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**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF MONTANA  
GREAT FALLS DIVISION**

WESTERN ORGANIZATION OF  
RESOURCE COUNCILS, MONTANA  
ENVIRONMENTAL INFORMATION  
CENTER, POWDER RIVER BASIN  
RESOURCE COUNCIL, NORTHERN  
PLAINS RESOURCE COUNCIL, SIERRA  
CLUB, and NATURAL RESOURCES  
DEFENSE COUNCIL,

Plaintiffs,

vs.

U.S. BUREAU OF LAND  
MANAGEMENT, an agency within the  
U.S. Department of the Interior; RYAN  
ZINKE, in his official capacity as  
Secretary of the U.S. Department of the  
Interior, MICHAEL NEDD, in his official  
capacity as Acting Director of the Bureau  
of Land Management; and KATHARINE  
MACGREGOR, in her official capacity as  
Acting Assistant Secretary of Land and  
Minerals Management of the U.S.  
Department of the Interior,  
Defendants.

Case No. CV-16-21-GF-BMM

**PLAINTIFFS' STATEMENT  
OF UNDISPUTED FACTS**

## Background<sup>1</sup>

1. Plaintiffs Western Organization of Resource Councils, Montana Environmental Information Center, Powder River Basin Resource Council, Northern Plains Resource Council, Sierra Club, and Natural Resources Defense Council (together, “Conservation Groups”) challenge the Bureau of Land Management’s (“BLM”) revisions to the Resource Management Plans for the Miles City and Buffalo Field Offices.

2. The areas encompassed by these plans comprise the northern and southern portions, respectively, of a region known as the Powder River Basin, an area of stark beauty with rolling grasslands, badlands, and remote wilderness. ECF No. 66, ¶49; BUF:6-1848, -1995, -2227, -2305; MC:7-2563, -2744. The Basin stretches for more than 14 million acres from Wyoming’s Bighorn Mountains, and the headwaters of the Tongue and Powder Rivers, north to the Yellowstone River in eastern Montana. ECF No. 66, ¶49; BUF:6-1868 to -1872; MC:7-2733. The Powder River Basin provides premier habitat for elk, mule deer, and pronghorn antelope, as well as threatened greater sage-grouse. ECF 66, ¶49; BUF:6-1882, -1890; MC:7-2752.

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<sup>1</sup> Citations to the record are provided in the following format: [Record Folder Name]:[Record Document Number]-[Record Bates Number]. MC stands for “Miles City,” BUF stands for “Buffalo,” RMR stands for “Rocky Mountain Region,” and WO stands for “Washington Office.”

3. The Powder River Basin is a major energy development area. BUF:6-1789. It is the largest coal-producing region in the United States. *Id.*; BUF:6-1808. In 2011, the 426.1 million tons of coal produced from the Buffalo planning area represented 38.8 percent of U.S. domestic coal production. BUF:6-1808. Large quantities of crude oil and natural gas are also produced in the Powder River Basin. BUF:6-1789.

4. BLM announced its intent to revise the Miles City and Buffalo plans in 2005 and 2008, respectively. MC:1-1, Buf:1-1. In 2011, these processes were still in the early stages: for example, BLM had yet to release a draft Environmental Impact Statement for either plan. At that time, BLM incorporated these ongoing plan revisions into its broad effort to address threats to the greater sage grouse across the species's range. RMR:1134-7955, -7974. This effort led BLM to concurrently revise eight resource management plans for contiguous planning areas in the rocky mountain region. *Id.* at -7955, -7965 (map). Specifically, BLM revised the Billings, Buffalo, Cody, HiLine, Miles City, Pompeys Pillar National Monument, South Dakota, and Worland Resource Management Plans. RMR:1134-7953.

5. These eight Plan revisions were undertaken simultaneously and in coordination with one another:

a. BLM issued a single “Notice of Intent” to prepare EISs for the eight plan revisions. RMR:1134-7974 (summarizing this and citing, by URL, BLM, “Notice of Intent to Prepare EISs and Supplemental EISs to Incorporate Greater Sage-Grouse Conservation Measures into Land Use Plans and Land Management Plans,” 76 Fed. Reg. 77,008 (Dec. 9, 2011)). This umbrella notice supplemented the prior notices and scoping periods that had been provided for the individual planning areas. RMR:1134-8083; *see also* Buf:1-1, MC:1-1.

b. The draft Plans and EISs for the eight plan revisions were all released within a four month span in 2013. Notice of Availability of the Draft Miles City Resource Management Plan and Environmental Impact Statement, MC:5-2504 (Mar. 8, 2013), NOA for HiLine draft EIS, 78 Fed. Reg. 17,714 (Mar. 22, 2013), NOA for Billings/Pompeys Pillar National Monument draft EIS, 78 Fed. Reg. 19,291 (Mar. 29, 2013) (single draft EIS encompassing both planning areas), NOA for South Dakota draft EIS, 78 Fed. Reg. 35,959 (June 14, 2013), NOA for Buffalo draft EIS, Buf:5-1323 (June 28, 2013), NOA for Bighorn Basin draft EIS, 78 Fed. Reg. 41,947 (July 12, 2013) (single draft EIS encompassing Cody and Worland planning areas); *see also* RMR:1134-8084 (summarizing process).

c. The final EISs for all eight plan revisions were announced on the same day, May 29, 2015. RMR:1134-8084 (summarizing announcement); *see also* Buf:7-4156, MC:6-2505.

d. The eight revisions were approved in a single, combined Record of Decision, issued September 18, 2015. RMR:1134-7955.

6. Although protection of the greater sage grouse provided the impetus for these simultaneous revisions, the revisions were not limited to that issue. Instead, as the Record of Decision explains, BLM undertook “full-scale resource management plan revisions for all BLM-administered lands and all BLM-program areas within [these eight field offices’] Planning areas; that is, [these plans revisions] are not limited to [greater sage grouse] habitat management.” RMR:1134-7968. For example, the Notice of Intent pertaining to all eight plan revisions identified “coal mining” and “fluid minerals” as pertinent issues. 76 Fed. Reg. at 77,010.

7. For Miles City specifically, BLM’s final EIS identified the purpose of the Plan as “to provide a single, comprehensive land use plan to guide management of BLM-administered lands in the Miles City Field Office. This plan provides goals, objectives, land use allocations, and management direction for the BLM-administered surface and mineral estate based upon multiple use and sustained yield, unless specified by law.” MC:7-2532.

8. The Miles City plan was needed to address “conditions [that] have changed since the original RMPs were approved” in 1985 and 1996. MC:7-2532; MC:7-2625. These changes include “[c]hanged ecological, sociological, institutional, and regulatory conditions”; “[n]ew laws, regulations, and policies that supersede previous decisions”; and “[c]hanging tolerance or acceptance of impacts.” MC:7-2532.

9. One of these changed conditions was the “new challenge” presented by “issues surrounding climate change.” MC:7-2537. BLM’s prior planning decision in 1985 and 1996 had not considered the impacts of climate change when making 1.6 million acres containing 71 billion tons of coal available for leasing. MC:7-3773 to 3788. BLM expects climate change to “affect a wide variety of resources (e.g., water, vegetation, and wildlife) and resource uses (e.g., livestock grazing and mineral development).” MC:7-2537. BLM recognized the need to “identif[y] management actions and best management practices (BMPs) that can reduce [climate change] impacts to resources and resource uses.” MC:7-2537.

10. The Miles City EIS and Plan identified the goal of “[r]educ[ing] greenhouse gas (GHG) emissions when feasible.” MC:7-2576; MC:9-4157. BLM further recognized that “Secretarial Order 3289 . . . establish[ed] a Department-wide, science-based approach to increase understanding of climate change and to coordinate an effective response to impacts on managed resources.” MC:7-2718.



11. For Buffalo, BLM similarly recognized both the broad scope and purpose of the revision, and the need to address climate change in particular. The Buffalo EIS explained that the goal of a resource management plan is to “provide[] direction for managing public lands administered by BLM in accordance with its multiple use mandate,” and that “[t]he purpose of revising the existing plan is to address conditions within the planning area that have changed and to evaluate new information in order to develop a management strategy that achieves,” among other things, agency goals and policies. BUF:6-1413. The Buffalo EIS and Plan specifically identified the goal of “[r]educ[ing] the impacts of . . . greenhouse gases.” BUF:8-4276. BLM further recognized the Department of the Interior’s policy to respond to climate change: “The Secretary of the Interior signed Order 3289 on February 22, 2010, establishing a Department-wide, scientific-based approach to increase understanding of climate change and coordinate an effective response to impacts on managed resources.” BUF:6-1732.

### **Anticipated Fossil Fuel Development**

12. BLM’s development of the revised Plans was informed by forecasts of likely future fossil fuel development. BLM prepared “reasonable foreseeable development” analyses for both the Miles City and Buffalo planning areas, which BLM used to estimate the amount of coal, oil, and natural gas likely to be extracted

during the 20-year planning periods. BUF:6-3346, 4000; MC:7-3435, -3759, -3797, -3799. The EISs for the six other Rocky Mountain Region plan revisions similarly rely on predictions of reasonably foreseeable fossil fuel development. *See* Bighorn Basin EIS at 1-4,<sup>2</sup> Billings/Pompeys Pillar EIS at 3-187, 4-24 to 4-25,<sup>3</sup> HiLine EIS at 450,<sup>4</sup> South Dakota EIS at 503.<sup>5</sup>

13. Based on these forecasts, BLM expects that under the adopted Plans, both the Buffalo and the Miles City planning areas will continue to produce major quantities of coal, oil, and natural gas. In the Buffalo Final Environmental Impact Statement (FEIS), BLM states that “BLM has estimated that it would issue 28 coal leases encompassing 106,400 acres with approximately 10.2 billion tons of coal in the two high-potential areas over the next 20 years.” BUF:6-2232.

14. For the Miles City planning area, BLM predicted that during the planning period, approximately 926 million tons of coal would be mined. MC:7-3799 to -3800, tbls. 43-44. BLM identified the five specific mines (Decker, Spring

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<sup>2</sup> Available at [https://eplanning.blm.gov/epl-front-office/projects/lup/9506/58518/63310/BB\\_PRMP\\_FEIS.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/9506/58518/63310/BB_PRMP_FEIS.pdf). The Court may take judicial notice of this and other factual documents under Federal Rules of Evidence 201(b)(2), (c).

<sup>3</sup> Available at <https://cdxnodengn.epa.gov/cdx-enepa-II/public/action/eis/details/downloadEisDocuments?eisId=167629>.

<sup>4</sup> Available at [https://eplanning.blm.gov/epl-front-office/projects/lup/68346/88903/106415/HiLine\\_Volume\\_I-Whole.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/68346/88903/106415/HiLine_Volume_I-Whole.pdf).

<sup>5</sup> Available at [https://eplanning.blm.gov/epl-front-office/projects/lup/68940/89567/107070/10\\_Chapter\\_3.pdf](https://eplanning.blm.gov/epl-front-office/projects/lup/68940/89567/107070/10_Chapter_3.pdf).

Creek, Rosebud, Absaloka, and Savage) where production is likely to occur, and even included a chart showing anticipated annual coal production—down to the ton—at each of these five mines every year through 2040. MC:7-3797 to -3799.

15. The Buffalo EIS noted that “[t]he majority, if not all, of these leases would be to provide reserves so that the already operating mines can continue to operate.” BUF:6-2232.

16. BLM further explained that in Buffalo, “[t]here are currently 12 . . . operating mines in the planning area. All are in Campbell County . . . .” BUF:6-1810.

17. In total, over the 20-year planning period, BLM expects that industry will mine approximately 11 billion tons of coal from the Miles City and Buffalo planning areas. BUF:6-2232, MC:7-3799 to -3800.

18. For Miles City, BLM estimates that in year 20 under the preferred alternative, there will be 7,078 producing wells in the planning area, MC:2231-73146 (3,244 oil wells), MC:2231-73175 (2,688 natural gas wells), MC:2231-73200 (1,146 coal bed natural gas wells), of which 1,253 will be federal wells, MC:2231-73146 (417 oil wells), MC:2231-73175 (350 natural gas wells), MC:2231-73200 (486 coal bed natural gas wells). BLM estimates that oil wells will produce an average of 20 barrels per day per well, MC:2231-73146, natural gas wells will produce 40 thousand cubic feet per day per well, MC:2231-73175,

and coal bed natural gas wells will produce 45 thousand cubic feet per day per well, MC:2231-73200.

19. For Buffalo, BLM estimates that in 2024 under the preferred alternative, there will be 11,018 wells in the planning area (5,451 oil wells, 539 natural gas wells, and 5,028 coal bed natural gas wells), of which 4,767 will be federal wells (2,723 oil wells, 269 natural gas wells, 1,775 coal bed natural gas wells). BUF:6-3657. BLM does not provide any information on expected production from wells in the Buffalo planning area.

### **Alternatives**

20. The EISs for the Miles City and Buffalo Plans evaluated five and four alternatives, respectively. MC:7-2625, BUF:6-1546.

21. Conservation Groups and others submitted comments on the Miles City and Buffalo draft EISs asking for evaluations of alternatives that would limit coal development, BUF:1545-96799, BUF:1602-97631, MC:816-33698, and alternatives that would require technologies or practices to further reduce methane emissions from oil and gas production. BUF:1407-91737 to -91745; BUF:1996-130425; MC:698-25016 to -25026; MC:816-33701.

22. In each Plan, the alternatives did not differ with regard to acres disturbed by coal mining, number of coal leases anticipated, or amount of coal production.

23. In Miles City, each alternative made approximately 1.6 million acres, containing 71 billion tons of coal, available for leasing. MC:7-2625. This reflected perpetuation of planning decisions made in 1985 and 1996. *Id.* In 1985 BLM made 1 million acres, containing 65 billion tons of coal, available for leasing in one portion of the planning area; BLM's 1996 planning decision made approximately 580,000 acres, containing 6 billion tons of coal, available for leasing in the other portion of the planning area. *Id.*

24. Under all five alternatives identified in the Miles City Plan, BLM predicted that during the planning period approximately 926 million tons of coal would be mined and 13,000 acres would be disturbed by strip-mining coal. MC:7-3799 to -3800, tbls. 43-44.

25. The Miles City EIS argued that consideration of alternatives that would restrict coal leasing or mining below these levels was not required, because, BLM claimed, BLM had previously determined what lands and quantity of coal would be available for leasing in prior resource management plans in 1985 and 1996. MC:8-4037. The Miles City EIS further stated that BLM would conduct

additional NEPA analysis prior to issuing individual leases, which is a subsequent stage in the coal development process. MC:8-4038.

26. BLM's 1985 and 1996 decisions concerning coal in the Miles City area did not consider the impacts of climate change when making 1.6 million acres, containing 71 billion tons of coal, available for leasing. MC:7-3773 to 3788.

27. The Buffalo EIS identified four alternatives, each of which made approximately 500 thousand acres, containing 41 billion tons of coal, available for leasing. BUF:6-1546; BUF:233-22990, -23143, -23149.

28. In so doing, the agency carried forward without alteration its 2001 planning decision to make this area and amount of coal available for leasing. BUF:6-1546. BLM's prior planning decision in 2001 did not consider the impacts of climate change when making coal available for leasing. BUF:233-22990, -23137 to -23178.

29. BLM predicted that under all four Buffalo alternatives, the agency would issue 28 coal leases and approximately 10.2 billion tons of coal would be strip mined during the planning period. BUF:6-2232.

30. The Buffalo EIS states that consideration of other coal alternatives was not required because "[r]educing climate impacts by limiting fossil fuel development was not identified as an issue through the scoping process and in development of the range of alternatives." BUF:9-5006.

31. In scoping comments Conservation Groups repeatedly asked BLM to reduce climate impacts by reducing coal development: “We encourage the BLM to seriously address the role coal has on climate change. CO<sub>2</sub> from coal fired power plants is the leading contributor to the rise of greenhouse gases. It is time to begin transitioning away from coal and opening up more coal resources to development will set us back in the fight against climate change . . . . Sierra Club asks that the BLM not expand coal mining operations. It is not in our nation’s best interest to continue using coal as an energy source. The health of our citizens and the health of our environment are at risk from the continued use of coal.” BUF:1545-96799. Conservation Groups further implored, “[P]ursuant to NEPA, BLM must address direct, indirect, and cumulative impacts of climate change [and] must consider alternatives in light of those impacts . . . .” BUF:1602-97631. Over one hundred commenters—constituting the majority of scoping comments BLM received—requested BLM’s planning process to “slow the pace of coal development.” BUF:1640-98190 (master letter); BUF:2-108 to -119 (identifying identical or similar letters).

32. In the final Buffalo EIS’s response to comments, BLM further asserted that its identification of lands available for further coal leasing in 2001 satisfied its duty to consider a range of coal alternatives. BUF:6-4111. BLM’s

Buffalo analysis from 2001 did not consider the impacts of climate change.

BUF:233-2990, -23135 to -23179.

33. Conservation Groups' comments regarding both Miles City and Buffalo also called for BLM to consider requiring technologies and practices that, when employed, can reduce methane emissions from oil and gas production. *See* BUF:1407-91737 to -91745; BUF:1996-130425; MC:698-25016 to -25026; MC:816-33701. For example, Conservation Groups noted that emissions from pneumatic devices could be reduced through use of "low bleed" or "no bleed" devices, and that fugitive emissions, or "leaks," could be reduced by programs for frequent leak detection and repair. BUF:1407-91744 to -91745, BUF:1258-85338 to -85339; MC:698-25025. EPA submitted similar comments. MC:277 (EPA letter providing list of air quality mitigation measures for BLM's consideration, noting that no bleed pneumatic controllers are "one of the most effective and cost-effective technologies"), BUF:1727-108249 to -108250 (EPA comment table).

34. Many measures recommended by Conservation Groups, including these two particular measures, go beyond what was required by EPA regulations regarding air emissions from oil and gas operations. For example, EPA regulations do not cover existing sources. 81 Fed. Reg. 35824 (June 3, 2016) (EPA's new source performance standards apply only to new, reconstructed, and modified sources). Conservation Groups called for BLM to address existing sources, and



alerted BLM's Buffalo Field Office to the fact that, at the RMP stage, BLM's Tres Rios Field Office required operators to replace high-bleed pneumatic devices with low-bleed, no-bleed, or air-driven devices on all existing wells as well as on all new wells. BUF:1258-85339.

35. Even for new sources, EPA regulations do not require "no bleed" pneumatic controllers (except for natural gas processing plants), and only require intermittent leak detection and repair. 40 C.F.R. §60.5390a(b)-(c) (allowing a "low" bleed rate of up to 6 cubic feet per hour for pneumatic controllers other than those at natural gas processing plants); *id.* §60.5397(g) (requiring only semiannual monitoring of leaks from well sites).

36. Information about the significant emissions reductions and cost savings of methane mitigation measures was available to BLM during the planning processes. For example, Conservation Groups directed BLM to its own Climate Change Supplementary Information Report, which detailed the amount of methane emission reduction expected as well as savings to industry as a result of the use of particular mitigation measures. BUF:1407-91740, n. 57; BUF:2167-137782 to -137783; MC:698-25020, n. 132; MC:2096-66767 to -66768.

37. EPA similarly recommended that BLM consider requiring methane mitigation best management practices. MC:277-13364 to -13365 (email from EPA to BLM); BUF:1727-108249 to -108250 (EPA comment table).

38. None of the alternatives analyzed in either EIS would have imposed any additional obligation to reduce methane emissions from oil and gas operations. BLM argued that it was not required to consider alternatives mandating methane mitigation measures because (1) EPA regulations already limit methane emissions, MC:7-3917, BUF:6-3648, and (2) BLM plans encourage the use of voluntary methane mitigation measures, MC:7-3917; BUF:6-2092, -3899 to -3902. Both arguments are unsupported.

39. In the Buffalo RMP, methane emissions for the year 2024 were forecast to be 2,134 tons from natural gas wells and 4,867 tons from coalbed methane wells. BUF:6-2364, -3742 (discussing emissions from preferred alternative). Emissions were dominated by wellhead fugitives (55% for natural gas wells, BUF:6-3688, and 85% for coalbed methane wells, BUF:6-3740) and pneumatic devices (40%, BUF:6-3688 and 7% respectively, BUF:6-3741). Combined, these sources accounted for over 95% of emissions for natural gas wells and 92% for coalbed methane wells.

40. For Miles City, for the preferred alternative, which BLM ultimately adopted, the BLM reports that methane emissions from oil and gas activity would total 489 tons per year in the peak year. MC:2231-72726. Of these, BLM calculated that oil wells account for 296 tons, MC:2231-73147, natural gas wells for 85 tons, MC:2231-73176, and coalbed methane wells for 109 tons, MC:2231-

73201. Of the 489 tons of total methane emissions, 229 tons or 47% are from oil well “production flaring,” MC:2231-73147, and 78 tons or 16% and 99 tons or 20% are from “gas wellhead and compressor station fugitives” (i.e., leaks) from natural gas and coalbed methane wells respectively, MC:2231-73176, -73201. Pneumatic controllers are not included at all in the methane emissions estimates.

### **Scope of Greenhouse Gas Emission Analysis**

41. BLM’s analysis of greenhouse gas emissions resulting from BLM’s management of the planning areas, and the resulting impact on climate change, provides estimates of the amounts of greenhouse gases that will be directly emitted within the individual planning areas by coal mining and oil and gas production. MC:7-3083 to -3087, BUF:6-2092. These emissions estimates are derived, in part, from BLM’s predictions of the amount of coal mining and oil and gas production that will occur during the planning periods. *Id.*

42. Neither EIS provides estimates of greenhouse gas emissions occurring outside the planning areas. Thus, the Miles City EIS does not estimate or discuss, in the cumulative impacts section or elsewhere, greenhouse gas emissions from fossil fuel extraction in the Buffalo planning area, and vice versa. Nor do the Miles City or Buffalo EISs address emissions from fossil fuel development occurring

pursuant to the other six plans revised in the same Record of Decision, or, more broadly, on the 700 million acre mineral estate managed by BLM.

43. Nor did BLM estimate the emissions that would result from the use of fossil fuels extracted within the individual planning areas, or from processing, transportation, *etc.*, of those fuels occurring outside the planning areas but prior to end use.

44. In the Miles City EIS BLM stated “GHG emissions from activities outside the planning area were not included because insufficient data exist to accurately quantify these emissions.” MC:7-3078.

45. In email response to an internal inquiry about emissions from use of coal extracted from the Buffalo planning area, Kristen Lenhardt, Chief of Communications, BLM Wyoming State Office stated, “We do not quantify downstream emissions (indirect) from the burning of coal at the RMP stage. However, we do make those calculations at the [lease] stage.” BUF:1961-128282.

46. BLM acknowledged that coal from the Miles City planning area will be burned to generate electricity. MC:7-3798. Similarly, BLM states that, “[c]oal produced [in the Buffalo planning area] is expected to be used almost entirely as steam coal for electric generation and other industrial applications.” BUF:6-2252.

47. BLM also examined Energy Information Administration estimates for future nationwide coal demand. BUF:6-2232.

48. Prior to publication of the EISs here, BLM had, in the EIS for coal leasing in the Powder River Basin, estimated the amount of greenhouse gases that would be emitted by the use and combustion of coal made available under the lease, in addition to the emissions that would result from coal mining itself. MC:816-33712, BUF:1996-130443 to -130444. BLM performed this analysis by multiplying (1) an estimate of the amount of greenhouse gases emitted from combustion of a ton of the coal at issue by (2) an estimate of the amount of coal that would be mined under the leases. *Id.* In that analysis, BLM predicted that each ton of coal burned would emit 1.659 tons of carbon dioxide. *Id.* This “conversion factor” allows BLM to translate “tons of coal mined” into “tons of carbon dioxide emitted during combustion” with simple multiplication. BUF:1996-130444.

49. Conservation Groups called BLM’s attention to that prior analysis, and to five other examples where BLM or other federal agencies previously estimated indirect emissions from various coal mining proposals. MC:816-33712, BUF:1996-130443.

50. More broadly, Conservation Groups explained to BLM that, when burned to generate electricity, coal emits predictable amounts of carbon dioxide based on various characteristics of the coal. BUF:1996-130444. Conservation Groups directed BLM to Energy Information Administration “emission coefficients” that estimate emissions per ton of coal consumed. MC:816-33710.

51. Conservation Groups explained that BLM could have readily taken the 10.2 billion tons of coal identified in BLM's reasonably foreseeable development scenario, multiplied by the 1.659 conversion factor BLM has used for coal mines in the Buffalo planning area, and calculated the 16.9 billion tons of carbon dioxide that will be emitted from combustion of coal from the planning area over the next twenty years. BUF:1996-130443 to -130444.

52. Conservation Groups noted these indirect emissions would be more than 80 times the amount of direct greenhouse gas emissions that BLM disclosed. BUF:1996-130444.

53. Comments submitted by Conservation Groups explained that BLM could perform a similar analysis to estimate emissions resulting from processing, transportation, and use of oil and gas extraction. MC:698-24978, MC:816-33695, Buf:1407-91726, Buf:1996-130418. Conservation Groups submitted a report by Stratus Consulting, "Greenhouse Gas Emissions from Fossil Energy Extracted from Federal Lands and Waters," that explained a methodology for estimating emissions for the entire oil and gas "life cycle." MC:698-27339 to -27341, Buf:2153-135123 to -135126. This methodology, like analyses BLM had previously undertaken for coal, essentially multiplied amounts of oil and gas by an "emission factor" to estimate greenhouse gases emitted per unit of oil or gas produced and consumed. *Id.*

54. This report further explained how that methodology could be used to estimate the total amount of greenhouse gas emissions related to fossil fuel extraction on all federal land. MC:698-27333, Buf:2153-135119.

### **Carbon Budgeting and the Social Cost of Carbon**

55. The greenhouse gas emissions from the Buffalo and Miles City plans, along with the emissions from all BLM-managed fossil fuel resources, substantially contribute to climate change. According to one estimate provided by Conservation Groups, total U.S. emissions in 2009 were 6.600 gigatons of carbon dioxide equivalent (“GtCO<sub>2</sub>e”), with emissions from fossil fuel extraction on federal lands being approximately 1.537 GtCO<sub>2</sub>e—accounting for approximately 24% of total U.S. GHG emissions. Buf:2153-135131, 135128.

56. The U.S. Environmental Protection Agency (“EPA”) also compiles U.S. emissions data to comply with commitments under the United Nations Framework Convention on Climate Change. Buf:2165-137065. The EPA found that in 2011, total U.S. greenhouse gas emissions were 6.702 GtCO<sub>2</sub>e, and that total U.S. emissions have increased by 8.4 percent from 1990 to 2011. Buf:2165-137086.

57. The Intergovernmental Panel on Climate Change (“IPCC”), a Nobel Prize-winning scientific body within the United Nations that reviews and assesses

information relevant to climate change, released a Climate Change 2014 Synthesis Report Summary for Policymakers, which is based on the reports of the three Working Groups for the IPCC's Fifth Assessment Report. Buf:2269-141298; MC:2371-77178. The IPCC's assessment concerning the state of warming is dire. Buf:2269-141300; MC:2371-77180 (unprecedented concentrations of greenhouse gases); Buf:2269-141302; MC:2371-77182 (widespread impacts from climate change); Buf:2269-141304; MC:2371-77184 (continued GHG emissions will increase the likelihood of "severe, pervasive and irreversible impacts"); Buf:2269-141312; MC:2371-77192 (climate change will continue for centuries, even if GHG emissions are stopped).

58. Noting a "consistent, almost linear" relationship between CO<sub>2</sub> emissions and global temperature change, the IPCC has developed mitigation scenarios to constrain anthropogenic greenhouse gas emissions. Buf:2269-141304; MC:2371-77184. One such scenario "aims to keep global warming *likely* below 2°C above pre-industrial temperatures." Buf:2269-141304; MC:2371-77184.

59. Identifying a carbon budget, the IPCC found that, for a >66% chance to remain under 2°C of warming, CO<sub>2</sub> emissions from all anthropogenic sources would need to remain under 1000 GtCO<sub>2</sub>. Buf:2269-141306; MC:2371-77186.

60. Globally, humans emitted 31.6 GtCO<sub>2</sub>e in 2009, with emissions expected to increase by roughly three percent a year. BUF:2130-133941. Based on



these past emissions, the remaining carbon budget for a >66% chance to limit warming to 2°C is approximately 800 GtCO<sub>2</sub>e.

61. Record evidence shows that fossil fuel reserves held by the world's fossil fuels companies and state actors are consistent with approximately 2,795 GtCO<sub>2</sub>e of emissions. Buf:2130-133942.

62. An Interagency Working Group was formed by the U.S. Government, comprised of numerous federal agencies and scientists, to create the social cost of carbon protocol ("SCC"). This Interagency Working Group developed a technical support document that allows agencies to "incorporate the social benefits of reducing carbon dioxide (CO<sub>2</sub>) emissions into cost-benefit analyses." MC:2356-776616; Buf:2157-135737.

63. The Interagency Working Group developed four social cost of carbon values on a per-ton basis to use in cost-benefit analyses, based on models assessing the harm from global warming and applying various discount rates over time. The social cost of carbon estimates for 2020 are \$12, \$43, \$65, and \$129 per ton. MC:2356-776617; Buf:2157-13738.

64. The Interagency Working Group uses a global measure of the benefit of reducing U.S. emissions, in order to "[emphasize] the need for a global solution to a global problem." MC:2356-776629-30; Buf:2157-135750-51. The social cost

of carbon can be applied to Miles City and Buffalo planning area emissions to evaluate the relative costs those emissions will have on society.

### **Analysis of Methane Emissions**

65. BLM estimated that the Buffalo and Miles City plans would lead to 500,000 and 3,000 tons per year of methane emissions, respectively. Buf:6-2092, MC:7-3087.

66. Methane is a much more potent greenhouse gas than carbon dioxide, on a pound-for-pound basis. MC:7-2712, BUF:6-2091.

67. The impact of methane and other greenhouse gases is often discussed in terms of “carbon dioxide equivalent,” or CO<sub>2</sub>e. MC:1934-59924, Buf:2127-133820. Volumes of methane are translated into carbon dioxide equivalent using an estimate of methane’s “global warming potential,” (“GWP”), which is an estimate of how many tons of carbon dioxide it would take to cause the same amount of warming as a ton of methane. *Id.*

68. Once emitted, methane persists in the atmosphere for much less time than carbon dioxide. *See, e.g.*, MC:1429-42172. Comparisons of methane and carbon dioxide are therefore necessarily tied to a particular time frame; the shorter the timeframe, the more extreme the impact of methane relative to carbon dioxide, and the higher methane’s GWP. Buf:2168-138040, MC:698-29728

(Intergovernmental Panel on Climate Change, *Climate Change 2007: The Physical Science Basis*). Commonly used timeframes used for global warming potentials are 20 and 100 years. *Id.*

69. Scientific understanding of methane’s potency has grown in the last two decades:

a. Periodically, the IPCC releases “assessment reports,” which present the then-prevailing scientific consensus on numerous issues relating to climate change. *See, e.g.*, MC:1934-59111, Buf:2127-133806 (Synthesis Report for the Fourth Assessment Report). The IPCC is recognized as “a multinational scientific body ... [d]rawing on expert opinions from across the globe,” *Massachusetts v. E.P.A.*, 549 U.S. 497, 508-512 (2007), and its “peer-reviewed assessments synthesized thousands of individual studies on various aspects of greenhouse gases and climate change and drew ‘overarching conclusions’ about the state of the science in this field.” *Coal. for Responsible Regulation, Inc. v. E.P.A.*, 684 F.3d 102, 119 (D.C. Cir. 2012), *aff’d in part, rev’d on other grounds in part sub nom. Util. Air Regulatory Grp. v. E.P.A.*, 134 S. Ct. 2427 (2014), *and amended sub nom. Coal. for Responsible Regulation, Inc. v. Env’tl. Prot. Agency*, 606 F. App’x 6 (D.C. Cir. 2015).

b. In 1996, the IPCC released its Second Assessment Report, which estimated that methane's 100-year global warming potential was 21. MC:2140-68661 (EPA summary); Buf:2165-137085 (same).

c. In 2007, the Panel released its Fourth Assessment Report, which increased the estimate of methane's 100-year global warming potential to 25, and which estimated methane's 20-year global warming potential at 75. Buf:2168-138040, MC:698-29728.

d. Studies published after the Fourth Assessment Report indicated that it still underestimated methane's potency, as explained by comments Citizen Groups submitted on the draft EISs. Buf:1407-91731, MC:698-24983; *see also* MC:7-2712 (final EIS recognizing these higher estimates).

e. As explained in Citizen Groups' protests, in September 2013, shortly after the Buffalo and Miles City draft EISs were published, the Panel released its Fifth Assessment Report on the physical science of climate change. MC:816-33719, Buf:1996-130451. This report again increased the estimates of methane's potency, adopting values as high as 37 and 86 for 100 and 20-year timeframes, respectively. *Id.*

70. In the EISs, BLM compares the climate consequences of the alternatives in terms of carbon dioxide equivalent emissions. Buf:6:2092-93, MC:7-3078.

71. BLM calculated carbon dioxide equivalent totals using a methane global warming potential of 21. BUF:6-2091, MC:7-2712.

72. In the Buffalo EIS, BLM explained its choice of GWP value solely by referring to it as “the EPA GWP[.]” Buf:6-2091. In the Miles City EIS, BLM stated that “The BLM uses the [methane] global warming potentials that are specified in USEPA regulations and are used for GHG emission reporting under 40 Code of Regulations Part 98 as of November 1, 2013.” MC:7-2712. The EISs do not provide any other source for this value.

73. 40 C.F.R. §§ 98.1 *et seq.* is EPA’s rule for “Mandatory Reporting of Greenhouse Gases.”

a. When this rule was first adopted in 2009, it required use of a methane global warming potential of 21 for some purposes. 74 Fed. Reg. 56,260, 56,395. EPA’s proposal for the rule explained that this value was taken from the IPCC’s 1996 report. 74 Fed. Reg. 16,448, 16453 n.3 (Apr. 10, 2009),

b. On November 29, 2013, EPA finalized a revision to this rule that, *inter alia*, updated the methane global warming potential specified in the rule to 25. 78 Fed. Reg. at 71,911; *see also* MC:7-2712 (final EIS, recognizing that EPA had proposed this update but not recognizing the fact that the update was finalized 18 months before publication of the final EIS).

c. In the proposals for the initial rule and the 2013 update, EPA recognized that the global warming potentials specified in the rules did not reflect the most current or best available science. 74 Fed. Reg. 16,448, 16453 n.3 (Apr. 10, 2009), 78 Fed. Reg. 19,802, 19,808 (Apr. 2, 2013). EPA explained that its selection was not made on the basis of best or most current science, but instead to adhere to United Nations emission reporting protocols. *Id.* At the time of the initial rule, those protocols had not been updated since 2002, and the 2002 protocols required use of the 1996 values. 74 Fed. Reg. at 16,454 n.3. The United Nations updated those protocols in 2012, to use the 2007 values, as reflected in EPA's 2013 revision of the rule. 78 Fed. Reg. at 19,808.

d. More broadly, EPA has recognized that “each successive [IPCC] assessment provides more accurate GWP estimates as experiments and improved computational methods lead to more accurate estimates of the radiative efficiencies, atmospheric lifetimes, and indirect effects of the various gases.” 78 Fed. Reg. at 71,911.

74. EPA compiles an annual estimate of total U.S. greenhouse gas emissions, which EPA refers to as an “Inventory.” *See, e.g.*, MC:2140-68660 to -68661 (EPA, “Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2009); Buf:2165-137084 to -137085 (EPA, “Inventory of U.S. Greenhouse Gas

Emissions and Sinks: 1990-2011). In these inventories, EPA presents emission calculations made using the most recent IPCC GWPs. *Id.* (summarizing EPA’s provision of these calculations).<sup>6</sup> The annual inventory presents an emission calculation made according to the United Nations protocols—*i.e.*, using outdated estimates of methane’s global warming potential. *Id.* EPA also calculates emissions using the GWPs specified in the outdated United Nations protocols, but EPA states that those calculations do not represent the most recent science. *Id.*

### **Non-Climate Cumulative Impacts**

75. Emissions from coal mining and fluid mineral development together represent the largest air emissions sources for each of the planning areas. BUF:6-2062 to -2063, -2085 to -2089; MC:7-3087.

76. In the Miles City EIS, BLM notes that “cumulative pollutant concentrations are expected to be less than the NAAQS [National Ambient Air Quality Standards under the Clean Air Act].” MC:7-3088. Similarly, in the Buffalo EIS, BLM notes that most pollutant concentrations are expected to be less than the

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<sup>6</sup> The calculations using the most recent GWPs are consistently presented in Annex 6.1 to the annual inventory. MC:2140-68661; Buf:2165-137085. Copies of these annexes for the inventories included or cited in the record here are available on EPA’s website at <https://www.epa.gov/ghgemissions/us-greenhouse-gas-inventory-report-archive>.

NAAQS, except that ozone concentrations will become an important issue in the planning area if EPA lowers the NAAQS for ozone. BUF:6-2089 to -2090.

77. BLM published the Proposed Resource Management Plan and Final Environmental Impact Statement for the Buffalo Field Office Planning Area in May 2015. BUF:6-1326. BLM published the Proposed Resource Management Plan and Final Environmental Impact Statement for the Miles City Field Office Planning Area in June 2015. MC:7-2508. On October 26, 2015, EPA lowered the NAAQS for ozone from 0.075 ppm to 0.070 ppm. National Ambient Air Quality Standards for Ozone, 80 Fed. Reg. 65292 (Oct. 26, 2015).

78. Multiple peer reviewed scientific publications have concluded that children, asthmatics, and even healthy adults exercising or working outdoors suffer impacts from ozone at the level of the NAAQS that was in effect when the EISs were published—0.075 ppm. MC:816-33705 to -33706; BUF:1996-130431.

79. Air pollution at levels at and below the NAAQS also impacts visibility and vegetation. BUF:1407-91709 (vegetation); -91705 to -91706 (visibility); MC:816-33703 (vegetation), -33701 to -33702 (visibility).

Respectfully submitted this 14th day of July, 2017.

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