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Comments: Please find attached comments from the Southern Environmental Law Center, The Clinch Coalition, Georgia ForestWatch, Virginia Wilderness Committee, Kentucky Heartwood, Appalachian Voices, MountainTrue, Cherokee Forest Voices, and Retired Landscape Conservation Planner Hugh Irwin.

August 27, 2024

Linda Walker
Director of Ecosystem Management Coordination
1400 Independence Ave., S.W.
Washington, DC 20250

Submitted online via https://cara.fs2c.usda.gov/Public//CommentInput?Project=65356

Dear Director Walker:

On behalf of the undersigned, thank you for the opportunity to comment on the proposed National Old Growth Amendments ("NOGA") and accompanying Draft Environmental Impact Statement ("DEIS").

We remain supportive of this long-awaited effort to protect and restore old-growth forests, and we appreciate several key improvements to the initial proposal.[1] Several significant problems, however, were either left unaddressed or made worse in the latest iteration. Although we have serious reservations about the proposed action as currently drafted, we believe that several targeted improvements to the proposed action could effectuate the Amendments' intent and earn our support.

Our intent here is to provide succinct explanations for critical improvements needed to ensure that the NOGA can meet its stated purposes.[2] We also provide feedback on a few inaccuracies in the underlying analysis, especially as related to Eastern forests.

The Need for Greater Clarity:

An overarching theme in our comments is the need for greater clarity. Before getting into the details, here is a hypothesis for the current lack of clarity: There is a deeply rooted incoherence in both the proposed action and the analysis. On the one hand, the proposed action clearly explains that it is needed to constrain management actions. The analysis, likewise, assumes that imposing constraints on management purposes (while still allowing for commercial management tools) will result in the fastest possible progress toward restoring abundant and resilient old growth.[3] On the other hand, the proposed action is also designed to promote action, and the analysis provides a litany of justifications to intervene in old growth forests.

These two needs (to constrain and to promote management) are in tension, but they are not irreconcilable. In fact, addressing both is unavoidable. Line officers will apply NOGA in at least two different contexts. When old growth is encountered during routine project development, they will use these new plan components to ask whether they may continue with actions originally intended to accomplish other plan objectives. In this context,

NOGA must constrain action. But line officers will also look to NOGA for direction about whether and how to manage old growth as a priority in itself. There, NOGA should promote action (or deferral of action) in the right places and for the right reasons.

NOGA's job is to marry these separate goals and to do so with clarity. As currently drafted, the proposed action lacks that clarity. Instead, the draft has grown with separate additions attempting to meet the two competing needs, resulting in a policy with lots of surface area[mdash]a high word count and untested technical phrases[mdash]but without clear answers for line officers who want implementable plans. For example, what does "relevant or beneficial" mean, and how will fire and climate refugia be identified? To be frank, NOGA's ambiguity probably gives us the worst of both worlds: It will likely deter some line officers from taking needed actions while giving cover to others for maladaptive actions. This is why the Forest Service is hearing feedback from some stakeholder groups who worry that NOGA will impede active management and from other groups who worry that it will increase harmful actions that degrade old forests.

We also suspect that some of the draft's ambiguity is intentional[mdash]a response to internal concerns that new standards will be "weaponized" to stop projects. But agency leaders should not confuse change, which is a desired outcome of NOGA, with overdeterrence. "Weaponization" is a legitimate concern only to the extent that the policy results in overdeterrence. It is not a basis to oppose needed change.

Clarity is the only way to effectuate change without overdeterrence. Using well understood concepts regarding reference conditions and clear and concrete limits on exceptions will create the accountability needed to ensure that needed constraints are effective. Overdeterrence, on the other hand, is the product of vagueness. If NOGA fails to specify clearly what changes are expected, then some line officers are likely to either avoid the gray area or find themselves facing conflict over where the edge is.

Our recommendations are therefore intended to increase the proposal's clarity. Where future uncertainties and local variability make it necessary to describe outcomes conceptually, we recommend using existing concepts (e.g., "restoration of process, composition, or structure") over new jargon that lacks a common understanding.

Ultimately, the question at this stage should be whether NOGA's words are effectively communicating its intent. The NOGA process has been open and transparent, and the agency has made good progress toward building and communicating a shared vision. But after the process is over, we will be left with the text. In the future, project developers will not be recalling roundtable discussions, poring over an EIS, or searching through a response to comments; they will instead be looking at the text of the plan content. We look forward to working with you to ensure that NOGA gives future decisionmakers something clear and consistent to go on.[4]

Agency Intent:

Based on the agency's explanations throughout the process, we understand that NOGA is intended to achieve several key goals:

* A consistent national framework for the conservation of old-growth forests;[5]
* An increase over time in the abundance, representativeness, redundancy, and connectivity of old-growth forests[mdash]qualities necessary to increase resilience and restore ecological integrity;[6]
* Assurance that existing old-growth forests will not be degraded by unnecessary active management but will instead be managed to promote their quality and resilience;[7]
* Limited exceptions affecting a "small footprint," cumulatively not to exceed 5% of the old growth in any national forest unit (at least outside of the wildland-urban interface);[8]
* Recruitment from some (but not all) mature forests to increase the amount of old growth and to replace old

growth lost to disturbance processes;[9]
* Local development of recruitment strategies (i.e., identification of which mature forests are managed on a trajectory for future old growth) based on local conditions, Tribal consultation, and collaborative input;[10]
* Monitoring at multiple scales to inform adaptive management;[11]

We support and share these goals, which are consistent with our prior comments and the best available science. The current text of the proposed action, however, does not track the agency's intent. As a result, NOGA is unlikely to accomplish its goals unless the final Amendments make a few key revisions, which we turn to now.

Our red-line edits are consistent with those recommended in the collaborative comments principally authored by Silvix Resources. With the exception of a few additional suggestions of particular importance to forests in the Southeast, any minor or stylistic differences in these recommendations are not intended to convey a different meaning.

Key Changes to Ensure that NOGA Effectuates Agency Intent:

1. Explicitly incorporate passive management as an option.

As noted above, we understand that agency leadership recognizes that passive management may be the best prescription for many old-growth forests.[12] Indeed, recent Technical Guidance for prescriptions in old-growth forests directs project developers to "defer" treatment unless needed to improve the stand's trajectory toward desired conditions,[13] and the Biological Evaluation explains that "active management for old growth must be complementary to natural succession."[14]

Using passive management wherever appropriate makes good sense. In many cases, especially in infrequent-fire forest types, old growth characteristics are best conserved and promoted by the passage of time and by refraining from disrupting ecological processes. And reserving proactive stewardship for the sites where it is most needed (in a resistance/resilience/transition framework) is also the most efficient way to allocate scarce agency resources.

Yet this intent is nowhere reflected in NOGA's text. The term "passive" management or an equivalent phrase is simply not found in the draft anywhere. Instead, the only option for old growth is "proactive stewardship," defined as "vegetation management that promotes the quality, composition, structure, pattern, or ecological processes necessary for old-growth forests to be resilient and adaptable," and "vegetation management" in turn is defined as a list of active "treatments."[15]

Again, because of our participation in the process, we understand that Standard 2a is intended as the second half of an "if/then" proposition: If vegetation management is prescribed, then it "may only be for the purpose of proactive stewardship." In other words, if an old-growth forest already has the quality, composition, structure, pattern, and processes needed to be resilient and adaptable, then there would be no need for intervention. Only if one or more of those characteristics were missing, therefore, would active intervention be allowed. For example, if an old-growth stand were missing the process of frequent, low-intensity surface fire, proactive stewardship could be prescribed to restore or mimic that process.

But while this may be the best interpretation of the current draft, it is largely implicit and could be misunderstood. The word "may" should not have to carry so much weight. Indeed, whether and why to take action in old-growth forests is at the very heart of NOGA, and the framework for that choice deserves more clarity.

Ideally, Standard 2a would be revised to explain this fork in the road. First, when is passive management appropriate? (Answer: when the old-growth forest already has the characteristics needed to be resilient and adaptable or is on a trajectory to develop those characteristics without intervention.) Second, when and to what

extent is active management appropriate? (Answer: proactive stewardship may be used when those characteristics are missing and the stand is not on a trajectory to develop them without intervention.)

A revised Standard 2a could easily incorporate this understanding explicitly, to wit:

Where conditions meet the definitions and associated criteria of old-growth forest but characteristics needed to be resilient and adaptable are either likely to be lost or are unlikely to develop otherwise, vegetation management is allowed may only be for the purpose of proactive stewardship. . . .

As a second alternative, Standard 2a could be revised to explicitly recognize passive stewardship strategies to conserve the old-growth forests that least need treatment, with definitions (ideally in a glossary) for both proactive and passive stewardship:

Where conditions meet the definitions and associated criteria of old-growth forest, manage the forest for the retention and enhancement of those characteristics using either passive or proactive stewardship approaches, as ecologically appropriate. . . .

Proactive stewardship: Refers to vVegetation management (e.g., prescribed fire, timber harvest, timber or biomass removal, hazardous fuel reduction, wildlife habitat improvement, and other mechanical/non-mechanical treatments used to achieve specific silviculture or other management objectives) that promotes the quality, composition, structure, pattern, or ecological processes necessary for old-growth forests to be resilient and adaptable to stressors and likely future environments.

Passive stewardship: Inactive vegetation management that promotes the quality, composition, structure, pattern, or ecological processes necessary for old-growth forests to be resilient and adaptable to stressors and likely future environments.

Third, we could also support edits to redefine proactive stewardship to include passive management strategies. I.e., the term "proactive" could be conceptualized as a deliberate and intentional decisionmaking process that may result in stewardship anywhere on the passive/active continuum. We note, however, that some readers may not find this to be intuitive, and it could necessitate a number of conforming edits and analytical changes.

1. Clarify that existing old growth should not be degraded by proactive stewardship.

The initial draft of NOGA included a now-deleted standard that management "must not degrade" old growth. The current draft deletes that language, finding it "redundant" with Standard 2a's formulation that management "may only be for the purpose of proactive stewardship."[16] The agency explains that the proactive stewardship language is intended to [c]onstrain management actions to those that promote the quality" of old growth, among other things.[17]

In concept, we agree that it should not be necessary to both forbid degradation and to require improvement. But unfortunately the current draft and analysis could be read to suggest that degradation of old growth is allowed under the banner of proactive stewardship. For example, the analysis states that "[t]here is no requirement that [areas managed for proactive stewardship] continue to meet the definition of old-growth."[18] The DEIS explains further that the proactive stewardship requirement is weaker than some existing plans' requirements "that old-growth forests must continue to meet the regional old-growth minimum criteria after vegetation management for proactive stewardship."[19]

As written, therefore, the Amendments would allow line officers to "thin to the minimum,"[20] or, since treated stands wouldn't be required to meet minimum old-growth criteria, to thin below the minimum. In fact, without a clear non-degradation requirement, some of the broad proactive stewardship categories would seem to allow

even regeneration harvest. We can easily imagine, for example, that a line officer might propose regeneration harvest within existing old-growth forest in order to meet the purported proactive stewardship purpose of promoting "patch sizes, extent, and spatial patterns of disturbances" at a landscape scale. In fact, when old-growth logs leave the Nantahala National Forest on trucks this summer, it will be precisely for this rationale[mdash]trading existing old growth to create "young forest" needed at the landscape scale.[21]

This potential misreading of NOGA is in part due to ambiguity in the spatial scales at which NOGA requirements apply. As written, the Amendments can be read to allow the sacrifice of existing old-growth values in order to meet broader landscape goals. Let us be clear: This process will not be successful if existing old-growth forests can be managed to lose their old-growth characteristics in service of landscape-level objectives not directly furthering increases in the abundance, quality, and resilience of old-growth forests. A history of subordinating old growth to purposes that could be met elsewhere (i.e., by harvesting non-old-growth forests) is the reason that a "constrain[t]" on management is needed in the first place.[22]

At the same time, we realize that even management intended to improve the quality of old growth at the site-specific scale may result in the reduction of structural elements relevant to the applicable old-growth definitions and criteria. For example, a thinning needed to restore species composition and improve resilience to fire would reduce the number of trees per acre[mdash]a relevant criterion under some regional old-growth definitions. Accordingly, the standard cannot simply prohibit degradation of any and all definitional criteria.

To solve this problem, we recommend the following clarifying edit to Standard 2a:

Standard 2a: . . . Proactive stewardship in old-growth forests shall maintain or contribute to the restoration of pre-fire suppression old-growth conditions characteristic of the relevant forest type(s), shall retain the large trees contributing to characteristic old-growth structure and composition, and shall maintain or promote one of the following . . . .

This additional language, which mirrors the tried-and-true language authorizing the CFLRP,[23] would provide a conceptual frame of reference[mdash]something that project developers can aim for, scalable to variable local conditions. This kind of reference condition is necessary when developing detailed prescriptions. (Note that the Technical Guidance for old growth prescriptions currently uses "ecological integrity" as a site-specific reference condition,[24] but this is an awkward fit because ecological integrity is a landscape-scale measure and loses meaning at the site-specific level.)

Such a reference condition is also needed to clarify the purpose of the proactive stewardship categories, which currently are ambiguous. As written, to what end would a project developer "promote . . . successional pathways" or "spatial patterns of disturbances"?

Our additions would provide clarity without limiting necessary flexibility. First, CFLRP collaboratives have successfully applied the "pre-fire suppression conditions" concept across very different landscapes, and it has been a unifying goal. Similarly, the requirement to retain large trees is field tested, and it would provide a backstop for commercial thinning projects while allowing removal of trees that are not contributing to characteristic structure or composition. To illustrate: If an old-growth forest is overcrowded by reference to pre-fire suppression conditions, reducing stand density would not violate the standard. On the other hand, removing large trees and leaving an equivalent basal area of small fuels would not be allowed.

A second option would be to modify current STD-01:

Standard 1: Old growth forests will be determinedidentified using definitions and associated criteria established in the land management plan. Where these definitions and associated criteria are found to be incomplete (i.e., only address some but not all ecosystems found in the planning area for which old-growth forest does or may exist) or

are non-existent in the plan, the planning unit's corresponding regional old-growth forest definitions and associated criteria, or successor regional definitions and criteria, will be applied in part when these are incomplete or in full when non-existent. Do not use minimum definitions for old growth forests as a target for management outcomes.

This change would clarify that minimum criteria are a threshold for application of NOGA's standards and not intended as a target for management. This would prevent "thinning to the minimum" as a routine, cookie-cutter prescription in old-growth forests and reinforce the requirement that management reducing the quantity of old-growth structural elements must have a site-specific proactive stewardship purpose.[25]

A final option here would be to restore the "must not degrade" standard and to add language clarifying what degradation means[mdash]i.e., a loss of old-growth characteristics not necessary to maintain or restore the quality, abundance, or resilience of old-growth forests.

1. Clarify the categories of proactive stewardship.

While the list of proactive stewardship categories is improved the initial draft, several categories still need clarification. We note that the DEIS does not attempt to explain the meaning or scope of these categories, making the precision of the text even more important. Three of the categories are particularly vague.

1.
1. Standard 2a(vi)

First, Standard 2a(vi) allows management that would promote "patch size characteristics, percentage or proportion of forest interior, and connectivity." As we wrote previously, enlarging the patch size of existing old growth and connecting existing patches is more obviously relevant to non old-growth forests near existing old growth, and as such this category appears out of place in this list. We ask that you clarify the purpose of this category or at least provide some illustrative examples.

1.
1. Standards 2a(vii) and (viii)

Standards 2(a)(vii) and (viii) are much too vague as currently written. As we explained in prior comments, vaguely allowing timber harvest to promote "types" and "frequencies" of disturbance or "successional pathways" could easily be read to cover even-aged harvest of existing old growth.[26] This overbreadth could be addressed with the following clarifications:

Standard 2(a)(vii): types, frequencies, severities, patch sizes, extent, and spatial patterns of disturbances needed to retain or develop old-growth characteristics in the future;

Standard 2(a)(viii): successional pathways and stand development needed to retain or develop old-growth characteristics in the future;

In each category, this additional language would clarify the intent that the "disturbances" and "pathways" being promoted are those which are characteristic of or compatible with the persistence of resilient, high-quality old growth.[27]

We note, however, that these clarifications would be unnecessary if the Forest Service adds the suggested language in Standard 2(a). Adding "pre-fire suppression old-growth conditions characteristic of the relevant forest

type(s)" as a reference condition would ensure that these categories are not used to justify removal of old growth to create non-old-growth conditions.

1.
1. Standard 2a(i)

Finally, we suggest a clarification that would broaden one of the categories. The category directly addressing fire is aimed at "reduction of hazardous fuels." We suggest that this be revised as follows:

Standard 2a(i): reductionmanipulation of hazardous fuel levels to reduce the risk of loss of old-growth forests to uncharacteristic wildfire, andor to facilitate the return of appropriate fire disturbance regimes and conditions;

Allowing actions that "manipulate" or "adjust" fuel levels to facilitate the return of appropriate fire regimes (rather than only "reduce" fuels to reduce risk) would eliminate a western bias in the proposed action. In the East, a burn or mechanical treatment may sometimes be needed to increase fuel loads for a subsequent burn.[28] In appropriate circumstances, deliberately increasing the intensity of fire behavior may assist the restoration of fire-suppressed forests, including old-growth forests.

1. Clarify that "removal" is a vegetation management action.

The final NOGA should clarify that "removal" of timber or biomass is a vegetation management action. Pound for pound, this small addition is probably the most important of all our recommendations.

Vegetation management: Includes - but is not limited to - prescribed fire, timber harvest, timber or biomass removal, and other mechanical/non-mechanical treatments used to achieve specific silviculture or other management objectives (e.g. hazardous fuel reduction, wildlife habitat improvement).

[Note: this definition currently appears in Standard 2a, but we suggest moving it into a glossary. Regardless, the addition should be made wherever the definition ultimately is housed.]

Commercial logging is often thought of as merely a "tool" to facilitate vegetation management, but it is a tool that requires both cutting and removal of vegetation. Whether to cut and whether to remove, however, are separate decisions. The decision of whether to remove cut material will often be as consequential as the decision whether to cut it in the first place, affecting outcomes including future fuel conditions, recruitment of coarse woody debris, soil inputs, erosion and soil compaction risk, and containment of pests and pathogens, among other things.

Vegetation removal should therefore be explicitly identified as a type of vegetation management, such that the decision to remove would be subject to Standard 2a's requirements for proactive stewardship. As an example of how this would work in practice, a line officer considering a thinning project in a crowded, high-fire risk forest might conclude that removing the cut fuels is essential to mitigate the risk of uncharacteristic wildfire. Elsewhere, a line officer considering a selection cut to improve species composition in a mesic forest might conclude that leaving tree boles as coarse woody debris would better serve the proactive stewardship purpose. In either case, the line officer would start by asking whether and to what extent removal is necessary. If the answer is yes, then the line officer is in the best position to decide on the method of removal (e.g., through "pile and burn," commercial sale, free use, a pilot biochar project, etc.). To be clear, if removal is appropriate, both commercial and noncommercial means of removal could be on the table depending on access, market conditions, and all the usual considerations.

The change suggested here would allow the Forest Service to have the best of both Alternatives 2 and 3. Alternative 2, the proposed action, would allow commercial harvest generally whenever a proactive stewardship action is implemented. Alternative 3, in contrast, would prohibit commercial sale. The DEIS concludes that allowing commercial harvest would facilitate faster progress toward the desired conditions because stumpage would offset some of the costs of treatment.[29] However, the DEIS also recognizes there are tradeoffs. Specifically, there is a risk that the availability of commercial harvest may "negatively influence old-growth management decisions."[30] The Forest Service ultimately concludes that the benefits of commercial harvest "likely outweigh[]" the risk of negatively influencing management decisions, although no analytical basis is provided for this conclusion.[31]

The change recommended here would make the Forest Service's analytical conclusion justifiable. The suggestion above is intended to allow commercial removals without creating a risk that commercial incentives will drive bad decisions. It achieves that outcome by asking whether removal of timber, like any other vegetation management action, is being used to achieve the proactive stewardship purpose in a particular project. If the removal of timber is integral to achieving that purpose, then there is much less risk that the decision is being influenced by commercial incentives.

1. Clarify the scope of exceptions.

We understand that the Forest Service means for the exceptions to Standard 2a to be used narrowly, such that they will affect only a tiny fraction of all old growth on any individual Forest.[32] However, the exceptions are not drafted narrowly. The breadth and vagueness of these exceptions will lead to confusion and controversy over their scope and frequency of use. The following revisions are essential to ensure that the exceptions are in fact limited, as described in the Forest Service's analysis, and to ensure that future projects can continue to tier to that programmatic analysis.

1.
1. Standard 2b

Standard 2b: The cutting or removal of trees in old-growth forest for purposes other than proactive stewardship is permitted when (1) incidental to the implementation of a management activity not otherwise prohibited by the plan, and (2) the area - as defined at an ecologically appropriate scale - continues to meet the definition and associated criteria for old-growth forest after the incidental tree cutting or removal, (3) no practicable alternatives exist, and (4) impacts to old-growth forest conditions are minimized. Such cutting and/or removal is expected to be infrequent.

As originally described, this exception was intended to cover activities like trail construction or maintenance. In the DEIS, however, the Forest Service reveals that it will also cover major projects like utility rights of way. While the DEIS does suggest that some utility projects may be large enough to lose coverage under the exception, this hinges on perhaps the vaguest phrase in the draft[mdash]the "ecologically appropriate scale" for determining if an area continues to meet the definition of old growth.[33] Without clarification, a utility project or ski resort of any size might be approved so long as there was still enough surrounding old growth to dilute the impact. This leads to the perverse result where the largest (and arguably most important) patches of old growth could be impacted by the most harmful projects.

In our view, this exception should be deleted. Alternatively, the Forest Service should at least include a requirement that would require avoidance and minimization of old-growth impacts to the greatest extent practicable. Such a requirement would employ familiar concepts,[34] and it would preserve local line officer flexibility to determine whether practicable alternatives exist. Perhaps most importantly, it would give line officers

leverage when working with permit applicants to seek improvements to proposals and accompanying analyses.

1.
1. Standard 2c

Standard 2c: Deviation from Standard 2.a and 2.b may only be allowed to the extent thatif the responsible official determines that vegetation management actions or incidental tree-cutting or removal are necessary for the following reasons and includes the rationale in a decision document or supporting documentation:

This simple addition would ensure that cutting and removal in old-growth forests does not go beyond the purpose of the exception. Without it, a determination that some cutting is necessary could open the door to any cutting because Standards 2a and 2b would no longer apply.

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1.
1. Standard 2c(vi)

Standard 2c(vi): in cases where it is determined - based on best available science, which includes Indigenous Knowledge - that the direction in this standard would preclude restoration of process, composition, structure, or resilience consistent with ecological integrityis not relevant or beneficial to a particular species or forest ecosystem type.

Of the exceptions to which we provide red line edits, this is the most problematic. Allowing local line officers to determine that following the other standards is "not relevant or beneficial" creates a loophole large enough to make the rest of NOGA irrelevant. Furthermore, we struggle to see why appropriate treatments in the ecosystem examples provided (e.g., lodgepole and jack pine[35]) could not be authorized as "proactive stewardship" rather than needing a separate exception. Nevertheless, we can imagine some limited situations where application of Standard 2a could inadvertently prevent needed restoration, such as old growth in a previously type-converted stand, or where it is necessary to restore fire to a system at the landscape scale even though it may consume some existing old growth locally within that landscape. We also recognize that if an ecosystem is meeting or exceeding NRV for old growth, application of Standard 2a could prevent the creation of other structural conditions needed to restore and maintain ecological integrity. The language above would address all of these narrow but legitimate exceptions.

A final note on Standard 2c(vi): this exception cannot be applied in a way that would prevent the achievement of NOGA's other plan components.[36] In other words, it cannot prevent the restoration of old growth forests in "amounts and levels" such that they are resilient to future stressors,[37] nor can it interfere with the ability to show a "measurable, increasing trend" in old-growth conditions within the plan area.[38] The agency should acknowledge this limitation in the FEIS.

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1. Standard 2c(i)

Standard 2c(i): In cases where this standard would preclude achievement of wildfire risk management objectives for municipal water supply systemswithin municipal watersheds or the wildland-urban interface (WUI) as

delineated in the 2010 Wildland-Urban Interface of the Coterminous United States mapdefined in Section 101 of the Healthy Forest Restoration Act of 2003 (16 USC 6511) and its application by the local planning unit, or would prevent protection of critical infrastructure from wildfire;

We recommend two limiting revisions for Standard 2c(i). First, "municipal watersheds" is so broad as to be effectively unlimited. For example, 100% of the Chattahoochee National Forest is within the watersheds of the Chattahoochee River (with many downstream intakes, including Atlanta), the Coosa River (with downstream intakes at Montgomery, among many others), the Tennessee River (with downstream intakes at Chattanooga, among many others), and the Savannah River (with intakes at Augusta, Savannah, and many more). In other words, every square inch of the Chattahoochee National Forest is part of a "municipal watershed"[mdash]many municipal watersheds, in fact. The same would be true of most, if not all, national forests across the country. The national forests are upstream of where people live. We recommend replacing the current draft's language with the phrase "municipal water supply systems" as defined by HFRA.[39]

Second, NOGA cannot rely on the HFRA definition of WUI, because the HFRA definition incorporates boundaries that will change as community plans (which are not subject to NFMA and NEPA procedural requirements) are developed and updated. Moreover, the HFRA definition of the WUI is crude and outdated. The 2010 map represents the best available science, as required by the planning rule.[40]

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1. Standard 2c(v)

Standard 2c(v): In cases where adherence to Stds 2a and 2b would unreasonably interfere with ongoing research in areas designated for research purposes, such as experimental forests or research natural areas;

There is no legitimate reason that experimental forests or RNAs should be excluded wholesale from NOGA's framework. First, forestwide plan components (like those in NOGA) should apply forestwide and should not carve out particular management areas. Second, and relatedly, the purpose of these Amendments is to provide consistency across the National Forest System. There are 80 experimental forests and watersheds in the NFS, most including thousands of acres. A blanket exclusion would therefore undermine the goal of consistency. Simply put, the Forest Service has provided no rationale for an area-based exclusion of experimental forests and RNAs.

It is also inappropriate to create a broad exception for research activities within these areas. For research on the efficacy of proactive stewardship techniques, no exception to Standard 2a would be needed. And we fail to see the value in creating a broad exception that would authorize new research that would involve the deliberate degradation of old growth. What legitimate purpose would there be to research the effects of management techniques prohibited by NOGA?

Accordingly, this exception, if retained, should be narrowly limited to ongoing research, as in the above edits. Further, RNAs should be deleted from the exception. RNAs are intended as reference areas and must be managed "in a virgin or unmodified condition except where measures are required to maintain a plant community which the area is intended to represent."[41] RNAs contain many of our highest quality old-growth sites. It would be perverse to exempt them from NOGA's requirements.

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1. Standard 2c(iv)

Finally, we also have concerns about the "de minimis" exception in Standard 2c(iv). We are not opposed to a de minimis exception in concept. Such an exception could be appropriate to cover gathering downed wood by campers, for example. We are deeply concerned, however, at the suggestion that the Southeast Alaska Sustainability Strategy (SASS) could be covered by this exception.[42] The SASS anticipates "micro" sales of 5 million board feet of old growth annually. If that counts as de minimis, then the exception is much too broad. The Forest Service should clarify that this exception applies only to truly de minimis uses (like gathering small amounts of downed wood). The unique needs of the Tongass should not be shoehorned into this exception, but should instead be addressed in the ongoing Tongass plan revision, with already-approved projects filling the gap between now and finalization of the new plan. Alternatively, the Forest Service could add a new exception for "subsistence or transitional purposes on the Tongass."

1. Simplify and clarify the plan content for recruitment of future old growth.

1. Importance of recruitment

Of all the issues we address in these comments, we believe the agency needs the most help with recruitment[mdash]specifically, the content of and relationships between Objective 1, Guideline 1, and Management Approaches 1a and 1b. As a result, our discussion and suggestions here are more comprehensive.

To begin with, we believe that the plan content addressing recruitment is crucially important. Together, these components outline the only process under NOGA that is responsive to Executive Order 14072's direction to conserve old and mature forests. It is also the only part of NOGA that concretely addresses recruitment of future old-growth forests, without which NOGA cannot make progress toward its desired conditions. The DEIS and Threat Assessment show convincingly that threats to old-growth forests are increasing. More recruitment is therefore needed to improve old-growth abundance and to replace old-growth forests as they are lost to disturbance.

Recruitment is especially important in the Southeast. Current levels of old growth are highly departed from ecological reference conditions.[43] Without policy change, the RPA Assessment shows that levels of old growth in the South will be flat over the next 50 years.[44] In itself, that isn't too different from national trends, where forest aging is expected to roughly equal losses.[45] The difference in the Southeast, however, is that projected future losses come primarily from increased timber harvest.[46] In fact, in the absence of harvest, disturbance processes considered "threats" in other regions (like fire, insects, and disease) actually lead to increases in old-growth conditions in the Southeast.[47] In short, timber harvest is the primary factor in the loss of existing old growth and retardment of recruitment in the Southeast. Without policy change, the Forest Service will not achieve improvements in the abundance of old growth relative to reference conditions. In short, NOGA's framework for recruitment of future old growth must move the needle for recruitment, else the agency will have no basis (according to its own best available science) to conclude that it will make any progress toward NOGA's desired conditions and objectives.

1.
1. Concerns about recruitment in the current draft

Unfortunately, we are concerned that NOGA's current approach will not be effective for at least two reasons. First, the current draft leaves a long list of tasks for local Adaptive Strategies.[48] To be sure, we see the value in developing local strategies to account for local conditions, collaborative input, and consultation with Tribes and

other governments. We are concerned, however, that local staffs may lack the resources to accomplish everything within two years. In addition, because NOGA does not provide substantive guidance for what Adaptive Strategies should accomplish (i.e., what makes an Adaptive Strategy "good enough" or not), we doubt that local leaders will move forward without more of a push. In short, we see the potential for lots of squeeze, little juice.

Separately, we are very troubled that the current draft still fails to address a serious vulnerability under NFMA. In our prior comments, we explained that NOGA cannot defer to the Adaptive Strategy the decision of where plan components will apply. Under the planning rule, a formal plan amendment is required whenever a Forest "change[s] how or where one or more plan components apply,"[49] and the agency will not comply with this requirement when it adopts local Adaptive Strategies. The Forest Service may believe that it has solved the problem by deleting the phrase "where plan components will apply."[50] However, the underlying problem is still the same. Guideline 1 applies only to "areas that have been identified in the Adaptive Strategy."[51] And, of course, those areas will not be identified until after NOGA is finalized, outside of the formal plan amendment process.[52]

1.
1. Conceptualizing a more focused approach to recruitment

To be sure, NOGA cannot definitively settle questions about mature forests without subsequent local decisionmaking. We agree with the Forest Service that although recruitment of old growth necessarily comes from mature forests, not all mature forests should be managed on a trajectory to become old growth.[53] This is essentially a summary of the "Connecticut Model," which we have endorsed in prior comments. If some mature forests must be managed deliberately as future old growth, the obvious questions under the Connecticut Model are how much and which additional mature forests?

These questions can be answered fully only with local ecological and social inputs. Accordingly, although NOGA must provide for recruitment, it must also leave room for local decisionmaking. On the other hand, local decisionmaking alone will never be able to satisfactorily decide how much and which forests should be on a trajectory as future old growth.

This has obviously been a difficult line to walk during the NOGA process, but it really is no different from many other tough issues that forest plans routinely tackle. For example, where will habitat protection be prioritized for a particular rare species if we lack comprehensive survey data for that species? In that case (as here) the forest plan must provide for cumulative direction while continuing to allow for project level assessment and decisions. For our hypothetical rare species, the plan might provide specific direction for "occupied" habitat or "suitable" habitat.

The current draft of NOGA lacks similar cumulative direction regarding how much or which forests to prioritize for recruitment. It directs units to "identify and prioritize areas for . . . recruitment,"[54] but it provides no measuring stick for whether an Adaptive Strategy does so adequately or excessively. This will be neither efficient nor effective. Returning to the above example, imagine a forest plan that merely contained a desired condition to maintain "abundant and resilient habitat" for rare species. Without actionable plan components, such a plan would almost surely fail to achieve the desired outcome, and it would be highly susceptible to conflict.

To cut to the chase, we believe that the decisionmaking currently contained in the Adaptive Strategy must be shifted in two directions[mdash]uphill, into NOGA, and downhill, into projects. NOGA must provide cumulative direction that can be implemented in projects, and projects must make decisions that add up to progress toward that programmatic direction. Adaptive Strategies will fill the gap, providing the context and decision support as line officers apply NOGA at the project level.

Looking "uphill" first, Guideline 1 should direct recruitment from the mature forests where expected stewardship actions are "needed and optimal" to achieve NOGA's desired conditions.[55] This would be analogous to protection of "occupied" or "suitable" habitat in the above example. Downhill projects, later, would specify the action (or inaction) most appropriate to maintain or improve the trajectory of those needed/optimal forests toward old-growth conditions. In other words, NOGA itself would make a programmatic decision about which forests to prioritize for recruitment (those which are needed and optimal), while projects would make decisions applying that programmatic direction at smaller scales. Adaptive Strategies themselves would not make decisions; they would merely provide context and support for project-level decisions. I.e., they would assist project developers in deciding what stewardship practices in which mature forests are needed and optimal to meet NOGA's desired conditions.

1.
1. Suggested revisions

We recommend the following changes to simplify Adaptive Strategies and address the current draft's practical and legal defects:

Objective 1: Within 2 years of the old-growth amendment record of decision, in consultation with Tribes and Alaska Native Corporations and in collaboration with interested States, local governments, industry and non-governmental partners, and public stakeholders, create or adopt an Adaptive Strategy for Old-Growth Conservation based on geographically relevant data and information identifies forests in which recruitment is needed and optimal to meetfor the purpose of furthering old-growth forest desired conditions and describes the expected proactive or passive stewardship strategies associated with those forests.

Guideline 1: Beginning 2 years after the NOGA record of decision, forests in which recruitment is needed and optimal to meet old-growth forest desired conditionsareas that have been identified in the Adaptive Strategy for Old-Growth Forest Conservation as compatible with and prioritized for the development of future old-growth forest, vegetation managementprojects should be managed through passive or proactive stewardship for the purpose of developing old-growththose conditions, unless doing so would prevent the accomplishment of a site-specific purpose that cannot be met elsewhere or with another prescription that would better contribute to old-growth desired conditions.

Management Approach 1a: Based on place-based Indigenous Knowledge and BASI, develop and utilize in future project developmentadhere to an Adaptive Strategy for Old-Growth Forest Conservation to recruit old-growth conditions consistent with desired conditions. The Adaptive Strategy will accomplish the following:

1. At an ecologically appropriate scale, develop a Decision Support Tool that relates expected stewardship strategies to the specifically identified forests in which recruitment needed and optimal to meet old-growth forest desired conditions (see Management Approach 1b);
2. Identify monitoring strategies and potential adjustments to the Adaptive Strategy as appropriate to address uncertainties in assumptions;

Management Approach 1b: The Decision Support Tool will assist project developers in identifying the forests where recruitment is needed and optimal to meet old-growth forest desired conditions. Decision Support Tools may follow either of two broad approaches. First, they may delineate or identify by attribute, at a level of specificity that can be readily applied during project development, forests and the associated stewardship approaches expected to be applied in those forests. Second, they may describe a process that will be used to identify forests and associated stewardship approaches at the project scale. In developing the Decision Support Tools, consider the following:

1. Ecological integrity and the natural range of variation;
2. Redundancy, representativeness, distribution, and connectivity;
3. Inherent capability to sustain old growth conditions or presence of climate or fire refugia;
4. Threats, stressors, and opportunities;
5. The likelihood of achieving the old-growth forest definitions and associated criteria in the shortest timeframe;
6. Attributes identified as culturally significant;
7. Biodiversity values and ability to promote climate-adapted species assemblages under current and future conditions;
8. Ability to reduce or manage fire hazard, speed or severity, or the spread of potential insect or disease outbreaks through proactive stewardship; or
9. The likelihood of the expected management strategies within identified forests to support or prevent the accomplishment of other plan desired conditions and objectives such as those related to other successional stages and associated species.

While these changes are relatively extensive compared to other, more targeted revisions suggested in these comments, we emphasize that the basic structure is not dramatically different from the current draft. The same ecological considerations are preserved, too. The changes are designed to simplify and clarify the process and to ensure it conforms to planning rule requirements.

1.
1. More detailed explanation of the suggested changes

1. "Needed and optimal"

The addition of the "needed and optimal" language would begin to address both of our top concerns about the current draft. First, it would simplify and speed up Adaptive Strategy development by removing the likeliest source of conflict and delay. Without the addition, each planning unit will have to decide not only how much and which mature forest to recruit, but also how to decide how much and which mature forest to recruit. Is it enough to just barely improve recruitment over business-as-usual? Or even to slow it down? Should Forests be prioritizing recruitment from older mature forests, or is it good enough to add freshly logged young forests to the future old-growth network (as some Forests in the Southeast have done)? Without something to pin these questions to, local processes will be mired in unsolvable, values-laden questions. Language like "needed and optimal" would anchor those questions to leadership's intent for NOGA[mdash]specifically to NOGA's desired conditions[mdash]without intruding on local flexibility to consider ecological, social, and economic factors.

Second, clarifying that Guideline 1 will apply to the forests that are "needed and optimal" to achieve desired conditions would also satisfy the planning rule requirement that plan components specify where and how they will apply.[56] The Guideline itself would define its applicability, while the precise location of the "needed and optimal" forests would be identified at the project level in light of on context and analysis provided by the Adaptive Strategies. As discussed further below, a Decision Support Tool could provide factors for Forests to consider when identifying which forests are needed and optimal for recruitment.

Making this addition would not require any additional NEPA analysis beyond what's needed for the current draft. Our recommendation would simply clarify that recruitment will occur as needed and optimal to achieve the desired conditions, and the Forest Service is already obligated to analyze the effects of its desired conditions.

To clarify further what these terms mean, let's focus on what is "needed" to achieve desired conditions. Here, we want to preempt a possible misunderstanding. It might be tempting to think of recruitment as related to the pace

of moving toward desired conditions. I.e., one might intuit that the more mature forest we devote to recruitment, the faster we can achieve abundant old growth. If that were the case, then the term "needed" would not necessarily improve clarity, because local units would still need to ask "how quickly?"[mdash]another intractable and values-laden question. The question "how quickly," however, is simply not relevant, because achieving abundant and resilient old growth is not about reaching a static condition in the future. It is instead about adjusting disturbance regimes now to influence a future dynamic equilibrium.

Without the right mix of proactive and passive management strategies today, the future equilibrium will not include abundant and resilient old growth plus all the other structural conditions (e.g., young forest, mid- and late-aged forests) necessary to ecological integrity. But even assuming we make the best possible decisions now, how quickly we achieve desired conditions is out of our hands. It depends on local ecological contexts and the quality of our assumptions. For example: What is the current age-class distribution? What are the predicted future trends in both stand-replacing and intermediate disturbances? How effectively can we prevent uncharacteristic stand-replacing disturbance through proactive stewardship of at-risk mature forests? The assumption underlying our suggested revision is that we can make reasonable, testable assumptions about what is "needed" now to influence the future equilibrium.

The term "optimal" is designed to accommodate ecological, social, cultural, and economic considerations. Of course, NOGA is not developing forest plans from scratch. Social, cultural, and economic considerations not related to old growth have presumably already been incorporated into existing forest plans. Accordingly, the list of factors for determining what is "needed and optimal" are designed to integrate the new considerations related to old growth recruitment (Management Approach 1b (i) through (viii)) with the priorities already set by existing management plans (and the contracts and/or Tribal agreements already adopted under those plans).[57]

1.
1.
1. "Decision Support Tool" and adaptive management

Influencing the future dynamic equilibrium to promote ecological integrity and resilient old-growth conditions will take more than random acts of conservation; it will take concerted action in the short term. Accordingly, the primary role of the Adaptive Strategies should be to support project decisions so that projects cumulatively achieve the desired conditions. Adaptive Strategies should provide an assessment, at an appropriate ecological scale, that if we consistently do X, Y, and Z, then we will improve the landscape trajectory toward desired conditions. (Projects, of course, will be responsible for accomplishing X, Y, and Z.) Of course, even with best available western science and Indigenous Knowledge, we are bound to be wrong about some things, so Adaptive Strategies must be, well, adaptive.

To capture both ideas, we suggest describing the Adaptive Strategies as including two responsibilities[mdash]namely, (i) a Decision Support Tool to assist in identifying the forests where recruitment is needed and optimal to meet desired conditions, along with the associated stewardship strategies expected in those forests, and (ii) developing monitoring questions and adaptive management triggers. Our version of Management Approach 1a eliminates all the other tasks assigned to Adaptive Strategy development and focuses on these core needs. To the extent these core responsibilities need further elaboration or processes, that additional information can be (and already is in part) included in Appendix D.

A "Decision Support Tool" is essential because it would otherwise be impossible to decide where recruitment should occur at the project level. For any discrete area of mature forest, some stakeholders might see good opportunities for recruitment while others might see opportunities for timber management, with recruitment always possible somewhere else (if needed at all). This invites intractable conflict, not to mention difficult

analysis. Decision Support Tools would solve this problem. By applying DSTs at the project level and using them to inform project purpose and need statements, line officers could show that projects are consistent with GDL-01 and contributing toward the desired conditions.

Decision Support Tools will not look the same in every geography. First, the appropriate scale may differ from place to place. For example, a DST could be developed at the forestwide, multi-forest, forest type, or regional scales. Second, DSTs may differ in the type of information they utilize because different planning units may have different information, analysis, and collaborative agreements available. We see two conceptual possibilities for DSTs: First, they could identify subsets of forests, either spatially or by attributes, along with the associated stewardship approaches expected in those subsets. For example a DST might identify:

* Spatial areas of predominantly mature forests that are likely fire refugia, where management will consist of predominantly passive management strategies;
* Infrequent-fire forest types where mature forests with characteristic species composition will be managed with single tree selection, girdling, or other prescriptions designed to accelerate development of old-growth characteristics;[58]
* Mature forest of a certain ecological community type as appropriate for proactive stewardship to restore characteristic fire behavior;
* Mature forests with a particular species composition as needing proactive stewardship to reduce the risk from insects or disease (e.g., pine beetle or emerald ash borer);
* The X% oldest mature forests for development of old-growth characteristics through passive or proactive means;
* Mature forests that are suitable habitat for old-growth associates for management to promote occupation by those species; or
* Areas recently affected by uncharacteristic stand-replacing disturbance for reforestation with fire- and drought-tolerant species;

Alternatively, where information or collaborative input is not available to identify subsets of mature forests for recruitment, DSTs could instead describe a process for how recruitment (through both passive and proactive stewardship) would be integrated into project development. For example:

* Conduct a stepped-down departure analysis of forest structure in major forest community types (accounting for pattern, distribution, and patch sizes) to understand deficits of old growth conditions;
* Assess probability of natural disturbance outside the natural range of variation and determine treatments and acreages needed to avoid uncharacteristic loss of mature forest conditions;
* Identify forests needed for passive or proactive recruitment after integrating consideration of rare habitats, access, and other considerations relevant under the forest plan.

DSTs could use either of these broad approaches or a combination. (Relatedly, our suggestions clarify that Decision Support Tools will help project developers identify "forests" rather than "areas," leaving the flexibility to describe those forests using either of the above approaches.) Either way, by following DSTs project developers would avoid the need to justify action or inaction on an ad hoc basis, because projects consistent with the DSTs will also be consistent with forest plan components as amended by NOGA.

To the greatest degree possible, we recommend that WO and Planning Service Group support be utilized to provide analytical support to (and bring consistency to) local Adaptive Strategy development. For example, some units may need new analyses to describe reference conditions, assess current departure from reference conditions, or model future outcomes of proposed strategies. Ideally, these products could be supported by staff working on similar issues elsewhere, providing economies of scale. This would free up limited local resources to coordinate with Tribes, other governments, and stakeholders for input on other ecological, social, cultural, and economic considerations relevant to optimizing recruitment approaches.

Another key responsibility for Decision Support Tools is to identify not only "forests" where recruitment will be prioritized, but also the related stewardship approaches that are needed and optimal to achieve desired conditions. These are two halves of a single whole. In order to provide useful support for future decisions, the DSTs must help identify the right actions (or inactions) in the right places.

1.
1.
1. "Inherent capability" and "refugia"

Several of our changes are intended to clarify that recruitment will be needed in forests with active management needs, and not just areas that could be set aside passively. In Management Approach 1b, we suggest removing the concepts of "inherent capability" and "refugia" from the prefatory language and moving them into the list of factors to be considered. To be clear, we think these concepts are promising and encourage the agency to explore them further.[59] Where good information exists, they can and should inform the development of Adaptive Strategies. However, recruitment should not be limited to refugia. To the contrary, NOGA should also provide for recruitment to increase and replace old growth in forest types or areas at risk of uncharacteristic disturbance. Relatedly, our revised Guideline 1 reiterates that forests needed and optimal for recruitment may be managed proactively or passively toward future old-growth condition. Our edits to Desired Condition 2 (discussed separately below) would also reinforce this understanding.

1.
1.
1. "Unless" safety valve for Guideline 1

Guideline 1 should include an "unless" phrase to clarify when deviation is appropriate.[60] We suggest that the Guideline should have a safety valve to ensure it does not prevent the accomplishment of another site-specific purpose contemplated under the forest plan. This would complement the parallel language in our suggestion revision to Management Approach1b(ix), which would ensure that the accomplishment of other non-site-specific plan objectives (e.g., managing jack pine systems consistent with the Huron-Manistee National Forest RLRMP Biological Opinion) would not be prevented by broad-scale strategies developed under NOGA. Together, these edits would ensure that plans remain "integrated" and that NOGA does not create internal contradictions.[61]

While these edits are substantial, we reiterate that they should not require further NEPA analysis. They are clarifying edits that work with the ingredients from the current draft, and they are explicitly tied to the desired conditions, which are already required to be analyzed.

1. Tie NOGA's desired conditions to the regulatory requirements for ecological integrity.

Desired Condition 1: Old-growth forests occur in amounts and levels of representativeness, redundancy, and connectivity such that conditions are within or moving toward the natural range of variation and are resilient and adaptable to stressors and likely future environments.

Desired Condition 1 is particularly important because it describes the vision for both stewardship of existing old growth and recruitment of future old growth. It answers the question "what does success look like?" or, more crudely, "how much is enough?" This question is important to stakeholders from widely different perspectives[mdash]those who worry that NOGA will not go far enough and others who worry it will go too far.

There is only one way to answer that question under the planning rule. The rule defines ecological integrity as "[t]he quality or condition of an ecosystem when its dominant ecological characteristics . . . occur within the natural range of variation and can withstand and recover from most perturbations imposed by natural environmental dynamics or human influence."[62] As the DEIS recognizes, there are two halves to the definition[mdash]NRV and resilience.[63]

The current draft of DC-01 explicitly incorporates one of those requirements (resilience) but omits the other (NRV). This creates an unfortunate ambiguity, suggesting perhaps that NRV is not relevant to understanding whether the amounts, types, and distribution of old growth are meeting this desired condition. Elsewhere, however, it is clear that NRV is highly relevant: The analysis refers deficits of old growth relative to "historical conditions" as evidence that "ecological integrity is compromised."[64] The analysis also uses a LANDFIRE departure analysis to compare current conditions to NRV for open- and closed-canopy structure.[65]More explicitly, in explaining Standard 2c(vi), the Forest Service uses NRV as a benchmark for determining whether further protection of old-growth forests would be "relevant or beneficial."[66]

The Forest Service addresses its ambivalence somewhat directly in the Ecological Impact Report. While acknowledging that NRV is central to the definition of ecological integrity, the Report discusses "constraints due to limitations of the reference period examined . . . and in an age of climate change."[67] It concludes that a "contemporary approach" would look at both NRV reference models and "rates and magnitudes of modern ecological change" to determine how to sustain ecological functions.[68]

Fair enough. Use of historical reference conditions alone is not enough, by itself, to ensure resilience and adaptability. But that's why the planning rule places an "and" between NRV and resilience. Both sides of the "and" are necessary.[69] The recommended edit would ensure that the desired condition is consistent with the planning rule, while leaving flexibility for local units to explore what ecological integrity means on their unique landscapes. "Moving toward" would set a compass bearing that would address current levels of departure even where systems are not capable of maintaining historical conditions. And Standard 2c(vi), with our suggested revision, would also provide a safety valve in circumstances where attempting to move toward NRV would preclude restoration of resilience.

1. Clarify that old growth should persist as a condition, not a steady state.

Desired Condition 2: Old-growth forests persist locally in areas that have the inherent capability to sustain old-growth forests over time and at the landscape scale accounting for current and future disturbance regimes.

While we appreciate the emphasis on areas that have inherent capability, which are unique in their ability to foster continuity of ancient forests, those areas are not fully representative of the ecosystems where old growth exists or needs to be restored. Restoration and maintenance of ecological integrity, including resilience, requires the persistence of old growth more broadly, including in areas where higher levels of disturbance is natural and expected. In those areas, old growth may be reset to a younger seral stage locally, but it should be replaced by aging mature forests to ensure persistence at the landscape scale.

1. Monitor the use of exceptions.

Plan Monitoring 2: Within the biennial monitoring evaluation report, provide monitoring questions and associated indicators to assess the abundance, representativeness, redundancy, connectivity, and resilience of old growth forests and inform adaptive management; include regular updates on actions taken pursuant to this amendment and any deviations from Standard 2a or Guideline 1; identify unintended consequences to other social, economic, or ecologic plan objectives; and provide updates on measurable changes in unit-level old-growth forest when new national inventory information is available.

The first of these changes recalls the language of Desired Condition 1, which notes that "[t]he terms 'amounts,' 'representativeness,' 'redundancy,' and 'connectivity' are intended to drive measurable progress."[70] This intent will not be effectuated unless progress for those qualities are actually measured.

The second change is necessary to track the use of exceptions and to ensure that they are consistent with the NOGA EIS. For example, outside of the WUI the DEIS discloses that exceptions to Standard 2a will affect less than 5% of the old-growth forests on any national forest. Forests that exceed this threshold will risk losing the ability to tier to the EIS. Additionally, frequent use of particular exceptions could signal a "need for change" to adjust the NOGA plan components, for example by narrowing an exception or expanding a proactive stewardship category.

1. Provide sideboards for field verification requirements.

Standard 1: [Add:] Old-growth forests, where it meets the minimum spatial scale relevant to inventory methods, will be identified and confirmed in the field using reliable field verification protocols.

In addition to the edits to Standard 1 previously discussed, we also suggest clarifying that "old-growth forests will be identified and confirmed in the field." In the Southern Appalachians, there is no consistency in how old-growth forest conditions are identified. For example, the George Washington National Forest uses a collaboratively developed protocol which is highly reliable.[71] The Nantahala and Pisgah National Forests, in contrast, will not conduct old-growth field surveys at all under their newly revised forest plan.[72] Common stand examinations direct staff to determine the age of a "representative" tree, which rarely if ever detects the presence of old trees. Without old-growth surveys, therefore, old-growth conditions are routinely overlooked during project planning unless brought forward by stakeholders. Clarifying the responsibility to identify old growth in the field is needed to meet NOGA's intent to improve consistency and to ensure the persistence of existing old growth.

The phrase "reliable field verification protocols" would clarify that units must choose and consistently apply a reliable survey method. They may use plan-level protocols (where applicable), Regional protocols, or other separate protocols where appropriate. However, a Forest may not simply decline to put survey protocols in place. This language would allow the George Washington National Forest to continue using its collaborative protocols, but it would require the Nantahala-Pisgah to fall back on the requirements of the Regional guidance, which emphasizes the obligation to core trees in the "oldest" age class, not just a younger "representative" tree.

Finally, we encourage you to specify the threshold size for an old-growth patch as the "minimum spatial scale relevant to inventory methods." We have reviewed the rationale for not addressing this issue directly, but we disagree with the approach. The Forest Service notes generally that the "minimum patch size . . . must be sufficient to function as an ecological unit," and explains further that the minimum size "at which old-growth forest features manifest" will be different in different forest types.[73] The analysis then punts the question to the Adaptive Strategies.[74]

The question of whether a patch is large enough to be considered old growth will bedevil the implementation of NOGA unless this issue is clarified.[75] Consistent with our overall feedback on the Adaptive Strategies, defining minimum patch size is too much to ask of local units. It has the potential to be a highly contentious question without more guidance from NOGA. Furthermore, while we agree that the variability in minimum patch sizes across different forest types is driven by ecological differences, defining the minimum patch size is not an ecological problem; it is a logistical problem: Have the old-growth features that NOGA is attempting to promote manifested in a way that we can identify them and track them? If so, then there is no reason to exclude them from NOGA's standards. As the keeper of the inventory, the WO should step in and specify the minimum patch sizes for each major forest type (or simplify by lumping into frequent- and infrequent-fire systems) based on its ability to detect and track those conditions. These thresholds need not be set immediately; they could be deferred

to future technical guidance.

Analytical Problems:

In addition to the suggested revisions to NOGA's text, we also have concerns about some of the analysis.

1. Issues specific to Southern Appalachian forests

The Southern Appalachians punch above their weight when it comes to the importance to old-growth conservation efforts. According to the Forest Service's inventory, the Southern Appalachian national forests contain about 1/3 of the total acres in Region 8 but more than 3/4 of total old growth.[76] Adding in Region 9, these the Southern Appalachians contain about 62% of all old growth on NFS lands in the East.[77]

The vast majority of our Eastern old growth, moreover, occurs outside of passively managed areas such as wilderness or inventoried roadless areas. Nationally, of the estimated 24,738,000 acres of old growth, 13,605,900 (55%) are in generally passive management.[78] However, only 24% of Eastern old growth (again, with most of that in the Southern Appalachians) is in passive management.[79] To put a point on it, our oldest forests are disproportionately located in the suitable timber base. For example, according to FS Veg, there are 179,616 acres greater than 100 years old in "unsuitable" management on the Nantahala and Pisgah NFs, while there are 304,861 acres greater than 100 years old considered suitable for timber production. In other words, our oldest forests are highly vulnerable to logging.

If NOGA is going to work nationally, then it must make sense in this vital landscape. For several reasons described below, the Forest Service should take a closer look at its assumptions related to the Southern Appalachians.

1.
1. Compensate for overinflated estimates of existing old growth.

NOGA emphasizes the requirement to use "geographically relevant data and information." And, of course, the planning rule requires use of the best available scientific information. We are concerned that the FIA-based inventory of old growth does not meet this requirement for the Southern Appalachian forests.

There is substantially less field-verified old growth in the Southern Appalachians than suggested by the FIA-based inventory. For example, the George Washington and Jefferson National Forests are estimated to contain 507,000 acres of old growth, but our best estimate is that the field-verifiable acreage is between 250,000 and 300,000 acres. As another example, the Cherokee National Forest is estimated to contain 66,000 acres of old growth, but field surveys, while incomplete, have confirmed only a little over 9,000 acres.

Similarly, the Nantahala-Pisgah National Forests are estimated to contain approximately 219,000 acres of old growth, but only about 90,000 acres has been field verified after extensive surveys.[80] It is likely that there is some additional old growth yet to be found on this landscape, but likely not another 100,000+ acres. Even FS Veg indicates that the FIA-based inventory is an overestimate. FS Veg shows that there are only 187,178 acres greater than 120 years old on the NPNF. This means that at least 32,000 acres of the 219,000 acres in the MOG inventory would be under 120 years old, and therefore likely younger than the Region 8 threshold for old growth.

We are concerned that the generous estimates in the national inventory will inadvertently depress the perceived need for recruitment. For example, as noted in prior comments, even under a conservative estimate of reference conditions the Nantahala-Pisgah should have approximately 500,000 acres of old growth. The actual deficit is around 130,000 acres greater than the deficit indicated by the FIA inventory.

We recommend that the FEIS clarify that the FIA inventory, while useful at broad scales, becomes less reliable at smaller spatial scales. Accordingly, where they would constitute best available science, Forests should use local estimates to inform the development of Adaptive Strategies.

1.
1. Correct Western biases in the analysis and recognize the diversity of Eastern forests.

The South, including the Southern Appalachians, is portrayed in the Forest Service's analysis as uniformly a "frequent fire" system.[81] Relatedly, a major theme in the DEIS is that, relative to fire, timber harvest is not a major threat to old-growth forests. In frequent-fire systems, the agency concludes that more harvest is needed to reduce the extent and severity of fire. This chain of reasoning reflects a western bias in the analysis and simply does not work in the East.

First, the Southern and Eastern Regions are not composed of uniformly "frequent fire" forests. Contrary to reality, the Forest Service estimates zero acres of old growth in infrequent-fire forest types in Region 8.[82] This is a vast oversimplification of the landscape. The Southern Appalachians, in particular, contain tremendous diversity. To illustrate that diversity, here are the average historical fire-return intervals (derived from LANDFIRE succession modeling[83]) for some Southeastern ecological communities:

* Appalachian dry oak-pine: 2-5 years
* Appalachian oak-hickory: 2-28 years
* Appalachian riparian and floodplain communities: 58-172 years
* Appalachian mixed hardwood communities: 293-556 years
* Maple-beech-basswood communities: 440-457 years
* Northeastern spruce-fir communities: 556-1,111 years
* Southern Appalachian balds: 155 years

With extant old-growth in systems across this continuum, it is clear that the entire region cannot be lumped together as "frequent fire."

Second, increased fire is generally not a threat to ecological integrity in the South; it is a restoration need. Characterizing fire as an increasing threat across the country, the DEIS predicts a "moderate increase" in moderate- to high-severity fire during this century in the East, with as much as a "5-fold increase in the incidence of wildfires" and a "doubl[ing] of mortality in oak-hickory forests by 2070.[84] But the DEIS doesn't attempt to provide a baseline for current fire return intervals. As the analysis notes elsewhere, fire suppression and associated mesophication is the agency's primary concern for oak-hickory forests.[85] In other words, the current incidence of fire is generally too low in frequent-fire systems in the East, and an increase would generally move those systems toward their natural range of variability.

Moreover, to the extent that the Forest Service is predicting increases in future natural disturbance in the NOGA DEIS, it is flatly inconsistent with the agency's most recent record of decision addressing that same issue in the Southern Appalachians. The Nantahala-Pisgah National Forest claims that natural disturbance (including fire) has dramatically decreased in this landscape and will continue to be inconsequential for the next two centuries. There the agency concluded that the current and future return interval for stand-replacing disturbance (including fire and all other causes) has decreased to an average return interval of 3,703 years across all ecosystems, including "frequent fire" systems like dry oak and pine-oak heath.[86] This is orders of magnitude longer than return intervals under NRV.[87] To be sure, we continue to believe that the Nantahala-Pisgah process was deeply flawed, but the agency cannot simply use inconsistent assumptions to support contemporaneous records of decision without at least explaining the discrepancy. As it stands, the local forest plan analysis uses

extraordinarily low estimates of future natural disturbance to justify the need for higher levels of regeneration harvest, and the NOGA analysis is using predictions about increased natural disturbance to justify the need for higher levels of thinning and fuels reduction. Neither account provides a good description of or prescription for the Southern Appalachians.

In the final EIS, the Forest Service should acknowledge that the South, and particularly the Southern Appalachians, is a highly diverse landscape with both frequent- and infrequent-fire communities and that increased fire (relative to the current baseline) is a restoration need, not a threat as it might be in the West. Moreover, the agency should disclose that throughout the East, regeneration harvest remains the biggest threat to old growth and recruitment.[88]

1.
1. Recognize opportunities for old growth recruitment and stewardship in Region 8.

The analysis asserts that two broad categories of forests are not good candidates for retaining and restoring old growth in Region 8. These assertions are unsupported and must be corrected.

First, we are troubled to see the Forest Service suggest that mature cove forests with tulip poplars are not considered candidates for old growth restoration:

"Stands with previous multiple harvests often have denser quantities of more aggressive mesophytic trees such as tulip poplar. Older stands with abundant tulip poplar are not considered viable old growth candidates. As such, tulip poplar harvests (thinning and group selection), associated with releasing or planting more diverse tree species, can help to restore mature examples."[89]

The citations provided for this section of the document do not support this assertion. To the contrary, the best available science shows that tulip poplar is a continually recruiting component of old-growth cove forests and that poplar dominance is a characteristic condition in the most productive mid-elevation coves.[90] As a practical matter, excluding poplar coves from old growth recruitment means excluding all coves, including many with characteristic species composition.

Excluding poplar coves as "viable old growth candidates" appears more about preserving commercial opportunities than it is about restoration. To the extent poplar may be overrepresented in some stands of cove forest, its dominance is due to prior harvest. Poplar is highly competitive in high-light conditions and benefits from exposure of mineral soil during ground disturbance. More regeneration logging will only exacerbate trends toward poplar dominance. If the Forest Service believes it can improve species composition through "thinning and group selection," moreover, there is no reason that these actions would be incompatible with recruitment of future old growth. Under Guideline 1, promotion of old-growth conditions can and should include promotion of characteristic species composition. In short, the only reason to create a blanket exclusion for mature cove forests with tulip poplar is because Region 8 national forests want to continue with even-aged logging in coves.[91] Even so, that is no basis to decline to consider whether and to what extent recruitment from mature cove forests is needed to achieve NOGA's desired conditions.

Second, the Forest Service makes a similar argument for forests at the other end of the moisture gradient:

"There is evidence that some of the identified old-growth includes areas where long-term fire suppression has allowed some forest group types to expand from fire refugium as well as includes forests that have developed compositional and structural characteristics outside the normal fire regime. Thus, these do not represent ecological old-growth forests and instead represent uncharacteristic conditions (USDA and USDI 2024b)."

The concept of "ecological old-growth forests" does not appear in NOGA's text, but we are concerned that this line of reasoning will be used to exclude broad swaths of mature and old-growth forests from NOGA's requirements, such as through application of Standard 2c(vi). This is a problem for Region 8 in particular because the DEIS also makes a point to identify mesophication, typified by "high proportions of maple," as a problem "across large landscapes" in the East.[92]

Here again, we see reasoning motivated by the desire to continue conducting regeneration harvests in oak forests generally.[93] If an oak forest has "high proportions of maple," then it could be excluded from NOGA as a matter of course.

To be sure, fire suppression has degraded oak forests, resulting in both structural changes (a move toward closed-canopy conditions) and compositional changes (trends toward dominance by fire-intolerant species like maple, loss of grass and herb diversity). But that is no justification to abandon efforts to restore old-growth oak forests. There are prescriptions that can address the symptoms of mesophication while keeping forests on a trajectory to develop high-quality old-growth conditions. For example, selective removal of "encroaching mesic species" and prescribed fire can improve stand trajectory without regeneration.[94]

Moreover, the goals of restoring species composition and restoring old-growth structure in oak forests are usually compatible. With fire suppressed dry forests, the key is to reintroduce fire and reduce stem density while maintaining old trees. This kind of work improves stand-level trajectory toward future old-growth conditions. In contrast, regeneration harvest is not just a setback for old-growth recruitment; it also has a terrible track record in restoring and perpetuating oaks. While it is agency orthodoxy to claim that stand-resetting harvest is necessary to create the conditions for successful oak regeneration, it is more often the case that oaks are outcompeted by disfavored species following heavy harvest except on the driest sites or where time- and cost-intensive follow-up treatments are applied.

Regeneration harvest in older oak forests is also counterproductive for fire risk. To the extent that the agency is worried about fire and fuels in the East, the agency should recognize that removal of larger, older trees through even-aged or two-aged harvest makes the stand less resilient to fire. Big trees have better survival after fire, and their removal makes the stand less resilient.[95] In contrast, reducing shrub density and restoring grassy understories, while not reducing susceptibility to fire, can reduce its intensity and severity.

As with cove forests, we understand the Forest Service's desire to continue with regeneration harvest for commercial reasons and to create large patches of young forest for the benefit of game wildlife species. But acknowledging that fire-suppressed oak forests can be managed on a trajectory to become high-quality old growth does not mean that regeneration harvest practices must end. It merely means that there are other options too.

Oak systems are highly diverse and complex. In the FEIS, the Forest Service would ideally provide a discussion of oak communities that recognizes the gradients of fire and intermediate disturbances necessary for oak recruitment, how these play out over the course(s) of stand development, and how these trajectories of disturbance-mediated stand development pathways relate to the variety of old-growth oak forest community types. But at the very least, the analysis must make clear that the Forest Service is not writing off "large landscapes" as unable to be managed for old-growth characteristics and thus available for regeneration harvest.

1. Acknowledge that maladaptive projects affecting old growth are still being proposed.

As noted at the top of these comments, there is a fundamental incoherence in the current draft. NOGA is intended as a constraint on management actions, both in existing old growth and in some mature forests.[96] Yet the analysis bends over backward to avoid showing any need for constraints. For example, the DEIS asserts that under all alternative (including the no-action alternative), "[v]egetation management actions that occur on the

NFS, including in old-growth forest, . . . are designed to . . . ensure that long-term positive outcomes outweigh short-term negatives, ultimately resulting in net conservation benefits and fostering ecological integrity."[97] In other words, the DEIS makes the argument that vegetation management will be beneficial even without any constraints.

The Ecological Impact Report is slightly more ambivalent. It focuses on the potential of silvicultural interventions to "restor[e] old-growth attributes."[98] Thinning, prescribed fire, cultural burning, and vegetation management generally all "can" accelerate restoration of old growth.[99] Implicitly, this acknowledges that those activities can also have counterproductive effects, depending on "forest type, existing condition, and site characteristics."[100]

But the Forest Service nevertheless downplays the significance of timber harvest as a threat. The Forest Service cites a national decrease in the prevalence of even-aged (stand resetting) harvest,[101] arguing that "vegetation management practices on federal lands typically preserve larger diameter, older trees."[102] Notably, this trend is not reported by Region. In our experience, regeneration harvest remains the primary commercial timber strategy throughout the Southern Appalachians.

Similarly, the agency concludes that "[t]ree cutting is currently a relatively minor threat" based on national trends,[103] but it fails to acknowledge that timber harvest is still the most serious threat to old growth in the East, where other disturbances like wildfire and insects/disease are not causing a loss of old growth.

The analysis does address regional differences in the Regional Old Growth Summary, but the relevant assertions are misleading and not supported by citation or data. For example, Region 8's summary asserts for several forest types that Region 8 "does not generally harvest, especially a regeneration harvest," in old growth forests.[104] It continues, however, by explaining that "active management is commonly used to develop diverse forest condition in the mature classes."[105] First, this is misleading because management is generally not used to develop diversity within mature forests; it is used to create young forest by removing mature forests.

Second, it is simply not true. As we shared in our comments on the ANPR, a parade of timber projects has proposed regeneration logging in existing old growth in the Southern Appalachians.[106] Fortunately, the old-growth logging was dropped from most (though not all) of these projects. Still, it is clear that existing forest plans alone are not adequately ensuring that vegetation projects are beneficial and "preserv[ing] larger diameter, older trees." In the East, unfortunately, conflict during the NEPA process has been the default gatekeeping mechanism.

The Forest Service should assess the relevant trends at a regional level. The analysis should forthrightly acknowledge that there is a need to constrain even current projects, and that ecologically inappropriate harvest is not just a historical problem. The agency should further acknowledge the impact of such projects on trust and efficiency. Even if harmful logging of old-growth forests is a relatively rare occurrence now, it has an outsized impact on relationships between the agency and the public.

1. Acknowledge tradeoffs of using commercial sale.

As discussed above, the Forest Service does vaguely gesture to tradeoffs between allowing and prohibiting the use of commercial sale of timber cut in old-growth stands. However, it concludes without analysis or citation that the benefits of commercial sale (facilitating proactive stewardship) outweigh the risk that commercial motives will influence project design.[107]

The Forest Service observes that selling timber "helps offset the cost of ecological restoration treatments,"[108] and that "funding from goods for services is key to fund restoration activities."[109] So, the agency concludes, less cost means that agency resources can stretch farther, accomplishing more work. The premise of this argument is that commercial treatments will have the same ecological benefits as if they were done

noncommercially[mdash]just more of those beneficial outcomes.

To the contrary, commercial tools present a different set of benefits and risks, and the influence of commercial incentives is usually difficult to trace. Consider a few scenarios:

* A project where trees need to be cut within old growth but it would be more ecologically beneficial to leave the cut material on the ground as coarse woody debris;
* A project where cutting larger, fire-resistant trees could help to pay for the cutting and removal of small-diameter fuels;
* A project where large and old trees could be packaged with and help to pay for important ecological restoration actions outside that stand;
* A project that could achieve the same structural improvements with either commercial or noncommercial methods, but where commercial treatment would have additional adverse effects (e.g., impacts to soil, understory, spread of invasive species, etc.).

These examples show that the use of commercial tools involves compromise. Further, for a resource-constrained agency like the Forest Service, these compromises are hard to escape. Being asked to do more work with the same limited resources increases the likelihood that a line officer will accept risks that could undermine the proactive stewardship purposes that are supposed to drive action in old growth.

We believe that the most elegant way to resolve this issue is to place the focus on whether removal would serve a proactive stewardship purpose rather than whether commercial harvest in general is good or bad. If removal is needed, then line officers are uniquely suited to decide how best to accomplish the removal. However, if the agency declines to clarify that removal is a vegetation management action that must itself serve a proactive stewardship purpose, then the analysis must do a better job of assessing and comparing the tradeoffs of commercial influence.

Relatedly, we were puzzled by the statement in the Social, Economic and Cultural Impacts Report that Alternative 2 "still allows for timber production, so long as it meets the definition and outcomes of proactive stewardship."[110] We assume this was written in error. Timber production defined as "purposeful growing, tending, harvesting, and regeneration of regulated crops of trees" for industrial or consumer sale.[111] Such a purpose is incompatible with limiting harvest to proactive stewardship purposes. The Forest Service should correct this error, perhaps by explaining that the proposed action allows for timber harvest, including by commercial sale, so long as it meets the definition and outcomes of proactive stewardship, or some equivalent phrase.

1. Missed opportunity to analyze carbon impacts.

We commend the Forest Service for recognizing that "[o]ld-growth forests provide a nature-based climate solution by storing large amounts of carbon over long time periods"[112] and that old-growth "forests have higher carbon stocks"[113] than younger forests. And we agree with the agency's conclusion that "[c]onsideration of carbon and its stability in old-growth forest ecosystems is essential to the Forest Service mission to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations."[114] But confusingly, the DEIS contains no consideration of how the various alternatives affect carbon sequestration and storage as compared to no action or compared to each other. This leaves the Forest Service without information necessary to make a reasoned choice among alternatives, which violates NEPA.

This shortcoming is surprising given the numerous documents instructing the agency to complete this analysis. First, as the agency acknowledges, it has initiated the plan amendment process to respond to Executive Order 14,072.[115] That Executive Order calls on the agency to implement a policy to "retain and enhance carbon storage."[116] And the agency acknowledges that old growth has a unique role in promoting "long-term storage

of carbon" among many other ecosystem services.[117] Yet, other than acknowledging that old-growth forests store significant amounts of carbon, the analysis of how and whether the plan amendments will lead to enhanced carbon storage is missing. This is a serious error because the alternatives would have very different effects on carbon storage. To put it simply, large and old trees store more carbon and are more resistant to loss of carbon from wildfire, so the alternatives that best promote retention and recruitment of old growth (in pre-fire suppression condition) will also contribute the most to stable carbon storage. The analysis inexplicably fails to disclose this crucial point.

Second, the Forest Service is clear that the Council on Environmental Quality's National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change calls on agencies to "consider the projected [greenhouse gas] emissions or reductions for proposed actions and their reasonable alternatives . . . and use this information to assess potential climate change effects" using "the best available information and science."[118] Third, the Forest Service has issued its own guidance requiring consideration of carbon effects.[119] More fundamentally, this analysis is required by NEPA.[120] The absence of this analysis leaves the agency without key information necessary to its decision, violates agency guidance, is inconsistent with Executive Order 14,072, and is unlawful.

The agency includes some background information on carbon storage and sequestration, but even this background information includes errors that must be fixed. First, the agency states that "[o]lder forests take up carbon more slowly than younger forests."[121] Perhaps technically true, it misses the forests for the trees for three reasons. First, it hides the fact that "[c]arbon density continues to increase with stand age beyond 300 years."[122] In other words, regardless of rate, older forests both store more carbon and continue to sequester carbon for centuries. Second, the papers supporting the agency's statement are focused on carbon accumulation in "live aboveground tree biomass" in forests, or stands, rather than individual trees.[123] Multiple studies show that even if the rate of carbon sequestration (measured as tree mass growth per unit leaf area) decreases over time for an individual tree, the amount of carbon sequestered annually continues to increase because it is driven, in part, by tree size.[124] Restated, older, individual trees may sequester carbon at a lower annual rate but they still sequester more total carbon each year than younger trees. This leads to the third point[mdash]aboveground, live tree carbon sequestration rate decreases in older forest stands because trees fall and decay. This transfers carbon out of the "live aboveground tree biomass" carbon pool but increases carbon stored in downed wood and, ultimately, soils. Thus, while "[o]lder forests take up carbon more slowly than younger forests" in live aboveground tree biomass, the older forest ecosystems still generally sequester more total carbon.

The agency's analysis here is also too broadbrush and fails to consider key regional differences. For example, in the Southeast trees over 80 years old outperform all other age classes except trees under 20 years old when measuring the rate of carbon sequestered in live aboveground tree biomass.[125]

The second shortcoming in the agency's background information is its assertion that timber harvests "may result in lower net greenhouse gas [ ] emissions relative to unmanaged forests, if carbon stored in harvested wood products [ ], substitution effects, and forest regrowth are considered."[126] First, the agency has provided no information suggesting that timber taken from national forests[mdash]particularly old-growth timber[mdash]is meaningfully contributing to any substitution effect. The agency cannot point to the theoretical possibility of substitution effects to pain a rosier picture of the carbon effects of logging. Second, the agency's own data is clear that logging results in the short-term emission (under ten years) of at least 50% of the carbon stored in a harvested forest even accounting for carbon stored in harvested wood products and regrowth. To be sure, that emitted carbon could potentially be re-sequestered by forest planted to replace the harvested one but the amount of carbon emitted through harvest of old growth will not be recovered for at least one hundred years or more[mdash]far too long to avoid the worst consequences of climate change.[127] The agency is increasingly asserting that logging will result in lower net greenhouse gas emissions when regrowth is considered. To avoid misleading the public (among other things), it must be clear-eyed that any "net" reduction is not only theoretical but will not happen, at best, for hundreds of years.

Third, the agency continues to assert that logging is not a leading threat to carbon storage and sequestration, but this is simply false especially in the East. The agency's own data shows that logging the primary threat to carbon stocks in Regions 8 and 9.[128] Continuing to reject this fact will fatally undermine this and other agency analyses.

Finally, we would be remiss not to note that the agency has missed a significant opportunity by failing to conduct a programmatic analysis in this DEIS of the cumulative carbon effect of timber projects authorized to achieve annual timber targets. Each year, the agency authorizes numerous timber projects which result in dozens of timber sales to achieve volumetric timber targets at national, regional, and unit-specific levels. Nevertheless, the agency has never assessed the aggregate effects of these projects on carbon storage and emissions. Instead, the agency provides a cramped analysis for some (but not all) projects that dismisses the effects of the individual project as a drop in the bucket. The agency never considers the carbon effects of the full bucket of timber projects authorized to achieve timber targets. This violates NEPA.[129] The nationwide DEIS prepared to support these plan amendments was an ideal opportunity to complete this analysis. The agency could have taken this opportunity to explain what it expects to change as a result of NOGA and how that differs from "business as usual." The agency's refusal to do so continues leaves its timber target decisions, and decisions for individual projects implementing those targets, legally vulnerable.

1. Project-level plan amendments bypassing NOGA should be rare.

The DEIS contemplates that project-level plan amendments to NOGA's requirements may be necessary in some circumstances,[130] but those occasions should be rare and are limited by law. The Forest Service cannot simply amend exceptions into plans, undermining forestwide direction by smaller cuts. NFMA's requirement that a forest plan constitute "one integrated plan" and that all activities on a forest be consistent with that plan prevents the Forest Service from waiving NOGA standards on a project-by-project basis.[131] To be clear, the agency may be able to amend NOGA plan components to allow an otherwise inconsistent project to be authorized but it may not waive those standards. The NOGA amendments are necessary, in part, to ensure forest plans "maintain or restore . . . ecological integrity."[132] The agency cannot reasonably apply that substantive NFMA requirement in a future project-specific amendment by simply waiving NOGA's plan components. Serial attempts to avoid NOGA's requirements through project-specific amendments would only intensify this problem and almost certainly undermine the achievement of other plan components (including NOGA components).

Second, we note that project-level amendments require the agency to determine "which specific substantive requirement(s) within [its NFMA regulations] are directly related to the plan direction being added, modified, or removed by the amendment and apply such requirement(s) within the scope and scale of the amendment."[133] In the past, the agency has unlawfully pointed to application of substantive requirements outside the scope and scale of an amendment to argue that those requirements are being met within that scope and scale. We flag the problem here simply to note that the agency must avoid this approach if it entertains any project-level amendments to NOGA components. Importantly, complying with this requirement is more difficult when amending forest plan promulgated under the 1982 planning rule because those plans are often inconsistent with the 2012 planning rule's requirements.

In addition to NFMA problems, frequent use of project-level amendments would create a problem under NEPA. Projects will not be able to tier to NOGA's EIS if they're outside of its bounds, and the DEIS does not identify the tipping point[mdash]i.e., it does not explain how often project-level amendments may occur or how much acreage is expected to be affected. This uncertainty invites conflict. The Forest Service would therefore be wise to articulate a cap on the use of amendments in the FEIS. For example, the agency could make clear that project-level amendments (along with the other exceptions) will not affect more than 5% of old growth in any individual

forest.[134] Alternatively, the Forest Service could clarify that project-level amendments to NOGA will require sign-off by the WO, which is responsible for the NOGA decision in the first place.

Conclusion:

Again, we appreciate the transparency and frequent opportunities to participate in this process. Although it would be impossible for us to support the current draft without reservation, we believe that the relatively minor improvements discussed above will ensure that the Amendments are effective and legally defensible. Thank you in advance for your consideration of our comments. We will reach out to schedule a time to discuss further at your convenience.

Sincerely,

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[1] In particular, we appreciate the removal of the word "primary" from Standard 3, clarification in Standard 2a that wildlife management in old growth should be for the benefit of old-growth associates, and application of Objective 4 to the "plan area" rather than "at least one landscape."

[2] In the interest of brevity and with respect for the agency's planned timeline, we do not reproduce discussions from our prior comments of the scientific literature or management trends in the Southern Appalachians. Instead, we incorporate those prior comments (on the ANPR and NOI) by reference.

[3] DEIS at 103 (explaining why the proposed action "is anticipated to lead to the achievement of desired conditions at the fastest rate").

[4]See Tom Stoppard, Rosencrantz and Guildenstern are Dead (1966) ("Words, words. They're all we have to go on.").

[5] DEIS at S-4.

[6]See DEIS at 25 (explaining intent of NOGA-FW-DC-01 to drive measurable progress for amount, etc. of old growth in service of resilience and consistent with planning rule requirements for integrity); id. at 27 (NOGA-FW-OBJ-04).

[7] DEIS at 28 (explaining that STD-2a, limiting management in old growth "only for the purpose of" proactive stewardship, was considered equivalent to an earlier requirement that management "must not degrade" old-growth forests); see also DEIS at 10 (incorporating Technical Guidance for Standardized Silvicultural Prescriptions for Managing of Old-Growth Forests, which itself creates a hierarchy starting with "deferral" of management, moving to "stand modification," and finally to "stand replacement treatments"). Biological Evaluation at 10 (stating that NOGA requires that management "not degrade old growth").

[8] DEIS at 12, 106.

[9] DEIS at 14 ("Mature forest comprises 47 percent of forested acres. The goal is not to manage all mature forest as future old-growth forest."). See also id. at 23 (explaining intent to "recruit and develop future old-growth forest" but noting that "not all acres/areas are intended to be managed toward old-growth forest."

[10] DEIS at S-1, 23, 26; App'x D ("Collaboration . . . must occur.").

[11] DEIS at 7 (establishing a "national monitoring framework"), 36 (directing development of additional monitoring questions and indicators "tailored to the Adaptive Strategy developed at the local level").

[12]See DEIS at 110 (observing that "passive" management strategies for old growth in some forest plans is "not contradictive" of NOGA).

[13] Technical Guidance for Standardized Silvicultural Prescriptions for Managing of Old-Growth Forests (March

2024) at 4, 6. See also FSH 2409.17.80.2.

[14] Biological Evaluation at 10.

[15] DEIS at 29 (NOGA-FW-STD-02a).

[16] DEIS at 28.

[17] DEIS at 29.

[18] DEIS at 16.

[19] DEIS at 102.

[20] By "thinning to the minimum," we refer to vegetation management in old-growth forests that, after treatment, just barely meets the minimum criteria associated with the relevant old-growth definition. While we recognize that some needed proactive stewardship treatments will inevitably move old stands toward lower basal area conditions, it remains a concern that targeting minimum criteria will become a default, cookie-cutter prescription.

[21]Southside Project Final EA at 60 (explaining that existing old growth will be converted to "young forest" based on the rationale that there is an abundance of mature forest in the project area that will not be harvested); Sarah Honosky, Timber sale of 98 acres in Nantahala National Forest ignites environmentalist concerns, The Asheville Citizen-Times (Aug. 17, 2022), available athttps://www.citizen-times.com/story/news/local/2022/08/17/55-k-timber-sale-nantahala-national-forest-sparks-some-frustrations/10330565002/ ("The [acres of confirmed old growth] on Brushy Mountain are not rare. What is rare in the area is young forest.").

[22]See DEIS at 29.

[23] 16 U.S.C. [sect] 7303(b)(1)(D).

[24]E.g., USDA, Technical Guidance for Standardized Silvicultural Prescriptions for Managing Old-Growth Forests (March 2024) at 4 (asking, at step 1, "whether the old-growth stand in question . . . currently has high ecological integrity").

[25]See Biological Evaluation at 3 (explaining that "multiple pathways" to old-growth conditions "lead to unique diversity" and are "essential for maintaining ecosystem functioning and resilience"). In other words, cookie cutter management for old growth, which would homogenize those successional pathways, would be counterproductive.

[26]See Crossover Project Scoping Record (May 2021) at 3, available athttps://www.fs.usda.gov/project/?project=56347 (proposing regeneration harvest of existing old growth because "scheduled harvest activities" are needed to "ensure [early successional habitat] in desired amounts and locations"); Mossy Oak Project Draft Decision Notice and FONSI (June 2017) at 5, available athttps://www.fs.usda.gov/project/?project=47264 (justifying regeneration harvest of old-growth oak forest as necessary to "regenerate harvested areas for the development of future stands").

[27]See DEIS at 19 (explaining that "disturbance regimes" and "development pathways" are characteristics of old-growth forests that differ from the regimes and pathways in forests at "other stages of stand development").

[28] The North Zone of the Cherokee National Forest, for example, is pioneering a sequenced process of mechanical slashdown followed by prescribed fire to restore composition and structural diversity to fire-

suppressed communities.

[29]See DEIS at 125.

[30] DEIS at 107.

[31]Id.

[32] DEIS at 12, 106.

[33] DEIS at 104.

[34]See, e.g., 36 C.F.R. 219.27(a)(9) (1982) (confining rights-of-way, "to the extent practicable," to designated corridors compatible with such uses).

[35] DEIS at 105.

[36] 16 U.S.C. [sect] 1604(f) ("one integrated plan"); FSH 1909.12.22 (explaining that one plan component cannot prevent another's accomplishment).

[37] NOGA-FW-DC-01.

[38] NOGA-FW-OBJ-04.

[39] 16 U.S.C. [sect] 6511(12).

[40] 36 C.F.R. [sect] 219.3.

[41] 36 C.F.R. [sect] 251.23.

[42] DEIS at 33.

[43] For example, only about 3% of the Southern Blue Ridge is currently in old-growth condition. Messick & Davis, Global Importance of Imperiled Old-Growth Forests with an Emphasis on the Southern Blue Ridge Mountains, in Imperiled: The Encyclopedia of Conservation (Dominick DellaSala, Michael Goldstein, eds. 2022). Meanwhile, even a conservative estimate of NRV suggests that about 50% of the landscape should be old growth. Nantahala & Pisgah National Forests Revised Land and Resource Management Plan (2023) at 66 tbl. 3 and accompanying FEIS at 3-389 tbl. 28 (estimating NRV at between 430,000 and 560,000 acres on an approximately 1 million-acre forest). See also C.G. Lorimer & A.S. White, Scale and Frequency of Natural Disturbances in the Northeastern US: Implications for Early Successional Forest Habitats and Regional Age Distributions, 185 Forest Ecology & Mgmt. 41-64 (2003) (estimating NRV for northern hardwood forests, a common forest type throughout the Appalachians, at 70-89% old growth).

[44] Mature and Old-Growth Forests: Analysis of Threats on Lands Managed by the Forest Service and Bureau of Land Management (USDA and USDA 2024b, hereinafter "Threat Assessment"), App'x 8 at A.66.

[45] DEIS at 69.

[46] Threat Assessment, App'x 8 at A.69 (projecting increased volume removal).

[47] Threat Assessment, App'x 13 at A.89. relative to increases in.

[48] Between the Management Approaches and App'x D, local processes are expected to: (1) manage local collaboration and consultation; (2) gather data and fill in gaps as needed with new analysis; (3) review existing strategies, agreements, and projects to inform strategies; (4) determine how much recruitment is needed; (5) determine where recruitment should be prioritized; (6) apply concepts of "inherent capability" and "refugia"; (7) make decisions about whether to use resistance, resilience, or transition strategies; (8) adopt protocols for field verification of old growth conditions, including a minimum patch size; and (9) identify a "program of work."

[49] 36 C.F.R. [sect] 219.13(a).

[50] DEIS at 22.

[51] DEIS at 33.

[52] DEIS at 26 (NOGA-FW-OBJ-01, requiring Adaptive Strategies to be created within 2 years after the NOGA record of decision); id. at 21, 23 (explaining that Adaptive Strategies will "[i]dentify and prioritize areas" where Guideline 1 will apply).

[53]See DEIS at 23.

[54] DEIS at 22 (NOGA-FW-MA-01a(v)).

[55] It may be that the Forest Service believes this requirement is implicit in the current draft. See DEIS at 26 (noting, in Objective 1, that the "purpose" of Adaptive Strategies is "furthering old-growth forest desired conditions"). Something so important, however, should be explicit.

[56] 36 C.F.R. [sect] 219.13(a).

[57] Please note that this list of factors is merely a reorganization of the current draft. It consolidates and rephrases considerations from current Management Approaches 1a and 1b into a single list of considerations informing the identification of forests and associated stewardship strategies for recruitment.

[58]E.g., Bauhus et. al (2009), Keeton (2006), and Fassnacht et. al (2005). See also D'Amato and Catanzaro, Restoring Old-Growth Characteristics to New England's and New York's Forests (Practitioner's Pamphlet).

[59]See Meddens et al., Fire Refugia: What Are They, and Why Do They Matter for Global Change?, 68 BioScience 944 (2018).

[60]See FSH 1909.12.22.14 (explaining that a well-drafted guideline should identify the conditions where exceptions would apply, if appropriate).

[61]See 16 U.S.C. [sect] 1604(f)(1); FSH 1909.12.22 (explaining the "integrated plan" requirement means that one plan component cannot prevent another's accomplishment).

[62] 36 C.F.R. [sect] 219.19.

[63] DEIS at 57.

[64] DEIS at 57. See id. at 61.

[65] DEIS at 65.

[66] DEIS at 106 (noting that the standards designed to increase the abundance of old-growth forests might not be binding in "systems that are already above the natural range of variation").

[67] Ecological Impact Report at 3.

[68]Id.

[69] Critically, NRV is not just about forest structure and composition. It is also the "coarse filter" to ensure that native species are persisting and recovering. 36 C.F.R. [sect] 219.9. If a forest plan does not aim for NRV, planners face a much higher burden to show that biological diversity requirements are met.

[70] DEIS at 25.

[71]See Attachment 2 to SELC, et al. comments on NOGA NOI (Feb. 2, 2024).

[72] Nantahala and Pisgah Forest Plan Objection Response (January 2023) at 373 ("The Forest Plan . . . will not require project-level surveys for old growth patches.").

[73] Ecological Impact Report at 10.

[74]Id. at 10-11.

[75] Although Guideline 3 may take some of the pressure off this question, there is still significant daylight between the "rare" or "unique" old trees protected by Guideline 3 and old trees that may exist in small patches of old growth.

[76] Ecological Impact Report, App'x 2 tbl. 21-1.

[77]Id.

[78] Ecological Impact Report at 90 tbl. 19.

[79]Id.

[80] Shapefiles available upon request.

[81] DEIS at 62 tbl. 3; Ecological Impact Report at 20 tbl. 3.

[82]Id.

[83] See Fire Effects Information System, available at https://www.feis-crs.org/feis/faces/FireRegimeSearch.xhtml.

[84] Ecological Impact Report at 32 (drawing from RPA Assessment), 50 (citing Robbins, et al. 2024).

[85] DEIS at 76; Ecological Impact Report at 50. See also Regional Old Growth Summary at 147.

[86] SELC et al., Notice of Objection to the Revised Land Management Plan for the Nantahala and Pisgah National Forests 50 (Mar. 22, 2022), provided as Attachment 1 to SELC et al. comments on NOGA ANPR (July 20, 2023).

[87]Id.

[88] Richard Birdsey et al., U.S. Forest Serv., Assessment of the Influence of Disturbance, Management Activities, and Environmental Factors on Carbon Stocks of United States Forests (2019).

[89] Regional Old Growth Summary at 137.

[90] Lorimer, C.G., 1980. Age structure and disturbance history of a southern Appalachian virgin forest. Ecology, 61(5), pp.1169-1184.

[91] To illustrate the routine nature of such practices, consider that for projects underway and under analysis on the Nantahala-Pisgah NF, 82% of regeneration harvest is occurring in mesic ecozones, with 60% of regeneration harvest in coves.

[92] DEIS at 76.

[93] "Where this community type is within the timber suitable base and multiple use forest plan objectives apply, mature portions of this community may be harvested and young forest created." Regional Old Growth Summary at 147.

[94] Regional Old Growth Summary at 147, 157.

[95] S. M. Hood et al., Fire and tree death: understanding and improving modeling of fire-induced tree mortality. 13 Environ. Res. Lett. 113004 (2018); T. Woolley et al., A review of logistic regression models used to predict post-fire tree mortality of western North American conifers. 21 Int. J. Wildl. Fire 1 (2012); T.L. Keyser et al., Short-term stem mortality of 10 deciduous broadleaved species following prescribed burning in upland forests of the Southern US, 27 Int. J. Wildl. Fire 42 (2018). See also Cansler, et al., The Fire and Tree Mortality Database, for empirical modeling of individual tree mortality after fire, 7 Scientific Data 194 (2020), available at https://www.nature.com/articles/s41597-020-0522-7.

[96] DEIS at 29, 33.

[97] DEIS at 98-99. Notably, this is not true under the majority of current forest plans, which were developed under a planning rule that prioritized economic efficiency over ecological integrity. Even newly revised plans have no requirements that individual projects result in net conservation benefits. And, of course, there is no monitoring program in place to quantify projects' long-term benefits or ensure they outweigh short-term harms.

[98] Ecological Impact Report at 39.

[99]Id.

[100]Id.

[101]Id. at 43.

[102] Social, Economic and Cultural Impacts Report at 24-25.

[103]Id. at 21.

[104]E.g., Regional Old Growth Summary at 137, 147, 153.

[105]Id.

[106] SELC et al. comments (July 20, 2023) at 23-25.

[107] DEIS at 107.

[108] Social, Economic and Cultural Impacts Report at 34.

[109]Id. at 36.

[110]Id.

[111] 36 C.F.R. [sect] 219.19.

[112] DEIS, 59.

[113] EIA, 13.

[114] DEIS, 59.

[115] DEIS, S-3.

[116] EO 14072 [sect] 2.

[117] DEIS at 19 (NOGA-FW-DRC).

[118] DEIS, 13.

[119]See U.S. Forest Serv., Climate Change Considerations in Project Level NEPA Analysis (2009); Leslie Brandt & Courtney Schultz, Climate Change Considerations in National Environmental Policy Act Analysis, U.S. Forest Serv. (2016), https://perma.cc/4VS7-NSAC.

[120]Din[eacute] Citizens Against Ruining Our Env't v. Haaland, 59 F.4th 1016, 1035 (10th Cir. 2023) ("The impact of [greenhouse-gas] emissions on climate change is precisely the kind of [ ] impacts analysis that NEPA requires agencies to conduct.") (quoting Ctr. For Biological Diversity v. Nat'l Highway Traffic Safety Admin., 538 F.3d 1172, 1217 (9th Cir. 2008)).

[121] EIA, 13.

[122] EIA, 15.

[123] Hoover and Smith, 2023.

[124] N.L. Stephenson et al., Rate of Tree Carbon Accumulation Increases Continuously with Tree Size, 507 Nature 90-93 (2014) (finding that "[e]ach year a single tree that is 100 cm in diameter adds the equivalent biomass of an entire 10-20 cm diameter tree").

[125] Hoover and Smith, 2023.

[126] DEIS, 75.

[127]See Tara Hudiburg et al., Meeting GHG Reduction Targets Requires Accounting for All Forest Sector Emissions, 14 Env't Rsch. Letters (2019).

[128] Richard Birdsey et al., U.S. Forest Serv., Assessment of the Influence of Disturbance, Management Activities, and Environmental Factors on Carbon Stocks of United States Forests (2019).

[129] Even where an agency "determine[s] that each [project] individually has a de minimis impact on climate change, the agency must also consider the cumulative impact of [greenhouse-gas] Case 1:24-cv-00518 Document 1 Filed 02/26/24 Page 18 of 60

19 See, e.g., WildEarth Guardians v. Zinke, 368 F. Supp. 3d 41, 77 (D.D.C. 2019) (Even where an agency "determine[s] that each [project] individually has a de minimis impact on climate change, the agency must also consider the cumulative impact of [greenhouse-gas] emissions generated by past, present, or reasonably foreseeable[agency projects] in the region and nation.").

[130]See, e.g., Social, Economic, and Cultural Impacts Report at 19 (noting that "in instances where projects cannot be mitigated, a project-level forest plan amendment may be necessary").

[131] 16 U.S.C. [sect][sect] 1604(f)(1), 1604(i); see Forest Service Handbook 1909.12 Sec. 22 (explaining that an integrated plan is one in which "plan components are internally consistent," such that "[o]ne plan component [does] not directly conflict with another plan component or prevent its accomplishment.").

[132]See 36 C.F.R. [sect] 219.8(a)(1); DEIS, 57 ("Compared to historical conditions, the extent of old-growth is clearly in deficit - suggesting ecological integrity is compromised").

[133] 36 C.F.R. [sect] 219.13(b)(5); see Sierra Club, Inc. v. United States Forest Serv., 897 F.3d 582, 603 (4th Cir. 2018).

[134] See DEIS at 106.

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