Rio Grande National Forest's Supervisor's Office
Attn: Forest Plan Revision
1803 W. Highway 160
Monte Vista, CO 81144

Via e-mail: *rgnf_forest_plan@fs.fed.us*

October 28, 2016

Dear Rio Grande Planning Team,

The following are the comments of the endorsers listed below on formal scoping for the forest plan revision for the Rio Grande National Forest (RGNF) and accompanying environmental impact statement (EIS). For this submission, we have reviewed the Notice of Intent to Prepare an Environmental Impact Statement (NOI; 81 Fed Reg 62706 et seq., September 12, 2016) and the Proposed Action (PA) document available on the RGNF's revision website.

As part of our comments, we are also submitting a Conservation Alternative (Alternative). We ask that this alternative be considered as a full alternative in the forthcoming environmental impact statement (EIS) for the revised plan. We are happy to work with the planning staff to ensure that the themes and concepts in our Alternative are fully represented in a plan revision EIS alternative. Our proposed Conservation Alternative should be considered part of our scoping comments, and is incorporated here by reference.

Many of the issues and concepts described in our Alternative should also be applied to other alternatives formulated for the plan revision EIS. They are emphasized in this letter.

Sincerely,

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2. August 22, 2016 comments on Need For Change version 2 and the Plan Revision Framework

3. Appendices to September 6 comments on the Preliminary Wilderness Evaluation, which includes Our Wilderness recommendations

RIO GRANDE NATIONAL FOREST PLAN REVISION
SCOPING COMMENTS

I. A MAJOR FOCUS OF THE PROPOSED ACTION SHOULD BE PROTECTION OF BIOLOGICAL DIVERSITY AND RECOVERY OF AT-RISK SPECIES.

The Planning Rule states:

> The purpose of this part is to guide the collaborative and science-based development, amendment, and revision of land management plans that promote the ecological integrity of national forests and grasslands.

36 CFR 219.1(c). Ecological integrity is defined in the rule as follows:

> The quality or condition of an ecosystem when its dominant ecological characteristics (for example, composition, structure, function, connectivity, and species composition and diversity) occur within the natural range of variation and can withstand and recover from most perturbations imposed by natural environmental dynamics or human influence.

219.19.

First and foremost, maintaining all the parts of each ecosystem is necessary to ensure ecological integrity. That means retaining all native species and recovering, to the extent possible, at-risk species[1].

Also important is maintaining ecological processes like fire, predation, natural hydrological cycles, soil formation, etc. Indeed, the Planning Rule requires that plans

> provide the ecological conditions necessary to: contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern within the plan area.

219.9(b)(1).

In our alternative, we state:

[1] This includes: threatened, endangered, proposed, and candidate species under the Endangered Species Act, as well as species of conservation concern.

> The theme of this alternative is to maintain, restore, and enhance biological diversity, including: consideration of plants, animals, fish, invertebrates, natural ecological processes, and local and landscape-level habitat connectivity, while still providing opportunities for multiple uses, as required by the Multiple Use Sustained Yield Act and the National Forest Management Act.

Alternative at 4.

This emphasis fits comfortably into Forest-wide goal 2, "Maintain and restore sustainable, resilient ecosystems". PA at 8. However, we do not believe that "[a]ggressively diversifying age classes and structure, seral stage, and habitat classes" (ibid.) would accomplish this goal. In fact, it would likely contradict it. Aggressively diversifying age classes would take a great deal of human manipulation, mostly via logging. Ecosystems that are heavily manipulated by humans, at least with methods other than prescribed natural fire, are not natural and will not contribute to maintaining biological diversity. For example, Canada lynx are known to avoid logged areas, and therefore such logging can significantly degrade Canada lynx habitat for long periods of time. Logging would destroy advanced regeneration and wildlife habitat, and the presence and use of roads would severely diminish habitat effectiveness for many wildlife species and lead to soil erosion and stream sedimentation.

Also, with large areas of Englemann spruce killed by beetles, much of the RGNF is in the non-forested or stand initiation seral stages. No actions by humans would diversify the age-class of stands dominated by dead and dying spruce. Planting spruce may help re-establish individual forest stands, but many acres planted in the near future (assuming that adequate stocking occurs everywhere) would not diversify the age class structure. Salvage logging and the removal of dead and dying trees would also remove important woody material from the landscape, which can cause cascading effects to ecosystems and retard the recovery of ESA-listed species.

We believe that to some degree, the focus of our Alternative stated above should receive emphasis in every alternative considered in the plan revision EIS. Public lands are the only places with enough acreage to provide habitat for wide-ranging species and those with needs for large areas and/or specialized habitat such as lynx, black bear, bighorn sheep, marten, and goshawk. The continued existence of, and recovery to, viable populations of these species depends on national forest management, as land in non-public ownerships is not large enough to provide for these species, nor to protect biological diversity in general. Also, such lands are mostly managed for purposes other than conserving ecological resources and biological diversity.

Thus it is critical that national forests be managed to conserve ecological integrity and biological diversity, and to maintain connectivity of wildlife habitat. Landscape linkages and wildlife corridors, as described in the Alternative, should be designated and managed to ensure wildlife passage.

The "strategic framework" for the plan revision must be based on the concepts outlined at 219.1(c), including the use of best-available science to revise plans to promote ecological integrity and sustainability. From the description of the strategic framework on p. 2 of the PA, it is not clear that this will be the intent of the RGNF plan revision.

The revised plan must ensure adequate representation of ecosystem types in protected areas. Our wilderness recommendations would increase representation of ecological types not currently protected in the National Wilderness Preservation System. See further discussion in our wilderness recommendations, which were part of our submission on September 6, 2016 and are in Appendix 5 to our Alternative.

Ecosystems and wildlife habitat must be connected across the landscape to ensure movement of wide-ranging species like lynx. The revised plan must ensure connectivity across borders with the Pike-San Isabel, Grand Mesa-Uncompahgre-Gunnison, San Juan and Carson National Forests, and with adjacent BLM lands in Colorado. See sections IV and V of the Alternative for a more detailed discussion.

Objectives, standards and guidelines must be composed to ensure there is sufficient emphasis on maintaining biological diversity in all alternatives, including the proposed action.

The Forest Service has a duty to conserve species listed under the Endangered Species Act (ESA):

> All other Federal agencies shall, in consultation with and with the assistance of the Secretary [of Interior], utilize their authorities in furtherance of the purposes of th[e Endangered Species] Act by carrying out programs for the conservation of endangered species and threatened species listed pursuant to section 4 of this Act.

16 U.S.C. 1536(a)(1). "Conservation" is defined in ESA as follows:

> The terms ''conserve,'' ''conserving,'' and ''conservation'' mean to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary…

Id. at 1532 (3). This means that the Forest Service does not just have an obligation to cause no harm to ESA-listed species, but it has an affirmative obligation to support and work to actively recover ESA-listed species found on the RGNF.

Because implementation of the revised plan could affect any or all of the eight threatened or endangered species that may reside on the RGNF[2] (see PA at 5), formal ESA consultation with the U. S. Fish and Wildlife Service is required before the revised plan is approved.

II. THE PROPOSED ACTION SHOULD RECOMMEND SOME QUALIFYING AREAS FOR WILDERNESS DESIGNATION. We note that the PA does not have a proposed management area (MA) for areas recommended for wilderness. We assume this means that the RGNF intends not to recommend any acres for wilderness designation in the revised plan. We believe this is shortsighted. The proposed revised plan should recommend some areas for wilderness, especially some areas adjacent to existing wilderness areas.

Many areas on the RGNF score very high on some wilderness qualities, and a number of them have an overall recommendation of high. See Wilderness Recommendation Process, Preliminary Evaluation Results. Some of the less than high rankings in this Evaluation appear to be in error. See our comments on the Preliminary Wilderness Evaluation, September 6, 2016, which are attached to our alternative as Appendix 4. In short, many areas on the RGNF clearly meet the criteria for wilderness.[3]

Recommending qualifying areas for wilderness designation would ensure protection of ecosystem types that are currently under-represented in the National Wilderness Preservation System, both nationally and on the RGNF. See detailed analysis in Appendix 1 to our September 6, 2016 comments, which is attached to our Alternative as Appendix 5. Note also the analysis in Appendix 2b of those comments (begins on p. 93 of the Appendix 5 file) identifying areas with considerable acreage of the five most under-represented ecosystem types on the RGNF. Recommending some of these areas and others for wilderness would help maintain the integrity of these and other under-represented ecosystem types and the diverse plant and animal communities they support.

Assigning roadless areas to either of the roadless MAs, 3.5 and 3.6, would provide some protection for wilderness characteristics, but still allow logging and road construction under some circumstances, especially in MA 3.5. See PA at 27-28.

[2] Plan implementation will almost certainly affect lynx, as is discussed elsewhere in these comments and in section V of our Alternative.

[3] The Preliminary Evaluation used the broad characteristics of wilderness areas listed in the Wilderness Act (see 16 U.S.C. 1131) and then addressed "considerations under each characteristic that help to narrow down each character trait." Preliminary Evaluation at 1.

On September 6, 2016, we submitted a list of areas we believe should be recommended for wilderness designation. This includes a description of each area and why it should be recommended for wilderness designation. We excluded from our recommendations all areas that had conflicts with possible wilderness designation, such as motorized trails. See Appendix 3 to our comments of September 6, 2016, beginning on p. 100 of that file, attached to these comments, and also to our Alternative as Appendix 5. We ask that all or nearly all of our wilderness recommendations be included in at least one alternative in the EIS, and that the proposed action contain at least some of our recommendations.

III. DESIGNATE SPECIAL AREAS

Various areas on the RGNF have special, fragile, and/or unique qualities that deserve protection. We are pleased to see that the following areas will be considered for designation: "the Continental Divide Trail, Old Spanish Trail, Natural Arch, Cumbres and Toltec National Historic Landmark, and Mt. Blanca Massif." PA at 21. However, the recreational opportunity spectrum class should not always be semi-primitive motorized, as proposed on p. 25 of the PA. Motorized use would certainly be inappropriate in the Mt Blanca Massif and the Continental Divide Trail corridor (except for motorized travelways that cross the Trail). The ROS class for these areas should be primitive and semi-primitive non-motorized, respectively. For other special areas, motorized use should not be allowed if it puts at risk any of the qualities for which the area is designated. In that regard, limitations on motorized use in the Natural Arch area will likely be necessary.

See our Alternative, Appendix 7, for a description of special areas that we believe should be designated.[4] At least one alternative should have all or nearly all of these areas and the ones being considered by the Forest Service, and the proposed revised plan should designate at least some of them.

If the Fremont Special Interest Area will be reduced in size, as hinted at PA pp. 17 and 21, the acreage excluded from the SIA should not be suitable for timber production, as it is too close to timberline. Reforestation in such areas would be difficult. See more detailed comments on this at p. 16 of our April 15, 2016 comments on Need For Change.[5]

See also Alternative Appendix 6 for recommendations for research natural areas.

[4] This includes a designated area that incorporates the Natural Arch and more.
[5] This comment later was mistakenly dated 2015.

IV. PROTECT AND RECOVER SPECIES OF CONSERVATION CONCERN AND OTHER AT-RISK SPECIES, INCLUDING LYNX AND WOLVERINE

We are pleased to see that the RGNF has made available on its plan revision website a preliminary list of species of conservation concern (PSCC). We agree that the species on the list should be SCC, and we also believe the following should be added to it:

--American pika (*Ochotona princeps*)
--silky pocket mouse (*Perognathus flavus*)
--red squirrel (*Tamiasciurus hudsonicus*)
-- Brazilian Free-tailed Bat (*Tadarida brasiliensis*)
-- Pale Moonwort (*Botrychium pallidum*)

American **pikas** live among high-elevation talus fields and are vulnerable to warming temperatures (Beever et al. 2003). American pikas are experiencing declines across most of their range (Wilkening et al. 2015). Calkins et al. (2012) predicted that pika habitat will shrink at even slightly warmer temperatures. The species occurs in the RGNF. For species that are at risk from the effects of climate change such as pika, designation as SCC is vitally important to ensure that stressors within the Forest Service's control, in combination with climate change, do not push these species towards a need for listing under the ESA.

According the NatureServe, the **silky pocket mouse** is imperiled in Colorado (NatureServe 2015). Based on a Forest Service Region 2 evaluations form, the species is known to occur on the RGNF (Forest Service 2001). Additionally, a small mammal survey conducted by Colorado Natural Heritage Program found occurrences on the RGNF (CNHP 2015). See also Rocchio et al. 2000.

Based on a study by Colorado Parks and Wildlife and others (CPW, undated), **red squirrels** may be having a negative response moderate and severe spruce beetle outbreak conditions. The assumption is that the loss of cone crop, a key food resource for the squirrels, is the key factor. They are residents of the RGNF and serve as an important secondary food source for Canada lynx. In Colorado, it represents a greater percentage of lynx diet than elsewhere within the lynx's range.

NatureServe (2015) ranks the **Brazilian free-tailed bat** as critically imperiled in Colorado. The species' range overlaps with the RGNF, and the forest includes several important habitats including caves (or mines), riparian, and mixed conifer forest.

Pale moonwort is ranked as imperiled in Colorado by NatureServe 2015. It is a Colorado Rare Plant (CNHP, 1997+) and Forest Service Region 2 Sensitive Species. It has been found in Rio

Grande and/or Conejos counties (Kettler et al. 2000). The Draft Environmental Impact Statement for the RGNF 1996 land and resource management plan indicates the plant occurs on the forest (p. 3-94).

The revised plan must protect **wolverine** (*Gulo gulo luscus*). Wolverine conservation status in the lower-48 is currently in some flux. In April 2016, a federal judge rejected the 2014 decision by the U. S. Fish and Wildlife Service (FWS) to not list the distinct population segment of the North American wolverine under the ESA. As the FWS reconsiders protections for wolverines, it is once again a "candidate" species under ESA. This may raise questions over how the Forest Service, including the RGNF, should treat wolverine in ongoing and forthcoming forest plan revisions.

Because the wolverine is a candidate species, the revised plan must ensure that ecological conditions are maintained that will "contribute to the recovery of federally listed threatened and endangered species [and] conserve proposed and candidate species". 219.9(b)(1). Maintaining ecological conditions alone will probably not be sufficient to help ensure wolverine recovery and viability across its range on national forest lands. Therefore, plan components, including standards and guidelines, for wolverine will likely be necessary, as required by 219.9(b)(1). For example, limitations on snowmobile use in some alpine areas where denning could occur may be necessary for protection and recovery of wolverine.

Importantly, the RGNF should review and incorporate the preliminary findings, and expected final report, from the Wolverine Winter Recreation Research Project that recently concluded the field study component of the project. All reports and maps are available at: http://www.roundriver.org/wolverine/wolverine-maps-reports-and-publications/ (last accessed October 20, 2016). Additionally, because of the uncertainty surrounding the wolverine's listing status and the importance of the species, the RGNF revised plan should include a mechanism whereby wolverine is automatically added to the species of conservation concern list in the event that the U.S. Fish and Wildlife Service once again determines that wolverine do not merit listing under the ESA. Given the expected life-span of the revised plan, this is very important to ensure that the plan can anticipate potential actions by other federal agencies in the future, but during the life of the revised plan.

The revised plan must have components, including standards and guidelines, for protecting **lynx** (*Lynx canadensis*), a threatened species under the federal Endangered Species Act. Please see Alternative section V for a detailed set of recommendations for lynx. We recommend a new management area for lynx linkages and a special area for one linkage.

The revised plan and all alternatives must have plan components that ensure adequate protection of lynx habitat. The EIS must demonstrate that each alternative would maintain lynx habitat and

provide an opportunity for the species to begin recovering to a full, viable population in Colorado. It will be especially important to limit logging, especially salvage logging, and other types of vegetation management in areas of lynx habitat.

Additionally, because of uncertainty regarding the future ESA-listing status of Canada lynx and the results of the currently ongoing status review of Canada lynx, the RGNF revised plan should include a mechanism whereby Canada lynx is automatically added to the species of conservation concern list in the event that the U.S. Fish and Wildlife Service decides to delist Canada lynx and remove its ESA protections as a threatened species.

V. WILD, SCENIC, AND RECREATIONAL RIVERS ELIGIBILITY AND MANAGEMENT

Under the Wild and Scenic Rivers Act, the Forest Service is required to evaluate potential additions to the National Wild and Scenic Rivers System:

> In all planning for the use and development of water and related land resources, consideration shall be given by all Federal agencies involved to potential national wild, scenic and recreational river areas, and all river basin and project plan reports submitted to the Congress shall consider and discuss any such potentials. The Secretary of the Interior and the Secretary of Agriculture shall make specific studies and investigations to determine which additional wild, scenic and recreational river areas within the United States shall be evaluated in planning reports by all Federal agencies as potential alternative uses of the water and related land resources involved.

16 U.S.C. 1276(d)(1).

A river is eligible to be included in the national wild and scenic rivers system if it is free-flowing and has at least one river-related outstandingly remarkable value (ORV)of national or regional significance. 16 U.S.C 1271(b), 1273(b). Segments found eligible must include a preliminary classification (wild, scenic, or recreational; 16 U. S. C. 1273(b), FSH 1909.12 section 82.8).

Free flowing is defined as follows in the Wild and Scenic Rivers Act:

> "Free-flowing", as applied to any river or section of a river, means existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway. <u>The existence, however, of low dams, diversion works, and other minor structures at the time any river is proposed for inclusion in the national wild and scenic rivers system shall not automatically bar</u>

its consideration for such inclusion: Provided, That this shall not be construed to authorize, intend, or encourage future construction of such structures within components of the national wild and scenic rivers system.

16 U. S. C. 1286(b); emphasis added.

"Outstandingly remarkable" values are "scenic, recreation, geologic, fish and wildlife, historic, cultural, or other similar values". 16 U.S.C. 1271.

The Planning Rule requires plans to identify eligible rivers:

(2) In developing a proposed new plan or proposed plan revision, the responsible official shall….

(vi) Identify the eligibility of rivers for inclusion in the National Wild and Scenic Rivers System, unless a systematic inventory has been previously completed and documented and there are no changed circumstances that warrant additional review.

36 CFR 219.7(c)(2)(vi).

And under the Planning Rule's Directives:

Unless a systematic inventory of study rivers has been completed and eligible rivers identified, the Interdisciplinary Team shall develop and conduct a comprehensive inventory and evaluation to determine which rivers are eligible for inclusion in the National System. …

When conducting an eligibility study of Forest Service-identified rivers (sec. 5(d)(1) of the Act) during land management plan development or revision, the Interdisciplinary Team shall include all potential wild, scenic, and recreational rivers flowing wholly or partially on National Forest System lands as identified in the Nationwide Rivers Inventory and by other sources.

FSH 1909.12, section 82.2.

The planning team needs to determine the potential eligibility of every stream on the RGNF for eligibility for designation as a wild, scenic, or recreational river under the Wild and Scenic Rivers Act. Such consideration is required under the Act. See 16 U. S. C. 1276(d)(1). Studies done for the previous RGNF plan may be sufficient where there have been no changes in river conditions. However, streams previously determined to be ineligible should be re-examined, as it

is possible that factors that make them ineligible, e g., low-head dams, no longer exist. See 219.7(c)(2)(vi) and FSH 1909.12, sections 82.2 and 82.4. Similarly, the planning team should reconsider river values and river corridor values in the context of the current regional and national array of river-related natural values. Streams of particular interest include Lake Fork Conejos River, South Fork Conejos River, and additional segments of the Rio Grande River, including the one from Stony Pass to Rio Grande Reservoir.

We are pleased to see that the RGNF will evaluate stream segments that were not previously evaluated, including nine segments in the Baca tract, which the Forest Service has acquired since the previous plan revision, and 25 segments elsewhere. See Need For Change, Version 2, item A 3 and Appendix A 3. The RGNG should review wild & scenic assessments and management already undertaken by adjacent federal land-management agencies, especially for any segments of streams shared with the forest.

Also, the forest should review existing streamflow protections provided by the State of Colorado *Stream and Lake Protection Program* (instream flow water rights), and consider for wild & scenic eligibility the streams included in that program. State instream flow water rights also provide new opportunities for federal-state cooperation, complementing and justifying eligibility findings. Specific state-protected streams that should be considered or retained for eligibility include:

- Alamosa River headwaters
- Alder Creek
- Bear Creek
- Beaver Creek
- Cross Creek
- East Fork Pinos Creek
- Elk Creek
- El Rito Azul
- Embargo Creek
- John’s Creek
- Lake Fork Conejos River
- Lost Mine Creek
- Middle Fork Conejos River
- Middle Fork Saguache Creek
- North Fork Conejos River
- North Fork Saguache Creek
- Pinos Creek
- Saguache Creek
- South Fork Camero Creek

- South Fork Saguache Creek
- Treasure Creek
- Wannamaker Creek
- West Alder Creek
- West Fork Pinos Creek

The Colorado Natural Heritage Program (CNHP) published, in April 2016, a report on fens in the RGNF (Smith et al, 2016). That report defines fens as ground-water fed wetlands that typically support sedges and low stature shrubs, and identifies potential fen areas within the forest, including a total of 2,532 likely fen areas in the forest. The report highlights in particular three watersheds with very high numbers of likely fens: Elk Creek; Headwaters of Alamosa River; Ute Creek.

While these fens rely most directly on groundwater, the interplay between groundwater and surface flows in streams is likely enough that nearby streams should be carefully studied for protection as part of the forest's fen assessment. Specifically, the following streams should be considered or retained for wild & scenic eligibility (or, if currently eligible, should retain that eligibility), focusing on the possible ORVs of fens and related plant communities:

Elk Creek watershed
- Elk Creek
- Rio Colorado
- South Elk Creek

Alamosa River Headwaters
- Bitter Creek
- Cascade Creek
- Cataract Creek
- Iron Creek
- Gold Creek
- Prospect Creek
- Treasure Creek

Ute Creek watershed
- East Ute Creek
- Middle Ute Creek
- West Ute Creek
- Ute Creek

The Colorado Natural Heritage Program (CNHP) published a report on the RGNF's wetlands (Lemly, 2012). It found wetlands in generally good condition across the forest, with a majority of wetlands occurring in subalpine and alpine areas. Id at 15. Like CNHP's 2016 report, it also noted the importance of fens in these areas. Id. at 36-37. The RGNF should consider wild-scenic river eligibility as one method of ensuring protection for these valuable resources. The following alpine streams should be studied for eligibility (or retained in current eligibility), focusing on stream-supported wetlands and the plant communities they support in order to recognize and protect those values:

- Benito Creek
- Halfmoon Creek
- Machin Creek
- headwaters Middle Fork Saguache Creek
- headwaters South Fork Saguache Creek
- Spring Creek
- Twin Peaks Creek
- Wannamaker Creek
- Whale Creek
- Adams Fork
- North Fork (Conejos)
- Middle Fork (Conejos)
- Rito Azul
- Mesa Creek
- Rito Hondo
- Spring Creek
- Willow Creek
- Bear Creek
- Pole Creek
- West Fork Pole Creek

- Rio Grande River above Rio Grande Reservoir

When considering streams for wild & scenic eligibility study, the forest should reference CNHP listings of riparian-dependent rare plants in the vicinity. For RGNF, these may include: Barneby's fever-few, blue-eyed grass, Bodin milkvetch, broadfruit, bur-reed, Colorado watercress, marsh-meadow Indian-paintbrush, mud sedge, slender spiderflower, and small-winged sedge.

The forest should also use data and analyses prepared by CNHP for *Potential Conservation Areas* location within the forest, including reports entitled: Adams Fork of Conejos River, Baca Grande and Reserve, Conejos River at Platoro, Conejos River at Spectacle Lake, Conejos River

Springs, El Rito Azul, Elephant Rocks, Great Sand Dunes, Pole Creek, Ra Jadero Canyons, Rito Hondo Creek, Rio Grande at Pole Creek Mountain, Saguache Creek, Sangre de Cristo Creek, Sangres Alluvial Fan, South Fork of the Conejos River and Hansen Creek, Upper Medano Creek, Upper Pole Creek, and Zapata Falls.

The forest should also evaluate for eligibility streams that contain Rio Grande cutthroat trout, or that once contained that fish, or that contain habitat suitable to assisting with that fish's recovery. Additional information for this purpose is available in CPW, 2013 and RGCT Conservation Team, 2013, both prepared in cooperation among the states of Colorado and New Mexico and the U.S. Forest Service.

All river segments found eligible must be managed to maintain their eligibility, both their free-flowing nature and any ORVs. Each alternative must contain plan components to ensure such protection, as required by 219.10(b)(1).

The revised plan should correct the management prescription error applied, in the 1996 plan, to Saguache Creek, which was classified as wild. While other wild-classification eligible streams are currently managed under 1.5 *Eligible Wild River*, seven miles of Saguache Creek are managed under 3.4 *Eligible Scenic River*. This discrepancy in management prescriptions has consequences relative to mineral withdrawal, oil & gas leasing, logging, ROS, and motorized travel. The new plan should affirm the wild classification of eligible Saguache Creek and adjust management area applications accordingly.

See Alternative section VI for additional comments on wild, scenic, and recreational river eligibility.

VI. FORMULATE STRONG STANDARDS AND GUIDELINES, BOTH FOREST-WIDE AND FOR INDIVIDUAL MANAGEMENT AREAS

Standards and guidelines are two required plan components, as described in the Rule:

> A standard is a mandatory constraint on project and activity decisionmaking, established to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements. …
>
> A guideline is a constraint on project and activity decisionmaking that allows for departure from its terms, so long as the purpose of the guideline is met. (§ 219.15(d)(3)). Guidelines are established to help achieve or maintain a desired

condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements.

219.7(e)(iii) and (iv), respectively.

In other words, plans are clearly intended to impose some limitations on management in order to meet desired conditions, avoid or mitigate adverse impacts, and meet legal requirements. Note that the plan decision document must include "[a]n explanation of how the plan components meet the sustainability requirements of § 219.8, the diversity requirements of § 219.9, the multiple use requirements of § 219.10, and the timber requirements of § 219.11" (36 CFR 219.14(a)(2)). Therefore, the EIS for the revision should show how each alternative meets these requirements.

It is important for the revised plan to have strong standards to ensure that impacts from implementation of projects and activities under the plan are minimized. Protections for wildlife and plant species at risk and riparian/wetlands are particularly important. The revised plan need not repeat existing direction, such as the Watershed Conservation Practices Handbook (FSH 2509.25), but the plan must incorporate this direction and state where this direction can be found so that the public has easy access to it. It must also incorporate the Soil Management Handbook, FSH 2509.18., including the R-2 Supplement 2509.18-92-1 .

Standards and guidelines, both forest-wide and in individual management areas, must not be watered down into "management practices". There is no provision in either the Planning Rule or the Planning Directives for use of management practices instead of standards and guidelines. We addressed this issue in our August 22, 2016 comments at 3-5. As we stated there: "It is simply not appropriate to evade the intent of the planning rule by greatly reducing or eliminating the use of required plan components that mandate limitations on management." Id. at 4. Making plan amendments easier is not a valid reason to use management practices instead of plan components. If a minor change in plan components is desired, only a minor amendment and corresponding NEPA documentation are needed. See 219.13(b)(3).

VII. ANALYZE A WIDE RANGE OF ALTERNATIVES IN THE PLAN REVISION EIS.

We addressed this issue in our April 15, 2016 comments[6], in response to a statement by the Forest Service during a March 30, 2016 webinar that the RGNF would try to have as few alternatives as possible in the plan revision EIS. We believe that full formulation and analysis of several alternatives, in addition to the required proposed action and no action alternatives, will be necessary to incorporate the spectrum of possible ways to manage the RGNF.

[6]These comments are incorporated by reference into our scoping comments, and are attached.

Alternatives with different emphasis may require management areas not used in the proposed action. For example, alternatives that recommended any acreage for wilderness would need an MA for proposed wilderness.[7] In our Alternative, submitted with these comments, we recommend a new MA for lynx landscape and other linkages.

A wide range of alternatives, as required by 40 CFR 1502.14(a), must be formulated and analyzed to accommodate the wide diversity of possible management options for the RGNF.

VIII. PROPOSED MANAGEMENT AREAS AND GEOGRAPHIC AREAS NEED MODIFICATION

We discussed our concerns with geographic areas (GAs) in our August 22, 2016 comments[8] at 5-6. We still have difficulty seeing how the use of GAs as proposed would aid in the revision. The PA states:

> …Geographic Area descriptions present more of a management emphasis based on land status and line officer discretion. …
>
> In response to comments received during the Assessment phase of the Plan Revision process, the Proposed Action clarifies direction based on land status and reduces overlapping direction. The proposed format maintains much of the previous direction but add (sic) place-based desired conditions to better focus overall direction. The Proposed Action incorporates Geographic Areas that combine Management Areas with similar emphases into larger groupings based on land status and line officer discretion.

PA at 1, 13.

How does the use of GAs "reduce[] overlapping direction"? As described in the quote above, GAs *add* direction that overlaps the direction in management areas. Any direction in GAs is also not "place-based"; rather, it is based on how areas are managed. The NOI states that the proposed action

[7] In the last round of forest planning in Region 2, the White River NF recommended some acreage for wilderness and assigned it to MA 1.2. See White River Plan at 3-10.
[8] These comments are also incorporated by reference into our scoping comments and attached.

> includes an overarching geographic area layer above the forest's existing management area layer, tiered to levels of active management, the forest's discretion in said management, and the current legal status of the land.

NOI at 62707.

The management areas would presumably have place-based desired conditions. Having desired conditions at the GA level would add overlapping, and potentially confusing, direction.

As we noted in our August 22, 2016 comments, the proposed use of GAs contradicts the Planning Directives, which state that GAs are "based on place". See FSH 1909.12, section 22.21.

We are not opposed to the use of GAs. However, we see no benefit in using them as proposed. The RGNF should either drop GAs or make them place-based and show how they would aid in providing management direction.

The consolidation of three **MAs for designated wilderness** (formerly 1.1, 1.2, and 1.3) into one new MA (1.1) (see PA at 18-19) is acceptable, provided that this MA contain standards and guidelines that address heavily used areas. These Standards and Guidelines must provide for restoration and for limiting use as necessary to protect and restore natural conditions. MA 1.13 in the current plan addresses this in Standard 2 (Plan at IV-7, -8).

We agree with the proposed management strategy for wilderness areas:

> Wilderness areas are managed for solitude; users are expected to be familiar with and use primitive skills in an environment that offers a high degree of risk and challenge.

PA at 23. However, the PA also proposes that in this MA, "[t]rail systems are maintained for user safety and comfort". Id. at 24. These two statements contradict. Some relocation or other management of trails may be needed to address potentially serious safety problems, but trails should generally not be managed for user comfort in wilderness.

We are pleased to see **Saguache Creek** listed as eligible for wild designation under the Wild and Scenic Rivers Act. PA at 24. It was found eligible in the current plan (see Plan at IV-8, Plan FEIS at 3-363), but was assigned to a scenic river-eligible MA on the Plan Management Area Map. Please be sure this river corridor is assigned to the wild-eligible MA (1.5) in the revised plan. The description of this MA should state that areas assigned to it are not suitable for timber production.

Why would areas assigned to **MA 3.4**, Designated and Eligible Scenic Rivers, be "part of the Suitable timber base"? Id. at 26. Under this MA,

> Scenic River landscapes are generally natural appearing. Vegetative composition and structure is influenced by biological processes and condition.

Ibid. Any logging, especially for the purpose of timber production, would be inconsistent with this desired condition.

Inclusion of scenic river corridors in the suitable base is especially odd, given that areas assigned to **MA 4.4**, Designated and Eligible Recreational Rivers, would be excluded from the suitable base. PA at 33. We believe strongly that neither scenic- or recreational-eligible rivers should be in the suitable timber base.

For **MA 3.1**, Special Interest Areas, the recreational opportunity spectrum should not always be semi-primitive motorized. These areas "typically contain unique botanical, geologic, historical, scenic, or cultural areas and values." PA at 25. Parts of most of these areas (e. g., those beyond basic access to the area) will need to be off-limits to motorized use to ensure these values are better protected from shooting and other vandalism. Similarly, livestock grazing, said to be an appropriate use (ibid.), may need to be limited or prohibited in some areas or parts of them to protect botanical values.

In **MA 3.4**, stipulations for oil and gas leases would be controlled surface use. PA at 26. But as with logging, oil and gas operations would be inconsistent with maintaining natural conditions, as the MA would require. It would be best to exclude MA 3.4 areas from oil and gas leasing to protect natural values. If leasing is allowed, stipulations must prohibit surface occupancy.

For **MA 3.5**, non-upper tier Colorado Roadless Areas, the PA, quoting from the Colorado Roadless Rule (CRR), lists the conditions under which logging could be approved. However, point 2, addressing cutting outside the community protection zone, omits the CRR's requirement that such "[p]rojects are expected to be infrequent". 36 CFR 292(c)(2)(ii).

MA 5.13 states:

> Management actions ensure that sufficient quality habitat for wildlife dispersion exists between undeveloped areas of the forest.

PA at 30; emphasis added. The same statement is in **MA 5.11**, minus the word "quality". Ibid. 5.13 has a stronger emphasis on timber production than 5.11[9], so if retention of quality habitat is required for 5.13, it should also be required for MA 5.11.

Under **MA 5.42**, Special Wildlife Habitats – Bighorn Sheep, areas would be

> maintained for established herds and are characterized by rocky slopes, cliffs, and open grasslands with scattered stands of trees.

PA at 31. It is well known that domestic sheep can transmit diseases to bighorn sheep. Such diseases are often fatal to bighorn sheep. The threats to bighorns were summarized as follows in a study commissioned by the Forest Service:

> Threats to the long-term viability of bighorn sheep in Region 2 include diseases transmitted by domestic livestock, the lack of connectivity and/or loss of genetic variability (fitness) due to habitat fragmentation, habitat loss, increased human disturbance, competition with domestic livestock, and predation on small, isolated herds. The relative importance of these threats to the persistence of bighorn sheep in Region 2 varies from area to area. However, the risk of disease outbreaks resulting from contact with domestic sheep and goats is widely believed to be the most significant threat facing bighorns in Region 2 and elsewhere across their range. …
>
> Management and conservation efforts for bighorn sheep in Region 2 should focus on:
>
> 1) eliminating the potential for contact between bighorn sheep and domestic sheep and goats…

Beecham et al, 2007, at 4. This publication further notes that "disease is likely the factor that eventually results in the extirpation or extinction of many bighorn herds". Id. at 36. See also Forest Plan Monitoring and Evaluation Report, 2013, at 13, 46.

Of the four bighorn herds on the RGNF at the time Beecham et al's research was published, two of them had "chronic" or "extensive" exposure to domestic sheep, and one other was suspected

[9] MA 5.13 places "emphasis on the production of commercial wood products" (PA at 30), while 5.11 emphasizes multiple use "to achieve a variety of goals" (id. at 29).

of having such exposure. Id.at 49. The fourth herd known to reside on the RGNF also resides on the GMUG NF, where domestic sheep grazing has historically occurred, leading to a widespread die-off within this herd in 1988. Id at 53.

But even so, "[l]ivestock grazing [would be] appropriate and authorized" under MA 5.42. This is not acceptable. It puts bighorns at too much risk, a risk that is avoidable by not allowing grazing of domestic stock in bighorn sheep habitat. Habitat for bighorns is mainly steep, rocky areas that may not contain much forage for domestic stock, but even where it does, many areas are too rough and isolated for domestic stock to reach them.

IX. ADDRESS TRAVEL MANAGEMENT. One of the most important and controversial aspects of national forest management is travel management. We recognize that the revised plan will not make decisions about which individual routes will be open to what uses and when. NOI at 62708. However, some forest-wide travel management issues should be addressed in the forest plan because the road system affects other forest resources, such as wildlife habitat effectiveness, watershed integrity, and recreation opportunity. If all decisions concerning the road system are made later, it might trigger the need for a major amendment to the forest plan and a supplemental EIS.

The revised plan must provide direction for achieving an ecologically and fiscally sustainable minimum road system, as required under the 2012 Planning Rule and subpart A of the Forest Service travel rules, 36 C.F.R. part 212. To address its unsustainable and deteriorating road system, the Forest Service promulgated the Roads Rule (referred to as "subpart A") in 2001. 36 C.F.R. §§ 212.1-212.21 (Administration of the Forest Transportation System), 66 Fed. Reg. 3206 (Jan. 12, 2001). This rule was amended by "Travel Management; Designated Routes and Areas for Motor Vehicle Use, Final Rule", 70 Fed Reg 68264 et seq., November 9, 2005.

Under the amended rule at 36 CFR 212.5b, the Forest Service "must identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands". At a minimum, Forest Plan designations, such as management area prescriptions and geographic area prescriptions (if used) should establish areas where routes will be generally open, open with specified restrictions, or closed to use by various classes of motor vehicle, including use allowed by season(s) for both on-snow and dry land use, consistent with laws and regulations, as well as desired conditions, and objectives for each respective area.

Detailed designations of areas and individual routes for the non-snow season (for snow season, see below) can be done later in a travel management plan. However, the system of roads with maintenance level 3 or higher should be identified at the Forest Planning stage. This will be necessary to do a proper analysis of wildlife habitat connectivity, as these roads are the ones with

the most traffic and the highest vehicle speeds, and thus the most likely to fragment wildlife habitat.

All of the acreage in the plan area should be determined to be suitable or unsuitable for motorized use, by type of motor vehicle(s), and season. The planning directives state that such an analysis should be done, "including [for] over the snow vehicles". See FSH 1909.12 section 23.23a 2d. Undertaking a suitability analysis will set the stage for later detailed travel planning, where route designations are done, and ensure that motorized travel does not interfere with attaining desired conditions and objectives, especially for retaining ecological sustainability and integrity, and protecting at-risk species.

Over-snow vehicles. Designations for over-snow vehicles (OSVs) may need to be done with the Forest Plan or earlier to meet the mandate of the OSV Rule, issued January 28, 2015 (80 Fed Reg 4500 et seq.). While this rule, which amended the agency's Travel Management Rule (36 CFR 212), did not state a deadline for completion, it clearly requires designation of routes and areas open to OSVs.

Under the OSV Rule, the Forest Service must apply the minimization criteria at 36 CFR 212.81(d), 212.55. Note especially the "[s]pecific criteria for designation of trails and areas" at 212.55(b). This section requires the agency to ensure that the following are minimized:

> (1) Damage to soil, watershed, vegetation, and other forest resources;
>
> (2) Harassment of wildlife and significant disruption of wildlife habitats;
>
> (3) Conflicts between motor vehicle use and existing or proposed recreational uses of National Forest System lands or neighboring Federal lands; and
>
> (4) Conflicts among different classes of motor vehicle uses of National Forest System lands or neighboring Federal lands.

Minimum snow depth for operation of OSVs should be at least one foot of packed snow. This depth should be higher for areas with taller vegetation, like willows.

Designation of areas and routes open to OSVs must not result in increased snow compaction, as required by the Southern Rockies Lynx Amendment.[10] Therefore, if any new areas are designated for OSV use, some existing areas would have to be closed to such use.

[10] Human Use Guideline HU G 10 states: "Designated over-the-snow routes or designated play areas should not expand outside baseline areas of consistent snow compaction, unless designation serves to consolidate use and improve lynx habitat." SRLA Record of Decision at Attachment 1-8.

Motor vehicle use should generally be prohibited in protected areas, other than for emergency search and rescue, and to maintain existing access to areas that analysis shows can withstand a high level of human use without damage to the values for which the respective area is designated. Failure to prohibit or sufficiently restrict motorized use in designated areas would likely result in damage to the important characteristics of the areas that make them worthy of protection and able (with some areas) to contribute to the protection and enhancement of biological diversity.

Off-route motorized use for game retrieval. Use of motor vehicle off of designated routes for game retrieval should not be allowed, except vehicles can be allowed to park just off roads open to the type of motor vehicle being used. Use of ATVs off of designated routes during hunting seasons invites damage because, for big game rifle seasons at least, the ground is often wet from melting snow, thus motor vehicle use will create ruts. Use of ATVs in these conditions creates visible routes that are then noticed and used by other vehicle operators in other seasons. Areas damaged by motor vehicles do not recover easily because soils are often thin and growing seasons are short.

The 2013 Monitoring and Evaluation Report noted that impacts from ATV use have been observed but that such impacts could "not be specifically attributed to afternoon big game retrieval". Id. at 24. As long as off-route game retrieval is allowed, a high priority for monitoring recreational impacts needs to be checking on ATV use for game retrieval.

Please see our comments of April 15, 2016 at 14-15 and 24-30 for a detailed explanation of why the off-route motorized game retrieval policy should be rescinded. These comments are attached in an Appendix to these comments.

Bicycles. The current plan has no direction on where and when bicycles can be used on the RGNF. Direction is needed to make regulation consistent with the GMUG NF and adjacent BLM land. Bikes should be limited to some existing routes. They should not be allowed on very steep or very narrow trails, nor on trails moderately or heavily used for hiking and/or horseback riding. Bikes must not be allowed to go cross-country, i. e, off of designated routes.

X. PROTECT WATERSHEDS

Under the Planning Rule, plans must, "[i]dentify watershed(s) that are a priority for maintenance or restoration". 219.7(f)(1). Furthermore, "[t]he Interdisciplinary Team should develop plan components to address conditions in priority watersheds". FSH 1909.12, section 22.31.

The NOI stated that the PA would identify priority watersheds for maintenance and restoration (81 Fed. Reg. 62707). However, a list or assessment of priority watersheds is absent from the PA. It would have been very helpful to see the watersheds list or analysis at this stage in the planning process.

It is very important to have the plan components necessary to protect riparian areas, as required by the Planning Rule at 219.8(a)(3). The Forest Service's Watershed Conservation Practices Handbook (WCPH), FSH 2509.25, must be incorporated into the revised plan and each EIS alternative. The management practices therein must be forest-wide standards. This should meet at least some of the requirements of the Planning Rule for riparian areas. (See 219.8(a)(3).) Additional standards and guidelines may be needed to fully protect riparian areas and wetlands, including fens. The latter are irreplaceable, so they deserve a high level of protection.

The Forest Service has federal reserved water rights for many streams on the RGNF. The EIS for the revision should analyze to what extent these rights will help maintain adequate streamflows to support ecological functions, including flushing flows, winter flows, and aquatic life. Given that the rights are likely junior on many streams, they may not provide much protection in an extended drought. In any case, other plan components will be necessary to ensure protection of watersheds.

Any watersheds in Class III, function impaired, should receive priority for treatment. But some watersheds in Class II, functioning at risk, may need action to prevent further deterioration.

See additional discussion in our Alternative, section VIII.

XI. PROVIDE ECOSYSTEM SERVICES AND ANALYZE IMPACTS ON THEM

Under the Planning Rule:

> (b) *Social and economic sustainability.* The plan must include plan components, including standards or guidelines, to guide the plan area's contribution to social and economic sustainability, taking into account: …
>
> (4) Ecosystem services…

219.8.

Ecosystem services provide many benefits, as summarized in Assessment 7. But also, as this assessment observes, "Because these benefits are often difficult to quantify, impacts on these

services can often be neglected during forest planning." Id. at 4. Therefore, it is important that the plan revision EIS thoroughly describe ecosystem services and evaluate how they could be affected by implementation of each EIS alternative.

Ecosystem services evaluated in the plan revision EIS should include, though obviously not be limited to, carbon sequestration, biological control, and soil formation.

We note that these ecosystem services can and should be assessed through the Forest Service's hard look at impacts and accounted for in the agency's identification and consideration of alternatives. See 40 C.F.R. §§ 1502.14, 1502.16, 1508.7, 1508.8. The 2012 Planning Rule takes an integrated and holistic approach that recognizes the interdependence of ecological processes with social and economic systems.

To properly assess this integrated and holistic approach, we recommend that the RGNF use a Total Economic Valuation framework (Peterson and Sorg 1987) to prepare any benefit-cost analysis for the Forest Plan revision and the various project-level activities and authorizations existing and contemplated on the RGNF.[11]

Use of Total Economic Valuation is consistent with the 2012 Planning Rule's mandates providing for assessment and protection of ecosystem services (see, e.g., 36 C.F.R. §§ 219.1(c), 219.6(b)(7), 219.8(b)(4), 219.10(a), 219.19). Furthermore, the White House Office of Management and Budget, Council on Environmental Quality, and Office of Science and Technology Policy released a memorandum, M-16-01, on October 7, 2015 directing federal agencies to incorporate ecosystem services into their decision-making, including through "monetization" and "ecosystem-services assessment methods" where "an agency's analysis require consideration of costs." M-16-01 at 2.

Total Economic Valuation recognizes that the public goods and services produced by public lands, including the RGNF, have characteristics that are not necessarily profitable if exploited by private enterprise. The aesthetic value of a viewshed, for example, is difficult to divide up and sell to individual consumers. It is also difficult to exclude "free riders" that enjoy the scenic beauty but are unwilling to pay for it. In these situations, private firms have little economic incentive to produce viewsheds and market forces fail to produce an adequate supply, despite the fact that additional, protected viewsheds may be economically rational and socially desirable.

Without adequate protection of public goods and services, society as a whole is less wealthy, and many of us as individuals are worse off (Peterson and Sorg, 1987, Morton 1999).

[11] Our comments regarding Total Economic Valuation are liberally appropriated—in certain instances, virtually word-for-word, from the excellent June 2015 comments submitted by the Conservation Economics Institute to the U.S. Bureau of Land Management regarding proposed oil and gas rules. See http://www.conservationecon.org/#!og/kl7ht

While the value of rival and excludable commodities, such as fossil fuels, livestock grazing, or other commercial activities, can be measured with market data, there are externalities (negative public goods, or public "bads") that often result from these activities (such as water quality degradation) that are not traded in markets and whose values are not reflected in market prices. Exclusive reliance on measures of value based on the market prices of commodities is thus incomplete. Put simply, the value of non-market public goods and services produced by public lands, including the RGNF, are not reflected in market transactions and therefore lack prices. The fact that non-market goods are not priced does not mean they have no value, only that market indicators of the value do not exist. Economists have developed methods for estimating non-market values when consumers are unable to express their preferences and willingness-to-pay via the marketplace.

Non-market values are estimated by economists using two main methods: (1) stated preference; and (2) and revealed preference. Stated preference relies on surveys that ask respondents to state their maximum willingness to pay for a non-market good or to choose from among a set of nonmarket goods with varying attributes and price levels. Revealed preference methods derive the value of non-market goods through actual behavior, including expenditures on travel and medical care, property values, and wage rates. Stated preference methods are the only way to estimate passive-use benefits (e.g. option, bequest, and existence values). Several choice experiment applications have examined passive use values from the management of public land. Garber-Yonts, et al. studied the preferences of Oregonians regarding the management of Oregon's Coast Range, including large acreage of BLM land. Adomowicz, et al. (1998) and Boxall and Macnab (2000) studied stakeholders' preferences regarding industrial forest management and other use and passive use values. Both studies find evidence of high valuations for passive-use values.

To complete a reasoned and informed benefits-cost analysis, we therefore recommend that the RGNF, using Total Economic Valuation, fully assess the non-market benefits and costs associated with the Forest Plan revision and the various project-level activities and authorizations existing and contemplated on the RGNF. As Field and Field (2009) point out, "[b]enefit-cost analysis is for the public sector what a profit-and-loss analysis is for a business firm" (p. 118). Economic efficiency takes the perspective of all of society, and examines all the costs and benefits associated with development and resource extraction on the RGNF, including non-market values.

The RGNF socio-economic analysis should, as part of using a total economic valuation framework, specifically assess the social cost of carbon to assess the RGNF's existing carbon sequestration value and the predicted or foreseeable net changes to the RGNF's carbon

sequestration capacity as a result of the cumulative impact of climate change and the specific project-level activities that would flow from the Forest Plan.

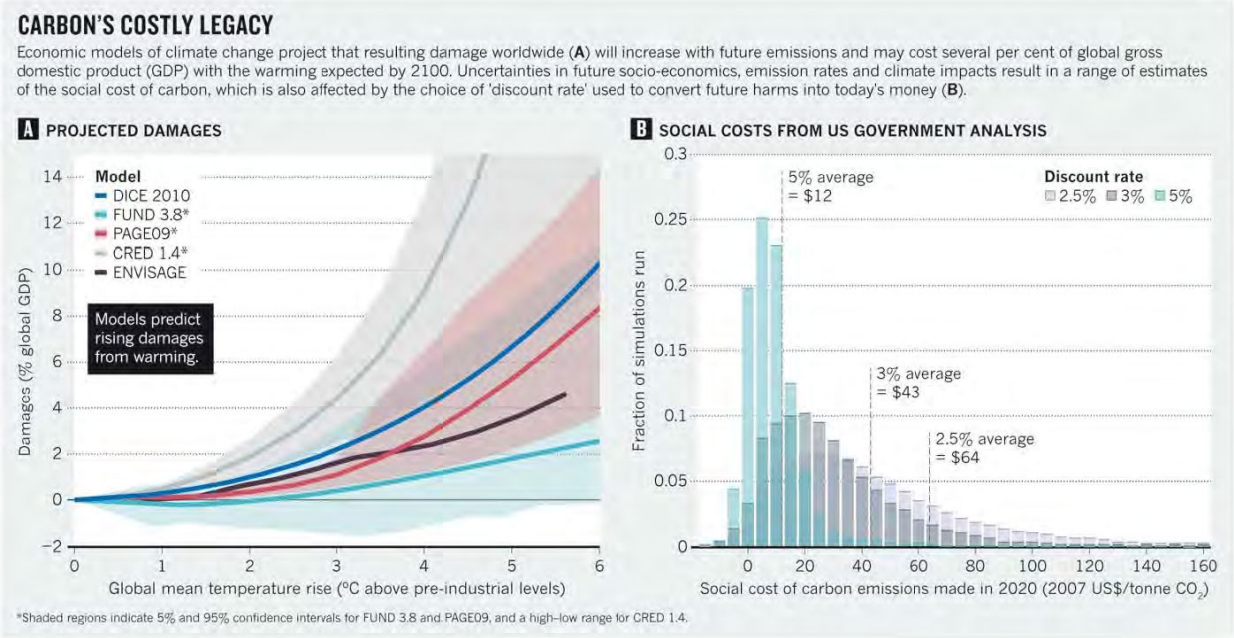
Executive Order 12,866 already directs federal agencies to assess and quantify carbon costs and benefits of regulatory action, including the effects on factors such as the economy, environment, and public health and safety, among others. See Exec. Order No. 12,866, 58 Fed. Reg. 51,735 (Sept. 30, 1993).[12] Moreover, independent of Executive Order 12866, the Ninth Circuit has ruled that agencies must include the climate benefits of a significant regulatory action in federal cost-benefit analyses:

> [T]he fact that climate change is largely a global phenomenon that includes actions that are outside of [the agency's] control ... does not release the agency from the duty of assessing the effects of its actions on global warming within the context of other actions that also affect global warming.

Ctr. for Biological Diversity v. Natl. Highway Traffic Safety Admin., 538 F.3d 1172, 1217 (9th Cir. 2008) (quotations and citations omitted); see also Border Power Plant Working Grp. v. U.S. Dep't of Energy, 260 F. Supp. 2d 997, 1028-29 (S.D. Cal. 2003) (finding agency failure to disclose project's indirect carbon dioxide emissions violates NEPA).

To implement Executive Order 12,866, an Interagency Working Group ("IWG") was formed to develop a consistent and defensible estimate of the Social Cost of Carbon—allowing agencies to "incorporate the social benefits of reducing carbon dioxide (CO2) emissions into cost-benefit analyses of regulatory actions that impact cumulative global emissions."[13] Using Social Cost of Carbon, put simply, measures the benefit of reducing greenhouse gas emissions now and avoiding costs in the future.[14] The charts below depict, (A) dramatically increasing damages from global warming over time, as well as (B) the social cost of these carbon emissions based on 2013 TDS values.[15]

[12] See also Executive Order 13563, 76 Fed. Reg. 3821 (Jan. 18, 2011) (reaffirming the framework of EO 12866 and directing federal agencies to conduct regulatory actions based on the best available science).
[13] See Interagency Working Group on the Social Cost of Carbon, United States Government, Technical Support Document: Technical Update on the Social Cost of Carbon for Regulatory Impact Analysis – Under Executive Order 12866 (May 2013) at 2 (hereinafter 2013 TSD).
[14] See Ruth Greenspan and Dianne Callan, More than Meets the Eye: The Social Cost of Carbon in U.S Climate Policy, in Plain English, WORLD RESOURCES INSTITUTE (July 2011).
[15] See Richard Revesz, et al., Global warming: Improve economic models of climate change, NATURE 508, 173-175 (April 10, 2014).



The importance of assessing the Social Cost of Carbon is obvious. Leading economic models all point in the same direction: that climate change causes substantial economic harm, justifying immediate action to reduce emissions.[16] The interagency process to develop social costs of carbon estimates—originally described in the 2010 interagency Technical Support Document ("TSD"), and updated in 2013—developed four values based on the average SCC from three integrated assessment models (DICE, PAGE, and FUND), at discount rates of 2.5, 3, and 5 percent,[17] as well as a fourth value demonstrating the cost of worst-case impacts.[18] These models are intended to quantify damages, including health impacts, economic dislocation, agricultural changes, and other effects that climate change can impose on humanity. While these values are inherently speculative, a recent GAO report has confirmed the soundness of the methodology in which the IWG's carbon costs estimates were developed, therefore underscoring the importance of integrating this analysis into the agency's decision-making process, even if the authority to do so is grounded in other duties, such as the National Forest Management Act and

[16] See Nature 508 at 174.

[17] The choice of which discount rate to apply—translating future costs into current dollars—is critical in calculating the social cost of carbon. The higher the discount rate, the less significant future costs become, which shifts a greater burden to future generations based on the notion that the world will be better able to make climate investments in the future. The underlying assumption of applying a higher discount rate is that the economy is continually growing. The IWG's "central value" of three percent is consistent with this school of thought—that successive generations will be increasingly wealthy and more able to carry the financial burden of climate impacts. "The difficultly with this argument is that, as climate change science becomes increasingly concerning, it becomes a weaker bet that future generations will be better off. If they are not, lower or negative discount rates are justified." WRI Report, at 9. "Three percent values an environmental cost or benefit occurring 25 years in the future at about half as much as the same benefit today." Id.

[18] See 2013 TSD at 2.

NEPA.[19] In fact, certain types of damages remain either unaccounted for or poorly quantified in IWG's estimates, suggesting that the social cost of carbon values are conservative and should be viewed as a lower bound, in particular given the RGNF's expansive mandates pursuant to the National Forest Management Act and NEPA.[20]

The updated interagency Social Cost of Carbon estimates for 2020 are $12, $43, $65 and $129 (in 2007 dollars).[21] The IWG does not instruct federal agencies to use a particular discount rate, suggesting the 3 percent discount rate ($43 per ton of CO2) as the "central value," but further emphasizing "the importance and value of including all four [social cost of carbon] values."[22] Use of all four values is, of course, consistent with the RGNF's broad responsibilities, pursuant to, e.g., NEPA, to take a hard look at impacts.

The Council on Environmental Quality has also recognized the social cost of carbon as a "harmonized, interagency metric that can provide decisionmakers and the public with some context for meaningful NEPA review." 79 Fed. Reg. 77802, 77827 (Dec. 24, 2014). The SCC provides an important tool for establishing the dollar value of future climate impacts and its use should catalyze agency action to reduce climate pollution and avoid or mitigate climate costs. The social cost of carbon, properly harnessed to the NEPA process, thus advances the Council on Environmental Quality's admonitions against "boilerplate" by providing an easily understood metric to "to foster excellent action" and to "take actions that protect, restore, and enhance the environment. 40 C.F.R. § 1500.1(c); 77 Fed. Reg. 77802, 77824. Furthermore, by providing a quantitative, monetized estimate of the actual costs—i.e., impacts—of the RGNF Forest Plan revision as implemented through proposed actions and alternatives, social cost of carbon analysis helps puts to rest the notion that agencies need not act to reduce climate pollution or to ameliorate climate change impacts because their actions "represent only a small fraction of global emissions…." (77 Fed. Reg. 77802, 77825).

We recommend the RGNF use the Social Cost of Carbon as follows.

First, the RGNF should ensure that the Social Cost of Carbon is applied to all greenhouse gas (GHG) pollutants, not just carbon dioxide. This can be done, simply, by multiplying the social

[19] GAO-14-663, Social Cost of Carbon (July 24, 2014).
[20] See Peter Howard, et al., Omitted Damages: What's Missing From the Social Cost of Carbon, Environmental Defense Fund, Institute For Policy Integrity, Natural Resources Defense Council (March 13, 2014), (providing, for example, that damages such as "increases in forced migration, social and political conflict, and violence; weather variability and extreme weather events; and declining growth rates" are either missing or poorly quantified in carbon cost models)
[21] See 2013 TSD at 3 (including a table of revised SCC estimates from 2010-2050). To put these figures in perspective, in 2009 the British government used a range of $41-$124 per ton of CO2, with a central value of $85 (during the same period, the 2010 TSD used a central value of $21). WRI Report at 4. The UK analysis used very different assumptions on damages, including a much lower discount rate of 1.4%. The central value supports regulation four times a stringent as the U.S. central value. Id.
[22] See 2013 TSD at 12.

cost of carbon by the global warming potential of the particular GHG. This analysis should, notably, account for the differing warming potentials of certain GHGs, such as methane, over differing time frames (in particular 100- and 20-year time frames). For example, the Intergovernmental Panel on Climate Change, in its Fifth Assessment Report, states that methane is 34 times more potent than CO2 over a 100-year time frame and upwards of 86 times more potent than CO2 over a 20-year time frame (accounting for climate-carbon feedbacks).[23]

Second, the RGNF should explicitly recognize that the social cost of carbon —and, more broadly, Total Economic Valuation—is a tool to quantify the climate impacts of a proposed action and to compare alternatives, and thus has far broader relevance to the NEPA process then just cost-benefit analysis. Indeed, in some instances, the social cost of carbon/total economic valuation analysis may be the best way to take a hard look at climate impacts to comply with 40 C.F.R. § 1502.22, depending on the availability of other tools to understand climate pollution and climate change impacts.[24] We emphasize this point because NEPA analyses often rely heavily on quantification of GHG pollution as a proxy for understanding climate impacts. However, using GHG pollution levels as a proxy for impacts has limited utility value, especially as compared to a social cost of carbon analysis. Unlike GHG pollution levels, the social cost of carbon offers a simple, straightforward, and easily understood metric to understand cumulative impacts and, specifically, the present dollar value of the incremental impact of GHG pollution increases caused cumulatively by a proposed action. 40 C.F.R. § 1508.7. Use of the social cost of carbon—rather than just quantification of climate pollution levels—can therefore help better inform the design, consideration, and selection of alternatives (including the no action alternative) and mitigation measures, "sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public." 40 C.F.R. § 1502.14.

Third, the RGNF should recognize that uncertainties pertaining to the social cost of carbon do not cut both ways and certainly do not warrant exclusion of SCC from NEPA analyses. In fact, any uncertainties warrant recognition that the social cost of carbon underestimates—perhaps significantly—the climate impacts of GHG pollution. As the U.S. Environmental Protection Agency has concluded:

> given current modeling and data limitations, [the federal SCC values] do[] not include all important damages. As noted by the IPCC Fourth Assessment Report, it is "very likely that [SCC] underestimates" the damages. The models used to develop SCC estimates, known as integrated assessment models, do not currently include all of the important physical, ecological, and economic impacts of climate change recognized in the climate change literature because of a lack of precise information

[23] IPCC Fifth Assessment Report, Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (accepted September 26, 2013).
[24] IPCC Fifth Assessment Report, Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (accepted September 26, 2013).

on the nature of damages and because the science incorporated into these models naturally lags behind the most recent research. [25]

We therefore support the revised draft guidance's statement that social cost of carbon estimates "are intended to be updated as scientific and economic understanding improves" (77 Fed. Reg. 77802, 77827), but ask the RGNF to treat SCC values as a lower bound to a project's impacts of climate change and to account for peer-reviewed scientific and economic literature pointing to far higher SCC values. [26]

Fourth, the RGNF should explain that the express purpose of assessing the Social Cost of Carbon is to provide an apples-to-apples basis for comparing a project's economic benefits with climate pollution impacts (costs). Where the Social Cost of Carbon is not assessed, these impacts (costs) are hidden from the public and, reflecting our comments regarding the broader use of Total Economic Valuation, in fact "paid for" by the broader environment and public in the form of degraded ecological resiliency, public health impacts, and more. Comparing the dollar benefits estimated to be produced by a proposed action to the dollar costs expected to be imposed by the project is a wholly defensible and necessary exercise. A dollar of income or tax revenue in the short term in the project area is no more important than, and could be negated by, the costs imposed by flooding in a coastal area, wildfire consuming a drought-stricken area, or people stricken by tropical diseases elsewhere in the country and experienced in the future—impacts that the current science says are highly likely.

Of course, the RGNF may consider both quantitative and qualitative factors in selecting an alternative. Large, significant industrial operations, for example, should not be authorized simply because their monetized benefit exceeds their monetized cost. For, taken to its logical conclusion, it would mean that the largest operations could, for example, effectively always be justified so long as they reap significant economic benefits that exceed the economic costs to the relatively poor or powerless. See Exec. Or. 12,898 (Feb. 16, 1994). By completing a social cost of carbon analysis, agencies should still consider qualitative factors, like environmental justice, to protect against inequities and to comply with conservation mandates.

Regardless, the social cost of carbon provides a quantitative basis for gauging, in conjunction with qualitative factors, whether a Federal agency—representing the broad public interest rather than the narrow and insular interest of a project proponent—should or should not approve a project or impose conditions to mitigate harm.

[25] EPA, The Social Cost of Carbon, http://www.epa.gov/climatechange/EPAactivities/economics/scc.html
[26] Moore, Frances C. and Diaz, Delavane B., Temperature Impacts on Economic Growth Warrant Stringent Mitigation Policy, Nature Climate Change 5, 127–131 (2015) (http://www nature.com/nclimate/journal/v5/n2/full/nclimate2481 html)

It is notable that the Social Cost of Carbon is already being taken into account (if imperfectly) by federal agencies and that its use has been upheld by the federal courts. In both Idaho and Montana, the BLM has prepared Social Cost of Carbon estimates in conjunction with the leasing of oil and gas.[27] The U.S. District Court for the District of Colorado also found Social Cost of Carbon analysis appropriate, and chided both the U.S. Forest Service and BLM for rejecting its use. See *High Country Conservation Advocates v. U.S. Forest Serv*., 52 F.Supp.3d 1174 (2014). With the use of the social cost of carbon becoming a more common practice, the RGNF should prepare a social cost of carbon analysis as a component of its Total Economic Valuation benefits-costs analysis as an appropriate and useful means of analyzing and assessing climate impacts under NEPA.

Fundamentally, use of a Total Economic Valuation framework—inclusive of the social cost of carbon —will help the RGNF internalize non-market benefits and costs,and thereby improve any socio-economic analysis prepared for the RGNF Forest Plan revision. For more information on benefit-cost analysis we recommend a couple of references: Chapter 6 in Field and Field (2009) lays out the various types of analyses very clearly; EPA, "Guidelines for Preparing Economic Analyses" (U.S. EPA 2000) is also a good reference and serves as a standard reference for the many benefit-costs analyses conducted by EPA and required by the Office of Management and Budget. Fundamentally, Total Economic Valuation of benefits-costs will provide a basis for reasoned, informed, and efficient planning, management, and decision-making to "provide for social, economic, and ecological sustainability." 36 C.F.R. § 219.8.

See section XIX below for further discussion on addressing the impacts of climate change.

XII. UPDATE THE AVAILABILITY OF OIL AND GAS LEASING. The world of oil and gas operations on national forest lands, has changed considerably since the previous plan was approved. First and foremost is the widespread application of hydraulic fracturing, or "fracking", and horizontal drilling, making it possible to produce oil and natural gas in areas where it is not possible to do so using conventional drilling techniques. Also, protection of roadless areas has been formalized with the Colorado Roadless Rule (CRR), limiting where and how oil and gas-related activity can occur.

As part of the plan revision, the Rio Grande NF must conduct the leasing analysis required by 36 CFR 228.102(c) and (d). This analysis requires a determination of which lands: are open to

[27] See e.g. BLM, Little Willow Creek Environmental Assessment, DOI-BLM-ID-B010-2014-0036-EA at p. 81-83 (Feb. 10, 2015) (https://www.blm.gov/epl-front-office/projects/nepa/39064/55133/59825/DOI-BLM-ID-B010-2014-0036-EA_UPDATED_02272015.pdf) and BLM, Environmental Assessment for October 21, 2014 Oil and Gas lease Sale, DOI-BLM-MT-0010-2014-0011-EA (May 19, 2014) at 76, http://www.blm.gov/style/medialib/blm/mt/blm_programs/energy/oil_and_gas/leasing/lease_sales/2014/oct__21_2014/july23posting.Par.25990.File.dat/MCFO%20EA%20October%202014%20Sale_Post%20with%20Sale%20(1).pdf.

leasing with standard lease terms, open to leasing with additional stipulations, or administratively closed to leasing.

It is important that the leasing analysis and decisions about lands available for leasing be conducted with the forest plan because impacts from oil-gas exploration and development may overlap with, or increase the intensity of, impacts from other management activities. It is highly likely that oil and gas activities on national forest land would affect: air quality, wildlife habitat fragmentation and connectivity, soils, water quality, scenery, and recreation opportunity. Thus disclosure of impacts from implementation of a forest plan would be incomplete without an analysis of impacts from oil and gas operations. Analyzing oil and gas activities separately would be treating them as an activity that operates in isolation from other management.

Lands available for leasing should generally be limited to those areas with at least moderate potential for oil and gas.

If the plan makes decisions about leasing specific lands under 36 CFR 228.102(e), then site-specific NEPA analysis must be done. It would be better to do such analyses and decisions separate from the plan, since the plan is a broad-scale document that sets the stage for specific projects to be later approved after proper consideration of NEPA and any other required documentation.

The analysis of leasing must include description of the reasonably foreseeable development (RFD) scenario, as required by 36 CFR 228.102(c)(3). This RFD becomes the basis for the required analysis of impacts of post-leasing oil-gas activity. Id. at 102(c)(4). Given the now-widespread application of fracking and horizontal drilling, the Forest Service should at a minimum develop a new RFD.

All protected areas must be discretionary no lease (DNL), or if leasing them is allowed, require no surface occupancy (NSO) stipulations for all leases. Note that under the Colorado Roadless Rule (CRR), NSO stipulations are required for leases issued after July 3, 2012 (the effective date of the CRR) in upper tier Colorado Roadless Areas (CRAs). CRR at 36 CFR 294.46(c). Waivers, exceptions, and modifications (WEMs) are not allowed if surface occupancy would result. Ibid. For non-upper tier CRAs, road construction and reconstruction are prohibited for these leases. 294.46(b). WEMs of these lease stipulations for any leases in CRAs (even those issued before July 3, 2012) are prohibited if road construction or reconstruction could result. Ibid. To ensure consistency and protection of valuable ecological resources, we strongly recommend that all roadless areas either be DNL or have NSO stipulations that are not subject to WEMs.

Wild river segments are withdrawn from mineral entry. 16 U. S. C. 1280(a)(iii). Therefore, such segments, and any segments recommended for such designation, cannot be leased. Any segments

found eligible for designation under any classification (wild, scenic, recreational) under the Wild and Scenic Rivers Act must be DNL.

All of the following areas should be DNL, or if any are leased, NSO stipulations with no WEMs allowed must be applied: all alpine areas, riparian areas, wetlands, priority watersheds and watersheds where function is impaired[28], campgrounds, picnic grounds, trailheads, big game winter range, deer and elk calving/fawning grounds, bighorn sheep lambing grounds, and areas immediately adjacent to private lands with residences.

All leases must include plans for reclaiming the site(s) used, including not only the well pad, but any access roads and pipelines.

Now is also a good time to do the leasing availability analysis because prices for oil and gas are low, and there is little industry interest. Thus there is no pressure on the RGNF to open large areas of the Forest to leasing. If, on the other hand, the leasing availability analysis is delayed until a time when prices are higher and industry interest increases considerably, there would be pressure on the RGNF to allow leasing in many areas, including some where leasing should not be allowed.

The following areas should not be available for leasing: all roadless areas, especially upper tier ones; alpine areas; designated and proposed special areas, including research natural areas; eligible and designated wild river corridors; wetlands; priority watersheds; developed recreation sites, including trailheads; big game winter range; deer and elk calving/fawning grounds; bighorn sheep lambing grounds; lynx linkage areas; and any designated critical habitat for ESA-listed species (either currently designated critical habitat or any that is designated during the life of the revised plan).

XIII. TIMBER MANAGEMENT

The RGNF should not encourage development of a large wood products industry. Such an industry could demand too much wood, push for extensive permanent and temporary road construction, and not be sustainable, given the need to retain live and dead trees for wildlife habitat and other ecological purposes. Lynx habitat would especially be at risk with a high-volume timber program. Notably, preliminary results from ongoing studies show that lynx are using areas with considerable amounts of dead and/or dying spruce. See The Wildlife society on-line newsletter, Feb. 2, 2016, available at:

[28] The planning Rule requires plans to "[i]dentify watershed(s) that are a priority for maintenance or restoration". 36 CFR 219.7(f)(1)(i). Plans "should [have] plan components to address conditions in priority watersheds". FSH 1909.12, section 22.31.

http://wildlife.org/canada-lynx-persist-in-spruce-beetle-impacted-forests-research-shows/ Accessed October 10, 2016.

By the time any Englemann spruce timber is cut under the revised plan, the trees eight inches or so and greater in diameter will have been dead for about 8 to 15 years. Though dead spruce that were sound (i. e., free of rot) when attacked by beetles can remain standing for several decades, the wood will have deteriorated because of weather checking and splitting. Insects may further decay the standing dead trees. Thus it is questionable that any of the dead spruce would be suitable for sawtimber, especially dimension lumber.[29] It may still be useful for biomass and house logs, but the former is not economic (see Alternative section IX), and there is little market for the latter.

All roadless areas, ESA-listed species' designated critical habitat, and designated (special) areas should be unsuitable for timber production. The following areas should also be unsuitable: areas over 35 percent slope, slopes with high ratings for soil erosion or slope failure, forested wetlands, and land within 100 feet of streams and other water bodies.

Stands containing dead or dying Englemann spruce do not necessarily need to be treated. Dead spruce, if free of rot when attacked by beetles, may remain standing for decades. The dead trees provide some hiding cover for various species and "other" habitat for lynx. They will also provide lynx denning habitat after falling to the ground in the future. Fallen trees will as they slowly return to the soil and reduce soil erosion. In other words, the dead spruce provides a considerable ecological benefit. This benefit would be lost with widespread salvage logging. Such treatment would also damage and destroy understories of young spruce and fir, delaying or prohibiting recovery of stands to a forested condition, or require expensive planting, with success uncertain.

While there will not be a shortage of snags and future down dead trees, there needs to be a forest-wide standard to ensure that they remain well-distributed. Salvage logging will remove many snags and possibly some existing down logs from each treatment area, but some of both should be retained in each salvage project. Snags should be left in groups, with some live trees if possible. Soft snags, i. e., those with some signs of internal rot, should receive priority for retention, as such snags will be the best for cavity-nesting species of wildlife to excavate into nests.

Similarly, a forest-wide standard must ensure retention of sufficient down-dead material. The largest sizes available should be retained, and the down dead material must be well distributed. Brown et al, 2003 stated that "10 to 30 tons per acre" of coarse woody debris (three-inch

[29] The PA at 16 states that "After 10 years, the dead spruce likely would no longer be viable as a commercial sawtimber…".

diameter and up) was desirable "for cool Douglas-fir and lodgepole pine types and lower subalpine fir types", provided small woody debris (less than three inches in diameter) was no more than 5 tons per acre.

Cutting of dead and dying spruce should be mainly limited to areas where dead trees could pose a hazard to public safety, such as in areas near infrastructure and adjacent to private land where the landowners are creating defensible space on their lands.

Old trees of all species, including subalpine fir, should generally be retained. With the death of almost the entire Englemann spruce overstory across the RGNF, the landscape is short of older trees and late successional habitat compared to historical conditions. See Assessment 1 and 3 Terrestrial at 35. The existing older trees will be needed to replace spruce snags, as the beetle-killed spruce fall to the ground over the next 75 years.

There is no need to cut aspen. There is currently little or no commercial wood product use for this species. Due to a large number of natural and human-caused disturbances in the late 19th century and early 20th century, aspen may have been at an historic high in the early to mid-1900s. See current Forest Plan FEIS at 3-167. The loss of spruce overstory due to bark beetle mortality will create areas for aspen to expand, as noted in Assessment 1 and 2 Terrestrial, p. 9.

Clearcutting should not be done in shade-tolerant species because reforestation is difficult. Clearcuts, if done in stands of any species, should be small (no more than a few acres) to avoid creating large open areas and fragmenting wildlife habitat.

See section IX of our Alternative for additional discussion on timber management.

XIV. LIVESTOCK GRAZING

See section XI of our Alternative for a more detailed discussion. The Forest Service should not restock currently vacant allotments and ones that become vacant. The land in these allotments should be restored to natural ecological conditions.

XV. CONTROL INVASIVE SPECIES

Proliferation of non-native plant species has become a serious issue on public lands in the western United States. The revised plan should have desired conditions, objectives, standards, and guidelines to combat this large and ever-growing threat to ecological integrity. Plan components should address priorities for weed treatment, as well as potential treatment methods.

See Alternative section XV for more details.

XVI. FIRE

Please see section X of Our Alternative. In general, the revised plan should encourage restoration of fire where safe and appropriate, via prescribed fire and fire use (formerly known as prescribed natural fire). It is most important to restore fire in the lower elevation ecosystems, below 9000 feet or so, as these areas have likely seen the most impact from human fire suppression.

The fire management zones proposed in the PA (p. 15) are similar to what we propose in our Alternative. However, the PA states that these zones "are not a mapped feature". Ibid. If so, then how could the zones "support[] decision makers before ignition occurs, by pre-assessing areas for wildland fire (prescribed fire and wildfire) risks and benefits"? If decision makers do not know where the zones are, they cannot make informed decisions about how to manage fire anywhere in the respective zones.

We encourage the RGNF to use fire zones in the revised plan, but they need to be mapped and displayed for each alternative in the revision EIS. That way, both the public and the agency decision makers will be informed about how fires would be managed.

XVII. ANALYZE THE SUITABILITY OF LANDS FOR RENEWABLE ENERGY DEVELOPMENT

Establishment of renewable energy, such as wind, solar, and geothermal, is becoming quite popular as way of supplying energy without relying on fossil fuels. It is reasonable to expect that there may be some requests for permits to locate renewable energy facilities on the RGNF over the life of the forthcoming revised forest plan. But as noted at p. 4 of Assessment 10, Energy and Minerals, the current plan does not address the issue of determining what portions of the RGNF might be suitable for renewable energy development. Therefore, the revised plan must make this determination.

The installation of solar and wind facilities is a permanent and overriding use of the land, meaning the areas on which these facilities are installed will not be available for most, if any, other uses. Therefore, suitability decisions must be made carefully, and only after consideration of all the potential impacts.

Wind turbines are known to cause significant mortality of avian and bat species. See e. g., RESOLVE, 2004; Loss et al, 2014; Cryan et al, 2014. Therefore, no land should be determined suitable for wind energy development unless it can be demonstrated that the installation and use of such facilities is not likely to cause more than minor mortality of bird and bats. Stipulations likely to be effective in keeping mortality and injury to a minimum must be required.

Generally, the taller the turbines, the greater the risk of collisions and death. Also, siting in canyons and on ridges where birds and bats are more likely to migrate, increases the risk of mortality.

Before any permits for wind energy are approved, proponents must agree to: monitor use, injuries, and deaths of birds and bats; regularly report all injury and mortality; and make their facilities available for research into bird and bat injuries and deaths and means to reduce such injuries and mortality. These conditions must be non-waivable stipulations on all wind energy development facility permits. Permit conditions may also need to include provisions to deter small mammals like rabbits, pocket gophers, and voles from inhabiting permitted areas, as such species are prey for raptors and can thus attract raptors to sites where they can be injured or killed.

Strict monitoring and mitigation will be necessary to ensure that the RGNF complies with the Migratory Bird Treaty Act (16 U.S.C 703-712), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d), and the Endangered Species Act (16 U.S.C. 1531 et seq.).

Similarly, **solar facilities** can be death traps for avian and bat species. They, or the insects they consume, are sometimes attracted by the bright light, or the birds and bats mistake a reflective solar facility for a water body. This is especially true for solar thermal facilities, where solar light is concentrated to heat water and produce steam that turns a turbine to produce electricity. Birds and bats flying into these facilities can be instantly burned to death, as has been repeatedly documented at facilities in California. See: Avian Mortality at Solar Energy Facilities in Southern California: A preliminary analysis, available at: http://www.kcet.org/news/redefine/rewire/Avian-mortality%20Report%20FINALclean.pdf, accessed September 27, 2016.

See also a 2014 report in Scientific American magazine, available at: http://www.scientificamerican.com/article/solar-farms-threaten-birds/, accessed September 27, 2016.

This report cites the following mitigation measures as ways to reduce bird and bat deaths:

> clearing vegetation around solar towers to make the area less attractive to birds, retrofitting panels and mirrors with designs that help birds realize the solar arrays are not water, suspending operations at key migration times, and preventing birds and bats from roosting and perching at the facilities.

However, the ultimate effectiveness of these measures is uncertain, and research continues. The unwaivable stipulations listed above for wind energy facilities should also be applied to solar facilities.

Geothermal facilities must not disrupt stream functions. Though they usually use groundwater, such facilities could affect the flow of streams if the groundwater is tributary to the stream.

The following areas must not be suitable for renewable energy development: all protected areas and those proposed for any protective designation, big game winter range, calving and fawning grounds, bighorn sheep lambing grounds, wetlands, riparian areas, wetlands campgrounds, trailheads, and alpine areas.

XVIII. MONITORING

Under the 2012 Planning Rule, national forest planning is clearly intended to be adaptive. See 36 CFR 219.2(b). Monitoring is a key component of this adaptive management process, as without it, changing conditions would not be identified and the effectiveness of plan components in mitigating impacts from plan implementation could not be assessed. As a result, changes in any plan to reflect changed conditions or new information would seldom if ever be done, and adaptive management would not be possible.

Specifically, the Planning Rule states:

> Monitoring information should enable the responsible official to determine if a change in plan components or other plan content that guide management of resources on the plan area may be needed.

36 CFR 219.12(a)

Under the Planning Rule, each plan must have a monitoring program that has "plan monitoring questions and associated indicators". 36 CFR 219.12(a)(2). Indicators are the means of "testing relevant assumptions and measuring management effectiveness and progress toward achieving or maintaining the plan's desired conditions or objectives". 219.12(a)(2).

As part of the indicator(s) for each monitoring question, there must be **triggers** for what result would identify a need for further evaluation, or in some cases, even an immediate change in management. Without triggers, monitoring might become just a collection of data, with no application toward identifying a possible need to change management. In other words, adaptive management would be thwarted.

Focal species. Each monitoring plan must have questions and indictors that address "[t]he status of focal species to assess the ecological conditions required under § 219.9." 219.12(a)(5)(iii). See our Alternative, section XVI, for a list of recommended focal species.

Whether or not they are officially designated as focal species, some monitoring of at-risk species should be done. This includes threatened, endangered, proposed, and candidate species, and species of conservation concern. Without such monitoring, there is no way to determine whether plan components are effective in meeting the Planning Rule requirement to:

> contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern within the plan area.

36 CFR 219.9(b).

Given the importance of monitoring to the land management planning process, it is critically important that the Rio Grande have money available for this activity as part of each annual budget, or under a longer-term appropriation. If money is not available for monitoring, major projects should not be implemented. Generally, information from projects should be regularly gathered and used for the forest monitoring program.

Broad scale monitoring. The Planning Rule requires the Regional Forester to develop a broad-scale monitoring program "for plan monitoring questions that can best be answered at a geographic scale broader than one plan area". 219.12(b). We recommend that this be developed concurrently with the monitoring program for the RGNF. Per 219.12(b)(2) and (c)(2), the Regional Office should work with the RGNF and the GMUG, San Juan, Pike-San Isabel, and Carson National Forests; the Colorado Department of Natural Resources; and the BLM's San Luis Valley Field Office to develop a broader-scale monitoring strategy "as soon as practicable".

Items of broader-scale monitoring must include, though not be limited to, the movement of wildlife species such as lynx, deer, elk, moose, and bighorn sheep.

XIX. ANALYZE IMPACTS OF CLIMATE CHANGE

There is no question that the earth is warming. Given the continued emissions of greenhouse gases (especially methane and carbon dioxide) mainly from human actions, continued warming is likely. The revised plan must reflect this by providing for resiliency, or the ability of ecosystems on the RGNF to maintain their functioning in the face of a warming climate. Consistent with laws, regulations, and protection of resources, the RGNF should be managed to retain carbon stocks and possibly increase carbon storage. However, any efforts to increase future carbon storage should not be done by methods that decrease current carbon storage.

Plan components for addressing and adapting to climate change will be necessary to ensure that the revised plan complies with the following from the Plan Rule:

> *Ecological sustainability.* (1) *Ecosystem Integrity.* The plan must include plan components, including standards or guidelines, to maintain or restore the ecological integrity of terrestrial and aquatic ecosystems and watersheds in the plan area,…

219.8(a).

Without mitigation measures, a national forest that is affected by runaway climate change is not ecologically sustainable. It is likely not socially or economically sustainable, either.

All of the RGNF will be affected by climate change, but lower elevation ecosystems and habitats are the most likely to be adversely affected by a warming climate. They could experience anything from floods to extended droughts at various future times. Generally, lower elevation habitat is likely to decrease in quality for some species due to warmer temperatures. Thus there will be a tendency for some species to move higher in elevation over time.

Therefore, it is very important to ensure connectivity of habitat from lower to higher elevations. This includes providing conditions that encourage connectivity from non-public lands adjacent to the RGNF (which are often at lower elevation) to areas on the Forest. It is also important to protect wildlife habitat with designated areas. These areas should encompass the full elevational range of the RGNF, but most of the currently designated area acreage is in the higher elevations. See Assessment 15. Thus areas with high ecological integrity below 10,000 feet elevation or so must be retained. Commercial activities should be minimized in these areas, with protection provided by special area designation or appropriately restrictive standards and guidelines, both forest-wide and those that are part of management areas.

The planning team should place special emphasis on the protection and restoration of water resources. Rivers, streams, wetlands and other waters originating on the Rio Grande National Forest function as essential ecological elements in the broader landscape. Emphasizing

protection and restoration of these water resources can improve resiliency and thereby have significant positive impacts on social, economic, and ecological sustainability across the RGNF.

The revised plan should have provisions to minimize release of greenhouse gases from activities on the RGNF. Any oil and gas leases should have strict, non-waivable stipulations requiring installation of the best available control technology for reducing leaks of gases such as methane in areas where exploration, drilling, or production occur. Other than for personal use firewood, the RGNF should not sell wood that is likely to be burned (e. g., for commercial biomass energy production), and would thus emit carbon directly into the atmosphere.

All alternatives must be evaluated for their effects on climate change, in terms of both current and future emissions and carbon sequestration. The analysis in the plan revision EIS should also analyze how a warming climate would affect management opportunities.

To assess the possible monetary costs to the planning area attributable to global warming, and the possible benefits from reduction of carbon emissions, the Forest Service should use the Social Cost of Carbon methodology. See:
http://www3.epa.gov/climatechange/EPAactivities/economics/scc.html
See also discussion in section XI above concerning the use of social cost of carbon methodology for analyzing economic effects.

This method accounts for only those costs of carbon (and benefits for its reduction) which can be quantified and to which a monetary value can be assigned. The other costs of carbon must separately be analyzed and included in the overall analysis of the effects of climate change.

The RGNF should foster landscape-scale ecological and community resiliency. Resiliency provides a positive, constructive frame to optimize and balance interconnected social, economic, and ecological systems and to thereby satisfy the agency's duty to "provide for social, economic, and ecological sustainability" in light of the challenges and opportunities presented by the reasonably foreseeable impacts of climate change to the RGNF and the broader landscape within which the RGNF rests. See 36 C.F.R. § 219.8.

Resiliency, for us, consists of two parts. First, resiliency is the capacity of an ecological or community system to maintain its function in the face of stress. A system with high resiliency withstands and bounces back from stress better than a system with low resiliency. Second, resiliency is the capacity of an ecological or community system to adapt to changing circumstances and conditions. Accordingly, a system with high adaptive capacity adjusts to changing circumstances and conditions better than a system with low adaptive capacity. These themes, and acknowledgement of the interconnected nature of ecological and community systems, are echoed in Aldo Leopold's 1949 classic, A Sand County Almanac, where the author

eloquently states, "[t]hat land is a community is the basic concept of ecology, but that land is to be loved and respected is an extension of ethics. That land yields a cultural harvest is a fact long known, but latterly often forgotten."

Resiliency can help account for the interconnected nature of natural and human-built infrastructure and provide a basis for effectively identifying management challenges and opportunities in world suffering from climate change. The RGNF Forest Plan can help optimize and balance how resources, such as water, are used across this interconnected landscape-scale mosaic of natural and human-built infrastructure, given the impacts of climate change.

Climate change, as we note above, elevates the importance of resiliency and understanding the interconnected nature of ecological and community systems. Indeed, this is at the root of the Forest Service's 2012 Planning Rules, which direct the Forest Service to "provide for social, economic, and ecological sustainability." 36 C.F.R. § 219.8. Climate change exacerbates impacts caused by existing ecological and community stressors, such as poorly managed road systems and livestock grazing. Climate change is also a persistent, intensifying, and non-linear stressor, changing precipitation and snowmelt patterns. Actions adequate to guard against a particular impact in a world that has warmed by 2°C may therefore be completely inadequate in a world that has warmed by 3°C. Thus, in the absence of robust action by the RGNF to build resiliency, climate change may, over time, unravel and catastrophically degrade existing ecological and community systems in the broader landscape.

We emphasize this reality because the Intended Nationally Determined Contributions ("INDCs") provided in advance of the upcoming U.N. Framework Convention on Climate Change Conference of the Parties in Paris in December 2015 are presently insufficient to constrain warming below the internationally agreed upon target to constrain warming to 2°C above pre-industrial levels.[30] The 2°C target is generally viewed as a threshold—if imperfect—to ameliorate the risk of catastrophic climate impacts. Notably, there are intense efforts underway in Paris, this very moment, to lower the threshold to 1.5°C to improve climate security and to protect the most vulnerable—efforts we support.[31] While projections vary, the INDCs, even if implemented successfully (a very big if), would still put the world for warming greater than 2°C.[32] This should provide a sobering reality check to us all and underscore the importance of a meaningful, impactful Forest Plan revision.

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[30] *See* http://www.wri.org/indc-definition (explaining INDCs).

[31] http://www.thenation.com/article/with-1-5-degrees-celsius-target-climate-justice-movement-poised-to-score-surprise-win/

[32] http://climateactiontracker.org/global.html (last visited Dec. 8, 2015).

To foster resilience, the RGNF should take the following four core actions as part of the Forest Plan revision process: (1) Account for climate change through a linked combination of proactive and adaptive management; (2) place special emphasis on the protection and restoration of water resource resilience; (3) better conserve wildlife habitat in the face of climate change; and (4) optimize the RGNF's carbon sequestration capacity.

The RGNF should forthrightly acknowledge and assess the predicted and reasonably foreseeable impacts of climate change and consider alternatives to ameliorate those impacts through the National Environmental Policy Act ("NEPA") review for the plan revision. These alternatives should assess different means of fostering resiliency to satisfy the 2012 Planning Rule's directive to "provide for social, economic, and ecological sustainability" 36 C.F.R. § 219.8. Each alternative should detail the specific plan components, i.e., desired conditions, objectives, standards, guidelines, and determinations regarding the suitability of lands for various multiple uses and how those plan components will or will not foster resiliency in the face of climate change to provide for social, economic, and ecological sustainability. This is particularly critical in the context of wildfire management, where ecological and community resiliency should drive wildlife risk management. Put differently, wildlife risk management should maximize resiliency benefits. Without considering broad-scale resiliency benefits, we are concerned that too much emphasis will be placed on logging to the exclusion of other activities and the broader need to manage for landscape-scale forest resiliency that holistically addresses interconnected ecological and community systems.

Climate change must be directly and consciously infused into all plan components, whether desired conditions, objectives, standards, guidelines, or determinations regarding the suitability of lands for various multiple uses. This is particularly important in terms of plan components that ensure *proactive*, rather than only reactive, adaptive planning, management, and decision-making. Proactive action at the Forest Plan level sets the stage for effective, meaningful project-level action.

With regards to resiliency and wildlife, the RGNF should consider alternatives (as required by NEPA (42 U.S.C. §§ 4332(2)(c)(iii), 4332(2)(E)) and its implementing regulations (40 C.F.R. 1502.14)) to better conserve wildlife by protecting and restoring intact wildlife habitat, improving the connectivity and permeability of wildlife habitat between wildlife habitat core areas, and maximizing the widest possible altitudinal range within protected areas. Each of these three elements works together to maximize the resilience of the RGNF's diverse wildlife species in the face of a warming climate.

In this context, we note that coordination with other National Forests and BLM lands adjacent to the RGNF is necessary, and cross-border wildlife protection measures, especially for species such as Canada lynx, is vital to ensure the resilience of these species in the face of climate

change, and consistency across borders for the management and protection of these species. We recommend designation of the Spruce Hole-Osier-Toltec Landscape Connectivity Area to accomplish this. See Alternative Appendix 7.

As to the RGNF's carbon sequestration capacity, the revised Forest Plan should optimize the RGNF's carbon sequestration capacity, ensuring, as much as possible, that the forest functions as a carbon sink. Unexploited federal lands can and should function as a carbon sink to help reduce net greenhouse gas emissions and thereby mitigate climate change. We recommend that the RGNF achieve this objective by limiting activities, like fossil fuels extraction, that release greenhouse gas emissions.

All fossil fuel leases or permits to drill should have strong, non-waivable stipulations to minimize the release of climate pollution (especially methane). This would help retain ecological and community resiliency. Also, incorporate carbon sequestration capacity as a criterion in the design and prioritization of project-level action with the express intent to protect and optimize the forest's ability to store carbon.

To help inform the RGNF's actions to mandate and optimize the RGNF's carbon sequestration capacity, we refer you to and ask you to assess the recommendations crafted by the Federal Forest Carbon Coalition.[33]

We note that while the RGNF's carbon sequestration capacity may appear small relative to the entire world, individual actions, cumulatively, can prove quite positive and, indeed, are essential. As the Supreme Court teaches:

> Agencies, like legislatures, do not generally resolve massive problems in one fell swoop, see *Williamson v. Lee Optical of Okla., Inc*., 348 U.S. 483, 489, 75 S.Ct. 461, 99 L.Ed. 563, but instead whittle away over time, refining their approach as circumstances change and they develop a more nuanced understanding of how best to proceed, cf. *SEC v. Chenery Corp*., 332 U.S. 194, 202–203, 67 S.Ct. 1575, 91 L.Ed. 1995.

Mass. v. EPA, 549 U.S. 497, 499 (2007).

We emphasize that the RGNF should also address, regardless of management actions, how each of the plan revision EIS's alternatives impacts the RGNF's carbon flows in terms of both sources and sinks, and in light of both "context" and "intensity," as part of the agency's hard look responsibilities under NEPA. See 40 C.F.R. §§ 1502.15, 1508.7, 1508.8, 1508.25, 1508.27.

[33] See http://www forestcc.org/recs.

Resiliency and carbon sequestration are expressly called for by Executive Order 13,653, "Preparing the United States for the Impacts of Climate Change." Section 1 of this order explains that:

> The impacts of climate change—including an increase in prolonged periods of excessively high temperatures, more heavy downpours, an increase in wildfires, more severe droughts, permafrost thawing, ocean acidification, and sea-level rise—are already affecting communities, natural resources, ecosystems, economies, and public health across the Nation. These impacts are often most significant for communities that already face economic or health-related challenges, and for species and habitats that are already facing other pressures. Managing these risks requires deliberate preparation, close cooperation, and coordinated planning by the Federal Government, as well as by stakeholders, to facilitate Federal, State, local, tribal, private-sector, and nonprofit-sector efforts to improve climate preparedness and resilience; help safeguard our economy, infrastructure, environment, and natural resources; and provide for the continuity of executive department and agency (agency) operations, services, and programs.

Section 3 of the Order reinforces this policy direction, mandating that agencies take action to make "watersheds, natural resources, and ecosystems, and the communities and economies that depend on them, more resilient in the face of a changing climate." Section 3 further states that, "recognizing the many benefits the Nation's natural infrastructure provides, agencies shall, where possible, focus on program and policy adjustments that promote the dual goals of greater climate resilience and carbon sequestration."

Executive Order 13,653 should be understood in the context of two new White House memoranda, which the RGNF should review to inform its Forest Plan revision. In October 2015, the White House directed federal agencies to account for ecosystem services in federal planning and decision-making. In November 2015, the White House strengthened federal ecological resource protection and restoration efforts. These memoranda complement the Council on Environmental Quality's guidance for federal agencies as they strive to account for climate change through National Environmental Policy Act ("NEPA") reviews. While that guidance remains in draft form, it is nonetheless helpful to inform the RGNF Forest Plan revision's NEPA process and how that process can properly account for climate pollution and climate change.

Note that the plan rule requires plans to provide ecosystem services:

> The plan must include plan components, including standards or guidelines, for integrated resource management to provide for ecosystem services and multiple uses in the plan area.

219.10(a). See further discussion in section__ above.

To assure that the RGNF can continue to provide ecosystem services and ecological, economic, and social sustainability, climate change will have to be addressed and its effects reduced.

Landscape-scale thinking, management, and analysis is crucial to resiliency in the face of climate change risks, impacts, and vulnerabilities. By taking a landscape-scale approach, the RGNF can best identify and prioritize opportunities to take Forest Plan and project level action to ameliorate climate change and to complement non-federal resource protection and restoration efforts.

XX. ECONOMICS

The 2012 planning rule establishes that land management plans will guide the management of National Forest System lands so that they are "ecologically sustainable and contribute to social and economic sustainability" and have the "capacity to provide people and communities with ecosystem services and multiple uses that provide a range of social, economic, and ecological benefits for the present and into the future." 36 CFR 219.1(c).

In the revision phase, the Forest Service is required to develop plan components, including standards and guidelines, to "guide the plan area's contribution to social and economic sustainability, taking into account:

- …economic conditions relevant to the area influenced by the plan, …

- Multiple uses that contribute to local, regional and national economies in a sustainable manner, and

- Ecosystem services."

36 CFR 219.8(b)(1), (3), (4).

The rule defines Ecosystem services as follows:

> Benefits people obtain from ecosystems, including:
>
> (1) Provisioning services, such as clean air and fresh water, energy, fuel, forage, fiber, and minerals;

(2) Regulating services, such as long term storage of carbon; climate regulation; water filtration, purification, and storage; soil stabilization; flood control; and disease regulation;

(3) Supporting services, such as pollination, seed dispersal, soil formation, and nutrient cycling; and

(4) Cultural services, such as educational, aesthetic, spiritual and cultural heritage values, recreational experiences and tourism opportunities.

219.19.

It defines economic sustainability as "…the capability of society to produce and consume or otherwise benefit from goods and services including contributions to jobs and market and nonmarket benefits…" while "meet[ing] the needs of the present generation without compromising the ability of future generations to meet their needs." 36 CFR 219.19.

We submitted substantive comments on ecosystem services during the assessment phase. We hope our comments provided useful information and guidance for the Rio Grande National Forest and Region 2 as a whole.

According to EPS-HDT, 2015, including Alamosa, Conejos, Costilla, Saguache Rio Grande and Mineral Counties, the population of the area has grown 25% since the 1970s (to 2013). See Appendix 9?

Employment during the same timeframe has doubled (approximately 13,000-26,000 jobs). Personal income has also seen an increase of 186 percent (almost 6 million to 16.22 million), reflecting a steady, healthy growth in population and income, reflecting an overall quality of life increase. Interestingly, self-employment also saw a 135 percent increase, almost 4,000 to 9,000 jobs, over the last 40 years.

Non-labor income (investments etc.,) has increased by 323 percent, meaning that retirees have found the San Luis Valley a desirable place to live. The largest concentration of second homes in the wildland urban interface (WUI) is in Conejos County (almost 70 percent) and Mineral County had the largest percentage of homes built within WUI (almost 38 percent).

Mostly baby boomers have moved to this WUI area because of quality of life issues that the Rio Grande National Forest provides (as part of ecosystem services), if they can handle the altitude. This also means building homes get built near fire prone areas. This highlights the importance of education, fire mitigation, and implementing controlled burns.

Non-Service jobs (extractive jobs, agriculture) have decreased by 11 percent, but service related jobs (transportation, utilities, amenities, wholesale/retail, health services) has increased by 35 percent. Government jobs have increased by 22 percent.

Regarding travel and tourism, information developed by the same EPS-HDT group, Mineral County (94 percent public lands) has seen the fastest rate of change in travel and tourism employment (1998-2012), an approximate 20 percent increase.

According to the Alamosa County, 2015, "the Great Sand Dunes National Park and Preserve had attracted an above average number of visitors, due to the growing popularity of National Parks, sandboarding, and adventure tourism across the country."

"Lodging tax collections increased, with a 7% increase of visitation at the Alamosa Welcome Center, from the following year. Interest in visiting Alamosa County has skyrocketed, reflecting an 80% increase in visits to their website, and 26,000 Visitor guides requested and mailed, a 65% increase over 2014."

This information does not include the 100th anniversary of the National Park Service, which is being celebrated this year (2016). Long story short, the Rio Grande headwaters surrounding the San Luis Valley and the quality of life it provides, small towns, and clean air and water, have been discovered by retirees, recreation visitors, cultural/historic buffs, small businesses and a generation of professionals who can use technological innovations to work from home.
What this means for the Rio Grande is vigilance in this planning process to prepare for travel management planning. Recreation on this Forest is going to increase considerably, thus anticipating where this increased use will occur and mitigating accordingly will be essential.

Technology will also play a critical role in terms of recreation access. Mountain bikes for example are only going to become more sophisticated, being able to travel farther distances, in rugged terrain at higher speeds. The Rio Grande must plan for this inevitability.
The Rio Grande does not have to concern itself so much with creating "cottage industry economic opportunities" for the surrounding communities because the economic opportunities are coming to the Rio Grande.

The Rio Grande National Forest already provides the essential elements for a wide range of multiple use and economic opportunities including: grazing, timber, various forms of recreation, small scale mining, hunting, fishing, wood gathering, herb collection, and downhill and backcountry skiing and winter sports. The present challenge is going to be balancing these uses and simultaneously protecting traditional uses, because the increase in recreation is going to interfere with users who are used to having the forest to themselves.

The 21st century has made its way into the RGNF, so any clearly defined management areas, wilderness recommendations, research natural areas, other designated areas, priority watersheds, wetlands, and wildlife corridors that can be identified and protected in this planning process will support the previous plan's traditional uses and also help provide ecosystem services for current and future generations.

XXI. ESA-LISTED SPECIES RECOVERY PLANS

The RGNF revised plan should explicitly require the RGNF to comply with all recovery plans prepared and released by the U.S. Fish and Wildlife Service for any ESA-listed species occurring on the RGNF. As the expert agency, the U.S. Fish and Wildlife Service expends considerable resources preparing recovery plans to help guide species towards recovery and eventual delisting under the ESA. Because the recommendations in recovery plans are very important for species recovery, but sometimes not diligently applied by federal land management agencies, the RGNF should become a leader amongst its peers and commit to mandatory compliance with all ESA-listed species' recovery plans.

REFERENCES

Alamosa County, 2015. Alamosa County Local Marketing District Board and the Alamosa Convention and Visitors Bureau, 2015 Annual Report.

Beecham, John L., Cameron P. Collins, M.S., and Timothy D. Reynolds, 2007. Rocky Mountain Bighorn Sheep(*Ovis canadensis*): A Technical Conservation Assessment. Prepared for the USDA Forest Service, Rocky Mountain Region, Species Conservation Project. February 12, 2007.

Beever, E.A., P.F. Brussard, and J. Berger. 2003. Patterns of apparent extirpation among isolated populations of pikas (Ochotona princeps) in the Great Basin. Journal of Mammalogy. 84: 37-54.
Bureau of Land Management, *Environmental Assessment for October 21, 2014 Oil and Gas lease Sale*, DOI-BLM-MT-0010-2014-0011-EA (May 19, 2014) at 76, http://www.blm.gov/style/medialib/blm/mt/blm_programs/energy/oil_and_gas/leasing/lease_sales/2014/oct__21_2014/july23posting.Par.25990.File.dat/MCFO%20EA%20October%202014%20Sale_Post%20with%20Sale%20(1).pdf

Brown, James K., Elizabeth D. Reinhardt, and Kylie A. Kramer, 2003. Coarse Woody Debris: Managing Benefits and Fire Hazard in the Recovering Forest. Rocky Mountain Research Station, General Technical Report RMRS-GTR-105. July, 2003

Bureau of Land Management, *Little Willow Creek Environmental* Assessment, DOI-BLM-ID-B010-2014-0036-EA at p. 81-83 (Feb. 10, 2015) (https://www.blm.gov/epl-front-office/projects/nepa/39064/55133/59825/DOI-BLM-ID-B010-2014-0036-EA_UPDATED_02272015.pdf)

Calkins, M.T., E.A. Beever, K.G. Boykin, J.K. Frey, and M.C. Andersen. 2012. Not-so-splendid isolation: modeling climate-mediated range collapse of a montane mammal Ochotona princeps across numerous ecoregions. Ecography. 35(9): 780-791.

CNHP (Colorado Natural Heritage Program), 1997+. Colorado Rare Plant uide.www.cnhp.colostate.edu. Latest update: June 30, 2014. http://www.cnhp.colostate.edu/download/projects/rareplants/list.asp?list=master

CNHP (Colorado Natural Heritage Program). 2015. Searching for pocket mice in the San Luis Valley. CNHP Blog, Connecting Conservation and Science. http://cnhpblog.blogspot.com/2015/10/searchingforpocketmiceinsanluis.html

CPW (Colorado Parks and Wildlife) et al. Undated. Impact of Bark Beetle Epidemics on Mammals in Colorado. http://sciencegs.weebly.com/uploads/6/0/6/4/60649065/wildlife_effects_spruce_beetle.pdf

CPW, 2013. Rio Grande Cutthroat Trout (*Oncorhynchus clarkii virginalis*) Conservation Strategy. Colorado Division of Parks and Wildlife, October, 2013.

Cryan, Paul M., P. Marcos Gorresen, Cris D. Hein, Michael R. Schirmacher, Robert H. Diehl, Manuela M. Huso, David T. S. Hayman, Paul D. Fricker, Frank J. Bonaccorso, Douglas H. Johnson, Kevin Heist, and David C. Dalton, 2014. Behavoir of Bats at Wind Turbines. Proceedings of the National Academy of Sciences. www.pnas.org/cgi/doi/10.1073/pnas.1406672111.

Environmental Protection Agency, Evaluating Climate Policy Options, Costs and Benefits. Available at: https://www.epa.gov/climatechange/evaluating-climate-policy-options-costs-and-benefits (last accessed October 27, 2016)

EPS-HDT, 2015. A Profile of Socioeconomic Measures Rio Grande NF Region Selected Geographies: Alamosa County CO, Conejos County CO, Costilla County CO, Mineral County

CO, Rio Grande County CO, Saguache County CO. Benchmark Geographies: Colorado Non-Metro. Economic Profile System-Human Dimensions Toolkit, EPS-HDT, February 26, 2015

Field, B.C. and M. K. Field. 2009. Environmental Economics: An Introduction (5th edition). McGraw Hill: Boston, MA 448 pp.

Forest Service. 2001. Region 2 Sensitive Species Evaluation Form, Perognathus flavus / Silky Pocket Mouse. USDA Forest Service, Region 2. July 23. http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5318202.pdf.

GAO, Regulatory Impact Analysis: Development of Social Cost of Carbon Estimates, GAO 14-663 (August 2014.) (http://www.gao.gov/products/GAO-14-663)

Greenspan, Ruth and Callan, Dianne, *More than Meets the Eye: The Social Cost of Carbon in U.S Climate Policy, in Plain English,* World Resources Institute (July 2011).

Howard, Peter et al., *Omitted Damages: What's Missing From the Social Cost of Carbon*, Environmental Defense Fund, Institute for Policy Integrity, Natural Resources Defense Council (March 13, 2014)

Interagency Working Group on the Social Cost of Carbon, United States Government, *Technical Support Document: Technical Update on the Social Cost of Carbon for Regulatory Impact Analysis – Under Executive Order 12866* (May 2013)

IPCC Fifth Assessment Report, Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (accepted September 26, 2013).

Kettler, S., J. Rocchio, R. Schorr, and J. Burt. 2000. Biological Inventory of Rio Grande and Conejos Counties, Colorado. Colorado Natural Heritage Program. Fort Collins, Colorado. March 31. http://www.cnhp.colostate.edu/download/documents/2000/rio_grande_and_conejos_counties_vol1.pdf.

Learn, Joshua. Canada lynx persist in spruce beetle impacted forests, research shows. Wildlife Society. February 2, 2016. Available at: http://wildlife.org/canada-lynx-persist-in-spruce-beetle-impacted-forests-research-shows/ (last accessed October 27, 2016)

Loss, Scott R., Tom Will, Peter P. Marra, 2013. Estimates of bird collision mortality at wind facilities in the contiguous United States. Biological Conservation 168 (2013) 201–209. http://dx.doi.org/10.1016/j.biocon.2013.10.007

Lemly, Joanna, 2012. Assessment of Wetland Condition on the Rio Grande National Forest. Colorado State University, Colorado Natural Heritage Program.

Moore, Frances C. and Diaz, Delavane B., *Temperature Impacts on Economic Growth Warrant Stringent Mitigation Policy*, *Nature Climate Change* 5, 127–131 (2015) (http://www.nature.com/nclimate/journal/v5/n2/full/nclimate2481.html)

Morton, P. 2001. Testimony before the U.S. Senate, Energy Impacts of the Roadless Area Conservation Rule. Subcommittee on Forests and Public Land Management, Committee on Energy and Natural Resources. Washington, D.C. April 26, 2001

National Academy of Sciences (NAS), 1997. Valuing Groundwater: Economic Concepts and Approaches. Committee On Valuing Groundwater, National Research Council.

NatureServe. 2015. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://explorer.natureserve.org.

Peterson, G.L. and C.F. Sorg.1987. Toward the measurement of total economic value. USDA Forest Service. GTR RM-148. Fort Collins, CO.

RESOLVE, 2004. Proceedings of the Wind Energy and Birds/Bats Workshop: Understanding and Resolving Bird and Bat Impacts. Washington, DC. May 18-19, 2004. Prepared by RESOLVE, Inc., Washington, D.C., Susan Savitt Schwartz, ed. September 2004.

Revesz, Richard *et al., Global warming: Improve economic models of climate change,* Nature 508, 173-175 (April 10, 2014).

RGCT Conservation Team, 2013. Conservation Agreement for Rio Grande Cutthroat Trout *(Oncorhynchus clarkii virginalis)* in the states of Colorado and New Mexico. Colorado Division of Parks and Wildlife, Denver, CO. 29 p.

Rocchio, J., D. Culver, S. Kettler, and R. Schorr. 2000. Biological Inventory of Rio Grande and Conejos Counties, Colorado Volume II: A Natural Heritage Inventory and Assessment of Wetlands and Riparian Areas in Rio Grande and Conejos Counties. Colorado Natural Heritage Program. Fort Collins, Colorado. http://www.cnhp.colostate.edu/download/documents/2000/Rio_Grande_and_Conejos%20County_Inventories_2.pdf.

Smith et al, 2016. Smith, Gabrielle, Joanna Lemly, Pam Smith, and Bernadette Kuhn, 2016. Fen Mapping for the Rio Grande National Forest. Colorado Natural Heritage Program, Colorado State University, Fort Collins, Colorado, April, 2016.

U.S. Environmental Protection Agency. 2015 Economic Analysis for Revised Uranium Mill Tailings Standards (EPA 402---R---14---003).

Wilkening, J.L., C. Ray, and J. Varner. 2015 Relating sub-surface ice features to physiological stress in a climate sensitive mammal, the American pika (Ochotona princeps). PloS one. 10(3): e0119327.

Young, R. A., & Loomis, J. B. 2014. Determining the Economic Value of Water: Concepts and Methods. Routledge.

ATTACHMENTS (sent separately)

1 April 15, 2016 comments on Need for Change and Plan Revision Framework

2 August 22, 2016 comments on Need For Change version 2 and the Plan Revision Framework

3 Appendices to September 6 comments on the Preliminary Wilderness Evaluation, which includes Our Wilderness recommendations. The wilderness recommendations begin at p. 100 of the document.