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Tenth Circuit

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UNITED STATES COURT OF APPEALS

Christopher M. Wolpert
Clerk of Court

FOR THE TENTH CIRCUIT

DINÉ CITIZENS AGAINST RUINING
OUR ENVIRONMENT; SAN JUAN
CITIZENS ALLIANCE; SIERRA CLUB;
WILDEARTH GUARDIANS,

Plaintiffs - Appellants,

v.

No. 21-2116

DEBRA HAALAND, in her official
capacity as Secretary of the United States
Department of the Interior; UNITED
STATES BUREAU OF LAND
MANAGEMENT, an agency within the
United States Department of the Interior;
TIM SPISAK, in his official capacity as
Acting New Mexico State Director of the
United States Bureau of Land
Management; RICK FIELDS, in his
official capacity as Field Manager of the
United States Bureau of Land Management
Farmington Field Office,

Defendants - Appellees,

and

DJR ENERGY HOLDINGS, LLC;
SIMCOE, LLC; AMERICAN
PETROLEUM INSTITUTE; ALICE
BENALLY; LILLY COMANCHE;
VIRGINIA HARRISON; SAMUEL
HARRISON; DELORA HESUSE;
VERNA MARTINEZ; LOIS PHOENIX;
MABEL C. SENGER; ENDURING
RESOURCES IV, LLC,

Intervenor Defendants - Appellees.

INSTITUTE FOR POLICY INTEGRITY
AT NEW YORK UNIVERSITY SCHOOL
OF LAW,

Amicus Curiae.

**Appeal from the United States District Court
for the District of New Mexico
(D.C. No. 1:19-CV-00703-WJ-JFR)**

Kyle J. Tisdell, Western Environmental Law Center, Taos, New Mexico (Allyson A. Beasley, Western Environmental Law Center, Taos, New Mexico; Daniel L. Timmons and Samantha Ruscavage-Barz, WildEarth Guardians, Santa Fe, New Mexico, with him on the briefs), for Plaintiffs – Appellants.

Bridget Kennedy McNeil, Environment and Natural Resources Division, U.S. Department of Justice (Michael C. Williams, Of Counsel, Attorney-Adviser, Office of the Solicitor, U.S. Department of the Interior; Todd Kim, Assistant Attorney General, and Clare Boronow, Environment and Natural Resources Division, U.S. Department of Justice, with her on the briefs), Denver, Colorado, for Defendants – Appellees.

Steven Rosenbaum, Covington & Burling LLP (Bradley K. Ervin with him on the brief), Washington, D.C., for Intervenor Defendant – Appellee American Petroleum Institute.

Hadassah M. Reimer, Holland & Hart LLP, Jackson, Wyoming; John F. Shepherd and Tina R. Van Bockern, Holland & Hart LLP, Denver, Colorado; and Robert J. Sutphin, Holland & Hart LLP, Santa Fe, New Mexico, filed a brief for Intervenor Defendants – Appellees DJR Energy Holdings, LLC and SIMCOE LLC.

Jennifer H. Weddle, Troy A. Eid, and Harriet M. Retford, Greenberg Traurig LLP, Denver, Colorado, filed a brief for Intervenor Defendants – Appellees Alice Benally, Lilly Comanche, Virginia Harrison, Samuel Harrison, Dolora Hesuse, Verna Martinez, Lois Phoenix, and Mabel C. Senger.

Jens Jensen, Keith D. Tooley, and Rebecca W. Watson, Welborn Sullivan Meck & Tooley, P.C., Denver, Colorado, filed a brief for Intervenor Defendant – Appellee Enduring Resources IV, LLC.

Max Sarinsky, Institute for Policy Integrity, New York, New York, filed an amicus brief for the Institute for Policy Integrity at New York University School of Law.

Before **McHUGH**, **EBEL**, and **MURPHY**, Circuit Judges.

McHUGH, Circuit Judge.

Diné Citizens Against Ruining Our Environment, San Juan Citizens Alliance, Sierra Club, and WildEarth Guardians (together, the “Citizen Groups”) challenge the Bureau of Land Management’s (“BLM”)¹ environmental assessments (“EAs”) and environmental assessment addendum (“EA Addendum”) analyzing the environmental impact of 370 applications for permits to drill (“APDs”) for oil and gas in the Mancos Shale and Gallup Sandstone formations in the San Juan Basin of New Mexico. Importantly, these challenges come after a separate but related case in which this court remanded to the district court with instructions to vacate five EAs analyzing the impacts of APDs in the area because BLM had failed to consider the cumulative environmental impacts as required by the National Environmental Policy Act (“NEPA”). After that decision, BLM prepared an EA Addendum to remedy the

¹ Citizen Groups also named individuals in their official capacities as employees of the Department of the Interior or the Bureau of Land Management as defendants. For convenience, we refer to these defendants collectively as “BLM.”

defects in those five EAs, as well as potential defects in eighty-one other EAs that also supported approvals of APDs in the area.

Citizen Groups now argue these eighty-one EAs and the EA Addendum violate NEPA because BLM (1) improperly predetermined the outcome of the EA Addendum and (2) failed to take a hard look at the environmental impacts of the APD approvals related to greenhouse gas (“GHG”) emissions, water resources, and air quality. BLM disagrees with Citizen Groups’ arguments and contends the challenges to some of the APDs were not justiciable because the APDs had not yet been approved. The district court affirmed the agency action, determining (1) Citizen Groups’ claims based on APD’s that had not been approved were not ripe for judicial review, (2) BLM did not unlawfully predetermine the outcome of the EA Addendum, and (3) BLM took a hard look at the environmental impacts of the APD approvals.

We agree with BLM and the district court that the unapproved APDs are not ripe and accordingly, limit our review to the APDs that have been approved. Turning to Citizen Groups’ two primary arguments on the merits, we hold that (1) BLM did not improperly predetermine the outcome of the EA Addendum, but, even considering that addendum, (2) BLM’s analysis was arbitrary and capricious because it failed to take a hard look at the environmental impacts from GHG emissions and hazardous air pollutant emissions. However, we conclude that BLM’s analysis of the cumulative impacts to water resources was sufficient under NEPA.

We reverse and remand so that the district court may consider the appropriate remedy for the NEPA violations we identify. To assist with that reconsideration, we

adopt the test set out by the D.C. Circuit in *Allied-Signal, Inc. v. U.S. Nuclear Regul. Comm'n*, 988 F.2d 146, 153 (D.C. Cir. 1993). In the event the district court concludes vacatur is not appropriate under that test, it should determine whether injunctive relief is warranted. Pending the district court's decision on remand, which should be rendered expeditiously, we enjoin the approval of any additional APDs based on the existing EAs and EA Addendum.

I. BACKGROUND

A. *Factual History*

We begin by reviewing the procedural requirements of NEPA, 42 U.S.C. §§ 4321 *et seq.*, and for managing oil and gas development in accordance with the Federal Land Policy and Management Act ("FLPMA"), 43 U.S.C. §§ 1701 *et seq.* We then provide the factual and procedural background of this appeal before turning to the legal analysis.

1. NEPA

NEPA is a federal environmental law that requires agencies to consider the environmental impact of their actions as part of the decisionmaking process and to inform the public about these impacts. *Citizens' Comm. to Save Our Canyons v. U.S. Forest Serv.*, 297 F.3d 1012, 1021 (10th Cir. 2002). NEPA does not command agencies to reach any particular outcome, and it does not direct agencies to give special weight to environmental concerns. *Id.* at 1022. "[I]t requires only that the agency take a 'hard look' at the environmental consequences before taking a major action." *Id.* (quotation marks omitted). To that end, NEPA directs agencies to prepare

an Environmental Impact Statement (“EIS”) for “proposals for . . . major Federal actions significantly affecting the quality of the human environment.” 42 U.S.C. § 4332(C); *see also* 40 C.F.R. §§ 1502.1–1502.24 (1978)² (relating to the EIS requirement).

If an agency is unsure whether an action will significantly affect the environment, the agency may prepare an EA to determine whether an EIS is necessary. *See* 40 C.F.R. § 1501.5. If an agency completes an EA and determines that a proposed project will not significantly impact the human environment, the agency issues a Finding of No Significant Impact (“FONSI”), and the action may proceed without an EIS. *Id.*; *see also Citizens’ Comm. to Save Our Canyons*, 297 F.3d at 1022–23.

2. FLPMA

BLM manages oil and gas development on federal land pursuant to FLPMA and in compliance with NEPA. BLM does so through a three-step process. First, BLM prepares a land use plan known as a Resource Management Plan (“RMP”) for oil and gas leasing in an area. *See* 43 C.F.R. § 1601.0-5(n) (defining “resource management plan”). After an RMP is approved, future agency actions must conform to the RMP. *Id.* § 1610.5-3. Second, BLM identifies the lands it will lease for oil and gas development and proceeds to sell and execute leases for those lands. *Id.* § 3120.1

² The APD approvals at issue took place prior to the 2020 amendments, so we cite to the prior versions of the regulations.

et seq. Third, the lessee submits an APD for oil or gas. *Id.* § 3162.3-1(c). BLM must approve the APD before the lessee may begin drilling. *Id.* Prior to approving an APD, BLM will typically conduct a site-specific EA to determine whether the APD approval will significantly impact the environment. *See, e.g., New Mexico ex rel. Richardson v. Bureau of Land Mgmt.*, 565 F.3d 683, 716–17 (10th Cir. 2009) (noting that site-specific EAs may need to be conducted prior to leasing or prior to APD approval depending on circumstances).

3. Oil and Gas Development in the Mancos Shale and Gallup Sandstone Zones

There are approximately 23,000 active oil and gas wells in the San Juan Basin of northern New Mexico. Approximately twenty years ago, BLM issued an RMP/EIS that considered the Mancos Shale and Gallup Sandstone zones in the San Juan Basin to be “a fully developed oil and gas play.” 79 Fed. Reg. 10548, 10548 (Feb. 25, 2014). Since then, improvements to technologies known as horizontal drilling and hydraulic fracturing have made it economical to conduct further drilling for oil and gas in the area. *Id.* In 2014, BLM published a Notice of Intent to Prepare a Resource Management Plan Amendment and an Associated Environmental Impact Statement that would account for the newly anticipated oil and gas development in the area. *Id.* Before it finalized the new RMP/EIS,³ BLM began approving APDs in the Mancos

³ BLM issued a draft RMP/EIS in 2020, but the updated RMP/EIS has yet to be finalized. This court previously held that some of the Citizen Groups were not likely to succeed on the merits of their claim that BLM violated NEPA by tiering EAs to the 2003 RMP/EIS that did not consider the increased interest in drilling in the Mancos Shale and Gallup Sandstone zones. *Diné Citizens Against Ruining Our*

Shale and Gallup Sandstone zones through individual, site-specific EAs tiered to the 2003 RMP/EIS.

4. Prior Lawsuit

In prior litigation, some of the Citizen Groups challenged the site-specific EAs for hundreds of APDs approved in the Mancos Shale and Gallup Sandstone zones from 2012 through 2016. *See Dine Citizens Against Ruining Our Environment v. Bernhardt* (“*Dine I*”), 923 F.3d 831 (10th Cir. 2019). The district court in that matter affirmed BLM’s approval of the APDs. *Id.* at 836. On appeal, this court affirmed in part and reversed in part. *Id.* at 859. We affirmed most of the APDs because those Citizen Groups had not provided the complete EAs necessary to review BLM’s actions. *Id.* at 845 (limiting our NEPA review to only the six complete EAs in the record). However, there was sufficient evidence in the record to review the APDs associated with six of the EAs, and this court held BLM failed to take a hard look at the cumulative impacts to water resources from the reasonably foreseeable wells in five of those six EAs. *Id.* at 850–51, 856–59. Thus, we remanded to the district court with instructions to vacate the FONSI and the associated APD approvals for the five wells. *Id.* at 859.

Environment v. Jewell, 839 F.3d 1276, 1283–85 (10th Cir. 2016). The decision to tier the EAs and EA Addendum to the 2003 RMP/EIS is not at issue in this appeal.

5. EA Addendum

In accordance with this court’s decision, BLM prepared supplementary NEPA analysis with the necessary cumulative impacts analysis for the five EAs. In the meantime, Citizen Groups filed this lawsuit challenging thirty-two additional EAs on the same grounds raised against the EAs challenged in the prior lawsuit. In response, BLM issued an EA Addendum that included additional environmental analysis for eighty-one⁴ EAs for 370 additional wells that may have suffered from the same defects as the five EAs we reviewed in *Dine I*.

BLM allowed the previously approved APDs to remain in place during the addendum process. According to BLM, the purpose of the EA Addendum was to determine whether the additional environmental analysis would support a FONSI or whether BLM would need to reopen its prior decisions on the APDs. In the EA Addendum, BLM considered how the APDs would affect the environment through air quality, GHG emissions, and groundwater. Based on the conclusions in the EA Addendum, BLM issued an individual Environmental Assessment Addendum and FONSI for each of the eighty-one EAs affected. These documents are nearly identical, stating “[t]his FONSI has been prepared to re-affirm the findings of the original EA and original FONSI for the selected Proposed Action alternative.” Joint App. Vol. 9 at 1923–Vol. 13 at 2489.

⁴ In the EA Addendum, BLM suggested the scope was expanded to include eighty-two EAs issued since 2014, but BLM identified only eighty-one EAs that would be affected by the EA Addendum.

B. Procedural History

In the instant matter, Citizen Groups filed a Petition for Review of Agency Action in the United States District Court for the District of New Mexico challenging thirty-two EAs and FONSIIs that preceded the approval of 255 APDs. In the petition, Citizen Groups argued the approvals of the APDs violated NEPA, and they requested that the court vacate BLM’s approvals of the APDs and enjoin BLM from approving any pending or future APD for horizontal drilling or hydraulic fracturing in the area. Citizens Groups filed this petition before BLM issued the EA Addendum and the subsequent individual Environmental Assessment Addenda and FONSIIs.

In response to the EA Addendum, individual addenda, and reaffirmed FONSIIs, Citizen Groups filed an Amended and Supplemented Petition for Review of Agency Action challenging all eighty-one EAs and the 370 APD approvals analyzed in the EA Addendum. Citizen Groups specifically argued BLM (1) had improperly predetermined the outcome of the EA Addendum because BLM did not vacate or suspend its approval of the APDs while preparing the EA Addendum, and (2) failed to take a hard look at the direct, indirect, and cumulative environmental effects of approving the APDs as they relate to water resources, air quality and human health impacts, and GHG emissions and climate.

While the matter was pending in the district court, several parties joined as intervenors: American Petroleum Institute (“API”); DJR Energy Holdings, LLC (“DJR”); Navajo citizens with allotment rights in the region (“Navajo Allottees”); Enduring Resources IV, LLC (“Enduring”); and SIMCOE LLC (collectively,

“Intervenors”). API is a national trade association of the oil and natural gas industry and represents over 600 companies, including companies with interests in the APDs at issue in this case. DJR is the owner and operator of twenty-two of the subject drilling permits, and SIMCOE is the owner and operator of seven permits to drill at issue in this case. Enduring is also an operator with ninety-one APDs challenged in this litigation, and Enduring argues it has different interests than the other operators because it uses special technology that results in net zero fresh water consumption during the drilling and operation process. The Navajo Allottees are Navajo Nation citizens who own mineral rights in the San Juan Basin. With the exception of Enduring, these Intervenors’ arguments center entirely on the appropriate remedy. Enduring also argues its APDs should not be vacated because BLM took a hard look at the environmental impacts of the APD approvals, especially in light of the special water technology Enduring uses.

After the matter was fully briefed, the district court issued an order affirming the APD approvals and dismissing Citizens Groups’ claims. First, the court concluded Citizen Groups’ claims were not ripe as to several of the APDs because they had not yet been approved by BLM. The court also concluded the claims were moot as to a few other APDs because either the APDs had expired or the wells had been abandoned. Turning to the merits of Citizen Groups’ challenges to the remaining APDs, the court reasoned that (1) BLM had not improperly predetermined the findings of the EA Addendum because it issued the initial EAs in good faith and retained the power to modify or revoke the approval of the APDs, (2) it was

appropriate to supplement the EAs and the administrative record with the EA Addendum, and (3) BLM adequately considered the environmental impacts as required by NEPA in the EA Addendum. Thus, the district court affirmed the agency action and dismissed Citizen Groups' petition.

Citizen Groups timely appeal the district court's order and final judgment.

II. DISCUSSION

Citizen Groups challenge the approval or pending approval of 370 APDs in the Mancos Shale area, arguing (1) the EA Addendum was unlawfully predetermined as applied to all APDs that were approved prior to its completion, and (2) BLM failed to take a hard look at the environmental impacts of all 370 APDs. We start by determining which APD approvals are properly before us and then turn to the merits of Citizen Groups' arguments.

A. *Jurisdiction*

We begin, as we must, by assessing our jurisdiction over Citizen Groups' claims. BLM argues that Citizen Groups' challenges to 161 of the APDs are not ripe because these APDs have not yet been approved.⁵ We agree.

⁵ Since the district court entered its ruling, BLM has issued final decisions on a few more of the challenged APDs, rendering those challenges ripe. BLM submitted a Motion for Judicial Notice requesting that this court take judicial notice of an updated spreadsheet showing the status of the challenged APDs and an accompanying declaration from David Mankiewicz, Acting Field Manager of BLM's Farmington Field Office, explaining the recent updates. According to the updated spreadsheet, there are currently 161 APDs that have not been approved or denied. These are the APDs designated as "not submitted," "unapproved notice of staking," "notice of staking," "application for permit to drill," or "unapproved application for

B. Merits

Before reviewing the merits with respect to the approved APDs, we set forth the general standard of review governing NEPA claims. Then, we consider the merits of the three main disputes raised in this appeal: (1) whether BLM unlawfully predetermined the outcome of the EA Addendum, (2) whether BLM failed to take a hard look at the environmental impact of the APDs in the initial EAs and the EA Addendum, and, if either of these violations occurred, (3) whether we should vacate the agency action or enjoin the development of the APDs.

permit to drill.” Mankiewicz Decl. ¶ 27. Citizen Groups have not opposed the motion to take judicial notice of the declaration or the updated spreadsheet.

It is within this court’s discretion to take judicial notice of a fact or a document. *United States v. Ahidley*, 486 F.3d 1184, 1192 n.5 (10th Cir. 2007). “Judicial notice is proper when a fact is beyond debate.” *The Estate of Lockett by and through Lockett v. Fallin*, 841 F.3d 1098, 1111 (10th Cir. 2016). Typically, we take judicial notice of facts that are a matter of public record. *Tal v. Hogan*, 453 F.3d 1244, 1264 n.24 (10th Cir. 2006). The updated statuses came from BLM’s official database for maintaining federal well information. Mankiewicz Decl. ¶ 7. Statistics from this database are publicly available. *See, e.g., Oil and Gas Statistics*, U.S. Dep’t of the Interior Bureau of Land Management, <https://www.blm.gov/programs-energy-and-minerals-oil-and-gas-oil-and-gas-statistics>. Thus, it appears this updated information is “beyond debate.” *Lockett*, 841 F.3d at 1111. Because the motion is not contested, the information is not debatable, and it helps this court determine its jurisdiction, we grant BLM’s Motion for Judicial Notice and take judicial notice of the Declaration of David Mankiewicz and Exhibit A.1, which includes the spreadsheet noting the current statuses of each of the challenged APDs.

BLM also argues that ten of Citizen Groups’ challenges are moot as to expired APDs or abandoned wells. However, Citizen Groups explicitly state they do not appeal the district court’s determination that the challenges to these APDs are moot. Appellants’ Br. at 4 n.1; Reply at 1 n.1. Accordingly, we do not review these ten APDs on appeal.

1. Standard of Review

NEPA does not create a cause of action, so NEPA challenges are brought under the APA. We review a district court’s resolution of APA claims de novo, applying the same deferential standard toward the agency’s decisions that the district court applies. *Biodiversity Conserv. All. v. Jiron*, 762 F.3d 1036, 1059 (10th Cir. 2014); *Utah Env’t Cong. v. Bosworth*, 443 F.3d 732, 739 (10th Cir. 2006). This means we will not overturn an agency’s decision “unless it is ‘arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with the law.’” *Utah Env’t Cong.*, 443 F.3d at 739 (quoting 5 U.S.C. § 706(2)(A)). An agency action is arbitrary and capricious

if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or if the agency action is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.

Wyoming v. U.S. Dep’t of Agric., 661 F.3d 1209, 1227 (10th Cir. 2011) (internal quotation marks omitted). “[W]e also accord agency action a presumption of validity.” *Id.* (internal quotation marks omitted). The challenger “bears the burden of persuasion” to show that the agency action is arbitrary and capricious. *N.M. Health Connections v. HHS*, 946 F.3d 1138, 1162 (10th Cir. 2019). “Our deference to the agency is especially strong where the challenged decisions involve technical or scientific matters within the agency’s area of expertise.” *Dine I*, 923 F.3d at 839 (internal quotation marks omitted).

2. Predetermination

Citizen Groups contend BLM violated NEPA because BLM approved the APDs prior to preparing the EA Addendum and did not vacate, suspend, or withdraw those approvals while gathering additional information about the environmental impact of the actions. In Citizen Groups' opinion, BLM unlawfully predetermined the outcome of the EA Addendum. BLM argues its supplemental environmental analysis was conducted in good faith, and the agency was prepared to revoke the APD approvals if the supplementary analysis showed that was necessary. We agree with BLM that in this situation—where BLM voluntarily conducted supplementary environmental analysis—BLM's choice not to vacate or suspend the underlying APDs pending that supplemental analysis did not render its decision unlawfully predetermined.

Because NEPA is concerned with agency consideration of environmental impacts as part of the decisionmaking process, NEPA “requires federal agencies to prepare an EIS [or EA] prior to taking major federal action.” *Utahns for Better Transp. v. U.S. Dep't of Transp.*, 305 F.3d 1152, 1162 (10th Cir. 2002) (citing 42 U.S.C. §§ 4321–4370d). In other words, the NEPA analysis must be “prepared early enough so that it can serve practically as an important contribution to the decisionmaking process and will not be used to rationalize or justify decisions already made.” 40 C.F.R. § 1502.5; *see also Forest Guardians v. U.S. Fish & Wildlife Serv.*, 611 F.3d 692, 712 (10th Cir. 2010) (noting environmental analysis is not meant to “rationalize a decision already made” (quoting *Metcalf v. Daley*, 214

F.3d 1135, 1142 (9th Cir. 2000))). However, “NEPA does not require agency officials to be ‘subjectively impartial’” while preparing the environmental analysis. *Forest Guardians*, 611 F.3d at 712 (quoting *Env’t Def. Fund, Inc. v. Corps of Eng’rs of the U.S. Army*, 470 F.2d 289, 295 (8th Cir. 1972)). That is, “[a]n agency can have a preferred alternative in mind when it conducts a NEPA analysis.” *Id.* Even with a preferred alternative, NEPA requires that the environmental analysis “be timely[] and [] taken objectively and in good faith.” *Id.* (quoting *Metcalf*, 214 F.3d at 1142).

A petitioner challenging an agency action must meet a high standard to show the agency engaged in unlawful predetermination. *Id.* at 714. Specifically, a petitioner must show “that the agency has *irreversibly and irretrievably* committed itself to a plan of action that is dependent upon the NEPA environmental analysis producing a certain outcome, *before* the agency has completed that environmental analysis.” *Id.* at 714–15. An agency does not engage in unlawful predetermination “simply because the agency’s planning, or internal or external negotiations, seriously contemplated, or took into account, the possibility that a particular environmental outcome would be the result of its NEPA review of environmental effect.” *Id.* at 715. But if a petitioner meets this high standard to show unlawful predetermination, “the agency likely has failed to take a hard look at the environmental consequences of its actions.” *Id.* at 713.

The typical predetermination analysis does not fit well with the facts of this case. Normally, this analysis asks whether an agency *irreversibly and irretrievably* committed itself to a plan of action prior to completing the required analysis under

NEPA. *See id.* at 714–15. But, in this case, BLM completed the NEPA process prior to approving the APDs in question and then voluntarily chose to supplement its analysis with an EA Addendum addressing potential shortfalls in the original EAs. By the time this court published its decision in *Dine I*, 923 F.3d 831, prompting BLM to supplement its analysis for the EAs in question, BLM had committed itself to a plan of action because it had already approved the APDs in question. But BLM took no new actions while working on the EA Addendum—it simply maintained the status quo. And, as BLM contends, it retained the authority to withdraw the APDs if its subsequent investigation uncovered more significant environmental impacts than its initial assessment. *See Joint App. Vol. 9 at 1853* (explaining BLM would review the EAs and APDs and determine whether to affirm its original decisions or reconsider them); *see also* 42 U.S.C. § 6506a(k)(2) (“The Secretary may direct or assent to the suspension of operations and production on any lease or unit.”); *Barlow & Haun, Inc. v. United States*, 805 F.3d 1049, 1057 (Fed. Cir. 2015) (recognizing BLM’s authority to impose conditions after lease was already granted). Because BLM was maintaining the status quo, while voluntarily addressing potential deficiencies in its original EAs, this case does not fit neatly into the predetermination standard.

Citizen Groups point to our decision in *New Mexico ex rel. Richardson v. Bureau of Land Mgmt.*, 565 F.3d 683, 718 (10th Cir. 2009), as support for its position that “issuing an oil and gas lease” “constitutes an irretrievable commitment of resources.” But Citizen Groups have not identified any binding authority addressing the unique situation here—where BLM had completed the NEPA process, approved

APDs, and then later decided to supplement its analysis. Although the approval of an APD in the first instance is typically considered an irretrievable and irreversible commitment to a plan of action, this court has not held that vacatur of prior commitments is required when BLM decides to conduct supplemental analysis. Indeed, Citizen Groups' primary predetermination argument—that BLM should have vacated or suspended the approval of the underlying APDs prior to conducting the supplemental analysis—suggests that BLM maintained discretion to reopen the approvals and vacate the APDs following completion of the supplementary analysis.

BLM argues it conducted the supplemental analysis in good faith with this discretion in mind—using the supplemental analysis to determine whether reopening and vacating the underlying APDs was necessary. Citizen Groups and BLM agree that BLM had the option to reopen and vacate the APDs at issue—their dispute is over when this needed to happen. Two sources—(1) regulations about supplementation under NEPA and (2) case law suggesting vacatur is not always necessary to remedy a NEPA violation—support BLM's position that conducting supplementary analysis under NEPA does not require BLM to first reverse or vacate prior commitments.

First, BLM argues that NEPA's implementing regulations' silence on vacating agency actions during periods of supplementary environmental analysis demonstrates that conducting supplementary analysis without vacating the underlying action is not unlawful predetermination. BLM is correct that the regulations guiding the NEPA process do not require an agency to suspend agency action while preparing a

supplemental environmental review. NEPA's implementing regulations describe the process agencies should use when conducting a NEPA analysis,⁶ and 40 C.F.R. § 1502.9(c) describes when an agency is required or permitted to supplement an existing NEPA analysis. In relevant part, the regulation states,

(c) Agencies:

(1) Shall prepare supplements to either draft or final environmental impact statements if:

(i) The agency makes substantial changes in the proposed action that are relevant to environmental concerns; or

(ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.

(2) May also prepare supplements when the agency determines that the purposes of the Act will be furthered by doing so.

40 C.F.R. § 1502.9(c). In other words, an agency is required to supplement when there are changes to the agency's plan or changes in circumstances or information that would impact the environment, and an agency may prepare supplements as desired to further consider environmental impacts. Nowhere does the regulation require that the agency vacate or suspend the prior decision subject to supplemental analysis. Although this regulation speaks to supplementation of an EIS, rather than an EA, it supports BLM's argument that supplementation does not require vacatur to avoid unlawful predetermination.

⁶ "The Council on Environmental Quality issued regulations implementing the procedural provisions of NEPA." *Utahns for Better Transp. v. U.S. Dep't of Transp.*, 305 F.3d 1152, 1162 n.2 (10th Cir. 2002).

If Citizen Groups' argument were correct—that an agency must vacate any commitments to plans of action prior to engaging in supplemental analysis to avoid unlawful predetermination—then any time an agency engaged in the required supplemental analysis outlined in 40 C.F.R. § 1502.9(c)(1), the agency would first have to vacate or suspend any underlying agency action. The regulation's silence on that point lends support to BLM's argument that vacatur during supplemental analysis is not mandatory.

Second, BLM notes this court has held an agency action violated NEPA without requiring vacatur of the underlying decision, which also suggests vacatur is not required to avoid unlawful predetermination in the context of supplemental environmental analysis. *See WildEarth Guardians v. U.S. Bureau of Land Mgmt.*, 870 F.3d 1222, 1240 (10th Cir. 2017). In *WildEarth Guardians*, we held that BLM acted arbitrarily and capriciously by determining that a decision to issue new leases on coal tracts, compared to a no-action alternative, would have no impact on climate change because “the same amount of coal would be sourced from elsewhere.” *Id.* at 1228. But despite identifying this NEPA violation, we chose not to vacate the impacted leases, instead remanding for the district court to determine if some narrower form of injunctive relief was appropriate. *Id.* at 1240. By inviting the district court to consider a remedy other than vacatur of the impacted leases, we implicitly recognized that supplementary NEPA analysis is not unlawfully predetermined simply because the previously approved action is not first vacated.

Citizen Groups counter by directing us to a 1992 opinion from the Southern District of Florida, *Protect Key West v. Cheney*, 795 F. Supp. 1552 (S.D. Fla. 1992), suggesting that belated environmental analysis cannot cure a deficient EA. In *Protect Key West*, the Navy planned a housing project in the City of Key West, Florida. *Id.* at 1554. In preparation for that project, the Navy prepared an eleven-page EA with very little environmental discussion and no citations, issued a FONSI, and approved the housing project. *Id.* at 1554, 1559–60. After moving ahead with the housing project, the Navy conducted studies, surveys, and investigations, and supplemented the EA with these documents after the fact to justify the FONSI. *Id.* at 1560. The court concluded the Navy violated NEPA because the EA did not adequately consider the environmental impacts prior to the agency decision. *Id.* Rather, the Navy decided to supplement the EA with the necessary environmental information supporting the decision after committing to the housing project. *Id.* at 1561–62. This, the court concluded, violated NEPA’s intent to account for “environmental considerations in the initial decisionmaking process.” *Id.* at 1562. Therefore, the court concluded the Navy had acted arbitrarily and capriciously, enjoined the housing project, and ordered the Navy to prepare an adequate EA. *Id.* at 1563.

According to Citizen Groups, BLM violated NEPA in a similar way because its initial EAs supporting the APD approvals were likely deficient, and BLM added more analysis after the fact without first vacating and reconsidering its decisions. *Protect Key West* is easily distinguishable from this case. There, the Navy conducted almost no environmental analysis and essentially used a bare bones EA as a

placeholder. In *Protect Key West*, the Navy was not performing supplemental analysis at all. Instead, it simply delayed its initial environmental analysis until after it had approved the housing project. Here, BLM performed an extensive environmental analysis before approving the APDs. Only after it became aware years later of potential deficiencies in that initial NEPA process did BLM conduct supplementary environmental analysis.

BLM did not engage in unlawful predetermination by conducting the supplementary analysis in the EA Addendum without first vacating the underlying APD approvals because BLM did not “*irreversibly and irretrievably* commit[] itself to a plan of action that [wa]s dependent upon the NEPA environmental analysis producing a certain outcome.” *Forest Guardians*, 611 F.3d at 715. While working on the EA Addendum, BLM stated the APD “approvals remain[ed] in place” and explained it would “review the [81] EAs and the associated 370 APDs and determine whether to affirm BLM’s original decision finding no significant impact and approving the APD or whether to reconsider that decision.” Joint App. Vol. 9 at 1853. Although BLM may have had the preferred outcome of not having to reopen the underlying APDs, it conducted the supplementary analysis in good faith to determine whether it could affirm the underlying FONSI and APD approvals. *See Forest Guardians*, 611 F.3d at 714 (“Predetermination is different in kind from mere subjective impartiality.” (internal quotation marks omitted)). Just as Citizen Groups argue BLM could have vacated the APD approvals prior to working on the EA Addendum, BLM maintained the discretion to reopen its original decision and vacate

the APD approvals if the EA Addendum showed this was necessary. The fact that BLM ultimately affirmed its original decision does not make the decision unlawfully predetermined where BLM maintained the option to reopen and vacate the APDs throughout the supplemental assessment process.

3. Hard Look

In addition to their predetermination argument, Citizen Groups argue BLM acted arbitrarily and capriciously by failing to take a hard look at the environmental impacts of the APD approvals. During agencies' decisionmaking processes, NEPA specifically requires agencies to "take a hard look at environmental consequences" of a proposed action.⁷ *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989) (quoting *Kleppe v. Sierra Club*, 427 U.S. 390, 410 (1976)). In doing so, the agencies must consider the direct, indirect, and cumulative environmental impacts of the proposed action. 40 C.F.R. §§ 1502.16 (environmental consequences), 1508.7 (cumulative impact), 1508.8 (direct and indirect effects). Direct effects are those "caused by the action and occur at the same time and place," and indirect effects are "caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable." *Id.* § 1508.8. A cumulative impact "is the impact on the

⁷ We do not "view 'hard look' as a requirement going beyond the APA standard of review" or applying a "heightened standard." See *WildEarth Guardians v. Conner*, 920 F.3d 1245, 1256 n.2 (10th Cir. 2019) (citing *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 513–16 (2009)). So, when assessing whether agencies took a "hard look," we are applying the APA standard of review, determining whether agencies' actions were "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(A).

environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency . . . or person undertakes such actions.” *Id.* § 1508.7. In each of these contexts, the agency must evaluate the “‘ecological, . . . economic, [and] social’ impacts of a proposed action.” *High Country Conservation Advocs. v. U.S. Forest Serv.*, 52 F. Supp. 3d 1174, 1190 (D. Colo. 2014) (quoting 40 C.F.R. § 1508.8).

When “considering whether the agency took a ‘hard look,’ we consider only the agency’s reasoning at the time of decisionmaking, excluding post-hoc rationalization concocted by counsel in briefs or argument.” *Richardson*, 565 F.3d at 704 (citation omitted). We may also consider non-NEPA documents that have been incorporated by reference into the NEPA documents. *See* 40 C.F.R. § 1502.21 (requiring agencies to “incorporate material into an [EIS] by reference” to “cut down on bulk”).

In our review, we apply “[a] presumption of validity [] to the agency action[,] and the burden of proof rests with the appellants who challenge such action.” *Richardson*, 565 F.3d at 704 (quotation marks omitted). Moreover, we do not “decide the propriety of competing methodologies”; we “determine simply whether the challenged method had a rational basis and took into consideration the relevant factors.” *Silverton Snowmobile Club v. U.S. Forest Serv.*, 433 F.3d 772, 782 (10th Cir. 2006) (quotation marks omitted). “Deficiencies in an EIS that are mere ‘flyspecks’ and do not defeat NEPA’s goals of informed decisionmaking and informed public comment will not lead to reversal.” *Richardson*, 565 F.3d at 704.

Citizen Groups argue BLM failed to take a hard look at (1) direct effects, indirect effects, and cumulative impacts of GHG emissions; (2) cumulative impacts to water resources; and (3) cumulative impacts to air quality and health. Because we have determined the EA Addendum was not based on unlawful predetermination, we consider the EA Addendum when assessing whether BLM took a hard look. Applying these standards, we now review BLM’s analysis of these three areas, beginning with the impacts of GHG emissions.

a. Impacts of GHG emissions from the APDs

“The impact of [GHG] emissions on climate change is precisely the kind of [] impacts analysis that NEPA requires agencies to conduct.” *Ctr. for Biological Diversity v. Nat’l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1217 (9th Cir. 2008). Accordingly, BLM considered the impact of GHG emissions in both the initial EAs and the EA Addendum. Citizen Groups argue that despite this analysis, BLM failed to take a hard look at (1) the direct and indirect effects of the GHG emissions and (2) the cumulative impact of the GHG emissions of the APDs in the initial EAs and the EA Addendum. We address each argument in turn.

i. Direct and indirect emissions

Citizen Groups raise two challenges to BLM’s methodologies for analyzing the direct and indirect effects of the GHG emissions. First, they argue BLM erred in calculating the amount of direct and indirect emissions. Second, they argue BLM used a low value for the global warming potential of methane. In these ways, Citizen

Groups contend BLM failed to take a hard look at the effect of the direct and indirect emissions.

1) Calculating direct and indirect GHG emissions

First, Citizen Groups argue BLM improperly quantified the total direct emissions of the gas and oil wells because it included only the annual GHG emissions from operating the wells, even though BLM assumed the wells would each have a twenty-year life span. After Citizen Groups commented about this alleged deficiency, BLM replied that it had “included a direct and cumulative impact analysis which includes lifetime emissions from both construction and operation for the APDs at hand” in the EA Addendum. Joint App. Vol. 9 at 1909. But BLM is mistaken. BLM calculated only the annual GHG emissions from the wells and used this same number to represent the total emissions for the twenty-year life span of the wells in the EA Addendum. *See infra*. In its response brief on appeal, BLM changes course and points to its 2018 Air Resources Technical Report (“2018 ARTR”) that was incorporated by reference into the EA Addendum. In the 2018 ARTR, BLM explained that it used annual estimates of GHG emissions for operating the wells because “[i]t is not possible to estimate the lifespan of an individual well” or “to incorporate the decline curve into results” from declining production over time. Joint App. Vol. 4 at 946; *see also* Joint App. Vol. 9 at 1866 (incorporating by reference the 2018 ARTR into the EA Addendum).

In reply, Citizen Groups note that despite the alleged infeasibility of estimating the lifespan of an oil or gas well, BLM nevertheless assumed a twenty-

year lifespan for downstream emissions. Citizen Groups also point to Table 14 in the EA Addendum, included here for reference, which purports to estimate the “Combined Downstream/End-Use GHG Emissions from the 370 subject wells over the predicted 20-year well life.”

Table 14. Estimated Combined Downstream/End-Use GHG Emissions from the 370 subject wells over the predicted 20-year well life.

Product Category	Emission Factors	Estimated Production	Estimated GHG Emissions
Crude Oil (BBL)	0.43 MT CO2/bbl	4,778,169 bbls	2,054,613 MT CO2e
Natural Gas (mcf)	0.055 MT CO2/Mcf	526,077,824 Mcf	28,934,280 MT CO2e
Construction and Operations of 370 wells. (See Table 12)	N/A	N/A	498,182.8 MT CO2e
Total (for all 370 wells)			31,487,075.8 MT CO2e

Source: EPA (2018j)

Joint App. Vol. 9 at 1877. This table estimates the total emissions from the crude oil and natural gas production of the 370 wells over twenty years based on the “decline curves representative of wells within the San Juan Basin.” *Id.* at 1876–77. But the value for the estimated emissions for constructing and operating the wells in Table 14—498,182.8 MT CO2e—is the same value given for the estimated *annual* emissions for constructing and operating the wells in Table 12. *See below.*

Table 12. Estimated Annual GHG Emissions from Oil and Gas Well Construction and Operations for 370 Possible Wells

Annual GHG Emission	Metric Tons (CO ₂ e)
**Highest Potential GHG emissions from well construction (370 wells, if all wells were constructed in year 1 only, all gas wells).	377,988.3
**Highest Potential GHG emissions from operations phase (370 wells, if all wells operations impacts happened in year 1 only, all oil wells)	120,194.5
Total from all 370 wells	498,182.8

Id. at 1874. Table 14 then adds this annual value to the estimated downstream end-use GHG emissions from crude oil and natural gas to show the total estimated *lifetime* GHG emissions for all 370 wells. *Id.* at 1877.

While we are deferential to the agency when it comes to the methodology the agency chooses to use, the agency’s methodology must be rational—and not arbitrary or capricious. *See Silverton Snowmobile Club*, 433 F.3d at 782. Citizen Groups contend it was unreasonable for BLM to use annual estimates to represent the direct emissions of GHGs. That decision may not be scientifically inaccurate or unreasonable in some contexts, but here, BLM used the estimated *annual* GHG emissions from the construction and operation of the wells to calculate the total estimated emissions for all 370 wells *over twenty years*.⁸ We agree with Citizen

⁸ The annual emission estimate for the operation of the wells was an overestimate because BLM assumed all 370 wells would be gas-producing, and therefore would emit more GHGs in their operations than oil wells. But it is highly unlikely that this overestimate in a single year could offset the additional emissions from all 370 wells for another nineteen years of operation.

Groups that this methodology is unreasonable because it uses the emissions calculated for one year to represent the estimated direct and indirect emissions over a twenty-year period.

BLM contends it limited the estimate for direct emissions to annual emissions for the operation of the wells because it could not estimate the lifespan or the decline curve of emissions from the wells. Yet, in the EA Addendum, BLM was able to use data from wells in the area to estimate a probable lifespan of twenty years and to estimate the decline curves when it calculated downstream emissions. *See* Joint App. Vol. 9 at 1876 (stating the production values “were calculated using decline curves representative of wells within the San Juan Basin”). BLM has not explained why these assumptions would be applicable to calculate the estimated downstream emissions but not the direct emissions from operating the wells.

In sum, BLM’s justification for not calculating the direct GHG emissions over the lifetime of the wells is inconsistent with the record, and BLM unreasonably used one year of direct emissions to represent twenty years’ worth of total emissions. BLM did not have to use one specific methodology to calculate the twenty-year emissions total, but the methodology selected must be reasonable. Here, it was not. Thus, BLM arbitrarily and capriciously calculated the GHG emissions and failed to take a hard look at the direct and indirect impacts of GHG emissions from the APDs.

2) Global warming potential of methane

Second, Citizen Groups challenge BLM’s method for calculating the warming potential for methane and BLM’s failure to consider the short-term effects of

approving the APDs. In the EA Addendum, BLM noted that “[t]he two primary GHGs associated with the oil and gas industry are CO₂ [carbon dioxide] and CH₄ [methane].” Joint App. Vol. 9 at 1872. Methane has a stronger greenhouse effect than carbon dioxide, and it also has a “shorter atmospheric lifetime” than carbon dioxide. Joint App. Vol. 5 at 1160. To account for the differences between the different GHGs, experts calculate the global warming potential (“GWP”) over a specific time horizon for each gas compared to carbon dioxide to calculate the carbon dioxide equivalent (“CO₂e”).

In the EA Addendum, BLM noted that methane “has a [GWP] that is 21 to 28 times greater than the warming potential” of carbon dioxide. Joint App. Vol. 9 at 1872. This range for the GWP factor comes from an evaluation of the one hundred-year warming potential of methane compared to carbon dioxide. But Citizen Groups note that BLM’s reports show methane has greater near-term climate impacts and argue BLM should have used a shorter, twenty-year time horizon to calculate the GWP. In the twenty-year warming potential, methane’s GWP is eighty-four—significantly higher than the twenty-one to twenty-eight GWP value BLM used based on the one hundred-year warming potential. Citizen Groups argue BLM should have considered the twenty-year warming potential values because they are more accurate, and BLM acted arbitrarily and capriciously by using the one hundred-year warming potential because it did not explain its decision to do so. For the first time on appeal, Citizen Groups also argue BLM acted arbitrarily and capriciously by using an outdated GWP range as reported in the Intergovernmental Panel on Climate Change’s

(“IPCC”) fourth report instead of relying on the IPCC’s fifth report for the one hundred-year GWP for methane.⁹ They note that BLM cited and used the fifth report in at least one of the initial EAs but then reverted to the older fourth report to prepare the EA Addendum without explanation.

In response, BLM argues it considered the twenty-year warming potential compared to the one hundred-year warming potential of methane in the 2018 ARTR and the 2019 white paper on GHG emissions. BLM points to the 2019 white paper as providing its rationale for using the one hundred-year timeline and thus the twenty-one to twenty-eight GWP range in the EA Addendum. That 2019 white paper states

BLM uses the 100-year time horizon since most of the climate change impacts derived from climate models are expressed toward the end of the century. Also, in accordance with international GHG reporting standards under the United Nations Framework Convention on Climate Change (UNFCCC) and in order to maintain consistent comparisons over the years, official GHG emission estimates for the United States are reported based on the GWP values given in the Fourth Assessment Report (AR4) of the IPCC (IPCC 2007).

Joint App. Vol. 4 at 950. In response to Citizen Groups’ comment raising its concern with use of the one hundred-year time horizon, BLM explained that it applied the one hundred-year timeline “since most of the climate change impacts derived from climate models are expressed toward the end of the century” and “to maintain consistent comparisons over the years.” Joint App. Vol. 9 at 1910. Addressing

⁹ Although Citizen Groups raise this argument for the first time on appeal, BLM did not argue that the argument was waived in its response brief, so the waiver has been waived. *See Schell v. Chief Just. & Justs. of Okla. Sup. Ct.*, 11 F.4th 1178, 1192 n.6 (10th Cir. 2021) (noting that “failure of party to argue waiver results in waiver of initial waiver argument”).

Citizen Groups' argument that BLM should have used the fifth report for the one hundred-year GWP for methane, BLM contends the 2019 white paper explained that BLM uses the fourth report for calculating official GHG emissions consistently.

Citizen Groups maintain that BLM's justification for using the one hundred-year time horizon for the GWP is not sufficient. They support their argument by citing to a District of Montana case that held "BLM violated NEPA where it failed to justify its use of GWPs based on a 100-year time horizon rather than the 20-year time horizon of the RMPs." *W. Org. of Res. Councils v. BLM*, No. CV 16-21-GF-BMM, 2018 WL 1475470, at *18 (D. Mont. Mar. 26, 2018). In that case, BLM chose to use the "100-year time horizon based on an agreement made by the parties to the United Nations Framework Convention on Climate Change." *Id.* at *15. That is, BLM used the one hundred-year time horizon because of "a political agreement between nations rather than [] science." *Id.* That, according to the District of Montana, was arbitrary and capricious and violated NEPA, which requires "accurate scientific analysis." *See id.* (quoting 40 C.F.R. § 1500.1(b)). But *Western Organizations Resources Council* is not binding on this court, and we do not find its reasoning persuasive under the current facts.

NEPA's implementing regulations require the information in an environmental analysis to "be of high quality" and supported by "[a]ccurate scientific analysis." 40 C.F.R. § 1500.1(b); *see also id.* at § 1502.24 (requiring agencies to "insure . . . the scientific integrity" of the analyses in the EISs). And "[b]oth short- and long-term effects are relevant." *Biodiversity Conservation All. v. U.S. Forest Serv.*, 765 F.3d

1264, 1267 (10th Cir. 2014) (quoting 40 C.F.R. § 1508.27(a)). With that in mind, “[a]n agency has discretion to choose a methodology, so long as it explains why it is reliable.” *Hillsdale Env’t Loss Prevention, Inc. v. U.S. Army Corps of Eng’rs*, 702 F.3d 1156, 1178 (10th Cir. 2012). Choosing to use a method that has been adopted by a respected international body, such as the IPCC’s fourth report used here, is one way to demonstrate reliability.

Further, BLM did not discuss the GWP for only the one hundred-year time horizon. Rather, it discussed the different GWPs for methane based on twenty-year time horizons and one hundred-year time horizons in its documents supporting the EA Addendum. BLM then explained that it used the GWP for the one hundred-year time horizon to support consistent reporting standards. Citizen Groups have not argued the one hundred-year time horizon for calculating methane’s warming potential is an inaccurate scientific analysis. They argue instead that a twenty-year time horizon for calculating warming potential would *more accurately* represent the short-term effect of the methane emissions on the climate. According to the record, BLM’s scientific analysis was accurate and reliable based on the IPCC’s GWP calculations. And because BLM discussed both the one hundred-year and twenty-year time horizons in the supporting documents, it appears BLM did consider the short- and long-term effects of the GHG emissions. Thus, BLM did not act arbitrarily and capriciously by using the one hundred-year time horizons in the EA Addendum.

ii. Cumulative impacts

Citizen Groups and amicus curiae, the Institute for Policy Integrity at New York University School of Law (the “Institute”) also argue BLM failed to take a hard look at the cumulative impact analysis of the GHG emissions from the APD approvals. They argue BLM’s analysis was inadequate because it discussed only the quantity of emissions in comparison to the state and national emissions but did not discuss the severity of impacts of the GHG emissions more locally.

A cumulative impact is “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” 40 C.F.R. § 1508.7. Thus,

[a] meaningful cumulative impact analysis must identify five things: (1) the area in which the effects of the proposed project will be felt; (2) the impacts that are expected in that area from the proposed project; (3) other actions—past, present, and proposed, and reasonably foreseeable—that have had or are expected to have impacts in the same area; (4) the impacts or expected impacts from these other actions; and (5) the overall impact that can be expected if the individual impacts are allowed to accumulate.

San Juan Citizens All. v. Stiles, 654 F.3d 1038, 1056 (10th Cir. 2011) (quoting *TOMAC, Taxpayers of Mich. Against Casinos v. Norton*, 433 F.3d 852, 864 (D.C. Cir. 2006)).

Citizen Groups contend “BLM’s comparison of project emissions to total emissions is, in effect, no analysis at all” because it does not say anything about how the emissions will impact the environment. Appellants’ Br. at 33. According to

Citizen Groups, BLM must consider the impacts of these emissions when added to the past, present, and reasonably foreseeable future GHG emissions to satisfy NEPA requirements. The Institute notes that comparing the quantity of project emissions to the quantity of state or national emissions provides little guidance because a small percentage of an enormous amount of emissions could still be an enormous amount of emissions. Moreover, the Institute expresses concern that an agency could “arbitrarily change the denominator to shrink or expand an action’s apparent significance.” Institute Br. at 8. For example, if compared to worldwide GHG emissions, all projects would be deemed to have a de minimus effect. Citizen Groups and the Institute also argue there are better methods for assessing the impacts of emissions on the climate such as comparing the emissions to the carbon budget.

BLM argues it conducted a thorough analysis of the cumulative impacts of the GHG emissions because it considered the emissions estimated from the project as well as local, national, and global emissions and generally explained the impact of GHGs on the global and regional climate. According to BLM, this general analysis was sufficient to satisfy its requirement because it explained that “global climate models are unable to forecast local or regional effects on resources.” BLM Br. at 33 (quoting Joint App. Vol. 9 at 1871). Indeed, BLM contends there is no method for determining the cumulative impacts of GHG emissions. But we agree with Citizen Groups that BLM could have used at least one method for making that determination.

Courts have disagreed about whether BLM’s method for analyzing the cumulative impacts of emissions satisfies this standard. *See WildEarth Guardians v.*

Bernhardt, 501 F. Supp. 3d 1192, 1208–09 (D.N.M. 2020) (“[C]ourts both in and out of the Tenth Circuit have offered mixed messaging on using climate change-based data in decisions.”). Some cases have held that the general description of climate change together with the comparison between the estimated emissions of an agency action compared to the regional, state, and national emissions is sufficient where the science cannot identify the specific impacts that certain GHGs will have on the climate. *See id.* at 1211; *Citizens for a Healthy Cmty. v. BLM*, 377 F. Supp. 3d 1223, 1238–41 (D. Colo. 2019); *WildEarth Guardians v. Zinke*, 368 F. Supp. 3d 41, 77 (D. Colo. 2019); *WildEarth Guardians v. Jewell*, 738 F.3d 298, 309 (D.C. Cir. 2013). Other courts, however, recognize the deficiencies in the comparative method BLM implemented here.

Just this year, the Ninth Circuit considered an agency’s decision to expand a mine, which the agency estimated would emit 240 million tons of GHGs. 350 *Montana v. Haaland*, 50 F.4th 1254, 1273 (9th Cir. 2022). The agency determined these emissions “would total approximately 0.44 percent of annual (single year) global GHG emissions” and thus concluded the mine expansion’s GHG contribution would be minor “*relative to other global sources [of GHGs].*” *Id.* at 1266. To reach this conclusion, the agency “did not cite any scientific evidence supporting the characterization of the project’s emissions as ‘minor’ . . . nor did it identify any science-based criteria the agency used in its determination.” *Id.* It seems the agency relied on the sub-one percent value as compared to other global sources to conclude the effect was minor, despite the fact the mine expansion was expected to emit more

GHGs annually than the largest single point source of GHG emissions in the United States. *Id.* Recognizing emissions greater than the largest single point source of GHG emissions did not seem insignificant, the Ninth Circuit commented that “[t]he reader is left to guess how or why the GHG emissions from the Mine Expansion represent an insignificant contribution to the environmental consequences identified in the EA.” *Id.* As a result, the Ninth Circuit recognized the importance of a science-based standard for determining whether the cumulative GHG emissions are significant rather than a comparative percentage-based standard that can be downplayed and manipulated based on the size of the comparator. *See id.* at 1269–70 (“By relying on an opaque comparison to total global emissions . . . the 2018 EA hid the ball and frustrated NEPA’s purpose.”).

In *350 Montana*, the plaintiffs argued the Department of Interior acted arbitrarily and capriciously by “fail[ing] to use the Social Cost of Carbon metric to quantify the environmental harms that may result from the project’s GHG emissions.” *Id.* at 1270. Rather than direct the Department of Interior to use a specific methodology, however, the Ninth Circuit concluded “that prescribing a specific metric for the agency to use on remand is not our role.” *Id.* at 1271. The Ninth Circuit concluded the Department of Interior must use “some methodology that satisfies NEPA and the APA,” which means at minimum contextualizing the significance of the project’s GHG emissions by providing “additional information concerning the Mine Expansion’s scale and scope relative to the industry and commodity.” *Id.* at 1272.

Other courts have also concluded an agency must adopt reasonable methods for considering the impacts of cumulative GHG emissions if such methods are available. *See High Country Conservation Advocates v. U.S. Forest Serv.*, 52 F. Supp. 3d 1174, 1191 (D. Colo. 2014) (holding the agency acted arbitrarily and capriciously by stating there was no way to measure impact of GHG emissions when at least one recognized method, the social cost of carbon method, was available); *California v. Bernhardt*, 472 F. Supp. 3d 573, 623 (N.D. Cal. 2020) (“It is arbitrary for an agency to quantify an action’s benefits while ignoring its costs where tools exist to calculate those costs.”); *see also Ctr. for Biological Diversity v. Nat’l Highway Traffic Safety Admin.*, 538 F.3d 1172 (9th Cir. 2008).

Here, BLM analyzed the past, present, and reasonably foreseeable cumulative GHG emissions expected in the United States and New Mexico. BLM also explained that the GHG emissions from New Mexico were expected to increase for numerous reasons. Then, BLM listed the past GHG emissions in the Mancos San Juan Basin area and the reasonably foreseeable emissions in the area based on the RMP and determined the percentage of those emissions that would come from the 370 wells analyzed in the EA Addendum. In other portions of the EA Addendum, BLM stated that “[t]he incremental contribution to global GHGs from a proposed land management action cannot be accurately translated into effects on climate change globally or in the area of any site-specific action.” Joint App. Vol. 9 at 1871. BLM noted the emissions from well construction and operations, excluding the downstream emissions, would increase the annual national GHG emissions by

0.00076%, and the annual New Mexico GHG emissions by 7.32%. BLM then concluded in a response to a comment, without further explanation, that its approval of the APDs “will incrementally contribute to global GHG emissions with de minimis impacts to cumulative GHG emissions.” Joint App. Vol. 9 at 1918.

As in *350 Montana*, it is not clear how BLM concluded the GHG emissions from the 370 oil and gas wells would contribute to climate change only in a de minimis way based on this analysis. To be sure, BLM adequately supported its conclusion that the emissions from these wells would be only a small portion of the emissions from all wells anticipated in the RMP, and would add only a small percentage to the annual GHG emissions in the nation and the state. However, this comparative analysis proves only that there are other, larger sources of GHGs. It does not show that this source, which is anticipated to emit more than 31 million metric tons of carbon dioxide equivalents,¹⁰ will not have a significant impact on the environment. Indeed, BLM’s analysis is an example of the concerns Citizen Groups, the Institute, and the Ninth Circuit identified regarding this comparative analysis.

Of course, “NEPA ‘does not require the impossible.’” *Utah Physicians for a Healthy Env’t*, 528 F. Supp. 3d at 1234 (quoting *WildEarth Guardians v. Zinke*, 368 F. Supp. 3d at 77). Nor does NEPA require an agency to employ a specific method for determining the effects of an agency action. *WildEarth Guardians*, 501 F. Supp.

¹⁰ As addressed previously, this estimate is significantly lower than it should be because BLM used a single year of operations emissions to calculate the total emissions over a twenty-year period. *See* Part II.B.3.a.i(1).

3d at 1200. But NEPA does require agencies to consider whether the proposed agency action will have a significant impact on the environment and to use accurate science to do so. 40 C.F.R. § 1500.1(b). Thus, if an accurate method exists to determine the effect of the proposed action, BLM must perform that analysis or explain why it has not. See *WildEarth Guardians v. Bernhardt*, 502 F. Supp. 3d 237, 255 (D.D.C. 2020) (“BLM either had to explain why using a carbon budget analysis would not contribute to informed decisionmaking, in response to WildEarth’s comments, or conduct an ‘accurate scientific analysis’ of the carbon budget.” (quoting 40 C.F.R. § 1500.1(b))).

Here, BLM claimed “[t]he incremental contribution to global GHGs from a proposed land management action cannot be accurately translated into effects on climate change globally or in the area of any site-specific action.” Joint App. Vol. 9 at 1871. Instead, BLM described the general projections of environmental impacts that may be related to climate change. Citizen Groups, however, propose another way BLM could have determined the environmental impact of the emissions—by comparing the emissions to the carbon budget.¹¹

¹¹ In addition to the arguments that BLM should have compared the emissions of the wells to the global carbon budget, the Institute also raises the social cost of carbon as another method BLM could have considered to determine the cumulative effect of the proposed GHG emissions. Citizen Groups also referenced the social cost of carbon method in their comment to the proposed EA Addendum and before the district court. Joint App. Vol. 5 at 972–77; Joint App. Vol. 2 at 237–38. The social cost of carbon is a method for estimating “the economic damages associated with an increase in carbon dioxide emissions and is intended to be used as part of a cost-benefit analysis for proposed rules.” Joint App. Vol. 9 at 1921. According to the

We first explain this method of assessing GHG emission impacts. Then, we consider Citizen Groups' argument, ultimately concluding that where BLM received a comment requesting it use the carbon budget method, BLM acted arbitrarily and capriciously by choosing not to address the cumulative impacts of GHG emissions based on there being no method for doing so, without explaining why the carbon budget method was deficient for these purposes.

The carbon budget derives from science suggesting the total amount of GHGs that are emitted is the key factor to determine how much global warming occurs. The carbon budget is a finite amount of total GHGs that may be emitted worldwide, without exceeding acceptable levels of global warming. According to the IPCC, the

Institute, the quantity of emissions estimated in the EA Addendum would result in a social cost of more than \$1.6 billion.

This suggestion was raised only in the amicus curiae brief and was not raised by Citizen Groups on appeal. This court has discretion to consider arguments raised solely in an amicus brief, but it should do so only "in exceptional circumstances." *Tyler v. City of Manhattan*, 118 F.3d 1400, 1404 (10th Cir. 1997). For instance, the court may exercise its discretion when "(1) a party attempts to raise the issue by reference to the amicus brief; or (2) the issue 'involves a jurisdictional question or touches upon an issue of federalism or comity that could be considered sua sponte.'" *Id.* (quoting *Swan v. Peterson*, 6 F.3d 1373, 1383 (9th Cir. 1993)).

Citizen Groups did not raise the issue of the social cost of carbon directly or by referencing the amicus brief. Moreover, the argument that BLM should have considered the social cost of carbon is not a jurisdictional issue that could be considered sua sponte. And Citizen Groups have not identified any other exceptional circumstance that would justify considering an argument raised solely by amicus curiae. Accordingly, we do not address this argument. However, BLM may consider the social cost of carbon as a potential method for addressing cumulative impacts of GHG emissions on remand.

carbon budget remaining in 2011 was below 1,000 GtCO₂¹² for a 66% probability of limiting warming to 2° Celsius above pre-industrial levels. By 2016, the remaining budget had been reduced to 850 GtCO₂.

According to Citizen Groups, BLM could have compared the expected emissions from the APDs to the remaining carbon budget to determine the cumulative impact of the expected emissions. And Citizen Groups argue their comments requesting BLM to apply the carbon budget analysis required BLM to either apply the analysis or explain why doing so would not contribute to informed decisionmaking. Appellants' Br. at 39 (citing *WildEarth Guardians*, 502 F. Supp. 3d at 255–56). In response to the comments, BLM explained only that “BLM is not required to use any specific protocols or methodologies . . . to determine the impact of the APDs on climate change.” Joint App. Vol. 9 at 1911–12.

It is indeed true that NEPA does not require BLM to use any particular methodologies. *WildEarth Guardians*, 501 F. Supp. 3d at 1209. Importantly, however, NEPA does not give BLM the discretion to ignore the impacts to the environment when there are methods for analyzing those impacts. So, while it is correct that BLM need not use any specific methodology, it is not free to omit the analysis of environmental effects entirely when an accepted methodology exists to quantify the impact of GHG emissions from the approved APDs. Simply stating what percentage the emissions will make up of regional, national, and global emissions

¹² GtCO₂ stands for gigatons of carbon dioxide.

does not meaningfully inform the public or decisionmakers about the impact of the emissions. *See Wyoming*, 661 F.3d at 1253 (identifying NEPA’s goals as promoting “public disclosure and informed decisionmaking”). Indeed, all agency actions causing an increase in GHG emissions will appear *de minimis* when compared to the regional, national, and global numbers. Where BLM neither applied the carbon budget method nor explained why it did not, BLM acted arbitrarily and capriciously by failing to consider the impacts of the projected GHGs.

In summation, BLM acted arbitrarily and capriciously in its analysis of GHG emissions by failing to take a hard look at the (1) direct and indirect impacts of GHG emissions by using an annual total of emissions to represent emissions for a twenty-year period, and (2) cumulative impacts of GHG emissions by relying solely on percentage comparisons where at least one more precise method was available.

b. Impacts of the approved APDs on water resources

Citizen Groups next argue BLM failed to take a hard look at the cumulative impacts of the APDs to water resources in the area. This is the issue that caused us to vacate and remand the five EAs we considered in *Dine I*, 923 F.3d at 853–54. There, we concluded BLM arbitrarily and capriciously violated NEPA because it failed to consider the impacts to water from the 3,960 wells predicted in the 2014 reasonably foreseeable development scenario (“RFDS”). *Id.* We reversed and remanded with instructions to vacate the five EAs for further consideration under NEPA. *Id.* at 859. In the EA Addendum, BLM considered the cumulative impacts to water resources

from 3,200 reasonably foreseeable wells, but Citizen Groups argue this analysis continues to be deficient.

Citizen Groups assert that while BLM quantified the cumulative amount of water the wells would use, it did not say anything about the impact the water consumption would have on the environment or specific groundwater sources. Citizen Groups contend BLM should have included the current or projected groundwater conditions and information about how the use of that water would affect nearby groundwater. Citizen Groups specifically note that BLM should have considered the groundwater levels in the context of the ongoing drought in New Mexico and the anticipated decrease in water from climate change. Citizen Groups also suggest that BLM should consider how the water use may impact the Navajo Nation where 40% of households currently lack water.

BLM argues it took a hard look with its cumulative impact analysis because it considered how much water was likely to be used, including if all the wells employed the most water-intensive methods. It then compared that water consumption to the total amount of water projected to be used in the region, concluding the water for the APDs would represent a small amount of the total water use in the San Juan Basin (0.12% to 1.3%). The EA Addendum also incorporated the 2019 BLM New Mexico Water Support Document, which analyzed the state of the groundwater wells and their existing supply of water. BLM also noted some mitigating factors, including that the oil and gas wells could use non-potable groundwater, recycled flowback

water, and produced water, which is water that cannot be applied to other potential uses.

In response to comments suggesting it should consider the impact to water in the context of the drought, BLM stated it considered the available water resources in the affected area, so the analysis is “already in the ‘drought context’ . . . if indeed the counties are in a state of drought.” Joint App. Vol. 9 at 1914. This is supported by the record, which considered the existing state of the potential groundwater wells. BLM did not consider the impact of climate change on the water supply in the EA Addendum even though it previously recognized that climate modeling suggests climate change will result in “decreases in overall water availability by one quarter to one third” in the local region. Joint App. Vol. 9 at 1872. But in the 2019 Water Support Document, BLM noted that it is in the process of developing a model to simulate water availability based on various scenarios.

BLM took a sufficiently hard look at the APDs’ expected impact on the water resources in the region. While BLM relied primarily on a quantitative-comparative analysis as it did with the GHG analysis, the effect of the analysis is different. With GHGs, unlike groundwater resources, BLM is not limited to a finite amount of emissions. And because of the global nature of climate change, BLM can compare GHG emissions on any large scale that shows the emissions from the APDs are small without determining the effect those emissions will have on the local environment. With water, however, there is a finite amount of water supporting the various water uses in a specific region. BLM calculated that the APD activities would account for

0.12% to 1.3% of the total water usage in the region, depending on the methods used for drilling for and extracting oil and gas. This accounts for a small amount of the total water resources available in the region, which is a much more useful comparison than GHG emissions compared to national or world quantities. *See WildEarth Guardians*, 501 F. Supp. 3d at 1215.

Moreover, Citizen Groups' implication that the water usage related to the APDs will exacerbate any water insecurity in the region is not supported by the record. BLM listed several mitigating factors affecting water usage, including the fact that the wells can use water that is not suitable for other purposes. Thus, the decision not to consider further the impact on human water availability was not arbitrary or capricious. In sum, we hold that BLM did not arbitrarily or capriciously conclude that the APD-related water use would not significantly impact the environment.

c. Impacts of the APDs to air quality and human health

Citizen Groups next argue BLM violated NEPA because it did not take a hard look at the impact of the APD approvals on air quality and health. Relatedly, Citizen Groups challenge BLM's analysis of the environmental impact from hazardous air pollutant emissions. We discuss each argument in turn.

Citizen Groups claim BLM largely failed to consider the information in the record showing the harmful effects of oil and gas drilling to air quality and health. Citizen Groups first suggest BLM inadequately considered the negative health impacts from the increased emissions from the wells. Second, Citizen Groups

contend BLM's characterizations of the hazardous air pollutant ("HAP") emissions as "temporary" emissions that "would not pose a risk to human health . . . because there would not be long-term exposure" was against the evidence in the record. Appellants' Br. at 47 (quoting Joint App. Vol. 9 at 1868). According to Citizen Groups, BLM must recognize the additive nature of air pollution and the long-term effects of air pollutant exposure.

i. Air quality and health

BLM explains that the EA Addendum incorporates the National Ambient Air Quality Standards ("NAAQS") and New Mexico Ambient Air Quality Standards ("NMAAQS") and associated Air Quality Index ("AQI") set by the Environment Protection Agency ("EPA") and New Mexico to protect human health. In the EA Addendum, BLM noted that the region is in attainment with NAAQS although the ozone pollutant levels have come close to exceeding those standards. BLM then presumed that all 370 wells would be drilled at the same time, which would be an unlikely scenario, and found the maximum increase in annual emissions in the area would be 0.46% to 3.16% depending on the pollutant. Even with these increases, BLM found the air quality would not exceed the NAAQS or the NMAAQS or increase the number of days categorized as "unhealthy" pursuant to the AQI. BLM conducted the same analysis regarding the cumulative impacts of all 3,200 wells anticipated in the region and concluded the annual emissions would increase by 0.20% to 1.41% depending on the pollutant. According to BLM, these increases would also not exceed the NAAQS or NMAAQS or increase the number of days

categorized as “unhealthy.” BLM argues it took a sufficiently hard look by comparing the emissions.

While Citizen Groups take issue with the EA Addendum’s suggestion that the increase in ozone pollutant levels would create a “temporary nuisance” for individuals living in the area, Appellants’ Br. at 47–51 (citing Joint App. Vol. 9 at 1868), BLM’s analysis was sufficient to satisfy NEPA. After considering the quantity of direct emissions of the 370 wells at issue and the cumulative emissions of the other wells anticipated in the area, BLM concluded that “development of the RFD scenario,” including by approving the 370 APDs at issue, “would not be expected to result in any exceedances of the NAAQS or NMAAQs for any criteria pollutants in the analysis area,” including ozone pollutants, or “to increase the number of days” classified as unhealthy pursuant to the Air Quality Index. Joint App. Vol. 9 at 1870. Accordingly, BLM considered the criteria pollutants, the criteria pollutant at highest risk in the area, and the health impacts of that pollutant. BLM then analyzed the direct and cumulative impacts of the oil and gas wells anticipated in the area and concluded that the levels for criteria pollutants would not exceed the attainment levels established by the EPA and New Mexico. Comparison to standards set by administrative bodies to determine whether healthy levels of pollutants would be exceeded constitutes a hard look at the health impacts of the drilling. *See WildEarth Guardians*, 738 F.3d at 311–12; *Tinicum Township v. U.S. Dep’t of Transp.*, 685 F.3d 288, 296 (3d Cir. 2012); *San Juan Citizens All.*, 326 F. Supp. 3d at 1251–52.

Citizen Groups further challenge the criteria air pollutant analysis because there is no evidence in the record about short- and long-term health impacts. Notably, in the EA Addendum, BLM conceded there were health impacts of ozone pollutants, especially for sensitive groups. Thus, it did not ignore this fact. Instead, BLM concluded the elevated ozone levels related to the APDs would not reach unhealthy levels as defined by NAAQS and NMAAQs. Thus, BLM took a hard look at the criteria pollutant emissions.

ii. HAPs environmental impact

Citizen Groups also challenge BLM's analysis of the environmental impact from HAPs. HAPs are "a class of 187 toxic air pollutants that are known or suspected to cause cancer or other serious health effects." Joint App. Vol. 9 at 1865. There are National Emission Standards for Hazardous Air Pollutants ("NESHAP"), which "limit the release of specified HAPs from specific industries." *Id.*; Joint App. Vol. 4 at 704. NESHAPs that apply to oil and gas development include control of "benzene, toluene, ethylbenzene, mixed xylenes, and n-hexane from major sources, and benzene emissions from triethylene glycol dehydration units as area sources." Joint App. Vol. 9 at 1865. The EPA publishes the National Air Toxics Assessment ("NATA"), which estimates the exposures and risk of cancer from HAPs in large areas. The most recent NATA shows the risk of cancer from HAPs in the San Juan Basin is lower than national levels, statewide levels, and levels for nearby areas.

In the EA Addendum, BLM also recognized that "HAP emissions [from APDs] would occur largely in phases—primarily during initial construction, then

during completion and reclamation efforts . . . [so] impacts would result in short-term local area increases of these pollutant emissions.” *Id.* at 1868. BLM then concluded that increase of the levels of HAPs “would be low relative to the distance from the source and would not pose a risk to human health (including cancer) because there would be no long-term exposure to elevated levels of toxic air pollutants.” *Id.* BLM also states that HAP emissions are estimated to be about 10% of VOCs, and gas vented during the well completion process “is flared, which substantially reduces the quantity of HAPs released.” *Id.* at 1869.

BLM recognized in the EA Addendum that HAPs can cause health effects, including cancer. BLM also recognized that the level of HAPs in the area would increase during construction and completion activities, but BLM did not determine the quantity of HAPs that would be emitted from the drilling of the oil and gas wells. Rather, BLM stated the HAP “levels would be low relative to the distance from the source and would not pose a risk to human health (including cancer) because there would be no long-term exposure to elevated levels of toxic air pollutants.” *Id.* at 1868. In the initial EAs, however, BLM determined the “estimated HAP emissions” for each APD. *See, e.g.*, Joint App. Vol. 11 at 2508. For example, in one EA, BLM estimated the HAP emissions of 0.09 tons/year for the APD at issue. *Id.*

Importantly, in the EA Addendum, BLM did not account for the cumulative impact to HAP emissions from the wells. Instead, BLM stated the increase in HAP emissions would be for a short time during the construction and completion of the wells, so it would not cause long-term exposure or health impacts. This may be true

for one well, but BLM anticipates that more than 3,000 similar wells will be drilled in the San Juan Basin over the next several years. If each well emits HAPs for approximately ninety days, as estimated, and there are more than 3,000 wells to be constructed, it is likely that HAP emissions will occur throughout the multi-year construction period. This could cause long-term exposure for individuals who live in or visit the San Juan Basin. And long-term exposure, according to BLM, could increase the cancer risk for individuals who live or spend time in the San Juan Basin. While BLM considered the cumulative impacts of the criteria pollutants from the approximately 3,000 wells, it did not include any analysis of the anticipated HAP emissions from the construction of those wells over a period of years. *Cf. Citizens for a Healthy Cmty.*, 377 F. Supp. 3d at 1242 (holding an EIS took a hard look at the health impacts of HAPs when it modeled the maximum amount of HAP emissions and calculated how that would increase the risk of cancer). Therefore, BLM acted arbitrarily and capriciously by failing to take the necessary hard look at the impacts to air and health from HAP emissions.

4. Remedy

We conclude BLM acted arbitrarily and capriciously by failing to take a hard look at (1) the direct, indirect, and cumulative environmental impacts of GHG emissions from the APDs; and (2) the cumulative HAP emissions and the associated environmental and health impacts. Therefore, we now consider the appropriate remedy. Citizen Groups ask that this court vacate the APDs or issue an injunction

halting development on the APDs. BLM and Intervenors argue the court should not vacate the APDs or issue an injunction.¹³

a. Vacatur

Because Citizen Groups' NEPA claims are brought as APA claims, we look to the APA to determine the appropriate remedy. The APA states that a "reviewing court shall . . . hold unlawful and set aside agency action, findings, and conclusions found to be . . . arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2). Accordingly, "[v]acatur of agency action is a common, and often appropriate form of injunctive relief granted by district courts." *Dine I*, 923 F.3d at 859.

But many courts have held that while remand with vacatur is the preferred remedy under the APA, it is not the only permissible remedy. *See Allied-Signal*, 988 F.2d at 150–51; *see also Black Warrior Riverkeeper, Inc. v. U.S. Army Corps of Eng'rs*, 781 F.3d 1271, 1290 (11th Cir. 2015) (collecting cases that have adopted the

¹³ DJR and SIMCOE filed an unopposed motion to supplement the record on appeal with a Supplemental Affidavit of Donald F. Koenig and a Supplemental Affidavit of Joseph Zimmerman supporting their positions regarding the proper relief. These affiants have prior affidavits in the record on appeal, and the supplemental affidavits provide updated information about the APDs and wells and the financial loss that vacatur would cause. *See* Supp. Aff. of Donald F. Koenig; Supp. Aff. of Joseph Zimmerman. As a "rare exception to Rule 10(e)," "we have an inherent authority to allow supplementation of the record." *Rio Grande Silvery Minnow v. Bureau of Reclamation*, 601 F.3d 1096, 1110 n.11 (10th Cir. 2010). Here, the affidavits provided updated information that has developed since the district court's opinion and would be helpful in this court's consideration of the appropriate remedy. *Anthony v. United States*, 667 F.2d 870, 875 (10th Cir. 1981). Accordingly, we grant the motion.

Allied-Signal test). Citizen Groups argue the days of remand without vacatur are over after the Supreme Court’s recent decision in *DHS v. Regents of the University of California*, 140 S. Ct. 1891 (2020). In that case, the Supreme Court reviewed the procedure DHS employed when making its decision to rescind the Deferred Action for Childhood Arrivals program (“DACA”). *Id.* The Court reiterated that an agency’s explanation for its action must precede or be contemporaneous with the action. *Id.* at 1907–08. The agency cannot rely on post hoc rationalization. *Id.* at 1908. Thus, when an agency action is supported by insufficient justification, the agency can either “offer ‘a fuller explanation of the agency’s reasoning *at the time of the agency action*’” or take “new agency action.” *Id.* at 1907–08 (quoting *Pension Benefit Guaranty Corp. v. LTV Corp.*, 496 U.S. 633, 654 (1990)).

In *Regents*, the Court concluded that some of the reasoning proffered for rescinding DACA was improper post hoc rationalization because it went beyond the reasons given when DHS made its decision. *Id.* at 1908. Thus, the Court held that those post-decision justifications could not be reviewed by the Court unless the agency had taken a new action, which it had not. *Id.* at 1908–09. Because the contemporaneous justification for rescinding DACA was arbitrary and capricious, the Court concluded “the appropriate recourse is therefore to remand to DHS so that it may consider the problem anew.” *Id.* at 1916.

Citizen Groups argue that after *Regents*, the only appropriate remedy for an APA violation is vacatur. But this stretches the holding too far. While *Regents* recognizes the importance of following procedures, it does not suggest that vacatur is

the only proper remedy for an APA violation. Indeed, whether to vacate was not the question the Court addressed. Furthermore, to the extent the Court’s holding may be extrapolated to apply to the remedy for an APA violation, the Court presented an option that allows the agency to provide further explanation for its contemporaneous reasoning instead of starting over and making a new decision altogether. *See id.* at 1907–08; *see also IAP Worldwide Servs., Inc. v. United States*, 160 Fed. Cl. 57, 85 (2022) (discussing the holding in *Regents* and noting that remand without vacatur is an appropriate form of relief). Thus, *Regents* does not preclude remand without vacatur as an appropriate remedy under the APA.

BLM and the Intervenors argue we should consider the practical consequences of vacatur, like the D.C. Circuit did in *Allied-Signal*, 988 F.2d at 150–51, when determining whether to remand with or without vacatur. We agree that vacatur is not always the appropriate remedy for NEPA violations and now adopt the test set out by the D.C. Circuit in *Allied-Signal* for determining whether vacatur is necessary. *See Id.* Under the *Allied-Signal* test, courts must consider two factors—(1) “the seriousness of the [agency action’s] deficiencies (and thus the extent of doubt whether the agency chose correctly),” and (2) “the disruptive consequences of an interim change that may itself be changed.” *Id.* In the context of this case, determining “the extent of doubt whether [BLM] chose correctly” refers to whether BLM chose correctly to reaffirm the FONSI, not whether it chose correctly to approve the drilling permits. *See Standing Rock Sioux Tribe v. U.S. Army Corps of Eng’rs*, 985 F.3d 1032, 1052 (D.C. Cir. 2021), *cert. denied sub nom. Dakota Access*,

LLC v. Standing Rock Sioux Tribe, 142 S. Ct. 1187 (2022) (“When an agency bypasses a fundamental procedural step, the vacatur inquiry asks not whether the ultimate action could be justified, but whether the agency could, with further explanation, justify its decision to skip that procedural step.”). And looking to “the disruptive consequences of an interim change that may itself be changed” requires consideration of “both the disruptive consequences to the [oil and gas] industry, as well as the potential environmental damage that might continue unabated while [BLM] revisits its determinations.” *Black Warrior Riverkeeper*, 781 F.3d at 1290 (quotation marks omitted).

Application of the *Allied-Signal* factors requires a fact-intensive inquiry that is typically left to the discretion of the district court. *See Black Warrior Riverkeeper*, 781 F.3d at 1291. Accordingly, we reverse and remand to the district court with instructions to apply these factors in the first instance to determine the appropriate remedy.

b. Injunctive relief

Citizen Groups also argue that if we choose not to vacate the APD approvals, we should enjoin development of the APDs. BLM argues there is not sufficient evidence in the record to support an injunction, so this court should either deny it or remand to the district court to consider the injunction. To show that injunctive relief is warranted, Citizen Groups must demonstrate

(1) that [they] ha[ve] suffered an irreparable injury; (2) that remedies available at law, such as monetary damages, are inadequate to compensate for that injury; (3) that, considering the balance of

hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction.

Monsanto Co. v. Geertson Seed Farms, 561 U.S. 139, 156–57 (2010) (quotation marks omitted). When assessing the first two factors in the context of environmental harm, courts recognize that “[e]nvironmental injury, by its nature, can seldom be adequately remedied by money damages and is often permanent or at least of long duration, *i.e.*, irreparable.” *Amoco Prod. Co. v. Vill. of Gambell*, 480 U.S. 531, 545 (1987). Additionally, when assessing the balance of hardships, financial harms should be considered but “financial concerns alone generally do not outweigh environmental harm,” especially if the financial harm is “self-inflicted.” *Valley Cmty. Preservation Comm’n v. Mineta*, 373 F.3d 1078, 1086 (10th Cir. 2004) (quotation marks omitted).

As with vacatur, whether to issue an injunction is within the discretion of the district court. *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 391 (2006). As such, we remand to the district court to apply the test for injunctive relief in the first instance if it determines vacatur is not warranted. Although the APDs that have not been fully approved are not yet ripe for our review, the deficiencies identified in the EAs and EA Addendum necessarily render any new APDs based on those documents invalid. We therefore enjoin the approval of any additional APDs until the district court can fashion a remedy. Finally, we also instruct the district court that time is of the essence.

III. CONCLUSION

First, we are limited to reviewing the 199 APDs that have been fully approved because the remaining 161 are not yet ripe for judicial review. Looking only to the 199 APD approvals that are ripe for review, we hold that BLM did not unlawfully predetermine the outcome of the EA Addendum but that BLM violated NEPA because it failed to take a hard look at the direct, indirect, and cumulative impact of GHG emissions and the cumulative impact of HAP emissions of the APD approvals. We REVERSE and REMAND to the district court to apply the *Allied-Signal* factors and the test for injunctive relief in the first instance. We enjoin any APD approvals based on the deficient EAs and EA Addendum until the district court determines the appropriate remedy on remand.