlooking the direct role that people play in igniting wildfires and increasing fire activity. Our analysis of two decades of government agency wildfire records highlights the fundamental role of human ignitions. Human-started wildfires accounted for 84% of all wildfires, tripled the length of the fire season, dominated an area seven times greater than that affected by lightning fires, and were responsible for nearly half of all area burned. National and regional policy efforts to mitigate wildfire-related hazards would benefit from focusing on reducing the human expansion of the fire niche."[35]

Benefield & Chen (2021) found that human access along roads and motorized trails was associated with anthropogenic wildfire. "The results demonstrate that anthropogenic wildfires occur as a result of activities such as overnight camping in remote portions of the forest, day usage on vehicle trails, and where there are clusters of designated campsites."[36]

The Purpose and Need Should Address The Unmet Need for Carbon Storage

The Forest Service cannot meet its legal obligations unless it works to reduce climate change. Those legal obligation emanates from the Forest Service Organic Act, the National Forest Management Act, the Endangered Species Act, Multiple-Use Sustained-Yield Act, and the applicable Land and Resources Management Plan. "Public forest reservations are established to protect and improve the forests for the purpose of securing a permanent supply of timber for the

[33] USDA, Roadless Area Conservation Rule Final EIS (2000), at 3-73 – 3-74, http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5057900.pdf.

[34] Johnson, R.F. 1963. The roadside fire problem. Fire Control Notes 24: 5-7.

[35] Jennifer K. Balch, Bethany A. Bradley, John T. Abatzoglou, R. Chelsea Nagy, Emily J. Fusco, and Adam L. Mahood 2017. Human-started wildfires expand the fire niche across the United States. PNAS 2017. http://www.pnas.org/content/early/2017/02/21/1617394114.full.pdf.

[36] Adam Benefeld, Jian Chen 2021. Examining the influence of outdoor recreation on anthropogenic wildfire regime of the southern Rocky Mountains. Natural Hazards. https://doi.org/10.1007/s11069-021-05065-1. See also: GEORGE WUERTHNER 2023. Wildfire–Road Removal A More Effective Wildfire Strategy. Wildlife News. JANUARY 25, 2023 https://www.thewildlifenews.com/2023/01/25/wildfire-road-removal-a-more-effective-wildfire-strategy/

people and insuring conditions favorable to continuous water flow."[37] Climate change is expected to disrupt forest ecosystems and hydrologic systems to an extent that threatens to violate the very foundations of the agency's Organic Act. The FS should make every effort to reduce GHG emissions that exacerbate global climate change.

The agency is required by law to faithfully implement its Resource Management Plan. Meeting resource management objectives set forth in the RMP requires properly functioning ecosystems with biophysical conditions and disturbance regimes within the historic range of variability. Global climate change is a clear and present threat to forest ecosystems and watersheds and is preventing the agency from meeting the goals and standards & guidelines described in the applicable Resource Management Plan, and other core legal requirements for management of federal lands. The agency cannot meet the RMP without bringing climate change under control, which requires reducing emissions, including emissions from logging. The agency cannot say that carbon storage is outside the scope of this project or not part of the purpose and need. The agency must include carbon storage as part of the purpose and need for this project.

The agency typically says one of the purposes of this project is to provide a supply of wood products to the public. The agency should reconsider timber targets in light of the fact that the public *needs* carbon storage to reduce global climate change much more than they *need* wood products. The NEPA analysis also needs to account for the fact that managing forests for water quality, water quantity, quality of life, and carbon storage for a stable climate will contribute far more to community stability than propping up the timber boom-bust industry with subsidized logging.

The agency must recognize that wood products are already underpriced and over-supplied due to "externalities" (costs that are not included in the price of wood, so those costs are shifted from wood product producers and consumers to the general public who suffer the consequences of climate change without compensation from those who receive artificially inflated profits from logging related externalities). Ecosystem carbon storage on the other hand is under-supplied because there is not a functioning market for carbon storage and climate services. The agency is in a position to address these market imperfections by focusing on unmet demand for carbon storage instead of offering wood products that are already oversupplied.

> Land protection, both public and private, provides substantial ecological benefits by avoiding conversion of natural systems to intensive, developed uses. These benefits include carbon sequestration, watershed functioning, soil conservation, and the preservation of diverse habitat types (e.g., Daily 1997, Brauman et al. 2007, Kumar 2012, Watson et al. 2014). Land protection also solves a key market failure: private markets tend to underprovide socially beneficial land uses such as natural forests, agricultural lands, or managed timberlands. The reason for this failure is that many of the benefits of these lands go to the public in general, not individual landowners. When private values and market transactions determine land uses, less land will be devoted to socially beneficial uses than if citizens could collectively determine use on the basis of social values (e.g., Angelsen 2010, Tietenberg and Lewis 2016).[38]

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[37] 1897 Forest Service Organic Act. https://winapps.umt.edu/winapps/media2/wilderness/NWPS/documents/publiclaws/ORGANIC-ACT-OF-1897.pdf.

[38] Katharine R.E. Sims, Jonathan R. Thompson, Spencer R. Meyer, Christoph Nolte, Joshua S. Plisinski. 2019. Assessing the local economic impacts of land protection. Conservation Biology. 26 March 2019 https://doi.org/10.1111/cobi.13318, https://harvardforest.fas.harvard.edu/sites/default/files/Sims_et_al-2019-Conservation_Biology.pdf.

Maintaining and increasing carbon storage in ecosystems on public lands is also required to meet LRMP desired future conditions and standards & guidelines. Carbon emissions from logging and other land management activities exacerbate global climate change and drive ecosystem changes that diverge from desired future conditions, such as uncharacteristic drought, fire, insect outbreaks, vegetation and wildlife mortality, species range shifts, low summer stream flows, unfavorable stream temperatures, extreme precipitation and peak flows and erosion, uncertainty related to vegetation recovery post-disturbance, uncertainty about the ability to provide a predictable, sustainable supply of forest products, etc. The agency should identify a purpose and need that recognizes the necessity of avoiding carbon emissions from logging and optimizing carbon storage to fulfill the promises in the LRMP.

Forest conservation is also needed to help forests, watersheds, and fish & wildlife adapt to global climate change:

- Mature forests serve as climate refugia where wildlife can find essential cool-moist conditions as the climate warms;
- Dense forests maintain cool-moist conditions and reduce stress (and mortality) on trees caused by vapor pressure deficit, which is exacerbated by clearcutting and thinning; and
- Dense forests with high canopies are more resistant and resilient to wildfire compared to forests that are clearcut or thinned.

Forest conservation to mitigate these effects should be considered as an alternative in the NEPA analysis.

Do not rely on the flawed boilerplate climate analyses

As explained below, the Forest Service's standardized NEPA language handed down from the regional office regarding carbon and climate change fails to take a hard look that NEPA requires. The analysis makes several highly misleading statements about managing forests for carbon storage, climate resilience, and the effects on climate change. The analysis inappropriately mischaracterizes the role of individual logging projects in the cumulative problem of global GHG emissions. The analysis misstates the effects of logging related carbon emissions that are not related to "deforestation." The analysis grossly misstates the climate effects of logging intended to reduce disturbance. The analysis misleadingly implies that logging benefits the climate by increasing forest productivity.

The NEPA analysis should consider the adverse climate consequences of GHG emissions caused directly and indirectly by logging. The NEPA analysis should estimate the quantity of GHG emitted by logging and associated activities throughout the wood products supply chain, and describe the contribution of this project to cumulative impacts of excess GHG in the atmosphere. The NEPA analysis should use a proxy such as the social cost of carbon dioxide emissions to describe effects.

The Forest Service should not rely on the boilerplate NEPA language from the regional office which is flawed in many ways. Instead the Forest Service:

- Must recognize the cumulative nature of the GHG emissions and climate problems. It does not matter that this project is small in the global scheme because all emissions matter when the causation (and effects) of climate change are global and cumulative;

- Cannot credibly assert that this project is harmless because it's not causing deforestation. This is immaterial. All GHG emissions, regardless of the source or how it is labelled, are part of the problem and cause the same climate impacts.

- Cannot credibly assert that thinning for forest health justifies or mitigates emissions from logging. Logging does not increase the capacity for growing trees. To the contrary, logging harms soil and reduces site productivity. Storing carbon in wood products is not preferable to storing carbon in forests. Evidence shows that forests are a more secure way of storing carbon. If this forest is not logged, or if more green tree are retained *in situ*, the agency cannot conclude that natural mortality will be greater than logging mortality. In fact, it is quite easy to predict that logging causes significantly more mortality than natural processes.

- Must not compare carbon *before and after* logging. That is an improper framework for NEPA analysis. The proper NEPA framework is to compare the effects of different alternatives (over time), so the agency must describe the carbon emissions and carbon storage in the forest over time *with* logging and *without* logging.

- Logging to reduce fire effects does not result in a net increase in forest carbon storage. The agency cannot predict the location, timing, or severity of future wildfires, so most fuel treatments will cause carbon emissions without any offsetting benefits from modified fire behavior. Studies clearly show that the total carbon emissions from logging (plus unavoidable wildfire) are greater than carbon emissions from wildfire alone.

- Cannot credibly assert that carbon storage in wood products is a useful climate strategy. Logging kills trees, stops photosynthesis, and initiates decay and combustion, with the end result being a significant transfer of carbon from the forest to the atmosphere. In stark contrast, an unlogged forest continues to grow and transfer more carbon from the atmosphere to the forest. Carbon emissions caused by logging far exceed the small fraction of carbon transferred to wood products. Carbon accounting methods that attempt to account for *substitution* of wood for other high-carbon building materials are fraught with uncertainty and too often represent maximum potential substitution effects rather than lower realistic estimates.

The FS website links to a 2009 document explaining how to incorporate "Climate Change Considerations in Project Level NEPA Analysis." Since then the agency has regressed to a misleading and incomplete non-quantitative analysis of how carbon emissions from logging contribute to global climate change. The FS should now be following the latest 2023 CEQ guidance on fulfilling NEPA requirements for projects that affect the carbon cycle and emit GHG.

Follow NEPA. It's still the law.

While NEPA law may be in flux due to a few radical court decisions and Trump era executive orders, there is still a lot of valid NEPA law that must be followed, including but not limited to:

1. NEPA is a statute, codified at 42 USC §§ 4321-4347, as amended by the Clean Air Act (42 U.S.C. 7609), and the 2023 Fiscal Responsibility Act (FRA),
2. Extensive NEPA case law interpreting the statute, much of which occurred before the 1978 CEQ regulations were approved, but continuing after the CEQ regulations, for instance, when courts rendered decisions founded on statutory language and interpretation, legislative history, other court decisions, etc.

3. NEPA rules properly promulgated by agencies other than CEQ, e.g., 36 CFR 220, including the CEQ regulations where those agency-specific regulations tier to the CEQ regs, e.g., 36 CFR § 220.4,
4. Internal agency guidance that is based on the NEPA statute, NEPA caselaw, and rules properly adopted by agencies with rulemaking authority, e.g., FSM 1950, FSH 1909.15.
5. CEQ's Feb 19, 2025 memo on implementation of NEPA says " … agencies should apply their current NEPA implementing procedures with any adjustments needed to be consistent with the NEPA statute as revised by the FRA. Moreover, although CEQ is rescinding its NEPA implementing regulations at 40 C.F.R. parts 1500–1508, agencies should consider voluntarily relying on those regulations in completing ongoing NEPA reviews …" We will continue to cite the CEQ regs because it still represents the best available guidance on implementing the NEPA statute.

Some of the core requirements of the National Environmental Policy Act itself include …

NEPA Section 101:

> … [I]t is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.

42 U.S.C. § 4331

NEPA Section 102:

> The Congress authorizes and directs that, to *the fullest extent possible*: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act, and (2) *all agencies of the Federal Government shall—*
>
> (A) utilize a *systematic, interdisciplinary approach* which will ensure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment;
>
> (B) identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by title II of this Act, which will *ensure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations*;
>
> (C) consistent with the provisions of this Act and except where compliance would be inconsistent with other statutory requirements, include in every recommendation or report on *proposals for legislation* and other *major Federal actions significantly affecting the quality of the human environment, a detailed statement* by the responsible official on—
>
> (i) reasonably *foreseeable environmental effects* of the proposed agency action;
>
> (ii) any reasonably *foreseeable adverse environmental effects which cannot be avoided* should the proposal be implemented; '
>
> (iii) a *reasonable range of alternatives* to the proposed agency action, including an analysis of any negative environmental impacts of not implementing the proposed agency action in the case of a no action alternative, that are *technically and economically feasible, and meet the purpose and need* of the proposal;

(iv) the *relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity*; and

(v) any *irreversible and irretrievable commitments* of Federal resources which would be involved in the proposed agency action should it be implemented.

Prior to making any detailed statement, the head of the lead agency shall *consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise* with respect to any environmental impact involved. *Copies of such statement and the comments* and views of the appropriate Federal, State, and local agencies, which are authorized to develop and enforce environmental standards, shall be *made available to* the President, the Council on Environmental Quality and to *the public* as provided by section 552 of title 5, United States Code, and shall accompany the proposal through the existing agency review processes;

(D) *ensure the professional integrity, including scientific integrity*, of the discussion and analysis in an environmental document;

(E) make use of *reliable data and resources* in carrying out this Act;

(F) consistent with the provisions of this Act, study, develop, and *describe technically and economically feasible alternatives*;

(G) ...

(H) study, develop, and *describe appropriate alternatives* to recommended courses of action in any proposal which *involves unresolved conflicts concerning alternative uses of available resources*;

(I) consistent with the provisions of this Act, *recognize the worldwide and long-range character of environmental problems* and, where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment;

(J) make available to States, counties, municipalities, institutions, and individuals, advice and information useful in restoring, maintaining, and enhancing the quality of the environment;

(K) initiate and *utilize ecological information in the planning and development of resource-oriented projects*; and

(L) assist the Council on Environmental Quality established by title II of this Act.

42 U.S.C. § 4332.

NEPA's requirements for thorough and accurate analysis are reinforced by the 2001 Information Quality Act which amended the Paperwork Reduction Act (44 U.S.C. chapter 35). This law requires agencies to use accurate, useful, objective, and complete information and analysis. Public Law 106-554, Section 515. See also, OMB's 2002 Guidelines implementing this law which require agencies to:

> ... maximize[e] the quality, objectivity, utility, and integrity of information, including statistical information, disseminated by the agency ...
>
> ...
>
> Establish administrative mechanisms allowing affected persons to seek and obtain correction of information maintained and disseminated by the agency ...
>
> ...
>
> Agencies shall treat information quality as integral to every step of an agency's development of information, including creation, collection, maintenance, and dissemination. This process shall enable the agency to substantiate the quality of the information it has disseminated through documentation or other means appropriate to the information.

2002 OMB Guidelines, Fed.Reg 2-22-2002.

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Each substantive issue discussed in these comments should be (i) incorporated into the purpose and need for the project, (ii) used to develop NEPA alternatives that balance tradeoffs in different ways, (iii) carefully analyzed and documented as part of the effects analysis, and (iv) considered for mitigation.

Please post to the project website, links to all relevant ESA and EFH consultation documents, RMPs, watershed analyses, and other supporting documents relied on in the NEPA analysis.

Please post to the project website before the public comment period, georeferenced maps of the proposed activity units that can be used to navigate in the field using apps such as Avenza.

Please provide Oregon Wild with timely notice of any forthcoming comment opportunities, and any draft and final decisions on this project. If the agency discovers new information or changed circumstance or modifies the project or the analysis after the decision, Oregon Wild requests to be notified and provided an opportunity to comment.

Note: If any of these web links in these comments are dead, they may be resurrected using the Wayback Machine at Archive.org. http://wayback.archive.org/web/

Sincerely,

Doug Heiken (he/him)
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