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Submitted via <https://cara.ecosystem-management.org/Public//CommentInput?Project=53825>

Re: Comments on Northern Extension Pipeline and Associated Fruitland Coal Gas Horizontal Drilling Project Draft EA, #53825

Ranger Simino:

On behalf of the Center for Biological Diversity (the Center), and its more than one million members and online activists, thank you for the opportunity to provide these comments on the preliminary environmental assessment (EA) on the on Northern Extension Pipeline and Associated Fruitland Coal Gas Horizontal Drilling Project. The Center is a 501(c)(3) nonprofit organization based in Tucson, Arizona, with offices across the country including in Crested Butte and Denver, Colorado. The Center is dedicated to protecting and restoring imperiled species and natural ecosystems. The Center uses science, policy, and law to advocate for the conservation and recovery of species on the brink of extinction and the habitats they need to survive. The Center has advocated and continues to actively advocate for increased protections for species and their habitats across Colorado.

This comment supplements a letter from San Juan Citizens Alliance and the Center, submitted today, commenting on the Preliminary EA. In addition to the issues raised in that letter, the Center writes separately to elaborate on our concerns related to the project's impacts on climate change. The agency's failure to address the project's life cycle impacts on climate change violates NEPA.

Oil and gas operations are a major cause of climate change; this is due to emissions from the operations themselves, and emissions from the combustion of the oil and gas produced. Under NEPA's requirement to analyze *indirect* as well as direct and cumulative impacts, the Forest Service's environmental review must therefore include not only emissions from drilling operations, but the full "lifecycle" emissions from the combustion (and leakage) of the natural gas produced.¹

¹ See *High Country Conservation Advocates v. United States Forest Serv.*, 52 F. Supp. 3d 1174 (D. Colo. 2014); *Dine Citizens Against Ruining Our Env't v. United States Office of Surface Mining Reclamation & Enft*, 82 F. Supp. 3d 1201 (D. Colo. 2015); *WildEarth Guardians v. United States Office of Surface Mining, Reclamation & Enft*, 104 F. Supp. 3d 1208, 1230 (D.

I. THE EA FAILS TO DISCLOSE THE CLIMATE IMPACTS OF THE NORTH EXTENSION PIPELINE PROJECT.

A. NEPA Requires the Forest Service Quantify Potential Life-Cycle Emissions Related to the Proposed Action and Assign Significance to the Emissions Impact on Climate Change.

Pursuant to NEPA, an agency must “consider every significant aspect of the environmental impact of a proposed action.” *Baltimore Gas & Elec. Co. v. Natural Resources Defense Council*, 462 U.S. 87, 107 (1983) (quotations and citation omitted). This includes the disclosure of direct, indirect, and cumulative impacts of its actions, including climate change impacts and emissions. 40 C.F.R. § 1508.25(c). The need to evaluate such impacts is bolstered by the fact that, as the U.S. Supreme Court has recognized, “[t]he harms associated with climate change are serious and well recognized,” and environmental changes caused by climate change “have already inflicted significant harms” to many resources around the globe. *Massachusetts v. EPA*, 549 U.S. 497, 521 (2007); *see also id.* at 525 (recognizing “the enormity of the potential consequences associated with manmade climate change.”). Failing to perform such analysis undermines the agency’s decision-making process and the assumptions made.

As a result, courts have repeatedly held that agencies must provide a meaningful consideration of greenhouse gas emissions (GHGs) to comply with NEPA. *See, e.g., Ctr. for Biological Diversity v. Nat’l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1217 (9th Cir. 2008). As the Ninth Circuit held, in the context of fuel economy standard rules:

The impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct. Any given rule setting a CAFE standard might have an “individually minor” effect on the environment, but these rules are “collectively significant actions taking place over a period of time.”

Ctr. for Biological Diversity, 538 F.3d at 1216 (9th Cir. 2008) (quoting 40 C.F.R. § 1508.7).

The courts have ruled that federal agencies consider indirect GHG emissions resulting from agency policy, regulatory, and leasing decisions. For example, agencies cannot ignore the indirect

Colo. 2015); *Wildearth Guardians v. U.S. Office of Surface Mining, Reclamation & Enft*, No. CV 14-103-BLG-SPW, 2015 WL 6442724 (D. Mont. Oct. 23, 2015) report and recommendation adopted in part, rejected in part sub nom. *Guardians v. U.S. Office of Surface Mining, Reclamation & Enft*, No. CV 14-103-BLG-SPW, 2016 WL 259285 (D. Mont. Jan. 21, 2016); *see also* Council on Environmental Quality, Revised Draft Guidance for Greenhouse Gas Emissions and Climate Change Impacts, at 11 (Dec. 18, 2014), *available at* <https://www.whitehouse.gov/administration/eop/ceq/initiatives/nepa/ghg-guidance> (“emissions from activities that have a reasonably close causal relationship to the Federal action, such as those that may occur as a predicate for the agency action (often referred to as upstream emissions) and as a consequence of the agency action (often referred to as downstream emissions) should be accounted for in the NEPA analysis.”

air quality and climate change impact of decisions that would open up access to coal reserves. See *Mid States Coal. For Progress v. Surface Transp. Bd.*, 345 F.3d 520, 532, 550 (8th Cir. 2003); *High Country Conservation Advocates v. U.S. Forest Serv.*, 52 F. Supp. 3d 1174, 1197-98 (D. Colo. 2014).

NEPA requires “reasonable forecasting,” which includes the consideration of “reasonably foreseeable future actions . . . even if they are not specific proposals” *N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1079 (9th Cir. 2011) (citation omitted). That an agency cannot “accurately” calculate the total emissions expected from full development is not a rational basis for declining to undertake any analysis. “Because speculation is . . . implicit in NEPA,” agencies may not “shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as crystal ball inquiry.” *Id.* In response to this mandate, federal agencies have on a number of occasions quantified GHG emissions from oil and gas leases as well as from coal leases.²

The final CEQ *Guidance on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA review* is dispositive on the issue of federal agency review of greenhouse gas emissions as foreseeable direct and indirect effects of the proposed action. 81 Fed. Reg. 51,866 (Aug. 5, 2016). The CEQ guidance provides clear direction for the Forest Service to conduct a lifecycle greenhouse gas analysis because the modeling and tools to conduct this type of analysis are readily available to the agency:

If the direct and indirect GHG emissions can be quantified based on available information, including reasonable projections and assumptions, agencies should consider and disclose the reasonably foreseeable direct and indirect emissions when analyzing the direct and indirect effects of the proposed action. Agencies should disclose the information and any assumptions used in the analysis and explain any uncertainties. To compare a project’s estimated direct and indirect emissions with GHG emissions from the no-action alternative, agencies should draw on existing, timely, objective, and authoritative analyses, such as those by the Energy Information Administration, the Federal Energy Management Program, or Office of Fossil Energy of the Department of Energy. In the absence of such analyses, agencies should use other available information.

81 Fed. Reg. 51,866, https://ceq.doe.gov/docs/ceq-regulations-and-guidance/nepa_final_ghg_guidance.pdf at 16 (Aug. 5, 2016)(citations omitted).

² See U.S. Bureau of Land Management, Environmental Assessment for West Desert District, Fillmore Field Office, August 2015 Oil and Gas Lease Sale, pp. 57-58 (Dec. 2015); U.S. Bureau of Land Management, Greenhouse Gases Estimate (West Desert District Nov 2015 Lease Sale), http://www.blm.gov/style/medialib/blm/ut/natural_resources/airQuality.Par.38; *High Country Conservation Advocates v. United States Forest Serv.*, 52 F. Supp. 3d 1174, 1196 (D. Colo. 2014) (decision to forgo calculating mines’ reasonably foreseeable GHG emissions for a decision to open an area to coal mining was arbitrary “in light of the agencies’ apparent ability to perform such calculations”).

CEQ's guidance even provides an example of where a lifecycle analysis is appropriate in a leasing context at footnote 42:

The indirect effects of such an action that are reasonably foreseeable at the time would vary with the circumstances of the proposed action. For actions such as a Federal lease sale of coal for energy production, the impacts associated with the end-use of the fossil fuel being extracted would be the reasonably foreseeable combustion of that coal.

Id. Although the 2016 CEQ guidance was “withdrawn for further consideration,” 82 Fed. Reg. 16,576 (April 5, 2017), the underlying requirement to consider climate change impacts under NEPA, including indirect and cumulative combustion impacts foreseeably resulting from fossil fuels leasing decisions, has not changed. *See S. Fork Band*, 588 F.3d at 725; *Ctr. for Biological Diversity*, 538 F.3d at 1214-15; *Mid States Coalition for Progress*, 345 F.3d at 550; *WildEarth Guardians*, 104 F. Supp. 3d at 1230; *Dine Citizens Against Ruining Our Env't*, 82 F. Supp. 3d at 1201; *High Country Conservation Advocates*, 52 F. Supp. 3d at 1174.

In addition, “[i]n a cumulative impact analysis, an agency must take a ‘hard look’ at all actions.” *Te-Moak Tribe of W. Shoshone of Nev. v. U.S. Dep’t of Interior*, 608 F.3d 592, 603 (9th Cir. 2010). An agency cannot satisfy this requirement under NEPA with “[g]eneral statements about ‘possible effects’ and ‘some risk’” unless the agency provides “a justification regarding why more definitive information could not be provided.” *Ocean Advocates v. U.S. Army Corps of Eng’rs*, 402 F.3d 846, 868 (9th Cir. 2005) (quoting *Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372, 1379-80 (9th Cir. 1998)).

B. The Forest Service’s Analysis of Climate Emissions.

The proposed action would result in the emission of GHGs from a number of sources. The project involves “the construction of the 8.6-mile Northern Extension Pipeline on SJNF, state, and private lands; the construction of the FGU #6-1 gas well, well pad, and access road on SJNF land; and the recompletion of the existing Federal #25A-1 and the USA-Amoco Com AC #1 CBM wells on SJNF.” San Juan National Forest, Northern Extension Pipeline and Associated Fruitland Coal Gas Horizontal Drilling Project Draft EA (April 2020) (“Pipeline EA”) at 5. Construction, operation, and management of the three wells and pipelines will involve GHG emissions, as will foreseeable leaks from the pipeline. Transport of the gas to distant markets will also involve GHG emissions. Combustion of the natural gas itself – the very reason for drilling the wells and building the pipeline – will also emit GHGs. All of these emissions will have impacts on climate change.

The Pipeline EA’s entire discussion of climate impacts is below.

The proposed project would result in greenhouse gas (GHG) emissions of CH₄, CO₂, and N₂O during the development and production phases (Carter Lake 2019). The anticipated emissions are included in the emissions inventory provided as Appendix A of the technical support document. The GHG emissions would occur from drilling and well site equipment, vehicles traveling to and from the site, and downstream combustion of the CBM by end users.

Quantifying estimated GHG emissions and comparing those emissions to state or national emissions is the best tool available for understanding the project's potential contribution to climate change. No analysis tools exist to describe the project's incremental contributions to common environmental metrics associated with increasing concentrations of atmospheric GHGs, such as, potential global or local warming, drought, sea level rise or other environmental impact. The problem is by nature a cumulative issue, and any downscaling of the projected global climate change effects to project scales (based on emissions scaling) does not provide meaningful analysis due to the fact that no significance levels have been defined. As identified in the emissions inventory (Carter Lake 2019), the project would emit GHGs, and would thereby contribute to the accumulation of atmospheric GHGs, and potential climate change effects. However, based on the project's emissions relative to overall GHG emissions in the region, the project's contribution to atmospheric GHGs, although additive, would be a tiny fraction and nearly unnoticeable.

Pipeline EA at 23-24. The "Appendix A" referred to is a series of tables that estimates GHG emissions for the following activities: Well Pad Heavy Equipment Tailpipe Emissions; Drill Rig Emissions; Separator Heater Emissions; AL Engines; and Workover Rigs. See http://www.fs.usda.gov/nfs/11558/www/nepa/109131_FSPLT3_5298586.pdf at 4, 8, 10, 11, 13 (last viewed May 22, 2020).

However, the Forest Service's analysis fails to take the hard look at climate impacts in a number of respects.

First, neither the EA nor the Carter Lake emissions inventory provides an estimate of *total volume* of GHG emissions from the construction and operation of the pipeline and three wells, nor does it estimate total annual emissions. It contains five tables with estimates, but never sums up the total GHG emissions from the sources it assesses, although it clearly could do so, and although doing so would assist both the public in the decisionmaker in understanding the climate impacts.

Second, while the Pipeline EA acknowledges GHG emissions would result from "downstream combustion of the CBM," Pipeline EA at 23, neither the EA nor the Appendix A tables purport to predict those combustion impacts, thus failing to take the hard look at the downstream and life-cycle impacts that NEPA requires. The Pipeline EA contains no estimates as to the volume of gas that will be produced by the new well, or the two re-drilled wells, although such an estimate is critical to understanding the GHG emissions of the proposed action, and although the drilling company itself has almost certainly predicted the volume of gas likely to be produced because such figures are critical to the company deciding whether the project will result in financial profit.

Third, while the Pipeline EA states that "[q]uantifying estimated GHG emissions and comparing those emissions to state or national emissions is the best tool available for understanding the project's potential contribution to climate change," Pipeline EA at 23, the EA fails to do so. We do not agree that comparing incremental contributions to state or national emissions is useful, given that every contribution to climate change brings us closer to catastrophic results in the

coming decades, the Forest Service's failure to undertake even the analysis that it says is the "best tool" is arbitrary and capricious.

Fourth, the EA's statement that "[n]o analysis tools exist to describe the project's incremental contributions to common environmental metrics associated with increasing concentrations of atmospheric GHGs, such as, potential global or local warming, drought, sea level rise or other environmental impact," Pipeline EA at 23, that statement is false. As described in detail below, an interagency working group developed the "social cost of carbon" specifically to assist the public and decisionmakers in understanding the nature and scale of small, incremental additions of climate pollution, and the costs those would have from sea level rise, drought, and other climate impacts.

Fifth, the EA states that the climate "problem is by nature a cumulative issue, and any downscaling of the projected global climate change effects to project scales (based on emissions scaling) does not provide meaningful analysis due to the fact that no significance levels have been defined." Pipeline EA at 23-24. If no significance levels have been defined, it has hard to understand how the Forest Service can conclude that this project will have "no significant impact," as the agency apparently intends to do, because every contribution could be significant. In fact, it is increasingly clear that every addition of climate pollution to the atmosphere is significant because every contribution takes humanity one step closer to irreversible impacts that threaten the economy, public health, and our way of life. And if the climate "problem is by nature a cumulative issue," that simply means that the Forest Service must disclose the potential *cumulative* effects of the Pipeline EA's GHG emissions when taken together with other climate polluting projects approved by the Forest Service and private polluters.

Finally, the EA states that "based on the project's emissions relative to overall GHG emissions in the region, the project's contribution to atmospheric GHGs, although additive, would be a tiny fraction and nearly unnoticeable." Pipeline EA at 24. The EA fails to provide any rational basis for this conclusion because neither the EA nor associated documents provide to the decisionmaker or the public: (1) the total project emissions, including downstream transportation and combustion emissions; or (2) regional GHG emissions. Nor does the EA bother to define what "region" it is referring to. The EA's climate analysis is thus the very opposite of a hard look; it is a series of assumptions without factual or legal support.

While the Pipeline EA relies on or tiers to two other analyses – the 2006 Northern San Juan Basin CBM Final Environmental Impact Statement and the 2013 SJNF Land and Resource Management Plan (Forest Plan) Final EIS – neither of those two documents contains a climate analysis that addresses the transportation, life-cycle or downstream emissions of the Pipeline project. See Pipeline EA at 1 (tiering to the two EISs).

The Northern San Juan Basin Final EIS's entire analysis of the climate impacts reads as follows: "No significant, adverse impacts to climate are anticipated from implementation of the proposed action or alternatives." Northern San Juan Basin Final EIS (2006) at 3-530. This EIS thus contains no climate analysis for the Pipeline EA to rely on.

The San Juan National Forest Plan Final EIS contains more information, but it still fails to address all foreseeable transportation, life-cycle and downstream emissions. For example, the Forest Plan FEIS states:

The amount of CO₂ and CH₄ emissions associated with well development on new federal leases for the RFD scenario were estimated for well drilling, well completion, and gas production.... Estimates of greenhouse gas emissions for oil and gas activities were calculated using assumptions from EPA AP-42 tables (EPA 1995) for different engines used for oil and gas drilling and production.

San Juan National Forest Plan FEIS (2013) at 364. The Forest Plan Final EIS contains estimates of GHGs from oil and gas *production* on an annual basis based on a reasonably foreseeable development scenario. *See id.* at 364-65. This “analysis” merely quantifies the volume of GHG emissions from four sources – drill rig engines, hydraulic fracturing engines, compressor engines, and well pad separator/heaters. *Id.* at 365. This EIS fails to disclose the climate-related *impacts* of these emissions, fails to address life-cycle, downstream emissions, and fails to include emissions related to transportation of materials and workers to pad and other sites. As a result, the Forest Service cannot rely on either the San Juan Forest Plan Final EIS or the Northern San Juan Basin Final EIS to comply with NEPA as it relates to either GHG emissions or the impacts of those emissions.

C. The Forest Service’s Analysis of Climate Emissions Violates NEPA.

Federal caselaw, agency expert guidance, and scientific studies concerning climate change further bolster the conclusion that the Forest Service’s climate analysis violates NEPA.

It is reasonably foreseeable that the Pipeline Project will induce natural gas production, transmission and ultimate end-user climate change impacts. The effects of this induced production must be considered in an EA, and in fact, necessitate a more robust review under an EIS. *See, e.g., N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1081-82 (9th Cir. 2011) (finding that NEPA review must consider induced coal production at mines, which was a reasonably foreseeable effect of a project to expand a railway line that would carry coal, especially where company proposing the railway line anticipated induced coal production in justifying its proposal); *Mid States Coal. for Progress v. Surface Transp. Bd.*, 345 F.3d 520, 549-50 (8th Cir. 2003) (environmental effects of increased coal consumption due to construction of a new rail line to reach coal mines was reasonably foreseeable and required evaluation under NEPA). The development drilling or re-drilling of three wells and its transport through the proposed pipeline will result in combustion of the extracted product. As courts have held in similar contexts, combustion emissions resulting from opening up a new area to development are “reasonably foreseeable,” and therefore a “proximate cause” of the leasing. *See Mid States Coal. for Progress v. Surface Transp. Bd.*, 345 F.3d 520, 549 (8th Cir. 2003) (holding that agency violated NEPA when it failed to disclose and analyze the future coal combustion impacts associated with the agency’s approval of a railroad line that allowed access to coal deposits); *High Country Conserv’n Advocates v. United States Forest Serv.*, 52 F. Supp. 3d 1174, 1197 (D. Colo. 2014) (same with respect to GHG emissions resulting from approval of opening an area to coal mining). Here, at the development stage, those impacts are even more direct and foreseeable.

The Forest Service cannot ignore the downstream impacts of climate combustion on the grounds that if the gas did not come from the HD Mountains, it would come from somewhere else. In both *Mid States Coalition* and *High Country*, the courts rejected the government's rationale that increased emissions from combustion of coal was not reasonably foreseeable because the same amount of coal would be burned without opening up the areas at issue to new coal mining. Both courts found this argument "illogical at best" and noted that "increased availability of inexpensive coal will at the very least make coal a more attractive option to future entrants into the utilities market when compared with other potential fuel sources, such as nuclear power, solar power, or natural gas." See *High Country*, 52 F. Supp. 3d at 1197 (quoting *Mid States Coalition*, 345 F.3d at 549). "On similar grounds, the development of new wells over the proposed areas for lease will increase the supply of [oil and natural gas]. At some point this additional supply will impact the demand for [oil and gas] relative to other fuel sources, and [these minerals] that otherwise would have been left in the ground will be burned. This reasonably foreseeable effect must be analyzed, even if the precise extent of the effect is less certain." *Id.* See also *WildEarth Guardians v. United States Office of Surface Mining, Reclamation & Enft*, 104 F. Supp. 3d 1208, 1229-30 (D. Colo. 2015) (coal combustion was indirect effect of agency's approval of mining plan modifications that "increased the area of federal land on which mining has occurred" and "led to an increase in the amount of federal coal available for combustion.")³

The Forest Service's greenhouse gas emissions analyses must include emissions from transportation of extracted product to market or to refineries, refining and other processing, in addition to combustion of the extracted end-use product, to disclose the full scope of greenhouse gas emissions that could result from well production. As noted, neither the Pipeline EA nor the EISs to which the EA tiers, includes emissions from transportation of extracted product to market or to refineries, refining and other processing, or end-use combustion, or even estimates that total volume of natural gas expected to be produced from the three wells.

The Forest Service cannot escape estimating the downstream combustion impacts of the natural gas mined from the three wells because doing so would be too difficult. Potential lifecycle greenhouse gas emissions for oil and gas volumes associated with the three wells can be generated using a peer-reviewed carbon calculator and lifecycle greenhouse gas emissions model developed by EcoShift consulting.⁴ This model is not novel in its development or methodology.

³ See also, Council on Environmental Quality's Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews, 81 Fed. Reg. 51,866 (Aug. 5, 2016) and https://ceq.doe.gov/docs/ceq-regulations-and-guidance/nepa_final_ghg_guidance.pdf at 14 ("For example, NEPA reviews for proposed resource extraction and development projects typically include the reasonably foreseeable effects of various phases in the process, such as clearing land for the project, building access roads, extraction, transport, refining, processing, using the resource, disassembly, disposal, and reclamation. Depending on the relationship between any of the phases, as well as the authority under which they may be carried out, agencies should use the analytical scope that best informs their decision making.")

⁴ See EcoShift Consulting, The potential Greenhouse Gas Emissions of U.S. Federal Fossil Fuels, Center for Biological Diversity and Friends of the Earth (2015),

Numerous greenhouse gas calculation tools exist to develop lifecycle analyses, particularly for fossil fuel extraction, operations, transport and end-user emissions.⁵ Indeed, the Department of Energy has historically utilized these types of lifecycle emissions analyses in NEPA review of oil and gas infrastructure projects.⁶ Other federal agencies have employed upstream, downstream and lifecycle greenhouse gas emissions analyses for NEPA review of energy-related projects.⁷

<http://www.ecoshiftconsulting.com/wp-content/uploads/Potential-Greenhouse-Gas-Emissions-U-S-Federal-Fossil-Fuels.pdf> (last viewed May 22, 2020).

⁵ See Council on Environmental Quality, Revised draft guidance for greenhouse gas emissions and climate change impacts (2014).

⁶ U.S. Department of Energy National Energy Technology Laboratory, Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas from the United States, DOE/NETL-2014/1649 (May 29, 2014) *available at* <http://energy.gov/sites/prod/files/2014/05/f16/Life%20Cycle%20GHG%20Perspective%20Report.pdf> (last viewed May 22, 2020). *See also* U.S. Department of Energy National Renewable Energy Laboratory, Life Cycle Greenhouse Gas Emissions from Electricity Generation Fact Sheet, Pub No. NREL/FS-6A20-57817 (2013) *available at* <http://www.nrel.gov/docs/fy13osti/57187.pdf> (last viewed May 22, 2020); U.S. Department of Energy National Energy Technology Laboratory Role of Alternative Energy Sources: Natural Gas Technology Assessment, Pub No. DOE/NETL-2012/1539 (NETL, 2012) *available at* https://www.netl.doe.gov/projects/files/FY12_RoleofAlternativeEnergySourcesNaturalGasTechnologyAssessment_060112.pdf (last viewed May 22, 2020); U.S. Department of Energy National Energy Technology Laboratory, Life Cycle Greenhouse Gas Inventory of Natural Gas Extraction, Delivery and Electricity Production, Pub No. DOE/NETL-2011/1522 (NETL, 2011) *available at* https://fossil.energy.gov/ng_regulation/sites/default/files/programs/gasregulation/authorizations/2012/applications/sierra_exhibits_12_100_LNG/Ex_89_-_Skone_Life_Cycle_GHG_Inventory_.pdf (last viewed May 22, 2020); U.S. Department of Energy National Energy Technology Laboratory, Life Cycle Analysis: Natural Gas Combined Cycle (NGCC) Power Plant, Pub No DOE/NETL-403-110509 (Sep 10, 2012) (NETL, 2010) *available at* [https://www.netl.doe.gov/projects/files/FY13_LifeCycleAnalysisNaturalGasCombinedCycle\(NGCC\)PowerPlantFinal_060113.pdf](https://www.netl.doe.gov/projects/files/FY13_LifeCycleAnalysisNaturalGasCombinedCycle(NGCC)PowerPlantFinal_060113.pdf) (last viewed May 22, 2020).

⁷ U.S. Bureau of Land Management, Final Supplemental Environmental Impact Statement for the Leasing and Underground Mining of the Greens Hollow Federal Coal Leas Tract, UTU-84102, 287 (Feb 2015) (BLM expressly acknowledged that “the burning of the coal is an indirect impact that is a reasonable progression of the mining activity” and quantified emissions from combustion without any disclaimer about other sources of coal. *Id* at 286. In that same EIS, BLM also acknowledged that truck traffic to haul coal would be extended as a result of the proposed lease approval, and this would generate additional emissions.) *See also*, U.S. Forest Service, Record of Decision and Final Environmental Impact Statement, Oil and Gas Leasing Analysis, Fishlake National Forest, 169 (Aug 2013) (Table 3.12-7: shows GHG emissions from transportation, offsite refining and end use; and total direct and indirect emissions. *See also id.*, Appendix E/SIR-2 (more detailed calculations of direct and indirect emissions.)) U.S. Army Corps of Engineers, Final Environmental Impact Statement: Alaska Stand Alone Gas Pipeline,

Courts have upheld the viability and usefulness of lifecycle analyses, and adoption of this trend is clearly reflected in the CEQ Guidance on Climate Change. 81 Fed. Reg. 51,866 (Aug. 5, 2016) (https://ceq.doe.gov/docs/ceq-regulations-and-guidance/nepa_final_ghg_guidance.pdf at 11) (“This guidance recommends that agencies quantify a proposed agency action’s projected direct and indirect GHG emissions. Agencies should be guided by the principle that the extent of the analysis should be commensurate with the quantity of projected GHG emissions and take into account available data and GHG quantification tools that are suitable for and commensurate with the proposed agency action”).⁸

The Forest Service’s statement that it is impossible to model the environmental impacts of additional climate pollutions is incorrect because a tool has been developed to assist with that task: the social cost of carbon. The federal Interagency Working Group on the Social Cost of Carbon has developed estimates of the present value of the future costs of carbon dioxide, methane, and nitrous oxide emissions as a proxy for the magnitude and severity of those impacts.⁹ These tools are easy to use by agencies, easy to understand by the public, and

Volume 2 Sec. 5.20-70–71 (Oct. 2012) The Corps, in a 2012 EIS for an intrastate natural gas pipeline in Alaska, estimated downstream emissions from combustion of the natural gas that would be transported, and also discussed the potential for natural gas to displace other, dirtier fuel sources such as coal and oil.) U.S. Department of State, Final Supplemental Environmental Impact Statement for the Keystone XL Project, § 4.14.3, Appendix U (Jan. 2014)(The Department of State, as lead agency on the Keystone XL Pipeline Review conducted a relatively comprehensive life-cycle greenhouse gas analysis for the proposed pipeline, alternatives, and baseline scenarios that could occur if the pipeline was not constructed.) U.S. Environmental Protection Agency Region X, Letter from Dennis McLerran, Regional Administrator, to Randel Perry, U.S. Army Corps of Engineers Seattle District, re Gateway Pacific Projects (Jan 22, 2013) (EPA submitted comments on the scope of impacts that should be evaluated in the coal terminal EIS that the Corps is preparing, in which it urged the Corps to conduct a lifecycle emissions analysis of GHG emissions from the coal that would be transported via the terminal.)

⁸ *High Country Conservation Advocates v. United States Forest Serv.*, 52 F. Supp. 3d 1174 (D. Colo. 2014) (court held that the agencies’ failure to disclose the effect of greenhouse gas (GHG) emissions from the mining lease modifications was arbitrary in violation of NEPA because the social cost of carbon protocol tool existed for such analysis under 40 C.F.R. § 1502.23 but the agencies did not provide reasons in the final EIS for not using the tool; and that the agencies’ decision to forgo calculating the foreseeable GHG emissions was arbitrary in light of their ability to perform such calculations and their decision to include a detailed economic analysis of the benefits). *See also Dine Citizens Against Ruining Our Env’t v. United States Office of Surface Mining Reclamation & Enf’t*, 82 F. Supp. 3d 1201, 1213-1218 (D. Colo. 2015) (court held that the agency failed to adequately consider the reasonably foreseeable combustion-related downstream effects of the proposed action. Also held that that combustion emissions associated with a mine that fed a single power plant were reasonably foreseeable because the agency knew where the coal would be consumed).

⁹ *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), available at

supported by years of peer-reviewed scientific and economic research. The EPA and other federal agencies have used these social cost protocols to estimate the effects of rulemakings on climate, and certain BLM field offices have used these tools in project level NEPA analysis. These protocols estimate the global financial cost of each additional ton of GHG pollution emitted to the atmosphere, taking into account factors such as diminished agricultural productivity, droughts, wildfires, increased intensity and duration of storms, ocean acidification, and sea-level rise.¹⁰

The need to disclose these impacts using tools such as the social cost of carbon – whether or not the Forest Service recognizes a “significance” threshold – is critical as the damaging impacts of climate change now and in the future become ever more apparent. According to the IPCC Fifth Assessment (AR5), total cumulative anthropogenic emissions of CO₂ must remain below about 1,000 GtCO₂ (equal to 275 GtC) from 2011 onward for a 66 percent probability of limiting warming to 2°C above pre-industrial levels.¹¹ Specifically, the AR5 states that cumulative CO₂ emissions from all anthropogenic sources must stay below 1 trillion tons of carbon or 1000 GtC (equal to 3670 GtCO₂) from 1861-1880 onward for a >66 percent probability of limiting warming to less than 2°C.¹² The AR5 goes on to state that 1000 GtC is reduced to about 790 GtC

<https://obamawhitehouse.archives.gov/sites/default/files/omb/assets/inforeg/technical-update-social-cost-of-carbon-for-regulator-impact-analysis.pdf> (last viewed May 22, 2020); Interagency Working Group on Social Cost of Greenhouse Gas, United States Government, Addendum to Technical Support Document on Social Cost of Carbon for Regulatory Impact Analysis under Executive Order 12866: Application of the Methodology to Estimate the Social Cost of Methane and the Social Cost of Nitrous Oxide (August 2016), available at https://19january2017snapshot.epa.gov/sites/production/files/2016-12/documents/addendum_to_sc-ghg_tsd_august_2016.pdf (last viewed May 22, 2020).

¹⁰ U.S. Environmental Protection Agency, The Social Cost of Carbon, available at https://19january2017snapshot.epa.gov/climatechange/social-cost-carbon_.html (last viewed May 22, 2020). *See also High Country Conservation Advocates*, 52 F. Supp. 3d at 1190-92 (describing social cost of carbon).

¹¹ Intergovernmental Panel on Climate Change, 2013: Summary for Policymakers. In: *Climate Change 2013: The Physical Science Basis, Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F. et al. (eds.)], Cambridge University Press (2013) at 27; Intergovernmental Panel on Climate Change, *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)], IPCC, Geneva, Switzerland, 151 pp. (2014) at 63-64 & Table 2.2.

¹² IPCC 2013 at 27 (“Limiting the warming caused by anthropogenic CO₂ emissions alone with a probability of >33%, >50%, and >66% to less than 2°C since the period 1861–1880, will require cumulative CO₂ emissions from all anthropogenic sources to stay between 0 and about 1570 GtC (5760 GtCO₂), 0 and about 1210 GtC (4440 GtCO₂), and 0 and about 1000 GtC (3670 GtCO₂) since that period, respectively. These upper amounts are reduced to about 900 GtC (3300 GtCO₂), 820 GtC (3010 GtCO₂), and 790 GtC (2900 GtCO₂), respectively, when accounting for

(2900 GtCO₂) when accounting for non-CO₂ forcings. Furthermore, an amount of 515 GtC (1890 GtCO₂) was already emitted as of 2011. This leaves a carbon budget of 275 GtC or 1010 GtCO₂ from 2011 onward (i.e., 790 GtC minus 515 GtC leaves 275 GtC which equates to 1009 GtCO₂).

Given that global CO₂ emissions in 2015 alone totaled 9.8 GtC (36 GtCO₂),¹³ this carbon budget is being rapidly consumed. The 275 GtC (1010 GtCO₂) carbon budget from 2011 onward has been reduced to 232 GtC (850 GtCO₂) from 2015 onward.¹⁴

To provide meaningful context on the climate impact of the proposed action, cumulative lifecycle emissions from the proposed well development and pipeline project should be analyzed in the context of the global and U.S. carbon budgets. The Pipeline EA fails to provide any context for the project's emissions, omitting any estimate of global, national, and regional annual emissions, and further fails to take the important next step of placing these emissions in the context of carbon budgets. At a time when the U.S. must rapidly ratchet down GHG emissions to avoid the worst dangers of climate change, the Forest Service should not be blindly committing to new fossil fuel development and infrastructure on our public lands that locks in carbon intensive gas production for years into the future without any understanding of the relative contribution of this emissions in terms of the remaining U.S. carbon budget.

A robust body of scientific research has established that most fossil fuels must be kept in the ground to avoid the worst dangers of climate change. Human-caused climate change is already causing widespread damage from intensifying global food and water insecurity, the increasing frequency of heat waves and other extreme weather events, flooding of coastal regions by sea level rise and increasing storm surge, the rapid loss of Arctic sea ice and Antarctic ice shelves, increasing species extinction risk, and the worldwide collapse of coral reefs.¹⁵ The 2014 Third National Climate Assessment makes clear that “reduc[ing] the risks of some of the worst impacts of climate change” will require “aggressive and sustained greenhouse gas emission reductions” over the course of this century.¹⁶ The 2018 Fourth National Climate Assessment states: “the continued warming that is projected to occur without substantial and sustained reductions in

non-CO₂ forcings as in RCP2.6. An amount of 515 [445 to 585] GtC (1890 [1630 to 2150] GtCO₂), was already emitted by 2011.”).

¹³ See Le Quéré, Corrine et al., Global Carbon Budget 2016, 8 Earth System Science Data 605 (2016).

¹⁴ Rogelj, Joeri et al., Differences between carbon budget estimates unraveled, 6 Nature Climate Change 245 (2016) at Table 2.

¹⁵ Melillo, Jerry M., Climate Change Impacts in the United States: The Third National Climate Assessment, Terese (T.C.) Richmond and Gary W. Yohe, Eds., U.S. Global Change Research Program, (2014); U.S. Global Change Research Program, 2017: Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles, D.J. et al. (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, 470 pp. (2017).

¹⁶ Melillo, Jerry M., Climate Change Impacts in the United States: The Third National Climate Assessment, Terese (T.C.) Richmond and Gary W. Yohe, Eds., U.S. Global Change Research Program, (2014) at 13, 14, and 649.

global greenhouse gas emissions is expected to cause substantial net damage to the U.S. economy throughout this century, especially in the absence of increased adaptation efforts.”¹⁷

The United States has committed to the climate change target of holding the long-term global average temperature “to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels”¹⁸ under the Paris Agreement. The United States signed the Paris Agreement on April 22, 2016 as a legally binding instrument through executive agreement,¹⁹ and the treaty entered into force on November 4, 2016. The Paris Agreement codifies the international consensus that climate change is an “urgent threat” of global concern.²⁰ The Agreement also requires a “well below 2°C” climate target because 2°C of warming is no longer considered a safe guardrail for avoiding catastrophic climate impacts and runaway climate change.²¹

Immediate and aggressive greenhouse gas emissions reductions are necessary to keep warming well below 2°C rise above pre-industrial levels. The IPCC Fifth Assessment Report and other expert assessments have established global carbon budgets, or the total amount of carbon that can be burned while maintaining some probability of staying below a given temperature target. According to the IPCC, total cumulative anthropogenic emissions of CO₂ must remain below about 1,000 GtCO₂ from 2011 onward for a 66 percent probability of limiting warming to 2°C above pre-industrial levels, and to 400 GtCO₂ from 2011 onward for a 66 percent probability of

¹⁷ Fourth National Climate Assessment, Summary Findings (2018) available at <https://nca2018.globalchange.gov/> (last viewed May 22, 2020).

¹⁸ United Nations Framework Convention on Climate Change, Conference of the Parties, Nov. 30-Dec. 11, 2015, Adoption of the Paris Agreement Art. 2, U.N. Doc. FCCC/CP/2015/L.9 (December 12, 2015) (“Paris Agreement”).

¹⁹ United Nations Treaty Collection, Chapter XXVII, 7.d Paris Agreement, List of Signatories; U.S. Department of State, Background Briefing on the Paris Climate Agreement (December 12, 2015). Although not every provision in the Paris Agreement is legally binding or enforceable, the U.S. and all parties are committed to perform the treaty commitments in good faith under the international legal principle of *pacta sunt servanda* (“agreements must be kept”); Vienna Convention on the Law of Treaties, Article 26. Although the United States in June 2017 announced its intention to withdraw from the Paris Agreement, in accordance with article 28, such withdrawal cannot occur until November 4, 2020.

²⁰ See Paris Agreement, at Recitals.

²¹ See the comprehensive scientific review under the United Nations Framework Convention on Climate Change (UNFCCC) of the global impacts of 1.5°C versus 2°C warming: U.N. Subsidiary Body for Scientific and Technological Advice, Report on the Structured Expert Dialogue on the 2013-2015 review, FCCC/SB/2015/INF.1 (May 4, 2015); See also Schleussner, Carl-Friedrich et al., Differential climate impacts for policy-relevant limits to global warming: the case of 1.5°C and 2°C, 7 Earth Systems Dynamics 327 (2016); Anderson, Kevin and Alice Bows, Beyond ‘dangerous’ climate change: emission scenarios for a new world, 369 Philosophical Transactions of the Royal Society 20 (2011).

limiting warming to 1.5°C.²² These carbon budgets have been reduced to 850 GtCO₂ and 240 GtCO₂, respectively, from 2015 onward.²³ The Pipeline EA fails to acknowledge that there are scientifically established global carbon budget for limiting global temperature rise to specific temperature targets.

Published scientific studies have estimated the United States' portion of the global carbon budget by allocating the remaining global budget across countries based on factors including equity and economics. Estimates of the U.S. carbon budget vary depending on the temperature target used by the study (1.5°C versus 2°C), the likelihood of meeting the temperature target (50 or 66 percent probability), the equity principles used to apportion the global budget among countries, and whether a cost-optimal model was employed. The U.S. carbon budget for limiting temperature rise to well below 2°C has been estimated at 38 GtCO₂, while the estimated budget for limiting temperature rise to 2°C ranges from 34 GtCO₂ to 158 GtCO₂.

A 2019 study by Stockholm Environmental Institute and others used publicly available data to estimate the difference between fossil fuel volumes and emissions that countries are currently planning and what the Intergovernmental Panel on Climate Change (IPCC) estimates would be consistent with 1.5°C or 2°C pathways.²⁴ The analysis shows that countries' current plans and projections for fossil fuel production would lead, in 2030, to the emission of 39 billion tonnes (gigatonnes) of carbon dioxide (GtCO₂).²⁵ That is 13 GtCO₂, or 53%, more than would be consistent with a 2°C pathway (with an interquartile range of 11–15 GtCO₂) and 120% or 21 GtCO₂ (with a range of 18–23 GtCO₂) greater than fossil fuel production levels consistent with a 1.5°C pathway.²⁶ This gap grows wider by 2040, when production levels reach 110% (22 GtCO₂, with a range of 18–24) and 210% (28 GtCO₂, with a range of 27–31) higher than those consistent with the 2°C and 1.5°C pathways.²⁷ And every additional ton of GHG emissions –

²² Intergovernmental Panel on Climate Change, 2013: Summary for Policymakers. In: Climate Change 2013: The Physical Science Basis, Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F. et al. (eds.)], Cambridge University Press (2013) at 27; Intergovernmental Panel on Climate Change, Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)], IPCC, Geneva, Switzerland, 151 pp. (2014) at 63-64 & Table 2.2.

²³ Rogelj, Joeri et al., Differences between carbon budget estimates unraveled, 6 Nature Climate Change 245 (2016) at Table 2.

²⁴ SEI, IISD, ODI, Climate Analytics, CICERO, and UNEP. (2019). The Production Gap: The discrepancy between countries' planned fossil fuel production and global production levels consistent with limiting warming to 1.5°C or 2°C, available at <http://productiongap.org/wp-content/uploads/2019/11/Production-Gap-Report-2019.pdf> (last viewed May 22, 2020),

²⁵ *Id.* at 14.

²⁶ *Id.*

²⁷ *Id.*

including those that would be made possible by the Pipeline EA – makes it more difficult for the U.S. to reduce its emissions.

Du Pont et al. (2017) averaged across five IPCC-AR5 sharing principles (e.g. capability, equal per capita, greenhouse development rights, equal cumulative per capita, and constant emissions ratio) to estimate the U.S. carbon budget through 2100 based on a cost-optimal model.²⁸ Du Pont et al. (2017) estimated the U.S. carbon budget at 57 GtCO₂eq (equal to ~ 38 GtCO₂)²⁹ for a 50 percent chance of returning global average temperature rise to 1.5°C by 2100, which is the only target among the studies that is consistent with the well below 2°C temperature commitment of the Paris Agreement. The U.S. carbon budget for a 66 percent probability of keeping warming below 2°C was estimated at 104 GtCO₂eq (equal to ~ 69 GtCO₂).³⁰

For a 66 percent probability of keeping warming below 2°C, Peters et al. (2015) estimated the U.S. carbon budget at 34 GtCO₂ based on an equity approach for allocating the global carbon budget, and 123 GtCO₂ under an inertia approach.³¹ The “inertia” approach bases sharing on countries’ current emissions, while the “equity” approach bases sharing on population size and provides for equal per-capita emissions across countries. Similarly using a 66 percent probability of keeping warming below 2°C, Gignac et al. (2015) estimated the U.S. carbon budget at 78 to 97 GtCO₂, based on a contraction and convergence framework, in which all countries adjust their emissions over time to achieve equal per-capita emissions.³² Although the contraction and convergence framework corrects current emissions inequities among countries over a specified time frame, it does not account for inequities stemming from historical emissions differences. When accounting for historical responsibility, Gignac et al. (2015) estimated that the United States has an additional cumulative carbon debt of 100 GtCO₂ as of 2013. Using a non-precautionary 50 percent probability of limiting global warming to 2°C, Raupach et al. (2014) estimated the U.S. carbon budget at 158 GtCO₂ based on a “blended” approach of sharing principles that averages the “inertia” and “equity” approaches.³³ Of that 158 GtCO₂ budget, 91 GtCO₂ was categorized as “committed” emissions from existing CO₂-emitting infrastructure that

²⁸ Du Pont, Yann Robiou et al., Equitable mitigation to achieve the Paris Agreement goals, 7 *Nature Climate Change* 38 (2017).

²⁹ See Meinshausen, Malte et al., Greenhouse gas emission targets for limiting global warming to 2 degrees Celsius, 458 *Nature* 1158 (2009). We used a conversion factor of 1 GtCO₂ = 1.5 GtCO₂eq based on Table 1 in Meinshausen et al. 2009.

³⁰ *Id.* 1 GtCO₂ = 1.5 GtCO₂eq based on Table 1 in Meinshausen et al. 2009.

³¹ Peters, Glen P. et al., Measuring a fair and ambitious climate agreement using cumulative emissions, 10 *Environmental Research Letters* 105004 (2015).

³² Gignac, Renaud and H. Damon Matthews, Allocating a 2C cumulative carbon budget to countries, 10 *Environmental Research Letters* 075004 (2015). In a contraction and convergence approach, national emissions are allowed to increase or decrease for some period of time until they converge to a point of equal per capita emissions across all regions at a given year, at which point all countries are entitled to the same annual per capita emissions.

³³ Raupach, Michael et al., Sharing a quota on cumulative carbon emissions, 4 *Nature Climate Change* 873 (2014) at Supplementary Figure 7.

will continue for infrastructure lifetimes without early retirement.³⁴ Under any scenario, the remaining U.S. carbon budget consistent with limiting global average temperature rise to 1.5°C or 2°C is extremely small and is rapidly being consumed. Any subsequently prepared NEPA document on the Pipeline project must disclose these limitations, and disclose that the Pipeline project will make it more difficult to avoid the worst impacts of the climate crisis.

Furthermore, a large body of scientific research has established that the vast majority of global and U.S. fossil fuels must stay in the ground in order to hold temperature rise to well below 2°C.³⁵ Studies estimate that 68 to 80 percent of global fossil fuel reserves must not be extracted and burned to limit temperature rise to 2°C based on a 1,000 GtCO₂ carbon budget.³⁶ For a 50 percent chance of limiting temperature rise to 1.5°C, 85 percent of known fossil fuel reserves must stay in the ground.³⁷ Effectively, fossil fuel emissions must be phased out globally within the next few decades.³⁸

A 2016 global analysis found that potential carbon emissions from developed reserves in currently operating oil and gas fields and mines would lead to global temperature rise beyond 2°C.³⁹ Excluding coal, currently operating oil and gas fields alone would take the world beyond 1.5°C.⁴⁰ To stay well below 2°C, the clear implication is that no new fossil fuel extraction or

³⁴ *Id.*

³⁵ The IPCC estimates that global fossil fuel reserves exceed the remaining 275 GtC carbon budget (from 2011 onward) for staying below 2°C by 4 to 7 times, while fossil fuel resources exceed the carbon budget for 2°C by 31 to 50 times. See Bruckner, Thomas et al., 2014: Energy Systems. In: Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press (2014) at Table 7.2.

³⁶ To limit temperature rise to 2°C based on a 1,000 GtCO₂ carbon budget from 2011 onward, studies indicate variously that 80 percent (Carbon Tracker Initiative 2013), 76 percent (Raupach et al. 2014), and 68 percent (Oil Change International 2016) of global fossil fuel reserves must stay in the ground. See Carbon Tracker Initiative, Unburnable Carbon – Are the world’s financial markets carrying a carbon bubble? (2013); Raupach et al. 2014; Oil Change International, The Sky’s Limit: Why the Paris Climate Goals Require a Managed Decline of Fossil Fuel Production (September 2016).

³⁷ Oil Change International 2016 at 6.

³⁸ Rogelj et al. (2015) estimated that a reasonable likelihood of limiting warming to 1.5° or 2°C requires global CO₂ emissions to be phased out by mid-century and likely as early as 2040-2045. Rogelj, Joeri et al., Energy system transformations for limiting end-of-century warming to below 1.5°C, 5 Nature Climate Change 519 (2015). The United States must phase out fossil fuel CO₂ emissions even earlier: between 2025 and 2030 on average for a reasonable chance of staying below 1.5°C and between 2040 and 2045 on average for a reasonable chance of staying below 2°C. See Climate Action Tracker, USA (last updated Jan. 25, 2017) at Rating figure showing U.S. emissions versus year (last visited Nov. 13, 2017).

³⁹ Oil Change International (2016) at 5.

⁴⁰ *Id.* at 5.

transportation infrastructure should be built, and governments should grant no new permits for new fossil fuel extraction and infrastructure.⁴¹ Moreover, some fields and mines, primarily in rich countries, must be closed before fully exploiting their resources. The analysis concludes that, because existing fossil fuel reserves considerably exceed both the 2°C and 1.5°C carbon budgets, “[i]t follows that exploration for new fossil fuel reserves is at best a waste of money and at worst very dangerous.”⁴²

According to a U.S.-focused analysis,⁴³ the United States alone has enough recoverable fossil fuels, split about evenly between federal and non-federal resources, that if extracted and burned, would exceed the global carbon budget for a 1.5°C limit, and would consume nearly the entire global budget for a 2°C limit.⁴⁴ Specifically, the analysis found:

Potential greenhouse gas emissions of federal fossil fuels (leased and unleased) if developed would release up to 492 GtCO₂e, representing 46 percent to 50 percent of potential emissions from all remaining U.S. fossil fuels.

Of that amount, up to 450 GtCO₂e have not yet been leased to private industry for extraction;

Releasing those 450 GtCO₂e (the equivalent annual pollution of more than 118,000 coal-fired power plants) would be greater than any proposed U.S. share of global carbon limits that would keep emissions well below 2°C.⁴⁵ Fracking has also opened up vast resources that otherwise would not be available, increasing the potential for future greenhouse gas emissions.

In sum, the long-lived GHG emissions and fossil fuel infrastructure that would result from the Pipeline project will contribute to undermining climate commitments and increasing climate change impacts, at a time when there is urgent need to keep most fossil fuels in the ground. Again, rather than ignoring these impacts as insignificant, the Forest Service must disclose these effects and the global context in which they will occur.

⁴¹ *Id.* at 5.

⁴² *Id.* at 17.

⁴³ Ecoshift Consulting, et al., *The Potential Greenhouse Gas Emissions of U.S. Federal Fossil Fuels* (2015).

⁴⁴ *Id.* at 4.

⁴⁵ Raupach, Michael et al. (2014) at Supplementary Figure 7. For the United States, Raupach et al. (2014) provided a mid-range estimate of the U.S. carbon quota of 158 GtCO₂ for a 50 percent chance of staying below 2°C, using a “blended” scenario of sharing principles for allocating the global carbon budget among countries. This study estimated U.S. fossil fuel reserves at 716 GtCO₂, of which coal comprises the vast majority, indicating that most fossil fuel reserves in the U.S. must remain unburned to meet a well below 2°C carbon budget.

The EA's climate change analysis should draw upon the 2017 National Climate Assessment's Climate Science Special Report.⁴⁶ Key points from this scientific report highlight the urgent need to reduce greenhouse gas emissions to avoid large and irreversible impacts:

- The magnitude of climate change beyond the next few decades will depend primarily on the amount of greenhouse gases (especially carbon dioxide) emitted globally. Without major reductions in emissions, the increase in annual average global temperature relative to preindustrial times could reach 9°F (5°C) or more by the end of this century. With significant reductions in emissions, the increase in annual average global temperature could be limited to 3.6°F (2°C) or less.
- The global atmospheric carbon dioxide (CO₂) concentration has now passed 400 parts per million (ppm), a level that last occurred about 3 million years ago, when both global average temperature and sea level were significantly higher than today. Continued growth in CO₂ emissions over this century and beyond would lead to an atmospheric concentration not experienced in tens to hundreds of millions of years. There is broad consensus that the further and the faster the Earth system is pushed towards warming, the greater the risk of unanticipated changes and impacts, some of which are potentially large and irreversible.⁴⁷

Climate change, driven primarily by the combustion of fossil fuels, poses a severe and immediate threat to the health, welfare, ecosystems and economy of the United States. These impacts are felt across the nation, including upon lands the Forest Service is charged with safeguarding. In the American Southwest, climate change is already having damaging impacts in the form a historic drought. The social cost of carbon analysis is an appropriate tool for analyzing the cumulative impacts of greenhouse gas emissions, and a rapid and deep reduction of emissions generated from fossil fuels is essential if such threats are to be minimized and their impacts mitigated.

The Forest Service has: failed to quantify and sum up the *total quantity* of climate pollution from the Pipeline project (including downstream combustion impacts); failed to disclose the environmental and other *impacts* of that climate pollution; and failed to place that climate pollution in context, particularly in considering the *cumulative* emissions from the Forest Service and the region. This complete absence of climate analysis violates NEPA's hard look mandate and abdicates the Forest Service's duty to protect its lands from the ravages of climate change.

⁴⁶ U.S. Global Change Research Program, 2017: Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles, D.J. et al. (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, 470 pp. (2017), available at <https://nca2018.globalchange.gov/chapter/1/> (last viewed May 22, 2020).

⁴⁷ *Id.* at 11 (see <https://science2017.globalchange.gov/chapter/executive-summary/>) (last viewed May 22, 2020).

II. THE FOREST SERVICE MUST PREPARE AN EIS BECAUSE THE PROJECT'S CLIMATE EMISSIONS AND IMPACTS ARE LIKELY SIGNIFICANT.

In determining whether an agency should prepare an EIS, CEQ regulations identify ten factors to evaluate concerning intensity. 40 C.F.R. § 1508.27(b). At least two of these factors tip heavily in favor of preparing an EIS.

First, as noted above, the total, life-cycle emissions of the Project are likely significant, given that the project's contributions to climate change make more likely that our economy, public health, and environment will suffer the most dire predicted consequences of the climate crisis.

Second, CEQ regulations mandate that in evaluating whether an EIS is necessary, agencies must determine "[w]hether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment." 40 C.F.R. § 1508.27(b)(10). The project will interfere with the State of Colorado's goal to reduce the state's carbon emissions. HB 19-1261, signed into law on May 30, 2019, establishes a statewide goal "of achieving, at a minimum, a twenty-six-percent reduction in statewide greenhouse gas pollution by 2025, a fifty-percent reduction in statewide greenhouse gas pollution by 2030, and a ninety-percent reduction in statewide greenhouse gas pollution by 2050," measured relative to 2005 statewide greenhouse gas pollution levels.⁴⁸ By increasing the State's greenhouse gas emissions via the drilling of wells, construction and operation of the wells and pipelines, and via the downstream transport and combustion of the gas from these wells, this project will put the state farther away from achieving those goals, threatening to violate a law critical to the protection of the environment. The EA fails to acknowledge this state law, or the potential for this project to violate the law's goals. As a result, the Forest Service must prepare an EIS to disclose the potential legal violation, and the degree to which this project will undermine the attainment of the state's statutory goals.

Thank you for this opportunity to comment. If you have any questions about this letter, please contact me at the number or email below.

Sincerely,



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⁴⁸ See HB 19-1261, "An Act Concerning the Reduction of Greenhouse Gas Pollution, and, in Connection Therewith, Establishing Statewide Greenhouse Gas Pollution Reduction Goals and Making an Appropriation," available at https://leg.colorado.gov/sites/default/files/2019a_1261_signed.pdf (last viewed May 22, 2020).