December 8, 2017

Dear GMUG Planning Team,

High Country Conservation Advocates, Western Environmental Law Center, Western Colorado Congress, Great Old Broads for Wilderness, Rocky Mountain Wild, The Wilderness Society, Defenders of Wildlife, Sheep Mountain Alliance, and Rocky Smith submit the following comments for consideration and incorporation in the Grand Mesa, Uncompahgre and Gunnison (GMUG) National Forest Land and Resource Management Plan revision. This submission addresses *Draft Assessment 10: Renewable and Nonrenewable Energy Resources, Mineral Resources, and Geologic Hazards*. Specifically, in this comment letter we address the issues of oil and gas, coal, and coalmine methane. We submit these comments with the goal of driving a more robust, accurate, and complete assessment of this topic.

I. Assessing Nonrenewable Energy Resources on the GMUG

The assessment component of revision is designed to "rapidly evaluate existing information about relevant ecological, economic, and social conditions, trends, and sustainability and their relationship to the land management plan" and to provide the basis for the Forest Service's identification of the need to change existing plan direction.[1] Given the controversy surrounding mineral and energy development across the GMUG, their impacts to other uses of the forest, and the future of renewable energy on public lands, a robust assessment of this issue is critical.

Forest Service Handbook 1909.12, Chapter 10, Section 13.5 identifies various types of relevant information which should be included in the evaluation for this assessment. For nonrenewable energy and mineral resources, the GMUG should identify and evaluate available information about nonrenewable energy resources and mineral resources in the plan area such as:

1. Potential for occurrence of nonrenewable energy and mineral resources.
2. Current type, extent, and general location of nonrenewable energy and mineral activity and energy facilities in the plan area.
3. Information on previous decisions related to the Federal mineral estate including oil and gas availability decisions and coal suitability evaluations.
4. Projections of potential of nonrenewable energy and mineral activity or reasonably foreseeable development in the case of oil and gas.
5. Trends in nonrenewable energy and mineral activity in the plan area.
6. The impacts of nonrenewable energy and mineral developments on ecological integrity and species diversity.
7. The contribution of nonrenewable energy and mineral activity in the plan area to social and economic sustainability, including taxes, royalties, and fees.

A review of the Draft Assessment reveals that while some information for each of the topics listed above has been incorporated into the document, there are several notable gaps and omissions that we ask the Forest Service to address. Specifically, the document should contain a more complete assessment of projections and trends for mineral development, as well as impacts to ecological integrity and species

[1] 36 C.F.R. § 219.5(a)(1) & (2)(i).

diversity. Especially needed is a better assessment of the relationship between mineral and energy development on the GMUG and climate change. In our comments we offer some background on these topics, and ask that the Forest Service include and expand on it in the final Assessment.

The GMUG should integrate information on mineral and energy development into other relevant assessment topics, including: Terrestrial and aquatic ecosystems and watersheds; Air, soil, and water resources; System drivers and stressors, especially relating to climate change; Baseline assessment of carbon stocks; At-risk species; Social, cultural, and economic conditions; Ecosystem services; Multiple uses; Recreation; Infrastructure; and Designated areas. Mineral development, and its direct, indirect and cumulative impacts, can affect each of these topics, and should be considered by the Forest Service.

Presenting the public with an accurate portrait of energy and mineral activities across the GMUG will foster a better understanding of the relationship between this use of forest resources and other uses that are enjoyed by the public. While each and every assessment completed by the GMUG is important, the issues of mineral and energy development are particularly so given the agency's plan to conduct its oil and gas suitability and leasing planning process subsequent to (or staggered with) forest plan revision. The Forest Service's assessment of resources and potential impacts during the plan revision will lay the foundation for the agency's future leasing availability decisions, so it is critical that the assessment be as complete and accurate as possible.

II. Draft Assessment Report Chapter 1 - Introduction

Key Issues

The Draft Assessment identifies six Key Issues, or "concerns and challenges which may be applicable to a revised forest plan."[2] The last issue identified, but one that should be a high priority for the agency, is the effect of mineral development and energy production on ecosystem services, human health, water quality/quantity, climate change, and air quality. Unfortunately, the Draft Assessment contains little useful information regarding this key issue. For example, there is no acknowledgement or discussion of the significant impacts of mineral and energy development on wildlife, despite this being a point of conflict on most projects on the forest. Energy development on the GMUG, particularly in the upper part of the North Fork Valley Geographic Area, directly impacts big game and other wildlife, and is a source of constant friction and concern from both the public and state wildlife managers.[3] The Assessment should assess the relationship between development and wildlife and wildlife habitat. In short, the GMUG needs to revisit this Key Issue and provide the pubic with information, maps, and analysis.

Assessing the effects of mineral and energy development on the environment is foundational for understanding the current condition of the forest and the direction for future forest policy and management. This type of development is perhaps the preeminent concern and challenge affecting all other uses on the forest, both from direct impacts to ecosystems, waters, wildlife, habitat, and other forest resources, as well as from impacts from climate change caused by fossil fuel development on the GMUG and other human activities. The proliferation of energy and mineral development on the GMUG directly affects forested habitat connectivity, recreation, rangeland management, watersheds and soil resources, invasive plants, and other resources and activities.

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[2] Draft Assessment 10 at 2.

[3] *See* Attachment 1.

We are especially concerned about the lack of discussion in the Draft Assessment regarding the relationship between energy and mineral development and climate change. As noted above, the document identifies climate change in the last listed key issue. But the document is notably silent on climate change pollution and its relationship to activities on the GMUG. To the best of our knowledge, the issue of potential emissions of climate-change pollution related to energy and mineral development on the forest is not addressed in any other assessment. The Forest Service must present climate pollution information from energy sources in an assessment. This information probably best fits in assessment 10, but if addressed in another assessment, it should at least be referenced in assessment 10.

Climate change is the quintessential major contemporary issue that was not identified as a significant concern at the time of development of the 1983 GMUG Forest Plan or 1993 Oil and Gas Amendment. The current science on climate change completely redefines old assumptions about the use of public lands for fossil fuel development. Given that a significant portion of our nation's coal, oil, and natural gas come from federal public lands, obtaining an accurate understanding of the net climate change emissions caused by the development of federal fossil fuels on the GMUG, and possible options to reduce or eliminate such emissions, is critical.

Until revision is complete, the Forest Service will base its analysis and decision-making within a framework of public issues, management concerns, and management opportunities that were relevant decades ago, but have not been updated to reflect the significant changes on the GMUG. As traditional extractive industries spar with less intrusive and ecologically damaging uses of our forest lands, it is imperative that the GMUG has in place a framework for addressing these changes. The current GMUG Forest Plan did not and could not have anticipated the increased use of unconventional drilling techniques like directional drilling and multi-stage hydraulic fracturing, increased demand for and feasibility of renewable energy, and climate change. The Forest Service must do its part to stem the impacts of climate change and manage for sustainable ecosystems, and the GMUG must take a hard look at greenhouse gas emissions stemming from the development it authorizes on the forest. Forest planning must reflect the challenges we face as community members and users of forest lands and resources, and it is imperative for the GMUG to adequately address climate change during the planning revision process.

The EPA has determined that human emissions of greenhouse gases are causing global warming that is harmful to human health and welfare.[4] Indeed, virtually every credible climatologist in the world accepts the legitimacy of global warming and the fact that human activity has resulted in atmospheric warming and planetary climate change.[5] According to experts at the Government Accountability Office, federal

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[4] *See* 74 Fed. Reg. 66,496 (Dec. 15, 2009), *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act*.

[5] *See*, e.g., INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *The Science of Climate Change* (1995); U.S. Climate Change Science Program, *Abrupt Climate Change* (Dec. 2008); James Hansen, et. al., *Global Surface Temperature Change*, REVIEWS OF GEOPHYSICS, 48, RG4004 (June 2010); *see also*, Richard A. Muller, *Conversion of a Climate Change Skeptic*, NEW YORK TIMES, July 28, 2012 (citing Richard A. Muller, et. al., *A New Estimate of the Average Earth Surface Temperature, Spanning 1753 to 2011*; Richard A. Muller, et. al., *Decadal Variations in the Global Atmospheric Land Temperatures*).

land and water resources are vulnerable to a wide range of effects from climate change, some of which are already occurring on local forest lands. These effects include, among others, "(1) physical effects, such as droughts, floods, glacial melting, and sea level rise; (2) biological effects, such as increases in insect and disease infestations, shifts in species distribution, and changes in the timing of natural events; and (3) economic and social effects, such as adverse impacts on tourism, infrastructure, fishing, and other resource uses."[6] We ask that the GMUG acknowledge these effects in its assessments and also acknowledge that these consequences drive a need for change in the GMUG's policy and management regarding fossil fuel resources.

Even though emissions from energy and mineral projects on the GMUG may look small when viewed on the scale of the global climate crisis, when considered cumulatively with all of the other greenhouse gas emissions from Forest Service-managed lands, they are significant and cannot be ignored. In addition, the GMUG has been, since 2011, home to Colorado's largest source of industrial methane pollution, from the West Elk Coal Mine.[7] The forest is already experiencing the impacts of climate change, including beetle-killed trees, early runoff, higher temperatures impacting vegetative growth, and changes in wildlife migration as wildlife adapt to warmer temperatures. A cavalier, business-as-usual approach to fossil fuel development and unmitigated emissions is unjustified given the stark reality of climate change, and is incompatible with the economic and environmental sustainability of the forest.

The GMUG should use the Social Cost of Carbon (SCC) and social cost of methane and other greenhouse gases (SCM)[8] to inform and improve its policies and management. Climate change is and will continue to cause significant impacts to the GMUG's resources. SCC is a measure of the economic harm from those impacts, expressed as the dollar value of the total damages from emitting one ton of carbon dioxide into the atmosphere. Using SCC and SCM, in essence, measures the benefit of reducing greenhouse gas emissions now and avoiding costs in the future.[9] The importance of assessing the SCC/SCM is obvious. Leading economic models all point in the same direction: climate change causes substantial economic harm, justifying immediate action to reduce emissions.[10]

We recommend that the GMUG use the SCC as follows. First, the GMUG should ensure that SCC is applied to all greenhouse gas pollutants, not just carbon dioxide. This can be done by multiplying the SCC by the global warming potential of the particular greenhouse gas. This analysis should account for the differing warming potentials of certain greenhouse gases, such as nitrous oxides, over differing time frames. As noted above, the SCM should also be used.

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[6] GAO Report, *Climate Change: Agencies Should Develop Guidance for Addressing the Effects on Federal Land and Water Resources* (2007); *see also* Committee on Environment and Natural Resources, National Science and Technology Council, *Scientific Assessment of the Effects of Global Climate Change on the United States* (2008); Melanie Lenart, et. al. *Global Warming in the Southwest: Projections, Observations, and Impacts* (2007).

[7] EPA, Facility Level Information on Greenhouse gases Tool, available at https://ghgdata.epa.gov/ghgp/main.do

[8] See https://www.epa.gov/environmental-economics/working-paper-estimating-social-cost-non-co2-ghg-emissions-methane-and, and https://www.ncbi.nlm.nih.gov/pubmed/28581559.

[9] 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).

[10] Richard Revesz, et al., *Global warming: Improve economic models of climate change*, NATURE 508, 174 (April 10, 2014).

Second, the GMUG should explicitly recognize that SCC 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. Use of SCC can help better inform the design, consideration, and selection of alternatives and mitigation measures in future GMUG activities.

Third, the GMUG should recognize that uncertainties pertaining to SCC and SCM do not cut both ways and certainly do not warrant exclusion of SCC from NEPA analyses. In fact, any uncertainties warrant recognition that the SCC underestimates—perhaps significantly—the climate impacts of greenhouse gas pollution.[11]

Fourth, the GMUG should explain that the express purpose of assessing SCC is to provide an apples-to-apples basis for comparing a project's economic benefits with climate pollution costs. Where SCC is not assessed, these costs, or impacts, are hidden from the public and are paid for by the environment and public in the form of degraded ecological resiliency, public health impacts, agricultural uncertainty, and other climate-related harms.

SCC is already being taken into account by federal agencies and its use has been upheld by federal courts. In both Idaho and Montana, the BLM has prepared SCC estimates in conjunction with the leasing of oil and gas.[12] The U.S. District Court for the District of Colorado also found SCC analysis appropriate, and chided both the U.S. Forest Service and BLM for rejecting its use.[13] With the use of SCC becoming a more common practice, the GMUG should prepare a SCC/SCM analysis and utilize this tool to achieve a more accurate and robust understanding of the costs and benefits of projects and actions.

Use of Best Available Science

The Draft Assessment states that best available science was used to develop the assessment, but the list proffered is limited largely to federal and state databases, summaries, reports and such. Absent from the section on Best Available Science are sources of independent science. Since development of the current GMUG Forest Plan and Oil and Gas Leasing Amendment there has been a plethora of scientific research devoted to mineral and energy development and its impacts on forest resources and human health. There is a wealth of directly relevant, available science on the relationship between energy and mineral development and climate change, wildlife, water quality, air quality, human health, etc. We offer some suggested studies in Attachment 3.

The GMUG should identify existing studies, reports, proposals, and other information that may be relevant, determine which sources of information constitute the best available scientific information, and utilize that information. In doing so, the agency must "[d]ocument . . . how the best available scientific information was used to inform the assessment," including "[i]dentify[ing] what information was determined to be the best available scientific information, explain[ing] the basis for that

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[11] EPA, The Social Cost of Carbon, http://www.epa.gov/climatechange/EPAactivities/economics/scc.html.

[12] *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 (https://www.blm.gov/sites/blm.gov/files/MT-DAKs%20Dillon%20Final%20EA_Oct_21_2014_.pdf).

[13] See *High Country Conservation Advocates v. U.S. Forest Serv*., 52 F.Supp.3d 1174 (2014).

determination, and explain[ing] how the information was applied to the issues considered."[14] This is part of the cornerstone for a successful plan revision, and thus far is incomplete.

III. Draft Assessment Report Chapter 2 – Conditions and Trends

Nonrenewable Energy – Oil and Gas

The Draft Assessment states that "the Forest Service contributes to the energy needs of the nation by leasing oil and gas resources."[15] But the Forest Service also contributes to the nation's greenhouse emissions and climate change through leasing and development of oil and gas resources. This needs to be explicitly recognized and considered in the Assessment.

Changed Conditions - Roadless

Roadless areas on the GMUG provide clean drinking and irrigation water and function as biological strongholds for populations of threatened, endangered, and sensitive species. They provide large, relatively undisturbed landscapes that are important to biological diversity and the long-term survival of many at-risk species, and serve as bulwarks against the spread of non-native invasive plant species. They also provide opportunities for dispersed outdoor recreation, an increasingly important economic driver for West Slope counties. The roadless values that these areas retain are important and must be protected.

The Draft Assessment devotes approximately a page and a half to the complex issue of the overlap between oil and gas leasing and roadless lands. But it mischaracterizes the status and impact of roadless protections as they pertain to existing leases issued after 2001 that overlap roadless areas. On pages 9-10 of the Draft Assessment the agency suggests that the Colorado Roadless Rule (CRR) resolved any issues with gap leases by superseding the 2001 Roadless Rule (RACR) and grandfathering existing leases. That is inaccurate for several reasons.

First, the RACR has been consistently upheld in court and all injunctions against that Rule vacated. As a result, any injunctions are now nullities with no legal effect. To the extent that leases were issued within GMUG roadless areas after implementation of the RACR, those leases are subject to protections of the 2001 Rule. And to the extent that the leases allow activities that would violate the RACR, they were improperly issued and violate the law. Improperly issued leases are subject to cancellation.

Second, protections of the RACR and any other prohibitions on surface use that existed at the time the CRR was implemented were carried forward by the CRR pursuant to 36 CFR 294.46(b). The GMUG must clearly state that fact, instead of suggesting that the RACR was superseded. One way for the Forest Service to clarify this would be to issue a notice to all leaseholders with roadless acreage indicating that the legal effect of the RACR is clear, and that the Rule has been effective since implementation. The agency should also clearly state that it will not approve any proposed activities that would violate the RACR.

In addition to clarifying the effect of the RACR and CRR, the GMUG should work to proactively ensure protection of roadless areas in several ways that the Draft Assessment fails to consider. First, when the

[14] 36 C.F.R. §§ 219.3, 219.6(a)(3).
[15] Draft Assessment at 8.

GMUG revises its Oil and Gas Leasing Availability Decision, it should consider closing roadless areas to oil and gas development completely, especially upper tier roadless areas. At the very least, the agency should impose NSOs to protect all roadless areas; (this can be done in the plan revision as well). Second, the GMUG should consider allowing existing and undeveloped leases to expire, rather than granting extensions, so that if there is still interest in developing those lands, such development proceeds under updated terms, i.e., a new lease with protective stipulations that comply with the CRR.

Current and Projected Potential Development Activity

The Draft Assessment states: "During the Forest Plan Revision EIS process, we will obtain a new RFD Scenario consistent with BLM's current efforts for the GMUG in order to inform the forest's effects analysis and allow us to better predict future trends."[16] Thank you for committing to obtaining a new Reasonably Foreseeable Development (RFD) Scenario as part of the revision process. According to recent projections from the Energy Information Administration (EIA), oil and gas markets will not be recovering to the near historic levels of production experienced from 2008 to 2014 any time soon.[17] The change in market conditions highlights the importance of reevaluation of the RFD scenario, and in particular estimations of the development potential on the GMUG.

The assumptions underlying past development potential projections and RFD scenarios have changed dramatically, and the GMUG needs to reevaluate development potential and the RFD based on this new information. A new RFD should change the assumptions used in the development of alternatives, in analyzing environmental consequences, and in projecting the impact of oil and gas development in terms of jobs and revenues. Wildlife, agriculture, and recreation are economic drivers in the planning area, and these values should not suffer because of outdated, overinflated oil and gas estimates. More realistic and conservative oil and gas development projections that would come from a reevaluation of the RFD in light of new data could drastically alter the decisions made in the revision process.

The Draft Assessment states:

> As of September 2016, there were approximately 106,727 acres of the GMUG under lease for oil and gas development on the Paonia Ranger District and Grand Mesa, with an additional 7,592 acres pending leasing actions in BLM's system. An additional 146,072 acres have been nominated for lease across the GMUG; *however, industry interest in those parcels may have waned as oil and gas prices have remained low*.[18]

The above statement highlights an important problem on the GMUG, one that should be assessed and addressed by the agency. This is the problem of industry locking up acreage in leases without any intention to develop.

Below is a list of just some of the past, present, and reasonably foreseeable projects and proposals on or adjacent to GMUG lands:

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[16] At 12.
[17] See https://www.eia.gov/outlooks/aeo/data/browser/#/?id=1-AEO2017.
[18] At 11 (emphasis added).

- North Fork Mancos Master Development Plan (NFMMDP) Proposal - The project would occur within an area encompassing 34,906 acres of public and private lands. This includes 25,790 acres administered by the Forest Service and 468 acres administered by the BLM. Long-term operational life of the project is estimated at 30 years, during which time up to 700 billion cubic feet of natural gas is expected to be produced from up to 35 wells.
- 150-Well Bull Mountain MDP - The Bull Mountain Unit Master Development Plan involves the exploration and development of up to 146 natural gas wells, 4 water disposal wells, and associated infrastructure on federal and private mineral leases in the Upper North Fork. While not on the GMUG, the unit abuts forest lands.
- Petrox 50-Well Proposal at Pilot Knob - Petrox is proposing up to 50 wells in a 6,400-acre project area that largely overlies the Pilot Knob Roadless Area north of Somerset.
- Fram 108-Well Proposal - BLM approved a proposal for 108 oil wells to be located downstream from the Bull Mountain Unit in the Whitewater Unit.
- Gunnison Energy 60- to 400-Well Master Plan - Gunnison Energy is proposing large-scale development north of Somerset and west of the Bull Mountain Unit for up to potentially 400 wells.
- Spadafora Waste Disposal Pits - The Spadafora Water Storage Facility was approved by the Gunnison County Planning Commission on March 6, 2015. Three water storage pits, each with a pump station and a volume of about 9,240,000 gallons, will sit on roughly 19 acres and will store and recycle produced water for drilling and gas well operations.
- Pilots Knob APD - SG has proposed an APD (12-89-30#1) in the Pilots Knob CRA on lease COC 64169.

Energy-Related Infrastructure

The Draft Assessment's discussion of energy related infrastructure, and pipelines specifically, neglects to address the wide range of potential impacts posed by pipelines. Class 1 rural gathering lines are essentially unregulated. Nationally, pipelines regulated by the Pipeline and Hazardous Material Safety Administration (PHMSA) experience 1.7 pipeline "incidents" per day.[19] Operators of class 1 rural gathering lines are only required to report incidents to COPUC or the COGCC when the spill requires an evacuation or road closure.[20] Based on those facts, it is impossible to know with any certainty the rate of any incremental failures that do not meet the COPUC's reporting requirements along the hundreds of miles of unregulated pipelines that traverse the GMUG. The GMUG should take steps to assess the potential for unreported incidents and their cumulative impacts on air, water, and soil quality along the lengths of the many miles of pipelines currently existing and proposed in the forest area.

The Draft Assessment states that four >12" gas transmission lines cross the GMUG, and numerous <12" gathering lines, and appears to see maintenance of Rights of Way as the chief issue surrounding these pipelines.[21] However, research conducted on behalf of the Gas Research Institute has created a model for sizing High Consequence Areas associated with natural gas pipelines that must be considered.

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[19] *Updated Pipeline Incident Analysis*, Matt Kelso, FracTracker Alliance, November 23, 2016. Available at https://www.fractracker.org/2016/11/updated-pipeline-incidents/.

[20] 4 CCR 723-4-4911(b).

[21] Draft Assessment p. 17.

According to the model, a pipeline with a diameter of 12", operating at 1440 PSIG, would have a potential High Consequence Area a radius of 311 feet along the entire length of the pipeline.[22] That High Consequence Area includes potential destructive impacts to people and structures, but does not address the potential for wildfire. As the ROWs are reclaimed and reseeded, there appears to be increased potential for wildfire ignition. More research is needed to assess the risk of increased wildfire ignition potential along pipeline corridors for both transmission lines and unregulated gathering lines.

As stated in the Draft Assessment, the GMUG is crisscrossed by many miles of pipelines. We would like to see the Forest Service take steps to include the potential impact zones of oil and gas-related pipelines in the Plan.

Nonrenewable Energy - Coal

The Draft Assessment's discussion of coal resources and impacts on the GMUG provides a basic background on the resource and its issues, but lacks vital information and contains several inaccuracies. Much like the section of the Draft Assessment devoted to oil and gas, the section on coal needs to explicitly note and consider the relationship between coal development on the GMUG and climate change, something that it has not done. The *Climate Science Special Report*, released by 13 federal agencies in November, "concludes, based on extensive evidence, that it is extremely likely that human activities, especially emissions of greenhouse gases, are the dominant cause of the observed warming since the mid-20th century."[23]

As an initial matter, the undersigned request that the Assessment disclose the volume of coal production likely to occur on *private lands* as a result of mining on public lands. Mining public coal on the GMUG supports the mining of private coal on other lands, and this needs to be acknowledged and discussed in the Assessment.

Second, the numbers for coal production in the Draft Assessment (Table 2, Page 16) appear to be low. The West Elk Coal Mine alone produces about four to five million tons of coal per year. Given this, it is unclear why the Draft Assessment's highest number is under three million tons. Please correct or explain this discrepancy.

We provide below a table showing production and employment numbers from the Somerset Coal Field and Colorado.

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[22] *A Model for Sizing High Consequence Areas Associated with Natural Gas Pipelines*, Mark J. Stevens, Gas Research Institute, October 2000 (http://www.pipelinesafetytrust.com/docs/C-FerCircle.pdf) p. iii

[23] See Attachment 4. Wuebbles, D.J., D.W. Fahey, K.A. Hibbard, B. DeAngelo, S. Doherty, K. Hayhoe, R. Horton, J.P. Kossin, P.C. Taylor, A.M. Waple, and C.P. Weaver, 2017: *Executive summary. In: Climate Science Special Report: Fourth National Climate Assessment, Volume I* [Wuebbles, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 12-34. Available at https://science2017.globalchange.gov/.

Coal Production and Employment, Somerset Coal Field and Colorado, 2010 and 2016

	Coal production, Somerset coal field mines (million tons)	Coal production, Colorado (million tons)	% of total Colorado coal production from Somerset coal mines	Coal employment, Somerset coal field*	Coal employment, Colorado	% of total Colorado coal employment from Somerset coal mines
2010	9.96	25.21	39.5%	923	2,041	45.2%
2016	4.19	12.8	32.7%	223	1,086	20.5%

^ All coal production and employment figures derived from Colorado Division of Reclamation, Mining and Safety website (http://mining.state.co.us/Reports/Reports/Pages/Coal.aspx).

* Employment figures are calculated from the last reported date of the period: Dec. 2010 for 2010, and December 2016 for 2016.

In addition to providing an accurate portrayal of coal production from the GMUG, it is also important that the Assessment disclose that significant volumes of North Fork coal will do nothing to address America's energy demand because the coal will be shipped overseas. Arch's recent quarterly reports reveal its predominately overseas market, negating any contribution to local or national energy demand.[24]

To understand the nature of greenhouse gas impacts on the environment, the GMUG must first quantify the *amount* of emissions that result from activities, like coal mining, on the forest. Like oil and gas development, coal mined on the GMUG is a significant source of climate change pollution, both from burning the coal and from the staggering amounts of methane released in the mining process. Another factor that adds to the problem is the use of GMUG-mined coal to allow the development and burning of non-compliant coal from other locations. The Draft Assessment states: "Coal from the North Fork Valley is often used to blend with lower quality coal to ensure power plants meet emission standards."[25] The Assessment should acknowledge that this practice prolongs reliance on coal as an energy source.

The undersigned want to highlight the importance of utilizing the best available science in the GMUG's assessment of coal and coal impacts. NEPA mandates that EISs contain "high quality" information and "[a]ccurate scientific analysis" sufficient to "help public officials make decisions that are based on understanding environmental consequences."[26] Agencies must affirmatively collect new scientific and technical information to support their hard look at impacts where "available information" is stale.[27] We ask that the Forest Service better identify and utilize sources of best available science related to this topic, something it has not done in the Draft Assessment.

In addition to climate change impacts, coal development on the GMUG has numerous other effects that should be identified and addressed by the agency. Impacts include groundwater depletion, delayed

[24] http://news.archcoal.com/phoenix.zhtml?c=107109&p=quarterlyearnings
[25] Assessment at 16.
[26] 40 C.F.R. § 1500.1(b), (c).
[27] See *Northern Plains Resource Council v. Surface Transportation Bd.* 668 F.3d 1067, 1085---87 (9th Cir. 2011).

reclamation and corresponding impacts to other land uses, air quality impacts, subsidence, impacts to wildlife, and coal transportation impacts.

Coal Mine Methane and Methane Capture

Climate scientists now recognize that avoiding catastrophic climate change will require both a long-term strategy to reduce carbon dioxide emissions and near-term action to mitigate methane and similar "accelerants" of climate change. Existing coal mine methane capture operations are economical and feasible, and should be pursued by the GMUG. In a 2008 op-ed in the Denver Post, Charlie Richmond, former Forest Service supervisor for the GMUG, promised that the agency would continue to "lead the charge" on methane use. "Finding just the right solution for utilization of methane, thereby reducing greenhouse gas emissions, will not happen overnight but is on the nearby horizon," Richmond wrote.[28] As early as 2009, methane recovery projects were already operating at some of the gassiest mines in the United States, and EPA concluded that there were numerous additional gassy mines where methane recovery projects could be developed.

Through its ventilation system and through methane drainage wells (MDWs), the West Elk Mine for the period 2011-2016 emitted a total of nearly 4.5 million tons of CO2 equivalent (CO2e) of methane pollution, making West Elk the single largest industrial methane pollution source in the State of Colorado. The Assessment should state this.

Methane pollution (in tons CO2e) from industrial sources in Colorado where the source emitted more than 400,000 tons CO2e of methane in any year between 2011 and 2016

	West Elk Mine	**Bowie Mine No. 2**	**Elk Creek Mine**
2016	402,876	271,827	*(none reported)*
2015	485,112	514,703	20
2014	651,233	417,374	19,945
2013	752,128	293,343	108,599
2012	922,434	331,656	1,151,883
2011	1,235,400	227,588	1,336,633
Total:	**4,449,183**	**2,056,492**	**2,617,080**

Source: EPA, Facility Level Information on Greenhouse gases Tool, available at https://ghgdata.epa.gov/ghgp/main.do.

GMUG plan revision presents an opportunity for the Forest Service to consider Forest-wide standards with stipulations for coal leasing that limit uncontrolled methane venting.

IV. Draft Assessment Report Chapter 3 - Sustainability

The contributions, both positive and negative, of energy and mineral activity to social, economic and ecological sustainability must be assessed. In light of climate change, increased user pressure and a rapidly growing demographic in Colorado, it is critical that the GMUG evaluate the sustainability of development. The FSH states that "[t]he assessment should identify and evaluate available information about the contribution of renewable and nonrenewable energy and mineral resources to social and

[28] See Attachment 5.

economic sustainability."[29] The 2012 planning rule requires that plan components "maintain or restore the structure, function, composition, and connectivity" of terrestrial, riparian, and aquatic ecosystems, taking into account climate change stressors and "opportunities for landscape scale restoration," and "provide for the diversity of plant and animal communities."[30] Examples of stressors include climate change, invasive species impacts, loss of spatial connectivity, and disruption of natural disturbance regimes.

Concerning "Environmental Sustainability," the Draft Assessment states: "Greenhouse gas emissions are being considered in analyses, however as of 2017, these are not regulated. Specific technologies have emerged to reduce greenhouse gas emissions particularly with regard to oil and gas drilling and production." There are also specific technologies to reduce greenhouse emissions from coal mine operations which the assessment should—but does not—discuss. Raven Ridge Resources, Inc. recently analyzed methane emissions data from the West Elk coal mine and concluded it would be safe, technologically achievable, and economically feasible to flare the mine's methane that is currently emitted through West Elk's methane drainage wells.[31] Raven Ridge's proposal would use an updated version of a methane flare already used at the nearby Oxbow mine, would utilize West Elk's planned methane drainage wells, and would not require new roads. The Raven Ridge report shows that there are no financial or practical hurdles to methane flaring at West Elk. Using available enclosed flare technology, West Elk would likely be able to flare 6.7 billion cubic feet of methane over the next ten years just from the mine's methane drainage wells – reducing its greenhouse gas emissions by 2.64 million tons of CO2e.

Because ecological integrity is so fundamental to the 2012 Planning Rule, we recommend that clear direction be developed in the revised Forest Plan to address how ecological integrity will be consistently maintained in light of increasing energy demand on the GMUG. Mineral extraction comes with a high pollution and natural resources price tag. Plan components should be developed regarding the protection of water quality, at-risk species, clean-up, and bonded site restoration.

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 . . . .[32]

Without mitigation measures, a national forest that is affected by runaway climate change is <u>not</u> ecologically sustainable. Nor is it socially or economically sustainable.

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[29] References to a variety of internal and external sources related to renewable and nonrenewable energy resources, mineral resources and geologic hazards that may provide relevant information for the assessment can be found at: http://www.fs.fed.us/emc/nfma/TIPS/directives/ch10energy.shtml. See specifically FSH 1909.12 section 13.5.

[30] 219.8(a)(1)(iv) and 219.9.

[31] See Attachment 6.

[32] 36 CFR 219.8(a)(1).

Regarding "Economic Sustainability," the Draft Assessment largely glosses over the unsustainable nature of prioritizing fossil fuel development. In addition, royalty rate reductions granted by the Department of Interior for the West Elk Coal Mine reduce royalty payments to local communities.

Regarding "Social Sustainability," the Assessment needs to identify recreation conflicts with mineral and energy development.

V. Draft Assessment Report Chapter 4 – Current Forest Plan and Its Context within the Broader Landscape

Chapter 4 identifies several "Issues in the Broader Landscape." The last issue is identified as:

> Climate change is a concern particularly with regard to oil, gas and coal development. With these mineral resources there is a concern about production releases of methane and other hydrocarbons and resultant burning or use of fossil fuels that contribute greenhouse gases that further contribute to climate change. The current Forest Plan (III-85) cites compliance with State and Federal air quality standards and references FSM 2120, and, therefore, remains relevant. While BLM has established direction in 2016-2017 for prevention of waste for oil and gas production facilities, until significance criteria are established for greenhouse gases it is likely the forest will continue to see comments and challenges to minerals development proposals based on the concept. *While specific effects on global climate change cannot be attributed to the project or even forest level, climate effects on the forest such as water availability (often needed for drilling activities) and effects on forest infrastructure (roads, culverts, etc.) may in turn impact minerals or energy development*.

This is incorrect, and should be changed in the Assessment. As discussed above in our comments, the social cost of carbon and methane does in fact permit the Forest Service to determine and disclose the climate impacts of oil, gas, and coal proposals.

VI. Draft Assessment Report Chapter 5 – Potential Need for Plan Changes

The assessment in many ways drives the need for changes to the existing forest plan. This necessitates a developed and robust discussion. Unfortunately, this section of the Draft Assessment is sparse and general, devoting only about one page to this important topic.

The document states: "Consider recognizing valid, existing mineral and leaser rights, irrespective of any new overlapping plan component, management area, etc. in the revised Forest Plan." What does this mean? Why is it identified first in the list of potential need for plan changes?

Further down it states: "Consider identifying non-mineral resource conditions that could warrant future specific lease stipulations or licensing conditions. For example, this might include areas where conflicting uses may occur that have not already been withdrawn from mineral entry or areas that have not previously been recorded for a sensitive plant or animal." We have attached maps as Appendix 2 that show conflicts between oil and gas development and sensitive wildlife habitat.

This section also states: "Consider clarifying management of resources without prior existing rights in roadless areas". Assessment at 32. The cited example concerns oil and gas leasing in roadless areas. We agree the Forest Service should clarify this – by prohibiting any leasing in roadless areas. That way, no prospective lease holder could complain that his/her right to develop a lease in a roadless area was thwarted.

We recommend that you add the following needs for change:

- There is a need to consider NSO for all designations, including SIAs and CRAs, to prevent unnecessary damages to areas with special values and resources.
- There is a need to identify lands that are not suitable for surface development associated with mineral leasing.

VII. Conclusion

The GMUG has an opportunity in forest plan revision to make great strides in conservation and sustainable use of the forest. However, the long term viability of these strategies, programs, and goals could be severely impacted by nonrenewable mineral and energy development. It is therefore important that the GMUG carefully and comprehensively document the impacts of fossil fuel development on the climate, wildlife, air, water, recreation, scenery and other resources that make the GMUG a special place for Colorado and the nation.

Thank you for your consideration of these comments.

Sincerely,

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Attachments:
1 – CPW Comments
2 – GIS Maps
3 – Best Available Science
4 – Federal Climate Science Report
5 – Charlie Richmond Op-Ed
6 – Raven Ridge Methane Report