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First name: Jim
Last name: Northup
Organization:
Title:
Comments: 1. Background

My name is Jim Northup and I live in Bristol, VT. I received the January 27, 2023 email from Jay Strand, Forest Planner and (National Environmental Policy Act) NEPA Coordinator, announcing the United States Forest Service[rsquo]s (USFS) [ldquo]development of the proposed action for the Telephone Gap Integrated Resource Project[rdquo] and inviting written comments on the proposed action until March 13, 2023. The following are my comments, respectfully offered. Please contact me if you have any questions or need additional information.

I have studied the 2006 Green Mountain National Forest (GMNF) Land and Resource Management Plan (LRMP) and the detailed description of the Telephone Gap proposal dated January 2023, as well as the associated maps and other information filed in the [ldquo]Scoping[rdquo] folder at the Telephone Gap Project website. I have visited the project area in person many times to enjoy its older intact forests, natural beauty, clean headwater streams, diversity of wildlife and opportunities for quiet recreation.

Having been employed in the past as a USFS Forest Planner and NEPA Coordinator, I have first hand experience preparing, reviewing and commenting on USFS LRMPs, Environmental Impact Statements (EISs), Environmental Assessments (EAs), and Scoping documents. I led the effort to prepare the 1987 GMNF LRMP and EIS.

I am a graduate of the Duke University School of Forestry and Environment[mdash]now the Nicholas School for the Environment. Although my memberships have lapsed, I was a member of the Society of American Foresters and Forest Stewards Guild for many years and have taught college courses in forest policy and management. I understand silvicultural concepts and practices as applied to Northeastern forests and have in recent years taken great interest in the management of forests to promote carbon sequestration, climate resilience and biodiversity conservation.

As Executive Director of a regional land trust I was instrumental in qualifying forest carbon credits for certification and sale[mdash]one of the first certified forest carbon projects of its kind in the nation. I believe the role of forests, especially public forests, in removing carbon dioxide from the atmosphere and sequestering carbon over the long term should be considered to be of paramount importance by USFS leaders.

2. Summary of findings and recommendations

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* The out-of-date 2006 GMNF LRMP fails to provide the policies and guidance USFS staff need to ensure proposed vegetation management projects like Telephone Gap respond positively to the most urgent issue of our time[mdash] climate change.
* The stated purpose of and need for the Telephone Gap Project fail to acknowledge and respond to the issues of climate change mitigation and adaptation, and conservation of mature and old-growth forests.
* The Telephone Gap Project fails to meet the letter or intent of Executive Order 14072 signed by President Biden on Earth Day 2022, calling for climate-smart management of federal forests, especially mature and old-growth forests.
* Prior to approving any new vegetation management projects on the GMNF the USFS should [ldquo]define, identify, and complete an inventory of old-growth and mature forests[rdquo] on the GMNF, as required nationally by EO 14072, and make the GMNF inventory public.

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* The 2006 GMNF LRMP and EIS fail to adequately identify or assess the effects of proposed vegetation management on climate change mitigation and adaptation. A new EIS or Supplemental EIS is needed.
* The proposed Telephone Gap Project fails to consider climate-smart management and conservation strategies, including but not limited to strategies that address threats to mature and old-growth forests.
* Logging almost 12,000 acres, as proposed by the Telephone Gap Project, and releasing several 100,000 tonnes of sequestered carbon would fail to comply with EO 14072 and would have a significant impact on the environment, triggering NEPA[rsquo]s requirement to prepare an EIS before project approval.
* A climate-smart alternative addressing the issues of climate change mitigation and adaptation should be developed and studied in detail as part of the NEPA process for the GMNF as a whole and for the Telephone Gap Project in particular.

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* If chosen as the preferred alternative, the climate-smart alternative for Telephone Gap could evolve into a Congressionally designated research and demonstration area with special funding and authorizations aimed at quickly researching, developing and showcasing Forestry as if Climate Matters.

3. The out-of-date 2006 GMNF LRMP fails to provide the policies and guidance USFS staff need to ensure proposed vegetation management projects like Telephone Gap respond positively to the most urgent issue of our time[mdash] climate change.

After reading the documentation supporting the Proposed Telephone Gap Project I cannot help but admire and respect the thought, hard work and professionalism of the USFS staff who prepared it. Their knowledge of and affection for the project area, and their commitment to closely follow and implement the 2006 Green Mountain National Forest (GMNF) Land and Resource Management Plan (LRMP) are obvious. For the most part, the staff did a great job, and I am grateful to them for it.

The major problems with the Proposed Telephone Gap Project stem largely from USFS leadership, not from the staff who work in the woods and prepared the proposal. My observations include the following:

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* USFS leaders failed to call for adoption of a revised GMNF LRMP before 15 years had passed. The 2006 GMNF LRMP is now 17 years old and is based on data even older than that. The National Forest Management Act (NFMA) regulations call for a Forest Plan to be revised every 15 years[mdash]or less if major new issues arise. Telephone Gap provides an excellent example of why timely revisions are required.
* If USFS leaders had called for the GMNF LRMP to be revised on schedule then the 2012 NFMA Planning Rule would have been followed during the revision process. The 2012 Planning Rule marks the first major update to Forest Service planning procedures in 30 years and would have resulted in a much improved Forest Plan[mdash]a Forest Plan that would undoubtedly have addressed climate change and called for climate-smart forestry.
* A few noteworthy improvements in the 2012 Planning Rule include requirements that the USFS use an ecosystem focus, that it ensure meaningful opportunities for public participation in the development of the revised Forest Plans, and that it address major new and emerging issues like climate change.
* Because the 2006 Forest Plan is several years out of date it fails to provide policies and guidelines designed to help USFS staff develop and implement projects that respond to the climate crisis and the need for climate-smart forest management policies. As a result, implementing the 2006 GMNF LRMP with the Telephone Gap Project exacerbates the climate crisis rather than helping to alleviate it.

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* USFS leaders should recognize the serious problems[mdash]logical and legal[mdash]that stem from implementing major vegetation management projects according to the outdated 2006 GMNF LRMP and suspend all such projects (past and proposed) until new management directions can be developed following NEPA and the new Planning Rule.

The climate crisis has gained much attention in the years following the adoption of the 2006 GMNF LRMP. Many believe it is THE existential, global issue of our time requiring immediate actions that significantly reduce carbon emissions and significantly increase the uptake of carbon from the atmosphere.

The International Panel on Climate Change (IPCC) in its 2022 report focused on the probable tipping point of 1.5 degrees Celsius above the preindustrial baseline and concluded that the world could exceed that threshold by as early as 2030 to 2040[mdash] just seven to 17 years from now. The IPCC report projected four scenarios of warming, and all but the most optimistic showed us exceeding the 1.5 tipping point and never coming down, climbing in the four scenarios to 1.7, 2.0, 2.1 and 2.4 degrees by 2040, then increasing.

This time frame for urgently needed action is corroborated by the Global Carbon Tracker report of 2022 (presented at the 2023 UN Climate Change Summit) which stated: [ldquo]If emissions were to merely stay flat at 2022 levels, the world would likely put enough carbon into the atmosphere to exceed the 1.5-degree Celsius threshold within nine years, and exceed the 2-degree Celsius threshold within 30 years.[rdquo]

It is easy to recognize the seriousness of these changes based on the climate chaos (i.e., climate-related disasters) described in the headlines nearly every day. The Earth is at 1.1 degrees Celsius above the baseline today, and in the US alone, hundreds of people are dying of heat, wildfires, and unusual floods or ice storms virtually every year (770 US climate-related deaths in 2021 alone). Thousands of people are flooded or burned out of their homes (15 percent of homes in US destroyed or impacted in 2021). Many people are put out of work for long periods. Many regions in the western US are facing prolonged drought conditions that will soon force abandonment of entire communities.

In addition to the human suffering, the US suffers billions of dollars in damages each year from these combined disasters ($165 billion in 2022). This is a huge and growing drag on our economy that we feel or will feel everywhere, even if we are not in the immediate path of a disaster.

The IPCC reports have examined in detail the impacts of these changes which have already begun and will get much worse. Globally, millions of people face starvation and forced migration away from untenable living conditions. The immigration issues that will ultimately be caused by a hundred million refugees are difficult to comprehend. Global food shortages and instability will have severe economic repercussions. Worldwide economic disruption and even endemic recession are easy to imagine given the global economic impacts of the pandemic and the war in Ukraine.

In Vermont these impacts have been more subtle, but they are evident nevertheless: milder winters with periods of erratic cold (this winter is a good example), ski areas struggling, pests moving northward from the south, droughts and temperature changes threatening crops and forests. More intense and more frequent windstorms, ice storms and even fires are likely to be on the horizon. Ominously, a 2022 EPA report shows that New England is one of the fastest warming areas on the planet, warming approximately 50 percent faster than the global average.

USFS decisionmakers must carefully consider these urgent and growing issues as they set policies and propose actions which could slow or accelerate global warming and the chaos it creates. Careful consideration of climate and climate-smart forestry are missing from the 2006 GMNF LRMP and the proposed Telephone Gap Project.

4. The stated purpose of and need for the Telephone Gap Project fail to adequately acknowledge the issues of climate change mitigation and adaptation, and conservation of mature and old-growth forests.

The role of forests, especially mature and old-growth public forests, in mitigating climate change has taken on much greater importance since the 2006 GMNF LRMP was adopted. These issues were substantially overlooked when the GMNF LRMP and EIS were prepared and when the Telephone Gap Project was developed. They are among the most urgent issues of our time and must not be overlooked any longer.

The 120-page [ldquo]State of Carbon Dioxide Removal[rdquo] (CDR) report, released on January 19, 2023 and prepared under the leadership of scientists from the University of Oxford, explains that current atmospheric carbon dioxide levels are so high they will cause the planet to warm more than 2.0 degrees Celsius (a widely acknowledged threshold level and temperature goal of the Paris Agreement) even if the world community could achieve net-zero carbon emissions tomorrow UNLESS significant actions are also taken to pull existing carbon out of the atmosphere.

Dr. Steve Smith, a lead author from Oxford[rsquo]s Smith School of Enterprise and the Environment, said [ldquo]To limit warming to 2 degrees Celsius or lower, we need to accelerate emissions reductions...[rdquo] and [ldquo]we also need to increase carbon removal, by restoring and enhancing ecosystems and rapidly scaling up new CDR methods.[rdquo] Dr. Oliver Geden of the German Institute for International and Security Affairs added [ldquo]CDR is not something we could do, but something we absolutely have to do to reach the Paris Agreement temperature goal.[rdquo]

In addition to the high-tech carbon removal strategies listed by the report[rsquo]s authors is the strategy of sequestering more carbon with climate-smart management of forests, grasslands and farmlands. The University of Oxford study indicates that climate- smart strategies applied to terrestrial ecosystems could increase the current worldwide level of carbon capture from two billion tons of carbon per year to four billion by 2050. An earlier study by the Intergovernmental Panel on Climate Change estimated that climate-smart strategies could pull five billion to eight billion tons of carbon from the air each year by 2050.

The point is not whether climate-smart strategies applied to terrestrial ecosystems can increase carbon capture by four billion or eight billion tons per year by 2050. The point is that increased carbon capture is essential to slowing and stopping global warming and one proven way to do it at a grand scale is through the application of climate-smart forest management strategies that retain already sequestered carbon, especially in older trees, and increase the effectiveness of carbon capture in younger forests managed for forest products.

Cutting down tens of thousands of acres of older trees, especially on our national forests in areas like Telephone Gap, and releasing the vast amounts of carbon they are storing at a time when the long-term health of the planet hangs in the balance, is not one of the actions these scientists would consider to be [ldquo]climate-smart.[rdquo] USFS leaders need to diligently avoid actions that release significantly more carbon and aggressively adopt actions that capture carbon.

The interrelated issues of climate change mitigation and adaptation and conservation of mature forests must no longer be overlooked when making decisions about how to manage the GMNF. Vegetation management projects like Telephone Gap that make timber production the primary output and give only lip service to the most pressing issues of our time[mdash]climate change mitigation and adaptation[mdash]are anachronisms in a time of dynamic change. Such projects are clearly not climate-smart and must be systematically reconsidered with an eye to making substantial changes that will address these new and vitally important issues.

5. The Telephone Gap Project fails to meet the letter or intent of Executive Order 14072 signed by President Biden on Earth Day 2022.

Adopting climate-smart strategies for management of national forests is not only prudent from a climate mitigation and adaptation standpoint, it is required by Executive Order (EO) 14072, signed by President Biden on April 22 (Earth Day), 2022.

President Biden[rsquo]s Executive Order 14072 recognizes the critical importance of mature and old-growth forests on our nation[rsquo]s federal lands and the need to manage these and other forests using climate-smart forestry aimed at improving and enhancing carbon storage, increasing resilience to stresses arising from climate change, conserving biodiversity, and providing other valuable public benefits.

These benefits must be considered in the design and evaluation of proposed vegetation management projects like Telephone Gap. They are currently overlooked in the proposed action for Telephone Gap.

As presently proposed, the Telephone Gap Project is in conflict with EO 14072. The Telephone Gap Project was not designed with the promotion of these values in mind. The proposal should be withdrawn, substantially reworked and a new proposed action should be presented to the public for review and comment.

Or, at the very least, a detailed [ldquo]climate-smart[rdquo] alternative that complies with EO 14072 should be developed and evaluated as part of the NEPA process alongside the currently Proposed Action for Telephone Gap.

Relevant excerpts from EO 14072 are provided below. (Emphasis added).

Section 1. Policy. Strengthening America[rsquo]s forests, which are home to cherished expanses of mature and old-growth forests on Federal lands, is critical to the health, prosperity, and resilience of our communities[mdash] particularly in light of the threat of catastrophic wildfires[hellip]Globally, forests represent some of the most biodiverse parts of our planet and play an irreplaceable role in reaching net-zero greenhouse gas emissions[hellip]Conservingold-growth and mature forests on Federal lands while supporting andadvancing climate-smart forestry and sustainable forest products is critical toprotecting these and other ecosystem services provided by those forests.[rdquo]

[ldquo]It is the policy of my Administration[hellip]to pursue science-based, sustainableforest and land management; conserve America[rsquo]s mature and old-growthforests on Federal lands; [hellip]and deploy climate-smart forestry practices andother nature-based solutions to improve the resilience of our lands, waters,wildlife, and communities in the face of increasing disturbances and chronicstress arising from climate impacts.[rdquo]

Sec. 2. Restoring and Conserving the Nation[rsquo]s Forest, Including Mature and Old- Growth Forests. My Administration will manage forests on Federal lands,which may include many mature and old-growth forests, to promote continued health and resilience; retain and enhance carbon storage; conserve biodiversity; mitigate the risk of wildfires; enhance climate resilience; enable subsistence and cultural uses; provide outdoor recreational opportunities; and promote sustainable local economic development.[rdquo]

6. The USFS should [ldquo]define, identify, and complete an inventory of old-growth and mature forests[rdquo] on the GMNF, and make the inventory available to the public, prior to approving any new vegetation management projects on the GMNF.

Another excerpt from Section 2 of Executive Order 14072 states (Emphasis Added):

[ldquo](T)he Secretary of Agriculture, with respect to National Forest System lands,shall, within 1 year of the date of this order, define, identify, and complete aninventory of old-growth and mature forests on Federal lands,

accounting for regional and ecological variations, as appropriate, and shall make such inventory publicly available.[rdquo]

[ldquo]Following completion of the inventory, the Secretaries shall:[hellip]analyze thethreats to mature and old-growth forests on Federal lands, including from wildfires and climate change; and develop policies, with robust opportunity for public comment, to institutionalize climate-smart management and conservation strategies that address threats to mature and old-growth forests on Federal lands.[rdquo]

Two things are worth noting: (1) April 22, 2023 marks one year from the date of EO 14072[mdash]the date by which the inventory of old-growth and mature forests must be completed on the GMNF and other national forests across the country. And, (2) The biggest looming threats to old-growth and mature forests on the GMNF today are the proposed Telephone Gap Project and the continued logging of the Early Successional Habitat Creation (ESHC) Project that was approved in 2019.

(A side note: The ESHC Project approved logging of up to 15,000 acres over a 15-year period, and though the exact locations of the logged areas were not identified when the project was approved, it is highly likely the areas will be mature and very old forests. Most of the planned early-successional-style- logging (clearcutting and its variants) has not yet happened and USFS leaders should not go forward with any timber sales that have not yet been contracted pending further review and consideration given the directives of EO 14072.)

As part of the NEPA analysis for the Telephone Gap Project the USFS should make public the results of its inventory of old-growth and mature forests across the GMNF, in the Telephone Gap and ESHC Project Areas. The NEPA analysis for the Telephone Gap Project should be used to highlight the differences between the proposed action alternative and the climate-smart management alternative in addressing potential climate-change driven threats to old-growth and mature forests.

A study published in Frontiers in Forests and Global Change on January 6, 2023 by Richard A. Birdsey and colleagues, [ldquo]Assessing carbon stocks and accumulation of mature forests and larger trees in U.S. federal lands,[rdquo] provides an extremely valuable and practical approach for USFS managers attempting to define [ldquo]mature[rdquo] and [ldquo]old- growth[rdquo] forests, especially as they relate to climate change and carbon sequestration. I encourage GMNF managers to consider and apply the findings and recommendations offered in this study.

The Birdsey study defines [ldquo]mature,[rdquo] from the standpoint of carbon sequestration, as beginning when a forest stand reaches the culmination of net primary productivity (CNPP). The study found that on the Green Mountain and White Mountain National Forests CNPP was reached at about age 35. And, because accurately determining stand age in the field can be difficult to do for a variety of reasons, the authors found that stands with trees having a median diameter of 12[rdquo] or more could be a useful metric for identifying mature stands (CNPP) on the Green Mountain NF.

Old-growth is a term that means different things to different people. I am pleased to see that the USFS is currently engaged in a nationwide effort to give clear, consistent guidance on defining that term as part of the old-growth inventory required by EO 14072. The 2023 Birdsey study provides useful insights on the value of old-growth forests and for determining their locations.

The reference to old-growth forests found in the documentation for the proposed Telephone Gap Project implies use of a definition that excludes old forests today that were once logged or destroyed by fire, wind or other natural forces even if they have been undisturbed for many years and currently display the structure and processes associated with old-growth. This is an overly narrow, short-sighted definition.

Fortunately, the definition the agency appears to be adopting now as part of its EO 14072 inventory is broader

and better.

I encourage the GMNF to adopt a definition of old-growth that focuses on the age, structure and processes exhibited by the forest today, and not exclude from the definition forests that were disturbed by humans or nature in the past. I also encourage the GMNF to recognize that older forests are steadily taking on the characteristics of old-growth and will function as old-growth forests in the near future if they remain relatively undisturbed.

My observations of old-growth remnants and older stands recovering from past disturbances lead me to think that even-aged northern hardwood stands generally begin to display the characteristics of what I consider to be old-growth after about 150 years of little or no major disturbances. I understand this is anecdotal and based on my limited experiences, but it is an anecdote I wanted to share. Do with it as you wish.

7. The 2006 GMNF LRMP and EIS fail to adequately identify or assess the effects of proposed vegetation management on climate change mitigation and adaptation.

The current GMNF LRMP was approved in 2006, but as part of the Telephone Gap Project[rsquo]s National Environmental Policy Act (NEPA) review, it is important to recognize that the GMNF LRMP is based on data and thinking from at least three to five years earlier than that. As a practical matter, the GMNF LRMP and EIS are at least 20 years out of date.

Climate change, carbon sequestration, climate-smart forestry and the vital role old forests in responding to climate change were not given much, if any, serious consideration by the USFS on the GMNF 20 years ago. Lack of sufficient awareness in the past is no reason to ignore these issues now.

The GMNF LRMP and Environmental Impact Statement (EIS) fail to adequately consider the issue of climate change or study in detail any reasonably forseeable alternatives that would respond to that issue, including any forestwide alternatives aimed at illustrating the effects of different forest management strategies, including but not limited to [ldquo]climate-smart[rdquo] management strategies, on carbon sequestration or climate resilience.

Proposed vegetation management projects like Telephone Gap cannot logically and lawfully tier to the GMNF LRMP EIS unless this deficiency is corrected. The GMNF LRMP and EIS should be revised with the aim of addressing the issue of climate change or, at the very least, a Supplemental EIS and GMNF LRMP Revision should be prepared to address what has come to light since its adoption[mdash]namely the significant new circumstances and information that are relevant to the proposed action and its impacts.

The proposed Telephone Gap Project and others like it should not be approved until these deficiencies in the current GMNF LRMP and EIS are corrected.

8. The proposed Telephone Gap Project fails to consider climate-smart management and conservation strategies, including but not limited to strategies that address threats to mature and old-growth forests.

As described above, a decision to approve the Telephone Gap Project cannot tier to the 2006 GMNF LRMP and EIS when it comes to addressing the issues of climate change mitigation and adaptation, or addressing the threats to mature and old- growth forests. As a practical matter, the 2006 GMNF LRMP is silent on these issues.

The NEPA Scoping documents for the Telephone Gap Project are inadequate to address these issues on their own. The documents acknowledge the subject of climate change, but only in a cursory manner that takes up just three short paragraphs of text stuck awkwardly and illogically into Section 2.1 Forest Habitat. The documents give no indication that climate change is a major issue deserving careful consideration and study as required by NEPA.

Not only are these new and important issues inadequately described in the Telephone Gap scoping documentation, the proposed action fails to incorporate measures to address these issues or evaluate alternative approaches to addressing them. This is contrary to the purpose and intent of NEPA, and interferes with NEPA[rsquo]s central objective of providing meaningful opportunities for public review and comments about the major issues associated with a proposed action.

9. Logging almost 12,000 acres, as proposed by the Telephone Gap Project, and releasing several 100,000 tonnes of carbon would have a significant impact on the environment, triggering NEPA[rsquo]s requirement to prepare an EIS.

Because the 2006 GMNF LRMP and EIS are inadequate in addressing the issues of climate change mitigation and adaptation on the GMNF, a new EIS or Supplemental EIS should be prepared prior to approving Telephone Gap or other vegetation management projects.

Given the inadequacy of the 2006 GMNF LRMP and EIS to address these issues, an Environmental Assessment (EA) of the Telephone Gap Project cannot tier to those documents and would be wholly inadequate. If an EIS or Supplemental EIS is not prepared for the GMNF LRMP, then an EIS must be prepared for the Telephone Gap Project to ensure the issues of climate change mitigation and adaptation are considered and a reasonable range of alternatives are evaluated.

NEPA requires preparation of an EIS when the effects of a proposed action are found to be [ldquo]significant.[rdquo] There can be no doubt that logging almost 12,000 acres of national forest and releasing several 100,000 tonnes of carbon would constitute a significant impact in light of the new issues and information about climate change that have come to light since adoption of the 2006 GMNF LRMP.

10. An alternative addressing the issues of climate change mitigation and adaptation should be studied in detail as part of the NEPA process for the GMNF as a whole and for the Telephone Gap Project in particular.

To correct the failure of the 2006 GMNF LRMP and EIS to adequately consider the role of public forests in responding to the critically important issue of climate change, a new EIS and LRMP or a Supplemental EIS and LRMP amendment should be completed prior to approving any new GMNF vegetation management projects such as Telephone Gap.

The University of Oxford report mentioned earlier makes one point crystal clear: timing is critical when it comes to carbon dioxide removal (CDR) and aggressive measures must be taken in the near term to sequester, not release, more carbon. Releasing already sequestered carbon by logging thousands of acres of older forests cannot be justified by saying [ldquo]Well, the trees will grow back and the carbon will be captured again over the next 50 to 100 years. No problem.[rdquo]

Wrong. Big problem. The climate crisis requires actions that will result in significant increases in carbon dioxide removed in the near term, not actions that release significant amounts of stored carbon that could require the next 50 to 100 years to recapture. Our National Forests need to be contributing to climate solutions, not adding to the climate problem.

If the USFS insists on advancing the Telephone Gap Project as currently conceived, the agency should recognize that NEPA requires it to prepare an EIS to evaluate the Telephone Gap Proposal against a climate-smart alternative strategy[mdash]one that steadily increases the total annual amount of sequestered carbon on the GMNF, increases the net annual CDR, and promotes increased resilience of the forest to future climate-related threats from wind, fire, drought, ice storms, floods, and insect and disease infestations.

In the climate-smart alternative, older stands of trees should be left uncut so that they can continue to capture

and store carbon. And younger stands of trees could be managed using techniques that mimic the conditions and processes seen in older forests and that result in increasing the average amount of carbon stored per acre over time. This would demonstrate a new approach to forestry on our national forests[mdash]forestry as if climate matters.

The results of a Maine forest modeling study were announced on March 7, 2023 and showed that widespread application of climate-smart forestry by private landowners in Maine could increase annual carbon storage by at least 20 percent over the next 60 years while maintaining current timber harvest levels. The study was conducted by researchers from the University of Maine, the New England Forestry Foundation and the USFS. The results underscore the important role the USFS could play by developing and demonstrating on younger forests the very best climate-smart forestry practices, while protecting carbon reserves on mature and old-growth forests.

As a starting point in developing the climate-smart alternative for Telephone Gap, I encourage the USFS to consider the following principles. Most of these principles address climate-smart forestry aimed at actively managing younger stands for timber products while simultaneously increasing carbon sequestration and promoting resilience to climate change.

As a practical matter, a principle to apply to mature forests in the climate-smart alternative would be [ldquo]do no harm.[rdquo] The January 6, 2023 study by Richard A. Birdsey and colleagues that was referenced earlier in these comments defines [ldquo]mature[rdquo] forests for the purpose of carbon capture, describes the outsized role mature forests play in sequestering carbon and provides practical recommendations on how the USFS could approach protecting the carbon found in mature forests from logging.

I encourage the USFS to invite the scientists at the Northern Institute of Applied Climate Science, Dr. William Keeton at UVM, William Moomaw at Tufts, as well as other scientists and foresters with expertise and interest in climate and forests to correct the errors and omissions in this very preliminary list, and to engage these experts in helping to develop and implement a climate-smart alternative for the GMNF and Telephone Gap Project.

* When you increase the amount of wood in a forest, you increase the amount of carbon in a forest, and you decrease the amount of carbon in the atmosphere.
* Forest carbon is found in live trees, dead trees, the forest floor and forest soil. An aim of climate-smart forestry is to take a suite of actions that increase the amount of carbon in these [ldquo]pools[rdquo] and decrease the amount of carbon released from these pools.
* Treating mature forests as [ldquo]carbon reserves,[rdquo] in which there is very little to no cutting or site disturbance and trees are allowed to grow bigger and older is a proven way to [ldquo]passively[rdquo] increase sequestered carbon.
* Managing younger forests to produce lumber or other forest products in a way that increases the average volume per acre over time is a way to [ldquo]actively[rdquo] increase sequestered carbon, but to a lesser total amount and at a slower rate per acre than in the carbon reserves.
* The more forest volume remaining (residual volume) after a silvicultural treatment and the longer the residual volume is left to grow before it is cut again, the greater the average carbon volume per acre will be over time.
* Minimizing the size of openings created by active management and minimizing the intensity and frequency of impacts will reduce carbon release and increase CDR. In other words, favor individual tree removals over group selections or clearcuts; favor long rotations over short rotations; favor longer, infrequent entries over shorter, frequent entries.

* Whenever the species and site conditions allow, choose a silvicultural approach that mimics the conditions and processes seen in old-growth forests. Dr. William Keeton at the University of Vermont has written much about this approach and should be consulted when developing guidelines and designing demonstration or research projects applying the approach to climate-smart, active forest management.
* Avoid creating large openings via clearcuts or shelterwood cuts. Large openings in the forest increase the loss

of carbon from decomposition by increasing soil temperature, moisture availability and microbial activity.
* Favor light selection cutting when possible, thereby creating small gaps in the canopy that can be filled relatively quickly by the residual stand. Some call this [ldquo]continuous cover forestry.[rdquo]
* Where appropriate, cut the shorter-lived, lower-quality trees first to lengthen the natural disturbance cycles (wind, ice, insects, disease). Favor retention of longer-lived, healthy trees which will naturally store carbon longer.
* Avoid conversions of long-lived, hardwood forests to short-lived softwood forests in order to keep the carbon in the forest longer.
* Maintain a high diversity of tree species and sizes suitable to the site to increase resistance to and resilience from natural disturbances.
* Actively manage younger stands to create the structural complexity associated with old-growth conditions[mdash]big old trees, large dead standing and downed trees, and a mixture of tree sizes and ages.
* Employ logging techniques that minimize damage to the residual stand. Damage lowers the amount and rate of carbon sequestration by lowering the growth (volume increase) of the residual stand, and increasing susceptibility to insects and diseases and other natural disturbances.
* Employ logging techniques that minimize damage to soils and roots thereby decreasing residual stand productivity and decreasing loss of carbon from the forest floor, forest soils and roots.
* If openings truly need to be provided to benefit particular wildlife species and sufficient amounts and sizes of temporary openings cannot be provided for those species using individual tree selection, maintain permanent openings using climate-smart techniques rather than repeatedly creating large temporary openings using clearcuts or shelterwood cuts.

11. The climate-smart alternative for Telephone Gap, if chosen as the preferred alternative, could form the basis for a specially designated research and demonstration area with the purpose of developing and showcasing to the world Forestry as if Climate Matters.

The need to create climate-smart forestry that sequesters carbon and increases resilience to climate change while producing forest products and protecting mature and old-growth forests is a need that extends way beyond the Telephone Gap Project area. The need to develop such an approach is bigger than the Green Mountain National Forest or the entire National Forest System. It is a need that must be met to benefit public and private forest landowners across the planet.

Re-envisioning the Telephone Gap Project as an innovative climate-smart, 21st Century response to some of the most urgent issues of our time is a challenge USFS leaders should step up to and meet. The nation and world need the agency[rsquo]s knowledge, experience and leadership now more than ever before.

The agency needs to recognize that its existing LRMPs and approaches to forest management are not sufficient any longer. A new approach is needed. Fortunately, President Biden[rsquo]s EO 14072 calls for the USFS to abandon its old paradigm and make the shift to climate-smart forestry and conservation of older forests.

I encourage the USFS to think beyond just developing a climate-smart alternative for the Telephone Gap Project. I hope it will envision the possibility that the Telephone Gap Project Area could serve as a specially designated research and demonstration area aimed at developing and demonstrating a new approach to forestry on public forests[mdash]a forestry as if climate matters.

If USFS leaders are open to this possibility, I have much confidence that USFS staff working cooperatively with forest ecologists, climate scientists and concerned citizens can develop a highly effective, climate-smart strategy for protecting carbon reserves in mature forests and actively increasing sequestered carbon while producing wood products in younger forests[mdash]a strategy that would work for Telephone Gap and elsewhere.

With congressional approval, agency support, special funding, commitment, hard work and leadership the Telephone Gap Project Area could quickly become a research laboratory and model for collaborative, science-

based, climate-smart forestry much needed by the nation and world. Climate-smart forestry experiments could be designed and valuable data could be collected. Scientific baselines could be established. Even the potential for producing significant revenues from the sale of certified carbon credits could be considered. The many possibilities are exciting.