

April 24, 2026

Surface Transportation Board
395 E Street, S.W.
Washington, DC 20423-0001
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Re: Comments on Docket No. EP 779: Permitting Reform – Environmental Review Process

To the Surface Transportation Board:

Please accept these comments on the Surface Transportation Board’s (Board’s) proposed rule rescinding and amending its NEPA regulations. Permitting Reform—Environmental Review Process, Docket No. EP 779 (March 21, 2026) (hereafter “Notice”). These comments are submitted on behalf of the Center for Biological Diversity, Sierra Club, Utah Physicians for a Healthy Environment, Living Rivers, and the dozen other groups and individuals listed below.

We are extremely concerned about the following issues:

- We oppose the Board’s rescission of provisions requiring opportunities for public comment on draft environmental impact statements (EISs) and environmental assessments (EA), and instead, conferring unbridled discretion on the responsible official to determine whether to offer public participation opportunities (with no requirement to even consider requiring public participation).
- The revision of the definition of “purpose and need” will likely limit consideration of reasonable alternatives, and amendments changing when NEPA applies to a proposed action lack any statutory basis.
- The Board’s narrowed and unsupported definition of “effects” and “proposed action” create unnecessary uncertainties around the Board’s obligation to conduct indirect and cumulative effects analysis.
- The improper expansion of the availability of categorical exclusions and adoption of unlawful procedures for their establishment and application violates NEPA.

Accordingly, we request that the Board revise the proposed rule in response to these concerns.

I. The Board’s Proposed Rescission of Rules Requiring Public Input Undermines NEPA’s Action-Forcing Purpose and Is Arbitrary and Capricious.

The Board proposes to rescind its longstanding rules requiring public comment on draft EISs and on EAs. *See* 49 C.F.R. § 1105.10(a)(3)-(4), (b) (2025). The proposed rescission is contrary to NEPA, Executive Order 11514, and longstanding executive interpretation, and is unsupported by reasoned explanation, including reasons for why these provisions are no longer beneficial or serve NEPA’s purposes to improve decisionmaking, or why they should be abandoned.

First, the removal of public participation procedures concerning draft EISs and EAs violates NEPA. Although Congress granted agencies some flexibility in implementing NEPA, it also directed that agencies use “all practicable means” in cooperation with the public to fulfill NEPA’s objectives, 42 U.S.C. § 4331(a), (b), and to implement NEPA “to the fullest extent possible,” *id.* § 4332(B). Specifically, Congress declared:

[I]t is the continuing policy of the Federal Government, *in cooperation with State and local governments, and other concerned public and private organizations*, to use *all practicable means and measures*, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.

42 U.S.C. § 4331(a) (emphasis added).

Congress thus established the Federal Government’s “continuing responsibility” to “use *all practicable means*, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may . . . fulfill the responsibilities of each generation as trustee of the environment for succeeding generations,” among other objectives. *id.* § 4331(b) (emphasis added). Accordingly, agencies, “*to the fullest extent possible . . . shall . . . identify and develop methods and procedures, in consultation with the [CEQ] . . . [to] ensure that presently unquantified environmental amenities and values may be given appropriate consideration in decision-making along with economic and technical considerations.*” 42 U.S.C. § 4332(B) (emphasis added).

The solicitation of public input throughout the NEPA process is a crucial, practicable means to “ensure” that agencies identify and consider potentially significant environmental impacts, weigh reasonable alternatives and mitigation measures to avoid or reduce impacts, and arrive at well-informed decisions that consider environmental values. As the Supreme Court has recognized, the EIS plays an important “informational role” not just for decisionmakers but for the public: the EIS “gives the public the assurance that the agency has indeed considered environmental concerns in its decisionmaking process, and, perhaps more significantly, provides a springboard for public comment.” *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989) (cleaned up).

That “springboard for public comment” serves NEPA’s “‘action-forcing’ purpose,” *id.* at 349. Preparation of an EIS “ensures that the agency, in reaching its decision, will have available, and will carefully consider, detailed information concerning significant environmental impacts; it also guarantees *that the relevant information will be made available to the larger audience that may also play a role in both the decisionmaking process and the implementation of that decision.*” *Id.* (emphasis added); *see also id.* (“[T]he strong precatory language of § 101 of the Act and the requirement that agencies prepare detailed impact statements inevitably bring pressure to bear on agencies ‘to respond to the needs of environmental quality.’” (quoting 115 Cong. Rec. 40425 (1969) (remarks of Sen. Muskie))). Stripping away opportunities for public input diminishes the public’s vital role in broadening the agency’s perspective, and the agency’s ability to make better informed decisions.

Accordingly, longstanding executive interpretations from NEPA's early implementation, even prior to the CEQ regulations, required that the public be afforded the opportunity to comment on a draft EIS. President Nixon's 1970 executive order directed that agencies develop procedures for public involvement to carry out NEPA's environmental objectives:

Consonant with Title I of the National Environmental Policy Act of 1969 . . . , the heads of Federal agencies shall . . . [d]evelop procedures to ensure the *fullest practicable provision of timely public information and understanding of Federal plans and programs with environmental impact in order to obtain the views of interested parties*. These procedures shall include, whenever appropriate, provision for public hearings, and *shall provide the public with relevant information, including information on alternative courses of action*. Federal agencies shall also encourage State and local agencies to adopt similar procedures for informing the public concerning their activities affecting the quality of the environment.

Executive Order 11514, Sec. 2(b) (Mar. 5, 1970).

Thus, from NEPA's beginning, federal agencies, including the Board, complied with that mandate, requiring public notice and comment on draft EISs, and later on, environmental assessments (or their equivalents), in apparent recognition that these public involvement procedures are "practicable." The Board's forerunner, the Interstate Commerce Commission (I.C.C.), explained that its original NEPA procedures "are intended to encourage, to the fullest extent possible, public and governmental participation in those formal proceedings which might significantly affect the quality of the human environment, and to the end of insuring that a complete record is developed which will enable the Commission to consider fully the environmental impact of a contemplated action." 350 I.C.C. 492, 500 (1975) (Appendix A, setting forth I.C.C.'s original 1972 NEPA procedures, which were promulgated via the I.C.C. Order at 340 I.C.C. 431 (1972)). From 1972 until the present, through revisions of its regulations in 1976, 1980, and 1991, the I.C.C. repeatedly affirmed the importance of soliciting and responding to public comments on draft EISs and EAs.

Those initial NEPA regulations required that the I.C.C. provide "[a] notice of all proceedings determined to have a significant effect on the quality of the human environment . . . with a request for public comments on [NEPA's section 102(2)(C)] environmental considerations. . . ." 49 C.F.R. § 100.250(e)(2) (1972). Further, the regulations directed that the I.C.C.'s "determinations in all proceedings which investigate environmental issues" "include an evaluation of . . . the views expressed . . . by all persons making formal comment." *Id.* § 100.250(g).

The I.C.C.'s 1976 revised regulations (issued "under the authority of . . . Executive Order 11514" among other laws, 352 I.C.C. 451, 452 (June 9, 1976)) strengthened the agency's NEPA public participation procedures. The regulations created procedures for the circulation of draft EISs, including providing those documents to "the parties" and "to State and local governments, as appropriate, and to other interested persons." 49 C.F.R. § 1108.14(c) (1976), with a request for comments on the draft, for a default 45-day comment period "from the date the draft EIS is made available to CEQ and the public," *id.* § 1108.14(d) (1976).

The agency's opinion addressing public comments on the proposed rulemaking noted,

In certain respects the draft statement represents *a most vital stage* in the NEPA process inasmuch as outside views can enhance objectivity and minimize any bias in the draft statement. The final statement, which generally receives only 'in-house' review, can then present to the decisionmaker a more objective analysis of environmental impacts. In light of this critical function of the draft statement, consulting agencies should be given as complete a statement as possible, so that the full range of impacts and alternatives are presented at the draft stage.

Revised Guidelines for the Implementation of the National Environmental Policy Act of 1969, 352 I.C.C. 451, 459 (1976) (emphasis added). The Board has never since disavowed that position.

The revised regulations further required that “[t]o the extent opposing professional views and responsible opinion on the environmental effects . . . have not been discussed in the draft statement, but are brought out by the comments, the environmental effect of the action will be reviewed in the light of those comments,” and that the final EIS “contain responsive reference to such views.” 49 C.F.R. § 1108.14(e) (1976). *See also id.* § 1108.3(d)(1) (“The Commission will insure timely notice and opportunity for public comment on impact statements and threshold assessments in an appropriate manner.”); *id.* § 1108.16(a) (requiring minimum public review periods of a draft and final EIS before a proposed action is authorized).

In addition, the revised regulations established the “environmental threshold assessment survey” (TAS)—the precursor to an EA and finding of no significant impact (FONSI)—which the I.C.C. defined as a written study “concluding that an EIS is not necessary.” *Id.* at § 1108.6(h). The TAS “identifie[d] areas of environmental concern and assesse[d] alternatives to the proposed action,” *id.*, and set forth “reasons why impacts are insignificant,” *id.* § 1108.13(c)(2). The revised regulations further required that the TAS’s conclusions “be made available to the public” either in the Federal Register or in local newspapers, *id.* § 1108.13(d), and that “[c]omments received will be considered and a determination made to (1) affirm the prior finding to no significant impact without modification, (2) modify or amend the TAS, or (3) prepare an EIS for the proposed action.” *Id.* § 1108.13(d).

In 1980, the I.C.C. proposed and finalized revised NEPA regulations “providing for streamlined reporting requirements, brief and concise environmental documentation, and expeditious administrative treatment *without sacrificing opportunities for public involvement.*” 45 Fed. Reg. 15236 (March 10, 1980) (proposed rule) (emphasis added); 363 I.C.C. 653 (1980) (final rule) (emphasis added). In the proposed rule, the I.C.C. recognized the CEQ’s recent adoption of regulations that had become effective on July 30, 1979. The I.C.C. stated, however, that as an “independent regulatory agency”:

[I.C.C.] does not view the Council’s regulations, issued pursuant to Executive Order 11091, of May 24, 1977, as binding upon its administrative actions. At the same time, however, the Commission recognizes the need for a uniform and consistent government-wide approach to implementing NEPA. Accordingly, as a

matter of policy, the Commission intends to follow the Council's regulations to the extent practicable.

45 Fed. Reg. at 15236.

Still, the I.C.C. issued standalone NEPA regulations which continued to preserve robust public participation in NEPA reviews. The regulations made “[a]ll environmental documentation” prepared in connection with proposed actions “available to parties and the public.” 49 C.F.R. § 1108.10(a) (1980). Further, those procedures: (1) required the preparation of a draft and final EIS to be noticed in the Federal Register and that the notice “invite comments and fix the commenting period,” *id.* § 1108.10(c); (2) required public notice of an EA and FONSI—“for an action in which formal adjudicative proceedings are ordered”—in the Federal Register “and/or ... newspapers in the affected area” and that the notice “invite comments and fix the commenting period,” *id.* § 1108.10(g)(1); and (3) required I.C.C. staff to review and respond to public comments on the draft EIS or EA, *id.* § 1108.10(d), (g)(2). The revised procedures added the same public notice and comment requirements on a supplemental EIS “to the extent practicable.” *Id.* § 1108.10(e).

In 1991, the I.C.C. again revised and recodified its NEPA regulations. *See* 1990 ICC LEXIS 104 (March 20, 1990) (I.C.C. order proposing rule); 7 I.C.C. 2d 807; 1991 ICC LEXIS 242 (July 19, 1991); Implementation of Environmental Laws, 56 Fed. Reg. 36104 (July 31, 1991). Those provisions required the preparation of “environmental reports” by the applicant addressing the topics to be analyzed in the agency’s NEPA review, and the report’s distribution to agencies and the public. 49 C.F.R. § 1105.7 (1991). According to the I.C.C., “broader dissemination of the applicant’s report would improve the development of the environmental record by facilitating better, earlier public input.” 1990 ICC LEXIS 104, at *13 (draft rule); *see also* 7 I.C.C. 2d 807; 1991 ICC LEXIS 242, at *17 (final rule).

The 1991 regulations continued to require the publication of a draft EIS for public comment, a comment period of “normally” 45 days, and, in the final EIS, a discussion of “the comments received and any changes made in response to them.” 49 C.F.R. § 1105.10(a)(3), (4) (1991). The same procedures were required for a supplemental EIS “to the extent practical.” *Id.* § 1105.(a)(5). With respect to EAs, the regulations continued to require public notice of the availability of the EA, a 30-day comment period, and a response to comments in the final decision. *Id.* § 1105.10(b). The regulations also provided that the timeframes for public notice and comment on a draft EIS or EA “may be waived or modified where appropriate.” *Id.* § 1105.10(c)(1).

These procedures have stayed intact since the 1991 revisions. *See* 49 C.F.R. § 1105.10(a)(3), (4) (2025) (draft EIS public comment requirements); *id.* § 1105.10(b) (EA public participation requirements); *id.* § 1105.10(c)(1) (waiver provision).

In an apparent attempt to undercut this continuity, the proposed rulemaking notice misleadingly states that “the Board’s current regulations for EAs do not require a draft EA.” Notice at 13. Although 49 C.F.R. § 1105(b) does not refer to a “draft” EA, it plainly requires public comment on an EA. *See also* 1990 ICC Lexis 104, at *29 (“In all other cases, the EA generally will be made available 60 days after the proposal is filed, and comments may be submitted within 30

days thereafter.”). The Board must acknowledge and explain its reasons for the proposed change in rescinding its longstanding requirement for public notice and comment on EAs.

The Board’s longstanding public participation procedures paralleled CEQ’s guidelines and regulations going back to NEPA’s enactment. *See* CEQ 1971 Guidelines, 36 Fed. Reg. 7724, 7726 (Apr. 23, 1971) (noting final EISs shall include “all comments received thereon by the responsible agency from Federal, State, and local agencies and from private organizations and individuals”). The CEQ regulations, from their adoption in 1978, through multiple amendments in recent years, have *consistently* required public comment on draft EISs and public involvement in EAs “to the extent practicable” until their rescission earlier this year. 40 C.F.R. §§ 1501.4(b) (EAs) and 1503.1(a)(4) (EISs) (1978); 40 C.F.R. §§ 1501.5(b) (EAs) and 1503.1(a)(2)(v) (EISs) (2020); 40 C.F.R. §§ 1501.5(e), (f) (EAs) and 1503.1(a)(2)(v) (EISs) (2024).

Federal agencies, including the Board, must still ensure timely public involvement in their NEPA reviews, notwithstanding the rescission of the CEQ regulations last year. Executive Order 11514, section 2(b) remains in effect. Although President Carter, in Executive Order 11991, amended limited provisions of Nixon’s order (e.g., requiring that CEQ issue regulations instead of guidelines implementing NEPA), and President Trump, in Executive Order 14154, rescinded the Carter amendments, neither of those amendments nor rescissions disturbed Executive Order 11514 Section 2(b)’s requirement that agencies develop procedures for public input.

In any case, the statute itself creates binding obligations for agencies to use “all practicable means” to fulfill their environmental trustee responsibilities, 42 U.S.C. § 4331(a), and to develop “to the fullest extent practicable” procedures to ensure that agencies consider environmental information. *See* 42 U.S.C. § 4332(2)(B). This provision remained unchanged even as Congress amended the law in 2023. Executive Order 11514’s longstanding interpretation that this mandate encompasses the development of procedures to allow for “timely” public input, deserves “great respect.” *Loper Bright Enters. v. Raimondo*, 603 U.S. 369, 430 (2024). Moreover, the Board’s and CEQ’s consistent view over more than a half-century that agencies can practicably provide public notice and comment on EISs and EAs also deserves great respect.

Case law reinforces that NEPA requires public notice and comment on EISs. Even before CEQ’s adoption of regulations requiring public comment and public involvement in the preparation of environmental documents, courts consistently recognized that NEPA requires meaningful public involvement. *See Trout Unlimited v. Morton*, 509 F.2d 1276, 1283 (9th Cir. 1974) (holding that NEPA requires information of a proposed project’s environmental impact to be made available to the public to “encourage public participation in the development of that information”); *see also Minnesota Public Interest Research Group v. Butz*, 541 F.2d 1292, 1300 (8th Cir. 1976) (“The purpose of NEPA is not to require an objection free document, but rather to give Congress, the responsible agencies, and the public a useful decision-making tool.”). Courts similarly recognized this requirement comports with NEPA’s purpose, namely that “the agency will become aware of the environmental impact of the decisions it makes.” *Daly v. Volpe*, 514 F.2d 1106, 1108 (9th Cir. 1975) (citation omitted); *see also Natural Resources Defense Council v. Morton*, 458 F.2d 827, 833 (D.C. Cir. 1972) (“Congress contemplated that the Impact Statement would constitute the environmental source material . . . in connection with the making of relevant decisions, and would be available to enhance enlightenment of—and by—the public.”).

Thus, the Board’s proposal to remove provisions requiring public input and involvement without explaining why those procedures are no longer necessary or “practicable” conflicts with NEPA’s directives that agencies (1) use “all practicable means” to fulfill their environmental trustee responsibilities, 42 U.S.C. § 4331, and that agencies, (2) “to the fullest extent practicable,” develop procedures to “*ensure* that presently unquantified environmental amenities and values may be given appropriate consideration in decision-making.” 42 U.S.C. § 4332(2)(B). The Board’s swerve from its longstanding position that public comment on draft EISs and on EAs are essential to the Board’s decisionmaking, without rational explanation, violates NEPA, Executive Order 11514, and the APA’s prohibition against arbitrary and capricious agency action. *See Mont. Wildlife Federation v. Haaland*, 127 F.4th 1 (9th Cir. 2025) (invalidating BLM’s elimination of public comment opportunities because the agency did not provide a rationale for this change in position); *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 515 (2009). The Board “must show there are good reasons for the new policy,” and where an explanation was given for the prior policy, “reasoned explanation is needed for disregarding facts and circumstances that underlay or were engendered by the prior policy.” *Fox Television Stations*, 556 U.S. at 515–16. Indeed, where an agency contradicts an earlier discussion or earlier findings, it must explain its approach. *See United States Sugar Corp. v. EPA*, 830 F.3d 579, 650–51 (D.C. Cir. 2016). Here, the Board has failed to do so.

Specifically, the Board fails to address:

- (1) Why the draft EIS—including public comment on a draft EIS—is no longer a “vital stage” of the NEPA review process, despite its value in promoting “objective” analysis, 352 I.C.C. at 459.
- (2) Why elimination of the requirement for public comment on EAs is justified except in cases involving “abandonment and discontinuance,” *see* [proposed] § 1105.8 (d)(4) (“Unless otherwise directed, comments may be submitted within 30 days of publishing the EA (15 days in the case of a notice of exemption for abandonment under § 1152.50 of this chapter).”)—especially where abandonment and discontinuances appear to be subject to “short regulatory deadlines,” Notice at 13, 16;
- (3) Why elimination of the requirement for an applicant-prepared environmental report is justified except in cases of proposed abandonments and discontinuances, *see* Notice at 16, and relatedly, why the Board should eliminate the requirement to make the environmental report available to public agencies, including state clearinghouses whose apparent function is to make this information available to the public; 1990 ICC LEXIS 104, at *13 (noting “that broader dissemination of the applicant’s report would improve the development of the environmental record by facilitating better, earlier public input”). If it is true that state clearinghouses are “obsolete,” Notice at 13, this information could simply be posted on the Board’s website or in the project’s docket.
- (4) How unbridled agency discretion over whether public comment on draft EISs or EAs, should be solicited (“as in [OEA’s] judgment is needed to fulfill its responsibilities under NEPA and this part,” [proposed] §§ 1105.8(c)(5), 1105.9(g)), will continue to accomplish NEPA’s informed decision-making objectives, especially without any regulatory requirement for OEA to even consider whether to solicit public comment, including

whether it would be “practicable,” or guidance on factors weigh in favor of public participation being “needed to fulfill [the Board’s] responsibilities under NEPA,” *id.* The same concern applies to the Board’s not requiring public comment on draft supplemental EISs, which “will be prepared and published in the same manner as the original document, as appropriate, except that scoping may not be conducted.” [proposed] § 1105.10(b))

- (5) How the sole public comment opportunity at the EIS “notice of intent” stage will provide “a meaningful opportunity for public comment” when the NOI need only provide a “preliminary description of the proposed action and alternatives” and “a summary of expected effects,” [proposed] 49 C.F.R. § 1105.9(f)(1)), i.e., potentially incomplete or cursory information.
- (6) How the public can be expected to provide “substantive,” relevant, and useful comments without the Board making available more detailed information about the project, alternatives, and environmental effects, *see* Notice at 15 (“The NOI will serve as an opportunity for interested members of the public to provide substantive comments early in the environmental review, and the EIS will be informed by any public comments received on the NOI.”).
- (7) Why the Board should no longer continue with its current approach of requiring public participation on draft NEPA documents as the default rule and allowing the Board to “waive or modify any of the time frames” for public participation in NEPA reviews in appropriate cases under section 1105.10(c).

Relatedly, the Center requests that the Board maintain the existing NEPA public participation framework, and issue specific guidelines governing under what circumstances modification or waiver of these timeframes would be appropriate—e.g., longer timeframes for when more complex/a broader range of environmental impacts are at issue and/or increased public interest or controversy is anticipated; shorter timeframes for when less complex/narrow environmental impacts are at issue and/or the proposal does not generate public controversy; and waiver in exceptional, emergency circumstances posing an immediate threat to public health or safety.

The Board’s rulemaking must consider studies reinforcing that public comment in environmental decisionmaking has led to substantive changes in a project and presumably improved environmental decisions.

A recent study quantified the impact of public comment on NEPA reviews and agency decisions and concluded “[p]ublic comments matter.”¹ The study reviewed 108 EIS processes spanning 22 years and found:

¹ Stava, Ashley, et al. *Quantifying the substantive influence of public comment on United States federal environmental decisions under NEPA* (2025), Environ. Res. Lett. 20 074028, <https://iopscience.iop.org/article/10.1088/1748-9326/addee5/pdf> (last viewed April 24, 2026), attached as Ex. 1.

[P]ublic comments resulted in substantive decision alterations in 62% of cases, with 64% showing modifications to alternatives, 42% showing modifications to mitigation plans and 11% leading to the selection of an entirely new preferred alternative. When federal agencies changed project alternatives (78 EISs), 88% of the time (69 of the 78 EISs) they credited public comments as the reason. In 45 of the 108 EISs, agencies modified mitigation plans and credited public comments as the reason 100% of the time. Agencies only occasionally selected a new preferred alternative (21 out of 104 EISs), but when they did, they credited public comments as the reason 100% of the time.

In another study, researchers performed a comprehensive analysis of 239 cases, where they evaluated the success of public participation and contextual and procedural factors contributing to success.² The study demonstrated that public participation has not only improved environmental policy, but it has played an educational role and helped resolve conflicts and mistrust that often plague environmental issues. The study found that public input improved the technical or practical quality of decisions in 68% of cases. The authors concluded that public comment successfully helps integrate the public's priorities into the final decision; helps find common ground among competing interests, though "conflict avoidance" was sometimes more common than full resolution; and is highly effective at increasing public understanding of environmental issues. Further, the specific way participation is handled (procedural factors) matters much more than the type of issue or level of government involved; collaborative, "intensive" processes are far more effective at reaching social goals than traditional public hearings; and the success of the outcome is heavily dependent on how responsive the lead agency is to the public's input and the overall motivation of the participants.

Further, there are many anecdotal examples where the NEPA process led to better projects and environmental outcomes, as told by agency managers and affected communities.³

The Board's rulemaking fails to show that public comment has been a source of needless agency delays, without any substantive benefit to the decision.

² Beierle, Thomas C. & Jerry Cayford, *Democracy in Practice Public Participation in Environmental Decisions* (Sept. 29, 2002), available at <https://Ex.5/doi.org/10.4324/9781936331017> (last viewed April 24, 2026), attached as Ex. 2.

³ DeGood, Kevin, Center for American Progress, *The Benefits of NEPA: How Environmental Review Empowers Communities and Produces Better Projects* (Jan. 16, 2018), available at <https://www.americanprogress.org/article/benefits-nepa-environmental-review-empowers-communities-produces-better-projects/> (last viewed April 24, 2026), attached as Ex. 3; Pepper, Elly, NRDC, *Never Eliminate Public Advice: NEPA Success Stories* (Feb. 1, 2015), available at <https://www.nrdc.org/resources/never-eliminate-public-advice-nepa-success-stories> (last viewed April 24, 2026), attached as Ex. 4; CEQ, *Examples of Benefits from the NEPA Process for ARRA Funded Activities* (May 2011), https://ceq.doe.gov/docs/get-involved/ARRA_NEPA_Benefits_List_May122100.pdf (last viewed April 24, 2026), attached as Ex. 5.

The Board's rulemaking also fails to consider several thorny practical issues that spring from the elimination of public notice and comment. To the extent that the Board justifies these changes on the grounds of "certainty" and "efficiency," *c.f.* Notice at 54 (citing E.O. 14154 as supporting the Board's goal to make the "environmental review process more efficient"), the Board fails to address the following issues:

- The elimination of public comment on EISs and EAs could result in the Board overlooking significant environmental issues, leading to more litigation under NEPA and thus greater inefficiencies and uncertain outcomes.
- Relatedly, if there is no opportunity to comment on a draft EIS or EA (and thus no issue exhaustion requirement), the agency may fail to explain why it took its approach to a certain environmental issue, resulting in a higher probability of success for NEPA litigants challenging unexplained agency action, and greater inefficiencies and uncertain outcomes.
- Where a programmatic EIS is involved, oversights that might have been caught in public comments could result in the Board having to address those issues at the site-specific approval stage or prepare a supplemental EIS, leading to greater inefficiencies and uncertain outcomes.
- If the public lacks notice of the agency action and an adequate opportunity to develop the administrative record in public comment, parties bringing litigation will be required to seek supplementation of the administrative record (e.g., to show the agency failed to consider relevant factors) or discovery, resulting in greater delays and costs for all litigants and the project applicant.

The Board must explain how its rule results in more efficient and certain outcomes, given that the elimination of public notice and comment could lead to more legal challenges under NEPA, causing more delays, costs, and uncertainties for everyone.

The proposed rule regarding the notice of intent (NOI) to prepare an EIS does not specify a minimum comment period. If the Board declines to require a minimum opportunity to comment on a draft EIS, the Board should require a minimum 60-day comment period at the NOI stage to allow the public opportunity to provide comments. Further, the agency should have the discretion to impose a longer comment period for rail construction projects that may implicate a number of potentially significant impacts, by, for example, disrupting public lands, creating land-use conflicts, crossing numerous streams, increasing geological hazards, harming sensitive and/or listed species, and increasing pollution in non-attainment areas. The public must have a fair and full opportunity to suggest alternative routes and provide information about potential impacts where multiple complex issues may be involved.

II. The Proposed Rule Amends the Definition of “Major Federal Action” Without a Reasoned Explanation.

The Board’s rulemaking re-defines the circumstances under which NEPA applies to a proposed action in terms that have no statutory basis. Under the current rules, “Major Federal action” incorporated CEQ’s former definition at 40 C.F.R. § 1508.18 (2019):

Major Federal action includes actions with effects that may be major and which are potentially subject to Federal control and responsibility. Major reinforces but does not have a meaning independent of significantly (§ 1508.27). Actions include the circumstance where the responsible officials fail to act and that failure to act is reviewable by courts or administrative tribunals under the Administrative Procedure Act or other applicable law as agency action.

See also 49 C.F.R. § 1105.5(a) (2025) (“In determining whether a “major Federal action” (as that term is defined by the Council on Environmental Quality in 40 CFR 1508.18) has the potential to affect significantly the quality of the human environment, the Board is guided by the definition of “significantly” at 40 CFR 1508.27.”).

However, the proposed rule would limit NEPA’s applicability by redefining the term “major federal action.” Specifically, the proposed rule would provide that two criteria must be met for NEPA to apply—the action must be both “major” and “federal,” but fails to provide any guidance as to what either term means. *See* [proposed] 49 C.F.R. § 1105.5(a)(6), Notice at 29 (“The terms “major” and “federal action,” each have independent force. NEPA applies only when both of these two criteria are met.”). The Board should clarify how the term “major federal action” differs from the former CEQ definition and explain why departure from that definition is justified. The Board must explain how this new test for NEPA applicability complies with the statute.

The earliest cases interpreting NEPA—including those that predated CEQ’s 1978 regulations—declined to give the “magnitude of the federal action”—that is, the “major” in “major Federal action” much additional bite. *Minnesota Public Interest Research Group v. Butz*, 498 F.2d 1314, 1321 (8th Cir. 1974). When a Federal action “significantly affect[s] the quality of the human environment,” an EIS is required. 42 U.S.C. § 4332(C).

Congress added its own definition of the major Federal action requirement with the recent statutory amendments. 42 U.S.C. § 4336e(10). But that provision did not adopt the Board’s approach. Instead, it provided only that the term “means an action that the agency carrying out such action determines is subject to substantial Federal control and responsibility.” 42 U.S.C. § 4336e(10). The Board does not explain whether its proposed language is meant to be a change from what came before, and if it is, why such a change is necessary or even advisable.

The Board offers little in the way of guidance about how to apply the “major” “federal action” requirement. Whereas CEQ’s 2024 regulations provided examples of what constitutes “substantial Federal control and responsibility” and what does not, 40 C.F.R. § 1508.1(w) (2024), the Board here provides only examples of actions that do not meet the definition. [proposed] 49 C.F.R. § 1105.5(b), Notice at 29-30.

The Board does not have unlimited discretion to determine what constitutes a major Federal action; where an action constitutes major Federal action within the meaning of the statute, NEPA requires the Board to go through environmental review, and the statute does not provide offramps except where specified. *See* 42 U.S.C. § 4332(2)(C). And that is true even if the Board initially exercises its judgment to conclude otherwise. *See, e.g., City of Dania Beach v. FAA*, 485 F.3d 1181, 1189 (D.C. Cir. 2007); *Wild Fish Conservancy v. Thom*, 2021 WL 8445587, at *18 (W.D. Wash. Sept. 27, 2021).

In the meantime, the omission of guidance about what constitutes a major Federal action will sow confusion and uncertainty, which in turn will result in litigation about whether actions are, in fact, major federal actions. By including what could appear to be a narrower threshold to the major Federal Action requirement while omitting the examples CEQ once included, 40 C.F.R. § 1508.1(w)(1) (2024), has the Board indicated that it no longer considers those to be major Federal actions? There is no way to know since there is no explanation offered. The Board need not cause this confusion. Instead, the Board should clarify that it continues to consider these actions as qualifying as major Federal actions under the statute.

III. The Proposed Rule Narrowly Limits “Purpose and Need.”

The proposed regulations narrowly limit the “purpose and need for the proposed action” as “based on the goals of the applicant and the Board’s statutory authority.” [proposed] 49 C.F.R. §§ 1105.8(c)(7) & 1105.9(i), Notice at 34, 37. All too often already, rather than considering the public interest, agencies define the purpose and need, from the agency’s or public’s standpoint, as simply responding to the project application, as required by their statutory authority. The revised definition will only reinforce this trend of defining the purpose and need in overly narrow terms, and will inevitably limit the range of alternatives that agencies consider, at the risk of eliminating reasonable alternatives to the proposed action that may achieve project goals with less environmental impact.

The Board should explain its rationale for this narrow definition and why broader public interests in environmental protection and public health and safety should not inform the project purpose and need. NEPA itself requires that the “policies and goals set forth in [NEPA] are supplementary to those set forth in existing authorizations of Federal agencies.” 42 U.S.C. § 4335. Although NEPA itself does not itself impose substantive environmental obligations, its “action forcing” procedures require that agencies consider the effects of their proposed action toward the end that agencies consider alternatives and measures to avoid, minimize, and mitigate environmental harms. And the Board itself has broad authority to consider environmental protection, energy conservation, public health and safety, and worker safety, under the Board’s national rail transportation policy. 49 U.S.C. § 10101(8), (11), (14).

IV. The Proposed Rule Fails to Provide Clear Direction Concerning the Consideration of Indirect and Cumulative Impacts, Risking Agencies Overlooking These Effects.

A. The Proposed Rule Arbitrarily Eliminates or Reduces the Consideration of Down-line Effects.

The proposed rule eliminates all reference to “indirect” and “down-line” effects, creating confusion over the proper scope of effects analysis and running the risk of curtailing analysis of reasonably foreseeable indirect effects. *See* Notice at 20 (“The Board will no longer require a description of ‘down-line impacts’—i.e., impacts from rail operations along existing rail line segments from trains originating or terminating on a proposed new rail line.”). This would alter the Board’s interpretation and practice of nearly a half-century. *See* 49 C.F.R. § 1105.7(e)(11)(v) (2025) (requiring that environmental reports for rail constructions “[d]escribe the effects, including indirect or down-line impacts, of the new or diverted traffic over the line if the thresholds governing energy, noise and air impacts in § 1105.7(e)(4), (5), or (6) are met”); 49 C.F.R. § 1105.7(e)(11)(v) (1991) (requiring same analysis); 49 C.F.R. § 1108.7(c)(11)(v) (1980), 363 I.C.C. 653, 663 (Nov. 5, 1980) (requiring “description of the effects, including indirect or down-line impacts, resulting from new or diverted traffic operating over the new line”).

Although the Board suggests that it could still consider down-line impacts, the proposed rulemaking notice strongly suggests that down-line effects analysis is discretionary, stating that “the Board has discretion to draw the lines as to ‘how far’ it will ‘go in considering the indirect effects that might occur outside the area of the immediate project,’ *Seven County*, 605 U.S. at 182,” and that “project-specific determinations will be made with respect to the analysis of indirect downline impacts.” Notice at 20.

Seven County, however, does not absolve the Board from considering down-line effects. In that case, the Board, in approving an oil railroad, was not required to consider the upstream and downstream effects of separate oil well and oil refinery projects or the actions of third-party drillers and refiners. *Seven Cnty. Infrastructure Coal. v. Eagle Cnty.*, 605 U.S. 168, 186 (2025) (“those separate projects fall outside the Board’s authority and would be initiated, if at all, by third parties”). In contrast, here, the effects of increased down-line train traffic resulting from a new line or other Board action would result from the construction of the new line itself and, most likely, the applicant’s own actions—not from separate projects or the actions of third parties.

Elsewhere, the proposed rule supports this understanding that an increase in down-line traffic from new rail construction should be attributable to the proposed construction the Board is considering approving. Proposed § 1105.16, which describes the content of EAs and EISs, broadly provides that an EA or EIS should include a “[d]escription of the anticipated effects of the proposed action on regional or local transportation systems and patterns.” [proposed] 49 C.F.R. § 1105.16(b), Notice at 41. Although that section does not mention down-line effects as part of the required analysis, it requires “[e]stimates of the amount of traffic likely to be diverted to other transportation systems or modes as a result of the proposed action, if any.” [proposed] 49 C.F.R. § 1105.16(b), Notice at 41-42. The proposed rule’s discussion of a new categorical exclusion for proposed abandonments suggests that the Board sees diverted traffic impacts on “other rail lines” as effects of a proposed action:

In proceedings in which there is diversion of traffic as a result of a rail line abandonment, there could be environmental impacts *on other rail lines or roads to which traffic is diverted*. The STB, however, has determined that those impacts will not have the potential to be significant unless the volume of traffic diverted exceeds the environmental thresholds (based on current traffic volumes). See current 49 CFR 1105.7(e)(4) & (5) and proposed 49 CFR 1105.16(d) & (e).

Notice at 58 (emphasis added). Similarly, for proposed discontinuances of service, the Board states:

[T]he only potential environmental impacts from a discontinuance would be if there is rail traffic operating on the line at the time of the discontinuance that would need to be diverted to another line or road. The STB has determined that, unless those diversions involve a substantial change in operations on another rail line or road (i.e., exceeds the STB’s environmental thresholds based on current traffic volumes), there are no reasonably foreseeable significant environmental impacts.

Notice at 60.

The proposed rule therefore categorically excludes proposed abandonments or discontinuances from preparation of an EA or EIS where the proposal “would not result in substantial changes in the applicant’s operations (*i.e.*, changes that would not exceed the thresholds established at [proposed] § 1105.16(d) or (e))”—e.g., where the traffic does not double, nor equal or exceed 8 trains per day, in Clean Air Act attainment areas. Notice at 55. Thus, the proposed categorical exclusion suggests that in cases where the environmental thresholds would be exceeded due to the diverted traffic, the Board would have to prepare an EA or EIS to analyze those diverted traffic effects. *See, e.g.*, Notice at 59 (“[A]n EA is only necessary in abandonment cases involving a significant diversion of rail traffic . . .”). Certainly, if the abandonment or discontinuance of a line could cause increased traffic on “another line,” so could the construction of a new line cause increased traffic on another line. There is no logical difference between the two scenarios that would make the proposed rail construction somehow less responsible for the increased traffic effects on another line, compared to abandonments or discontinuances that divert and cause increased traffic onto another line.

The Board should clarify that the definition of “effects” includes down-line effects (e.g., due to new rail construction), and that down-line effects must be analyzed, where the environmental thresholds in proposed § 1105.16(d) or (e) are exceeded. Otherwise, the Board must explain why the analysis of down-line effects from new construction should be discretionary or treated differently from the analysis of diverted traffic effects resulting from abandonments and discontinuances.

B. The Proposed Rule’s Requirements for Air Quality Analysis Are Arbitrary.

The Board’s proposed requirements for air quality analysis also lack basis or support. Where thresholds are exceeded for impacts to energy conservation, air quality, and noise, the Board’s EA or EIS must analyze those impacts. *See* [proposed] 49 C.F.R. § 1105.16(e), (f), (g), (l), Notice at 42-44. With respect to thresholds for air quality, the Board limits analysis of effects on

air emissions to “the air quality control region in which the proposed action is located,” even though emissions could travel downwind to another air quality control region, or down-line emissions could occur in an air quality control region outside the area of the proposed action. *Id.* Confusingly, these emissions must be analyzed where the proposed action is located in an attainment area and where rail traffic would exceed certain thresholds, *without regard to where that traffic increase would occur*, i.e., where there is:

(i) An increase in rail traffic of at least 100 percent (measured in gross ton miles annually) or an increase of at least eight trains a day on *any segment of rail line affected by the proposed action*,

(ii) An increase in rail yard activity of at least 100 percent (measured by carload activity), or

(iii) An average increase in truck traffic of more than 10 percent of the average daily traffic or 50 vehicles a day on *any affected road segment*.

[proposed] 49 C.F.R. § 1105.16(e)(1) (emphasis added).

Thus, the proposed rule purports to limit air quality impacts analysis to the local air quality control region of the proposed action, but then would broadly require the Board to consider air emissions that could occur in areas outside that local air quality region (i.e., “any segment of rail line affected by the proposed action,” “any affected road segment,” and any rail yard affected). These provisions also appear to consider operational emissions as the only relevant factor to whether an air quality analysis must be performed, ignoring the consideration of construction emissions impacts, which can be significant. For example, the Board concluded that construction of the Uinta Basin Railway in Utah would result in more than 97 tons of nitrogen oxides emission annually, just below the Clean Air Act’s 100-tons-per-year threshold triggering conformity analysis in nonattainment areas.⁴

To add to the confusion, the environmental thresholds for air quality analysis in nonattainment areas use similar but not identical language, requiring that the Board:

[m]easure anticipated effect on air emissions (for the air quality control region in which the proposed action is located), and determination of whether any expected increase would be within the parameters established by the relevant State Implementation Plan, if the proposed action affects a class I or nonattainment area and would result in:

(i) An increase in rail traffic of at least 50 percent (measured in gross ton miles annually) or an increase of at least three trains a day *on any segment of rail line*,

⁴ Surface Transportation Board, Uinta Basin Railway EIS (Aug. 2021) at 3.7-25, https://icfbiometrics.blob.core.windows.net/uinta-basin/03_07_AQ_GHG_FEIS.pdf (last viewed April 24, 2026), excerpts attached as Ex. 6.

(ii) An increase in rail yard activity of at least 20 percent (measured by carload activity), or

(iii) An average increase in truck traffic of more than 10 percent of the average daily traffic or 50 vehicles a day *on a given road segment*.

[proposed] 49 C.F.R. § 1105.16(e)(2), Notice at 42-43 (emphasis added).

Both provisions' qualifiers limiting effects analysis to "the air quality control region in which the proposed action is located" should be removed not just because this limitation is inconsistent with the proposed triggers for air quality analyses, but because this limitation does not comport with the Board's duty to consider a proposed action's reasonably foreseeable significant effects. The Board's NEPA reviews cannot ignore air pollution caused by the proposed action that either (1) affect downwind airsheds or (2) originate in a down-line airshed, given air pollution's potentially significant impacts to public health. The Supreme Court specifically recognized the potential for such air pollution impacts:

To be clear, the environmental effects of the project at issue may fall within NEPA even if those effects might extend outside the geographical territory of the project or might materialize later in time—for example, run-off into a river that flows many miles from the project and affects fish populations elsewhere, *or emissions that travel downwind and predictably pollute other areas*.

See Seven County, 605 U.S. at 187 (emphasis added).

Another reason why the Board should not limit the consideration of indirect air quality effects is because such a narrow analysis could result in a curtailed Clean Air Act conformity analysis, which agencies typically address in their NEPA reviews. The failure to comply with the CAA's conformity requirement could be an indicator of significant air quality impacts. To prevent the federal government from worsening air quality in already impaired airsheds, Congress adopted the CAA's General Conformity Rule, which agencies have an "affirmative responsibility" to implement. 42 U.S.C. § 7506(c)(1). In relevant part, this CAA provision states that:

No department, agency, or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license or permit, or approve, any activity which does not conform to [a state implementation plan (SIP)] . . . Conformity to a [SIP] means—

(A) conformity to [a SIP's] purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and achieving expeditious attainment of such standards; and

(B) that such activities will not—

(i) cause or contribute to any new violation of any standard in any area;

(ii) increase the frequency or severity of any existing violation of any standard in any area; or

- (iii) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

Id.

Regulations define direct emissions as those emissions that are caused or initiated by the Federal action and occur at the same time and place as the action and “are reasonably foreseeable.” 40 C.F.R. § 93.152. Indirect emissions are defined as those emissions that are caused by the Federal action, but may occur later in time or distance, and are reasonably foreseeable, and which the Federal agency can practically control and will maintain control over. *Id.* “Reasonably foreseeable emissions are projected future direct and indirect emissions that are identified at the time the conformity determination is made; the location of such emissions is known and the emissions are quantifiable as described and documented by the Federal agency based on its own information and after reviewing any information presented to the Federal agency.” *Id.* Because the Board authorizes both construction and operation of rail lines, both construction and operational emissions along the proposed line would appear to be “direct emissions.”

In addition, the proposed regulation requires that an analysis of air pollution effects of a project located within a nonattainment area should include a “determination of whether any expected increase would be within the parameters established by the relevant State Implementation Plan, if the proposed action affects a class I or nonattainment area.” [proposed] 49 C.F.R.

§ 1105.16(e)(2), Notice at 42. Again, the Board fails to explain why the consideration of pollution impacts on class I or nonattainment areas should be limited to areas that are within the same air quality control region in which the proposed action is located, much less why this analysis should only occur if the proposed action occurs in a nonattainment area. A proposed action located in an attainment area (including a “maintenance area” subject to a state implementation plan) could have harmful impacts on a class I airshed or nonattainment area downwind of the attainment area or down-line of the proposed project.

Moreover, it is unclear what type of analysis is required by the “determination of whether any expected increase would be within the parameters established by the relevant State Implementation Plan.” *Id.* What it means for any expected increase to “be within the parameters established by the relevant State Implementation Plan” is so vague that it does not provide a meaningful guide as to what issues the Board’s NEPA review should consider. For example, the Clean Air Act’s conformity requirement broadly requires federal agencies from worsening air quality in already impaired airsheds, and specifically requires that:

No department, agency, or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license or permit, or approve, any activity which does not conform to [a state implementation plan (SIP)] . . . Conformity to a [SIP] means—

(A) conformity to [a SIP’s] purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and achieving expeditious attainment of such standards; and

(B) that such activities will not—

- (i) cause or contribute to any new violation of any standard in any area;
- (ii) increase the frequency or severity of any existing violation of any standard in any area; or
- (iii) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

42 U.S.C. § 7506(c)(1). Potentially, the determination called for by the Board's proposed rule requires something akin to a CAA conformity determination, but it is entirely unclear and unexplained.

Further, although a project's emissions with respect to the CAA's public health standards or "parameters established by the relevant State Implementation Plan" is one factor that might indicate significant impacts, it is not the only indicator of whether air pollution could result in significant impacts. Impacts on visibility (including Class I areas, such as national parks, which must set goals to improve visibility and reduce emissions that cause haze), nitrogen deposition, and greenhouse gas emissions and climate change may also result in significant impacts requiring analysis in an EIS or EA.

The proposed rulemaking also fails to support its air quality thresholds with evidence backing its assumption that the proposed thresholds are still valid. Since these thresholds were adopted in 1991, train operations have changed dramatically. Precision scheduled railroading has resulted in running longer and heavier trains carrying more freight on tighter schedules. Trains are also running on older locomotive engines, due to a glut of existing locomotives, with less overall demand for new engines (another effect of precision scheduled railroading), and regulatory loopholes that do not require engines to be updated.⁵ In addition, crude by rail shipments have grown since 1991, and are now roughly nine times greater than they were in 2010.⁶ Crude by rail involves shipments of crude oil in longer and heavier unit trains.⁷ Overall, this could mean trains are emitting dirtier pollution at increased levels compared to prior operations. Longer trains also cause more idling of vehicles at grade crossings potentially resulting in more pollution from

⁵ Cooke, David, Union of Concerned Scientists, *Railroads Are Running Dirty Diesel Trains Through Communities and No One Is Doing Anything About It*, The Equation (June 17, 2025), available at <https://blog.ucs.org/dave-cooke/railroads-are-running-dirty-diesel-trains-through-communities-and-no-one-is-doing-anything-about-it/> (last viewed April 24, 2026), attached as Ex. 7; McLaughlin, Tim, *How the US freight rail industry got dirtier than coal power plants*, Reuters (Dec. 15, 2025), available at <https://www.reuters.com/sustainability/climate-energy/how-us-freight-rail-industry-got-dirtier-than-coal-power-plants-2025-12-14/> (last viewed April 24, 2026), attached as Ex. 8.

⁶ U.S. Energy Information Administration, Total Crude Oil by Rail 2010-2026 (graph), available at https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=ESM_EPC0_RAIL_ZAMN_ZAMN_MBBL&f=M, (last viewed April 24, 2026) attached as Ex. 9.

⁷ Mikulka, Justin, *Overloaded: New Rules Allowed for Heavier Bakken Oil Trains*, DeSmog, (Sep 19, 2016), available at <https://www.desmog.com/2016/09/19/overloaded-new-rules-allowed-heavier-bakken-oil-trains/> (last viewed April 24, 2026), attached as Ex. 10.

those vehicles.⁸ The Board must explain how it arrived at its emissions thresholds and why lower thresholds are not justified in light of significant changes in the rail industry and operations.

C. The Proposed Rule Improperly Limits Analysis of Indirect Effects on ESA-Listed Species.

The proposed rule appears to limit the Board’s analysis of effects on species protected under the ESA, providing that an EA or EIS will describe “[w]hether any federally listed threatened or endangered species or areas designated as a critical habitat *are present in or adjacent to the area* of the proposed action and how that determination was made,” and “[w]hether the proposed action is likely to adversely affect federally listed threatened or endangered species or areas designated as a critical habitat, and if so, describe the effects.” [proposed] 49 C.F.R.

§ 1105.16(h)(1)(i), (ii), Notice at 43. But the Board’s obligation to analyze effects on listed species is much broader under NEPA—the Board must analyze the project’s reasonably foreseeable effects on species *whether or not the species occur within or adjacent to the project area*. For example, as the Supreme Court made clear in *Seven County*, if a rail line construction would cause runoff pollution into a stream, which then adversely affects listed species far outside the project area, the Board must address those effects in the EA or EIS. *Seven County*, 605 U.S. at 187 (“To be clear, the environmental effects of the project at issue may fall within NEPA even if those effects might extend outside the geographical territory of the project or might materialize later in time—for example, run-off into a river that flows many miles from the project and affects fish populations elsewhere . . .”).

Moreover, under the ESA, the duty to consider effects on listed species extends as far as the proposed project’s “action area”—that is, “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.” 50 C.F.R. § 402.02. To the extent the proposed rule’s requirement is meant to guide the Board in fulfilling its obligations under the ESA—as suggested by its requirement that the EA or EIS address whether the proposed action “is not likely to adversely affect” listed species or critical habitat, as formal consultation under the ESA also requires, 50 C.F.R. § 402.14(b)(1)—the proposed rule does not capture the correct area of analysis. The rule should be revised to require a description of species occurring in all areas to be affected directly or indirectly by the proposed project, not just within or adjacent to the project area.

D. The Proposed Rule Provides Unclear Direction on Cumulative Effects Analysis.

The proposed rule makes no reference to cumulative impacts, including the requirement to consider reasonably foreseeable future actions. The consideration and disclosure of cumulative

⁸ Long Freight Trains: Ensuring Safe Operations, Mitigating Adverse Impacts (2024), Chapter: 6 Environmental Impacts. National Academies of Sciences, Engineering, and Medicine. 2024. Long Freight Trains: Ensuring Safe Operations, Mitigating Adverse Impacts. Washington, DC: The National Academies Press, available at <https://www.nationalacademies.org/read/27807/chapter/8> (last viewed April 24, 2026), attached as Ex. 11.

impacts is required under the statute. The proposed rule should be amended to require consideration of cumulative impacts.

Cumulative impacts analysis requires an assessment of the actual impact in light of background effects – e.g., how will increased emissions affect air quality in light of existing emissions. NEPA reviews “must give a realistic evaluation of the total impacts and cannot isolate a proposed project, viewing it in a vacuum.” *Grand Canyon Trust v. FAA*, 290 F.3d 339, 342 (D.C. Cir. 2001). “Even a slight increase in adverse conditions that form an existing environmental milieu may sometimes threaten harm that is significant. One more factory ... may represent the straw that breaks the back of the environmental camel.” *Id.* at 343 (quoting *Hanly v. Kleindienst*, 471 F.2d 823, 831 (2d Cir. 1972)).

The Board cannot abandon cumulative impacts analysis, based on CEQ’s rescission of its regulations. Cumulative impacts necessarily fall within NEPA’s mandate for agencies to consider the reasonably foreseeable effects of its action “to the fullest extent possible,” 42 U.S.C. § 4332, tracing back to NEPA’s original understanding, as interpreted by CEQ, the courts, and agency practice.

Within a few months of NEPA’s enactment in 1970, CEQ issued its first set of guidelines on implementing NEPA, at President Nixon’s direction, Executive Order 11514, § 3(h). CEQ, Statements on Proposed Federal Actions Affecting the Environment; Interim Guidelines (April 30, 1970) (“1970 Guidelines”), 35 Fed. Reg. 7390 (May 12, 1970).⁹ The guidelines advised that agencies “should prepare an [EIS] if it is reasonable to anticipate a cumulatively significant impact on the environment from Federal action,” in recognition that a project’s effects “can be individually limited but cumulatively considerable.” 35 Fed. Reg. at 7391. Specifically, CEQ noted that section 4332(C) of NEPA directing agencies to prepare a “detailed statement” for “major Federal actions significantly affecting the quality of the human environment” “is to be construed ... with a view to the overall, cumulative impact of the action proposed” and “of further actions contemplated.” *Id.* Examples included: “when one or more agencies over a period of years puts into a project individually minor but collectively major resources, when one decision involving a limited amount of money is a precedent for action in much larger cases or represents a decision in principle about a future major course of action, or when several Government agencies individually make decisions about partial aspects of a major action.” *Id.* at 7391; *see also Ely v. Velde*, 451 F.2d 1130, 1137, n.22 (4th Cir. 1971) (citing 1971 guidelines to hold that agency action’s cumulative impacts triggered preparation of an EIS).

CEQ also advised that the EIS should “assess the action for cumulative and long-term effects,” in view of two other statutory provisions. 35 Fed. Reg. at 7392. The guidelines found that the statutory requirement for an EIS to address “[t]he relationship between local short-term uses of man’s environment and the maintenance and enhancement of long-term productivity,” 42 U.S.C. § 4332(2)(C)(iv), “in essence” required a cumulative effects analysis. *Id.* *See also* National Environmental Policy Act of 1969, S. REP. No. 91-296 (July 9, 1969) (“Senate Report on

⁹ Available at https://archives.federalregister.gov/issue_slice/1970/5/12/7389-7393.pdf#page=2 (last viewed April 24, 2026).

NEPA”),¹⁰ at 2, 21 (draft precursor to 42 U.S.C. § 4332(C)(iv) would have required a finding that the proposed “local, short-term uses of man’s environment are consistent with maintaining and enhancing long-term productivity”). Further, this assessment should be done “from the perspective that each generation is trustee of the environment for succeeding generations,” 35 Fed. Reg. at 7392, in clear reference to NEPA’s policy statement that the Federal Government “use all practicable means” to “fulfill the responsibilities of each generation [as] trustee of the environment for succeeding generations,” 42 U.S.C. § 4331(b)(1). This was in apparent recognition that “long-term productivity” and future sustainability can only be assessed and preserved if the overall impact from all actions in the affected area are cumulatively considered.

CEQ repeated the recommendations that cumulative impacts can trigger an EIS, and should be addressed in an EIS, in subsequent updates to the 1970 Interim Guidelines in 1971 and 1973.¹¹

In 1978, CEQ codified these guidelines – that a proposed action’s significant cumulative impacts should trigger an EIS, and that an EIS should analyze cumulative impacts, among others – in binding regulations. *See* 40 C.F.R. § 1508.27(b)(7) (1978) (requiring consideration of “[w]hether the action is related to other actions with individually insignificant but cumulatively significant impacts” to determine whether to prepare an EIS, and noting “[s]ignificance exists if it is reasonable to anticipate a cumulatively significant impact on the environment.”); *id.* § 1508.27 (1978) (including “cumulative impact” in the definition of “effect,” and describing it as “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 (Federal or non-Federal) or person undertakes such other actions”).¹² These requirements remained in effect, except for the short period between July 2020 and April 2022, until CEQ rescinded its regulations last year. *Compare id. with* § 1508.1(g) (2020) (removing cumulative impacts from definition of “effects”) *with* § 1508.1(g) (2022) & § 1508.1(i) (2024) (restoring

¹⁰ Available at <https://ceq.doe.gov/docs/laws-regulations/Senate-Report-on-NEPA.pdf> (last viewed April 24, 2026).

¹¹ *See* CEQ, *Statements on Proposed Federal Actions Affecting the Environment: Guidelines*, 36 Fed. Reg. 7724, 7724-25 (April 23, 1971), at §§ 5(b), 6(a)(v) (“1971 Guidelines”), available at <https://ceq.doe.gov/docs/laws-regulations/FR-1971-04-23-36-FR-7724-CEQ-NEPA-Guidelines-original.pdf> (last viewed April 24, 2026); CEQ, *Preparation of Environmental Impact Statements: Guidelines*, 38 Fed. Reg. 20550, 20551 (Aug. 1, 1973) (“1973 Guidelines”), at § 1500.6(a) (also clarifying that cumulative impact of the action includes “related Federal actions and projects in the area, and further actions contemplated”); *id.* at § 1500.8(a)(1) (“The interrelationships and cumulative environmental impacts of the proposed action and other related Federal projects shall be presented in” the EIS), available at <https://ceq.doe.gov/docs/laws-regulations/FR-1973-08-01-38-FR-20550-CEQ-NEPA-Guidelines-revised.pdf> (last viewed April 24, 2026).

¹² The 1978 regulations are printed at 43 Fed. Reg. 55,978 (Nov. 29, 1978), available at <https://ceq.doe.gov/docs/laws-regulations/FR-1978-11-29-43-FR-55978-CEQ-NEPA-Regulations-NOFR.pdf> (last viewed April 24, 2026).

cumulative impacts); *see also id.* § 1501.3 (2020) (removing consideration of cumulative effects from determining the significance of an action).

And, in later guidance to agencies, CEQ reiterated the importance of a cumulative impacts analysis in advancing NEPA's purpose of informed decision making for individual projects:

Many times there is a mismatch between the scale at which environmental effects occur and the level at which decisions are made. Such mismatches present an obstacle to cumulative effects analysis. For example, while broad scale decisions are made at the program or policy level (e.g., National Energy Strategy, National Transportation Plan, Base Realignment and Closure Initiative), the environmental effects are generally assessed at the project level (e.g., coal-fired power plant, interstate highway connector, disposal of installation land). Cumulative effects analysis should be the tool for federal agencies to evaluate the implications of even project-level environmental assessments (EAs) on regional resources.

CEQ, *Considering Cumulative Effects Under the National Environmental Policy Act* (Jan. 1997), Chapter 1 at 4.¹³

The 2020 Rule's jettisoning of cumulative impacts analysis deviated from CEQ's otherwise consistent interpretation of NEPA since NEPA's enactment, that agencies should consider cumulative impacts.

Likewise, eliminating cumulative impacts analysis would conflict with U.S. Supreme Court and other federal court decisions dating back to NEPA's early implementation, and pre-dating the 1978 regulations. Courts have found in NEPA's statutory text the requirement to consider cumulative impacts and "focus concern on the 'big picture' relative to environmental problems." *Swain v. Brinegar*, 517 F.2d 766, 775 (7th Cir. 1975). In *Swain*, the Seventh Circuit observed NEPA "expressly requires recognition of 'the worldwide and long-range character of environmental problems,'" 42 U.S.C. § 4332(2)(E) [1975] [now codified at 4332(2)(I)], and one of its specific elements to be studied in the EIS is 'the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity.'" 42 U.S.C. § 4332(2)(C)." *Swain*, 517 F.2d at 775. Thus, NEPA recognizes that "each 'limited' federal project is part of a large mosaic of thousands of similar projects and that cumulative effects can and must be considered on an ongoing basis." *Id.*; *see also Kleppe v. Sierra Club*, 427 U.S. 390, 409–410 (1976) ("comprehensive impact statement may be necessary" for agency to meet its duties under NEPA; "[w]hen several proposals . . . will have cumulative or synergistic environmental impact upon a region are pending concurrently before an agency, their environmental consequences must be considered together").

Courts have also recognized that cumulative impacts analysis is necessary to put a proposed action's effects into meaningful context and fulfill NEPA's informed decisionmaking purpose. In *Hanly v. Kleindienst*, 471 F.2d 823 (2d Cir. 1972), the court stated that agencies are required to consider "the absolute quantitative adverse environmental effects of the action itself, including

¹³ Available at https://ceq.doe.gov/publications/cumulative_effects.html (last viewed April 24, 2026).

the cumulative harm that results from its contribution to existing adverse conditions or uses in the affected area.” *Id.* at 830–31. *See also Minnesota Public Interest Research Group v. Butz*, 498 F.2d 1314, 1322 (8th Cir. 1974) (“There has been increasing recognition that man and all other life on this earth may be significantly affected by actions which on the surface appear insignificant,” and citing CEQ guidelines on cumulative impacts); *Natural Resources Defense Council v. Callaway*, 524 F.2d 79, 88 (2nd Cir. 1975) (Congress intended “to instill in the environmental decisionmaking process a more comprehensive approach so that long term and cumulative effects of small and unrelated decisions could be recognized, evaluated and either avoided, mitigated, or accepted as the price to be paid for the major federal action under consideration”); *Swain v. Brinegar II*, 542 F.2d 364, 370 (7th Cir 1976) (finding illegal segmentation of highway project, because “the combined statements of course do not consider the overall environmental effects of the 42-mile freeway”); *id.* at 368 (“although the individual environmental impact might be slight, the cumulative consequences could be devastating”); *Klamath-Siskiyou Wildlands Ctr. v. BLM*, 387 F.3d 989, 994 (9th Cir. 2004) (“Cumulative impacts of multiple projects can be significant in different ways. The most obvious way is that the greater total magnitude of the environmental effects . . . may demonstrate by itself that the environmental impact will be significant. Sometimes the total impact from a set of actions may be greater than the sum of the parts.”).

Accordingly, for decades courts have held that NEPA reviews “must give a realistic evaluation of the total impacts and cannot isolate a proposed project, viewing it in a vacuum.” *Grand Canyon Trust v. FAA*, 290 F.3d 339, 342 (D.C. Cir. 2002); *see also Healthy Gulf v. FERC*, 107 F.4th 1033, 1043 (D.C. Cir. 2024) (“NEPA’s mandate to consider the cumulative effects of a project makes sense: A project’s incremental emissions do not exist in a vacuum, and requiring consideration of the overall state of the surrounding environment helps ensure that agencies do not overlook the full impact of those emissions.”). The *Seven County* decision is not to the contrary as it never mentions the term “cumulative” impacts. *Seven County*, 605 U.S. 168.

Agency practice predating the CEQ’s 1978 regulations is consistent with CEQ’s and the courts’ decades-long reading of NEPA that significant cumulative impacts should trigger preparation of an EIS. The Board’s 1976 regulations required that, in determining whether an action will significantly affect the environment, the Board consider “[t]he absolute quantitative environmental effects of the action itself, including the cumulative harm that results from its contribution to existing adverse conditions or uses in the affected area.” 49 C.F.R. § 1108.8(a)(2) (1976). And in considering whether the proposed action is a major federal action, the Board was required to consider “[w]hether proposed actions, though individually limited, may cumulatively have a significant environmental impact.” *Id.* § 1108.8(b)(2) (1976). Thus, a “detailed environmental impact report” prepared by the applicant for new construction proposals to inform the Board’s decision whether to prepare an EIS was required to address cumulative impacts. *Id.* § 1108.12(a)(2) (“The DEIR should also address the considerations set forth in rule[] 1108.8(b). . .”). *See also id.* § 1108.14(b) (“In preparing draft EIS the Environmental Affairs Staff will take into account the guidelines set forth in 40 CFR 1500.7-1500.8 (38 Fed. Reg. 20552-3),” including CEQ’s 1973 guideline requiring cumulative impacts analysis (§ 1500.8(a)(1): “The interrelationships and cumulative environmental impacts of the proposed action and other related Federal projects shall be presented in” the EIS.)).

Agencies' duty to consider cumulative impacts includes consideration of climate change impacts. "The impact of greenhouse gas emissions on climate change is precisely the kind of cumulative 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); *see also Scientists' Institute for Public Information, Inc. v. Atomic Energy Com.*, 481 F.2d 1079, 1090 (D.C. Cir. 1973) (NEPA "plainly contemplates consideration of 'both the long-and short-range implications to man, his physical and social surroundings, and to nature, in order to avoid to the fullest extent practicable undesirable consequences for the environment'" (citing 1971 Guidelines, 36 Fed. Reg. at 7724); *id.* at 1090 n.46 (noting NEPA's "concern for long-range planning" in its declaration of policy to "fulfill the responsibilities of each generation as trustee of the environment for succeeding [generations]" (citing 42 U.S.C. § 4331(b)(1)).

Indeed, Congress's primary concern in enacting NEPA was to compel the Federal Government to confront the exact challenges and existential threats posed by climate change. In the Senate Report accompanying the July 1969 version of the NEPA bill, the bill's sponsors highlighted the need to manage and account for nature's "limited capacities" and "the cost of adaptation to deteriorating conditions" to avoid "environmental catastrophe" and irreparable damage, for humanity's sake:

Natural beauty increased recreational opportunity, urban esthetics and other amenities . . . are worthy and important public objectives in their own right. But the compelling reasons for a national policy are more deeply based. The survival of man, in a world in which decency and dignity are possible, is the basic reason for bringing man's impact on his environment under informed and responsible control. The economic costs of maintaining a life-sustaining environment are unavoidable. We have not understood the necessity for respecting the limited capacities of nature in accommodating itself to man's exactions, nor have we properly calculated the cost of adaptation to deteriorating conditions. In our management of the environment we have exceeded its adaptive and recuperative powers, and in one form or another we must now pay directly the costs of maintaining air, water, soil, and living space in quantities and qualities sufficient to our needs. Economic good sense requires the declaration of a policy and the establishment of a comprehensive environmental quality program now. Today we have the option of channeling some of our wealth into the protection of our future. If we fail to do this in an adequate and timely manner, we may find ourselves confronted, even in this generation, with an environmental catastrophe that could render our wealth meaningless and which no amount of money could ever cure.

Senate Report on NEPA at 17; *see also id.* at 16–17 ("The longer we delay in meeting our environmental responsibilities, the longer the growing list of 'interest charges' in environmental deterioration will run.").

In sum, NEPA requires federal agencies to disclose cumulative impacts, including climate change. The Board's regulations fail to ensure that these impacts will be disclosed.

E. Agencies Must Consider Environmental Justice Impacts.

The proposed rule does not include any requirement to consider environmental justice impacts and should be revised to require this analysis. Environmental justice impacts fall squarely within NEPA's purview. This analysis is especially important for Board-proposed actions, given that most trains are powered by diesel locomotives, which cause harmful particulate matter and other pollution, and rail operations are often concentrated in communities disproportionately burdened by industrial pollution. A 2007 EPA analysis found that more than 13 million Americans live near ports and railyards, with a "high percentage of low-income households, African Americans and Hispanics."¹⁴ According to the American Lung Association, "communities living near railyards, ports and other major rail operations"—which are often low-income Brown and Black communities with higher rates of asthma, heart disease, and lung disease—"are disproportionately burdened by the health harms of diesel emissions."¹⁵ For example, communities in Houston near rail lines and rail yards have higher rates of cancer, and communities in Chicago near major railyards and intermodal facilities have twice the asthma hospitalization rate of the national rate.¹⁶ The compounding effects of additional pollution burdens that proposed rail facilities may pose should not be overlooked.

In enacting NEPA, Congress recognized the interconnection between environmental quality and human welfare, or "the critical importance of restoring and maintaining environmental quality *to the overall welfare and development of man.*" 42 U.S.C. § 4331(a) (emphasis added). Accordingly, NEPA sets forth a "continuing policy of the Federal Government ... to use all practicable means and measures ... in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and *fulfill the social, economic, and other requirements* of present and future generations of Americans." *Id.* (emphasis added) Consistent with this focus on human welfare, Congress required that agencies address the impacts of "major Federal actions significantly affecting the quality of the *human environment.*" 42 U.S.C. § 4332(C) (emphasis added); *id.* § 4336(b)(1) (requiring an EIS for a "proposed agency action ... that has a reasonably foreseeable significant effect on the quality of the human environment").

Moreover, Congress specifically identified values of the "human environment" it intended NEPA to achieve, including broad enjoyment of health and safety, historic and cultural preservation, and diverse beneficial uses by all Americans and future generations:

In order to carry out the policy set forth in this Act, it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans,

¹⁴ See American Lung Association, *Getting Health on Track: Cleaner Locomotives for Healthy Air* (2005), available at <https://www.lung.org/getmedia/6238cb62-61ec-4434-9a54-6e399a3a315d/Cleaner-Locomotives-Report.pdf> (last viewed April 24, 2026), attached as Ex. 12.

¹⁵ *Id.*

¹⁶ *Id.*

functions, programs, and resources to the end that the Nation may, among other things ...

- (1) fulfill the responsibilities of each generation as the trustee of the environment for succeeding generations;
- (2) *assure for all Americans* safe, healthful, productive, and esthetically and culturally pleasing surroundings;
- (3) attain the *widest range of beneficial uses* of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
- (4) preserve important *historic, cultural, and natural aspects of our national heritage*, and maintain, wherever possible, an environment which supports diversity and variety of individual choice; [and]
- (5) achieve a balance between population and resource use which will permit *high standards of living and a wide sharing of life's amenities*.

42 U.S.C. § 4331(b) (emphases added). Congress also recognized that “*each person* should enjoy a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.” 42 U.S.C. § 4331(c) (emphasis added).¹⁷

Assessing environmental justice impacts in NEPA reviews is one of the “all practicable means” an agency can use to “assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings.” 42 U.S.C. § 4331(b)(2). On the other hand, authorizing actions that would perpetuate a historical pattern and practice of overburdening low-income, Black, Brown, Indigenous, and other socioeconomically disadvantaged communities with industrial facilities, pollution, health harms, safety risks, and blight, without any regard for these adverse effects, would run contrary to these Congressional policies.

Failing to conduct environmental justice analysis would also run contrary to CEQ’s consistent understanding that NEPA requires consideration of economic and social effects that are interrelated with physical environmental impacts. CEQ has long recognized, “effects” under NEPA include not just “ecological” effects, but also “aesthetic, historic, cultural, economic, social, or health” effects. 40 C.F.R. § 1508.8 (1978); *id.* § 1508.1(g)(1) (2020); *id.* § 1508.1(i)(4) (2024); *see also* 1970 Guidelines, 35 Fed. Reg. at 7391 (“alternative actions that will minimize adverse impact should be explored and both the long- and short-range implications to man, his physical and social surroundings, and to nature”); 1971 Guidelines, 36 Fed. Reg. at 7725, § 2 (same), § 5(c) (“Significant adverse effects on the quality of the human environment include

¹⁷ *See also* CEQ, *Environmental Justice: Guidance under the National Environmental Policy Act* (Dec. 10, 1997) (“CEQ EJ Guidance”), at 7 (stating that the above goals “make clear that attainment of environmental justice is wholly consistent with the purposes and policies of NEPA”), available at https://www.epa.gov/sites/default/files/2015-02/documents/ej_guidance_nepa_ceq1297.pdf (last viewed April 24, 2026), attached as Ex. 13.

both those that directly affect human beings and those that indirectly affect human beings through adverse effects on the environment”); 1973 Guidelines, 38 Fed. Reg. at 20550, § 1500.2(b) (“agencies should use the environmental impact statement process to explore alternative actions that will avoid or minimize adverse impacts and to evaluate both the long- and short-range implications of proposed actions to man, his physical and social surroundings, and to nature”).

Although “economic or social effects by themselves [do not] require preparation of an [EIS],” CEQ has consistently prescribed that when “economic or social and natural or physical environmental effects are interrelated,” the EIS shall discuss those effects “on the human environment.” 40 C.F.R. § 1508.14 (1978); *id.* § 1502.16(b) (2020); *id.* § 1502.16(b) (2024) (same). Environmental impacts on areas historically burdened by pollution and industrial facilities, compounded by social disadvantages such as the effects of racial discrimination, poverty, or an English-limited population, are interrelated physical and socioeconomic effects that federal agencies must address in their NEPA reviews, or else demonstrate why they are not interrelated.¹⁸

The proposed rule’s failure to address environmental justice in NEPA analysis is arbitrary and capricious.

V. The Proposed Rule Allows the Board to Establish and Apply Categorical Exclusions in an Unlawful Manner.

A. The Proposed Rule Does Not Require the Board to Formally Adopt Categorical Exclusions Established by Another Agency in All Cases Where the Categorical Exclusion Is Applied, as NEPA Requires.

NEPA prescribes that before an agency can rely on another agency’s categorical exclusion listed in another agency’s NEPA procedures, it must first formally adopt the categorical exclusion “for a category of proposed agency actions for which the categorical exclusion was established consistent with” the following procedures:

- (1) identify the categorical exclusion listed in another agency’s NEPA procedures that covers a category of proposed actions or related actions;
- (2) consult with the agency that established the categorical exclusion to ensure that the proposed adoption of the categorical exclusion to a category of actions is appropriate;

¹⁸ See also CEQ EJ Guidance (Ex. 13) at 9 (advising agencies to consider “whether there may be disproportionately high and adverse human health or environmental effects” on environmental justice populations; “the potential for multiple or cumulative exposure to human health or environmental hazards in the affected population and historical patterns of exposure to environmental hazards”; and “the interrelated cultural, social, occupational, historical, or economic factors that may amplify the natural and physical environmental effects of the proposed agency action”).

(3) identify to the public the categorical exclusion that the agency plans to use for its proposed actions; and

(4) document adoption of the categorical exclusion.

42 U.S.C. § 4336c. Accordingly, if the Board wishes to rely on a categorical exclusion established by, say, the U.S. Forest Service, the Board must follow the procedures under 42 U.S.C. § 4336c, without exception.

However, the proposed rule allows the Board to “rely on another agency’s determination that a categorical exclusion applies to a particular proposed agency action if the agency action covered by that determination and the proposal before the Board are substantially the same, or if the proposal before the Board is a subset of the agency action covered by that determination,” [proposed] 49 C.F.R. § 1105.7(g). Notice at 33 This fails to require the Board to follow the agency-to-agency consultation and public notice procedures for establishing a categorical exclusion before it can rely on another agency’s categorical exclusion, as 42 U.S.C. § 4336c requires. It may be that the categorical exclusion was established by a different agency than the agency whose project-specific categorical exclusion determination the Board is relying on. Under NEPA, the Board must assure *for itself* that the application of that categorical exclusion to the proposed action (or its general category) is “appropriate,” by consulting with the agency that established the categorical exclusion. 42 U.S.C. § 4336c(2). And the Board must still follow the public notice requirements for establishing and relying on another agency’s categorical exclusion. 42 U.S.C. § 4336c(3). To authorize a less strict procedure would violate the law.

B. The Proposed Rule Fails to Provide Adequate Procedures for Establishing and Applying Categorical Exclusions.

The proposed rule fails to provide for public comment on the establishment of categorical exclusions based on another agency’s categorical exclusion. The Board should provide this additional process to ensure the categorical exclusion is appropriate for its own category of action that the Board seeks to establish.

The proposed rule fails to establish a regulatory requirement for the documentation of the application of a categorical exclusion, much less public notice of the categorical exclusion. *See* [proposed] 49 C.F.R. § 1105.7(e), Notice at 32-33. At a minimum, the Board should provide public notice of the Board’s authorization of a project using a categorical exclusion on the Board’s website.

The proposed rule lacks guidelines on what extraordinary circumstances may disqualify a proposed project from using a categorical exclusion. The Board should consider adopting the former CEQ regulations’ extraordinary circumstances definition:

Extraordinary circumstances means factors or circumstances that indicate a normally categorically excluded action may have a significant effect. Examples of extraordinary circumstances include potential substantial effects on sensitive environmental resources; potential substantial disproportionate and adverse effects on communities with environmental justice concerns; potential substantial effects

associated with climate change; and potential substantial effects on historic properties or cultural resources.

40 C.F.R. § 1508.1(o) (2024).

The proposed rule also sets the bar too high for preparation of an EA instead of a categorical exclusion when extraordinary circumstances are present. NEPA requires preparation of an EA for a proposed action if it “does not have a reasonably foreseeable significant effect on the quality of the human environment, *or if the significance of such effect is unknown.*” 42 U.S.C. § 4336(b)(2) (emphasis added). However, under proposed 49 C.F.R. § 1105.7(e)(1)(i), Notice at 32-33, the Board will apply a categorical exclusion to a proposed agency action if it “is not likely to result in reasonably foreseeable adverse significant effects.” *See also* [proposed] 49 C.F.R. § 1105.7(e), Notice at 32-33; [proposed] 49 C.F.R. § 1105.6(b)(1), Notice at 30 (“If the Director concludes that, in connection with an action listed in § 1105.7(a), extraordinary circumstances exist that indicate a normally excluded agency action is likely to have a reasonably foreseeable significant effect, the Director will evaluate the action listed in § 1105.7(a) pursuant to § 1105.7(e).”). Because an EA is required where the significance of an effect is unknown, the categorical exclusion cannot apply in those circumstances and an EA should be prepared. The rule should be revised to require that a categorical exclusion be applied “unless the Director determines that extraordinary circumstances indicate that a normally categorically excluded agency action is likely to have a reasonably foreseeable significant adverse effect *or that the significance of an effect is unknown.*”

It is also problematic that the Board can entirely circumvent the EIS and EA process where an extraordinary circumstance is present, and the project applicant “modifies the proposal to avoid those effects,” [proposed] 49 C.F.R. § 1105.7(e)(1)(ii), Notice at 32-33—note that the type of effects “those effects” refers to is unclear but the referent appears to be “reasonably foreseeable significant adverse effects” in subsection (ii). If extraordinary circumstances indicate reasonably foreseeable significant adverse effects, the project must undergo an EIS process. The Board cannot apply a categorical exclusion without allowing the public to weigh in with respect to alternatives to the proposed action and the project’s effects.

Further, under the proposed rule, it does not appear the Board would be required to document its review of whether extraordinary circumstances are present. *See* [proposed] § 1105.7(e), Notice at 32 (“If a categorical exclusion covers a proposed agency action, the categorical exclusion will be applied unless the Director determines that extraordinary circumstances indicate that a normally categorically excluded agency action is likely to have a reasonably foreseeable significant adverse effect. If a categorical exclusion covers a proposed agency action, the categorical exclusion will be applied unless the Director determines that extraordinary circumstances indicate that a normally categorically excluded agency action is likely to have a reasonably foreseeable significant adverse effect.”). The documentation of such a review is critical to ensuring that the agency does not overlook the presence of any potentially extraordinary circumstances. The final rule should be revised to require this documentation.

USDA’s regulations implementing NEPA provide an example of the type of basic documentation that the Board could require. Even while weakening its regulations, the USDA requires that to apply a categorical exclusion, a responsible official must determine that a

categorical exclusion applies to a proposed action “and that no extraordinary circumstance exists.” 7 C.F.R. § 1b.3(g) (2026). That determination must be documented in “a finding of applicability and no extraordinary circumstances” (or “FANEC”), *id.*, § 1b.3(g)(1), but only if “[t]he category requires NEPA documentation in accordance with statute, [USDA’s NEPA regulation], or as required by the Federal agency regulations or procedures from which a category was adopted,” *id.* § 1b.3(g)(1)(iii). At a minimum, the Board should consider adopting the FANEC documentation requirement without this latter condition.

In addition, USDA regulations require that the documentation include the following information:

- (i) Incorporate by reference any other relevant documentation developed as part of the environmental review process and contained in the proposal record, such as documentation of compliance with other applicable laws or regulations as deemed necessary by the responsible official;
- (ii) State the category or categories being used. If a category being used is adopted from another non-USDA agency, specify that it was adopted;
- (iii) Describe the proposed action and certify the category or categories used are applicable to the actions;
- (iv) State the resources that the responsible official considered in determining whether an extraordinary circumstance exists;
- (v) State that no extraordinary circumstances exist, as informed by the interdisciplinary review; and
- (vi) Include the date issued and signature of the responsible official.

Id., § 1b.3(g)(2). The Board should similarly require the inclusion of this information in the FANEC documentation. Otherwise, the Board must explain why the adoption of these procedures is not practicable, despite USDA’s adoption of these procedures.

VI. The Board Should Clarify or Strengthen Other Provisions.

The Board should amend or clarify three other provisions.

First, the proposed rule creates new procedures for the preparation of environmental documents by applicants. Whenever an applicant requests that it be allowed to prepare an EA or EIS, the proposed rule requires that the Board consider whether “the applicant and the applicant’s contractor have the expertise necessary to prepare an EA or EIS that meets the requirements of Board regulations, NEPA, and related environmental laws; OEA has the resources necessary to independently evaluate the documentation; Government-to-Government consultations with federally recognized Tribes would be needed; and any other relevant project-specific considerations.” [proposed] 49 C.F.R. § 1105.15(c), Notice at 40-41.

It is unclear whether the fact that “Government-to-Government consultations with Tribes would be needed” disqualifies the project from an applicant-prepared review, but the rule should clarify that this would be a disqualifying factor.

NEPA itself expressly requires “the head of the lead agency” to consult with cooperating agencies, in a consultation process distinct from preparing the environmental review:

Prior to making any detailed statement, the *head of the lead agency* shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved.

42 U.S.C. § 4332(2)(C) (emphasis added). Moreover, the statute provides for delegation of the preparation of an environmental document to an application but does not provide for delegation of consultation with sister agencies:

A lead agency shall prescribe procedures to allow a project sponsor to *prepare an environmental assessment or an environmental impact statement* under the supervision of the agency. Such agency may provide such sponsor with appropriate guidance and assist in the preparation. The lead agency shall independently evaluate the environmental document and shall take responsibility for the contents.

42 U.S.C. § 4336a(f) (emphasis added). This authority to delegate does not authorize delegation of the consultation process.

Further, Federal agencies cannot delegate their authority to consult with Indian Tribes. In the context of consultations with Tribes under the National Historic Preservation Act, federal agencies are not allowed to delegate their Tribal consultation duty to applicants. *See* 36 C.F.R. § 800.2(c)(4) (allowing agency to delegate general consultation duty to applicants, but stating, “Federal agencies that provide authorizations to applicants remain responsible for their government-to-government relationships with Indian tribes.”). Advisory Council on Historic Preservation, *Limitations on the Delegation of Authority by Federal Agencies to Initiate Tribal Consultation under Section 106 of the National Historic Preservation Act* at 1 (July 1, 2011) (“federal agencies cannot unilaterally delegate their tribal consultation responsibilities to an applicant nor presume that such discussions substitute for federal agency tribal consultation responsibilities.”).¹⁹

The Board should clarify in its NEPA regulations that it cannot delegate Tribal consultation duties to applicants or applicant-directed contractors.

Second, the Board should clarify that baseline surveys or the study of environmental impacts do not qualify as “new research” under proposed 49 C.F.R. § 1105.6(c):

¹⁹ Available at <https://www.achp.gov/sites/default/files/guidance/2018-09/Tribal%20Consultation%20Delegation%20Federal%20Limitations.pdf> (last viewed April 24, 2026), and attached as Ex. 14.

When considering whether the reasonably foreseeable effects of the proposed action are significant, OEA will analyze the potentially affected environment and degree of the effects of the action. OEA may use any reliable data source and will not undertake new research unless it is essential to evaluating alternatives and the cost and time of obtaining it are not unreasonable.

[proposed] 49 C.F.R. § 1105.6(c), Notice at 31. This proposed regulation is based on 42 U.S.C. § 4336(b)(3), which provides agencies are “not required to undertake new scientific or technical research unless the new scientific or technical research is essential to a reasoned choice among alternatives, and the overall costs and time frame of obtaining it are not unreasonable.” “New scientific or technical research” is a narrow term that strongly suggests studies on the frontiers of science. Webster’s Dictionary, for example, defines research as “investigation or experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical application of such new or revised theories or laws.” [RESEARCH Definition & Meaning - Merriam-Webster](#). The collection of information about baseline conditions, including wildlife, plant, and habitat surveys, does not fall into this definition. In any case, even if baseline surveys or environmental impact studies could be considered “new scientific or technical research,” this information is “essential to a reasoned choice among alternatives.” 42 U.S.C. § 4336(b)(3)(B). Their critical importance in understanding a project’s effects should also be given weight when determining whether the costs of conducting the research is “unreasonable.”

Third, proposed 49 C.F.R. § 1105.16(l)(2) is awkwardly worded. That proposed provision states that an EA or EIS’s contents will include, inter alia, “[i]f hazardous materials are expected to be transported, description of procedures that would be used for storing and fueling construction equipment.” [proposed] 49 C.F.R. § 1105.16(l)(2). We request that the Board consider clarifying the provision to read: “[i]f hazardous materials are expected to be transported, a description of procedures that would be used for storing and fueling construction equipment.”

VII. CONCLUSION

For all the reasons set forth above, the Board’s proposed rule is inconsistent with NEPA and principles of administrative law. We urge the Board to revise the proposed rule in light of our comments.

Sincerely,

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EXHIBITS

- Exhibit 1 Stava, Ashley, et al. *Quantifying the substantive influence of public comment on United States federal environmental decisions under NEPA* (2025), Environ. Res. Lett. 20 074028, available at <https://iopscience.iop.org/article/10.1088/1748-9326/addee5/pdf>
- Exhibit 2 Beierle, Thomas C. & Jerry Cayford, *Democracy in Practice Public Participation in Environmental Decisions* (Sept. 29, 2002), available at <https://doi.org/10.4324/9781936331017>
- Exhibit 3 DeGood, Kevin, Center for American Progress, *The Benefits of NEPA: How Environmental Review Empowers Communities and Produces Better Projects* (Jan. 16, 2018), available at <https://www.americanprogress.org/article/benefits-nepa-environmental-review-empowers-communities-produces-better-projects/>
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EXHIBIT 1

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Quantifying the substantive influence of public comment on United States federal environmental decisions under NEPA

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Abstract

A citizen's right to comment on, and criticize, government decisions makes a difference. The U.S. National Environmental Policy Act of 1969 (NEPA) institutionalized public engagement in environmental review in the belief it would lead to better decisions and more sustainable outcomes. But, 50 years later, NEPA's public comment process has been criticized as costly and slow, while doing little to change outcomes. Data science now makes it possible to track progress and evaluate the influence of public participation. We examined 108 environmental impact statement (EIS) processes spanning 22 years. Our analysis revealed that public comments resulted in substantive decision alterations in 62% of cases, with 64% showing modifications to alternatives, 42% showing modifications to mitigation plans and 11% leading to the selection of an entirely new preferred alternative. When federal agencies changed project alternatives (78 EISs), 88% of the time (69 of the 78 EISs) they credited public comments as the reason. In 45 of the 108 EISs, agencies modified mitigation plans and credited public comments as the reason 100% of the time. Agencies only occasionally selected a new preferred alternative (21 out of 104 EISs), but when they did, they credited public comments as the reason 100% of the time. As the United States and the 190+ states and countries that have adopted NEPA's example consider how to address environmental change, it is important to assess the role of public participation in environmental decision making. Our data say public comments matter.

1. Introduction

Public engagement in governmental decision making is intended to increase the likelihood that decisions are made in the best interests of the people [1] by providing affected communities with the opportunity to participate in the decision-making process and to influence their government. Through public comment and engagement processes, governments

can increase citizen's trust in decision-making, leading to strengthened support for policy and decision-making outcomes [2–5]. Here, we evaluate the outcomes of environmental analyses conducted under the National Environmental Policy Act (NEPA) to assess the influence of public engagement and comment processes on decision-making outcomes. The vision of NEPA was elegant—that environmental review, science and an open public comment process

result in better decisions and more sustainable environmental outcomes [6]. Now known as the environmental Magna Carta, NEPA has been emulated more than 190 times across the world, and environmental review is recognized as key a governance intervention to promote sustainability [7]. But, 50 years after NEPA's enactment, many are skeptical of the time and money invested in public comment processes associated with environmental analyses e.g. [8]. Further, scholars have expressed doubt whether U.S. agencies are actually influenced by public comments e.g. [9–11]. Whether public comments actually influence agency decisions is therefore a critical question in public policy design, not only in the United States, but in countries that have adopted NEPA's example and implemented a public comment process in environmental review. Our research shows that, in the sphere of environmental review, public engagement processes do impact decision-making outcomes.

For environmental decision making in particular, public engagement is seen to lead to more sustainable environmental outcomes and improved decisions [12–16]. For example, in a survey of Canadian environmental review experts, participants believed that stakeholder participation enhances confidence in projects and creates a sense of accountability and transparency, leading to better decisions [17, 18]. In South Korea, Campbell determined that good policy performance coupled with public engagement engenders trust [2]. By breaking down communication barriers and improving the perception of ethical conduct and competence, public comment processes facilitate government transparency—a crucial aspect to building trust [19]. Several scholars have argued that decision-making processes that lack public engagement, or are perceived as having been unsatisfactory in their public engagement, can create distrust and conflict between the public and government [20].

NEPA requires U.S. federal agencies to take a 'hard look' at their actions [21–23]. All federal actions—projects directly undertaken by agencies or private efforts that require federal permits or funding—must go through NEPA. The highest level of review, the environmental impact statement (EIS), documents an agency's scientific analysis of significant impacts to the human environment, a preferred action, alternatives and mitigation plans. The draft EIS details the analyses and is released for public comment. Agencies are encouraged to consult and inform the public of the project, and collect comments to be integrated as the agency sees fit into the final EIS. Agencies summarize public comments and explain any changes to the proposed action, or the analysis of its effects, that have been made since the draft. Public participation processes vary between agencies, as they are authorized to develop their own, individual guidelines.

Among countries that have followed NEPA's example, the practices vary. The European Union

mandates public comment for strategic environmental assessments (SEAs) during scoping and review, but individual countries set environmental impact assessment (EIA) protocols. Canada, the Netherlands, Australia, Scotland, Kenya, and the Association of Southeast Asian Nations countries require early public comment in scoping and draft review [17, 24–27]. In Chile, Italy, Germany, New Zealand, and the United Kingdom (UK), public comment during the scoping period is at the discretion of the agency but is required before the final decision [28–30].

Researchers have used two lenses, procedural and substantive effectiveness, to assess the influence of public comment processes in environmental review [31–33]. The bulk of scholarship centers on procedural effectiveness—whether agencies comply with procedural legal requirements and the processes employed to do so [34]. This scholarship has argued that public comment processes may not live up to their potential [20, 35–37]. And some limited studies suggest citizens agree. In the UK, 22 stakeholders who had previously commented on waste disposal EIAs doubted that the agencies actually took their comments into account and saw their role as merely helping the agency comply with regulations [38].

We argue that measuring whether an agency follows procedures is an inadequate measure of whether public comments meaningfully contribute to the decision making process. Agencies may adhere to guidelines, giving a perception of effective engagement, however, if the comments do not influence the decision, merely following the procedures is not indicative of effective engagement. A more direct measure would assess substantive effectiveness, or the extent to which comments impel agencies to alter plans and decisions [34, 39].

To our knowledge, only four studies have attempted to examine the substantive influence of public comment on agency decisions. In a study of 117 SEA reports in England, Fischer was unable to determine whether public comments influenced decisions because the agency's rationale for changes was not explicitly stated [40]. In the United States, De'Arman concluded that public comments rarely result in substantive modifications to a final EIS [41]; the study was limited to a single agency and did not define what constitutes a 'substantive' change. Ulibarri *et al* used the percent change in the number of words (from draft to final EIS) discussing an 'impact area' as the metric for determining whether the agency substantively responded to a public comment [10]; although this measure is effective for evaluating whether an agency addressed public comments, it does not indicate whether the comment resulted in a substantive change to the decision. In contrast, Eckerd developed a definition for substantive modifications as a 'decision-altering' change [42]. In an analysis of three EIS cases in the Washington D.C.

area, Eckerd determined 99% of comments were met with boilerplate, and only 6% of comments led to ‘decision-altering’ changes. Although Eckerd concluded this indicates minimal public influence on agency decisions, we note that in all three cases, the agency altered their decision. Our study expands on the work done by Fischer, De’Arman and Ulibarri *et al* by analyzing a much larger sample that spans time, agencies, and project type and provides a rubric to determine not only if changes occurred, but if the changes made were substantive, or decision-altering.

The framers of NEPA hypothesized that public engagement through a public comment process would be a critical and positive force for environmental sustainability. But, to date, the view that public comment influences agency decisions has been largely absent from academic literature, likely due to the difficulty of parsing through a large number of comments and analyzing the impact. Data science now makes it possible to track progress and rigorously evaluate the influence of public participation in NEPA.

This paper tests NEPA’s fundamental hypothesis about the value of public comment. We assess the rate at which agencies credit public comment as the basis for substantive changes to a decision. Agencies may credit public comment because agency officials are persuaded that modifying the project is better policy; or officials may consider the public comment to present a risk of successful litigation if no change is made [9, 11, 43, 44]. However, the subjective intent of the agency is not the focus of this paper. Our focus is the rate at which public comments are credited with leading to a substantive change in agency action.

With the enactment of the Infrastructure Investment and Jobs Act in 2021 and the Inflation Reduction Act in 2022, the United States is poised for a major wave of infrastructure development, unmatched since the post-World War II economic boom. As governments worldwide increase development, they may seek to expedite environmental reviews at the expense of public engagement [7, 8, 45]. Environmental review, as envisioned by NEPA, has set the standard around the world for over five decades as a key science-based intervention to support environmental sustainability. Here we lay aside anecdotal criticisms in favor of rigorous scientific analysis of the power of public comment.

We ask two questions. First, does public comment influence outcomes? Specifically, do agencies identify public comments as the reason for modifying alternatives or mitigation plans; or, do they credit public comment as the reason for selecting an entirely new preferred alternative? Second, are the changes that result substantive, in that decisions are altered? We consider multiple agencies and action types, and employ a broad timeframe and a detailed rubric to

distinguish between substantive and non-substantive changes based on the actual change to decisions.

2. Results

2.1. Agencies credit public comments as a reason for altering decisions

We determined the frequency with which agencies in the final EIS explicitly credited public comments as a reason for modifying an existing alternative in our sample of 108 EIS processes. Seventy-two percent of the time, agencies made changes to alternatives between the draft and final EIS ($n = 78$). Of this 72%, 88% of the time agencies explicitly stated that changes were made because of public comment ($n = 69$). This fraction is 64% of the total sample. Results from a proportion test show that, more often than not, when agencies modify alternatives it is because of public comments (table 1, one-sided proportion test, $H_0: p_{\text{Yes}} = p_{\text{No}}$, $H_A: p_{\text{Yes}} > p_{\text{No}}$, $p = 0.0026$). Further, responsiveness to public comments was similar across agencies—they modify alternatives in response to public comment at similar frequencies (Fisher’s exact test, $p = 0.94$).

To evaluate whether agencies modify mitigation plans because of public comment, we needed to know if the agency credits public comments on a draft EIS when it modifies mitigation plans in a final EIS. Forty-two percent of the time, agencies modified mitigation plans between the draft and final EIS ($n = 45$, table 1, one-side proportion test, $H_0: p_{\text{Yes}} = p_{\text{No}}$, $H_A: p_{\text{Yes}} > p_{\text{No}}$, $p = 0.95$). Although public comments do not have an impact on changes to mitigation plans more often than not, of the 42% that did change mitigation plans, agencies credited public comments as the reason for making changes to the mitigation plans between draft and final 100% of the time ($n = 45$, 42% of the total). There was no statistically significant association between agency and frequency of modifications to mitigation plans (Fisher’s exact test, $p = 0.13$). Although the frequency with which Federal Energy Regulatory Commission (FERC) modified mitigation plans was not statistically different from other agencies, FERC had the highest proportion of processes (75%) crediting public comment as the reason to modify mitigation plans.

We evaluated whether agencies select an entirely new preferred alternative more often than not because of public comment by looking at the reasons agencies gave when selecting a new preferred alternative. Between the draft and final EIS, agencies selected a new preferred alternative only 11% of the time ($n = 11$). But 100% of these credited public comment as the reason. Additionally, there were four cases where a preferred alternative was not declared in the draft or final EIS. Therefore, of all the processes we surveyed with a preferred alternative identified, 20%

Table 1. Results: frequency with which agencies credit public comments.

Agency, action-type	Do agencies credit public comment when modifying alternatives? ($n = 108$)		Do agencies credit public comment when modifying mitigation plans? ($n = 108$)		Do agencies credit public comment as the reason for selecting an entirely new preferred alternative? ($n = 104$)	
	Yes	No	Yes	No	Yes	No
BLM CRB, EGT, MRE	23	13	15	21	11	25
FERC EGT, MRE	7	5	9	3	1	11
USACE CRB, MRE	9	3	5	7	2	8
USFS CRB, EGT, MRE	22	14	13	23	5	29
USFWS CRB, EGT	8	4	3	9	2	10
Total	69	39	45	63	21	83
Proportion test ($p_{Yes} > p_{No}$)	$p\text{-value} = 0.0026$		$p\text{-value} = 0.95$		$p\text{-value} = 1$	
Fisher's exact test (by agency, $p_{Yes} > p_{No}$)	$p\text{-value} = 0.94$		$p\text{-value} = 0.13$		$p\text{-value} = 0.45$	

Counts of 'yes' and 'no' responses. The far-left column denotes the agency and action type. Our three research questions are in the top row. We focus on the three most common EIS action-types (conservation, restoration and biological resource use (CRB); energy generation and transmission (EGT); and mineral resource extraction (MRE)) and the agencies that produced the highest number of EISs within each action-type (Bureau of Land Management (BLM), Federal Energy Regulatory Commission (FERC), U.S. Army Corps of Engineers (USACE), U.S. Forest Service (USFS), and U.S. Fish and Wildlife Service (USFWS)). We used proportion tests to determine if agencies make changes more often than not, and if the changes were substantive more often than not. We used Fisher's exact tests to determine if agencies behave differently from one another.

of the time the agency specifically credited the public as steering the choice of preferred alternative ($n = 21$, table 1, one-side proportion test, $H_0: p_{Yes} = p_{No}$, $H_A: p_{Yes} > p_{No}$, $p = 1$). Although we did not find a statistically significant difference in behavior across agencies (Fisher's exact test, $p = 0.45$), it is notable that BLM had the highest frequency of selecting a new preferred alternative in response to public comments (nearly 30% of the time).

2.2. Public comments are often credited for decision-altering, substantive changes

The results indicate that, more often than not (62% of the time), when agencies credit public comment as the reason for modifications to alternatives, the changes are substantive (table 3, one-side proportion test, $H_0: p_S = p_{NS}$, $H_A: p_S > p_{NS}$, $p = 0.04$). We found that three agencies stand out (table 3, Fisher's exact test, $p = 0.01$). When the U.S. Forest Service (USFS) and the U.S. Fish and Wildlife Service (USFWS) made such modifications, 73% and 75% of the time (respectively), the changes made were substantive. Similarly, in all seven cases (100%) where FERC credited public comment in modifying an alternative, the changes were substantive. Refer to table 2 for definitions of substantive versus non-substantive.

3. Discussion

In our evaluation of 108 environmental review processes from the U.S.'s NEPA, we found public comment often influences outcomes and results in substantive changes in agency decision-making. More often than not, when agencies modified alternatives, they identified public comments as the reason for the change. In our sample, agencies did not typically change mitigation plans between the draft and final EIS, but when they did, they credited public comment. Further, when agencies selected a new preferred alternative, they explicitly credited public comments. Most importantly, the agencies' changes were substantive—not simple textual changes to the document, but decision-altering modifications. Our results indicate anecdotal criticisms of the efficacy of public engagement may be unfounded, and that prior research, which focused merely on agencies satisfying process, may offer limited insights. Our approach also demonstrates the power of data science to elucidate the effectiveness of policy interventions for environmental sustainability.

Based on the current perceptions of public engagement from existing scholarly literature, we would have expected public engagement to have little to no impact on agency decisions [9, 11, 35–38,

Table 2. Substantive versus non-substantive modifications.

Substantive		
	Definition	Example
(i) Partial modifications of an aspect of the proposed project	An aspect of the original alternative is modified, but nothing is completely removed or added.	As part of an alternative, a temporary road is being set up to redirect traffic. A public comment expressed concern over the path of the roadway, the agency decides to slightly modify its path to accommodate the concern.
(ii) Partial modification involving the addition or removal of an aspect of the proposed project	The agency removes an entire aspect of the alternative, but overall, the alternative remains.	Addition: as part of an alternative, the agency adds a temporary roadway to account for public concerns regarding traffic caused by the project. Removal: As part of an alternative, the agency removes a temporary roadway, as comments have expressed concern of the temporary roadway being close to a school zone.
(iii) Entirely new alternative created	A new alternative (combination or brand new) is created.	The agency decides to create an entirely new alternative that includes several new aspects, plans, or constructions.
Non-substantive		
(iv) Basic text changes	Basic changes to text for clarity, conciseness, or grammar errors.	'In response to comments received on the Draft EIS, we have reduced descriptions of certain elements of the proposed covered activities, removing some redundant text and unnecessary detail.'
(v) Unclear	Determined alternatives were modified in response to public comments, but it is unclear what the exact change is.	An agency responds to a comment indicating the alternatives have been modified in response, however there is no specific demarcation or explicit statement on the exact change made in the entirety of the document or attached documents.

We compared the draft EIS and final EIS of each process where a modification was credited to public comment and coded each as substantive (i.e., decision-altering) or non-substantive following Eckerd's definition of substantive modification [42].

Table 3. Are the changes that are credited to public comments substantive?

Are the changes made in response to public comments substantive or non-substantive? ($n = 69$)		
Agency, action-type	Substantive (S)	Non-substantive (NS)
BLM CRB, EGT, MRE	12	11
FERC EGT, MRE	7	0
USACE CRB, MRE	2	7
USFS CRB, EGT, MRE	16	6
USFWS CRB, EGT	6	2
Total	43	26
Proportion test p -value	0.04	
Fisher's exact test p -value	0.01	

Total counts by agency and action type of substantive (i.e. decision-altering) and non-substantive modifications to alternatives that are credited to public comment (refer to definitions in table 2). When agencies modified alternatives, 62% of the time the changes are substantive.

44, 46]. But as several researchers have pointed out, most of the scholarship has focused on procedural effectiveness [34, 39]. Here, we argue that the extent to

which agencies credit public comments when altering decisions should be the primary measure of the influence of public comments. Our study expands on the

findings of Eckerdt, who found evidence for ‘decision-altering’ public comments in a small sample [42]. Our results provide support for the notion that public comments can substantively affect agency decisions using a larger, statistically robust sample.

The point of this study was to explore the role public comment plays in agency decision making. Therefore, we have focused on identifying explicit attributions to public comments for changes. We recognize that there may be circumstances in which an agency has multiple motivations for making a change: re-analysis by staff; high-level re-evaluation or judgments of political acceptability. We also acknowledge that attribution in final EIS documents may be subject to reporting bias. An agency may decide to modify a project in a fashion that is consistent with public comment for additional reasons, and point to the public comment as justification in the final EIS. Agencies may also be more inclined to report changes aligned with public comment to demonstrate responsiveness, enhance legitimacy, or mitigate litigation risk—even when other factors were more influential. Such pretextual reasoning would, however, not appear to reduce the risk of successful litigation and could enhance such risk if it can be demonstrated that the agency has provided a false justification. Other scholars have noted that officials may seek to comply with the letter of the law to avoid litigation and simultaneously be responsive to public comment [9, 11, 43, 44]. We argue it does not eliminate the role of public input; but, rather, it highlights the complexity of its influence. So long as public comment contributed to the change, the comment has had a meaningful effect.

Public engagement is widely accepted as vital in the practice of environmental review around the world e.g. [7, 17, 27]. Regulations vary, but in most countries where environmental review has been adopted, the public must be involved prior to decision-making. In the United States, some have argued for limiting or eliminating public comment in NEPA, questioning whether it is worth the time and cost [8, 47]. For similar reasons, in India, lawmakers have pushed to revise EIA regulations and limit public comment from certain project types—including highway, irrigation, defense, and national security projects [45]. These views have been largely based on anecdotes. Our research demonstrates that public comment matters.

Lawmakers who are concerned with empowering citizens may wish to focus on improving public engagement practices. Researchers from around the world have called for improvements to public engagement including best practices, clearer guidelines on how to conduct transparent communication with stakeholders, and greater allocation of resources not

only to inform citizens but also to create engagement processes that empower the public [25, 35, 40, 48–51]. In particular, scholars emphasize the need to clarify the goals for each phase of public engagement in order for public engagement to have maximal influence on planning and decisions [28].

Several scholars have proposed metrics for evaluating the quality of public engagement [20, 28, 31]—e.g. the number of public meetings, accessibility of meetings, number of attendees, number and types of efforts to notify the public, the types of groups involved, and the length of the comment period. As part of the study, we had initially planned to extract information about these metrics. Although agencies may be undertaking high-quality engagement, in the 108 EISs we examined, information about the accessibility of meetings, number of attendees and the number and types of efforts to notify the public was not reported. To guide agencies, scholars and policymakers in determining the most effective strategies for more meaningful and efficient public engagement, we encourage U.S. federal agencies to report and track the quality of their public engagement efforts.

When the regulations that guide NEPA reviews were revised in 2023 by the Biden administration, improving public engagement practices was one of the specified goals. Our results indicate that public engagement results in substantive changes to agency decisions. Our work on the substantive effect of public comments, and the work of other scholars on the procedural effect of engagement [20, 31, 40–42] would be useful in guiding improvements to the public engagement process.

A common assumption in many liberal democracies is that individual citizens have limited power to influence government decisions. This assumption is often wrong. Not only in that it implies that public engagement with the government is not effective, but also that it implies engagement with government is inherently adversarial. The U.S. Congress’ vision of NEPA was to promote harmony between humankind and the environment and to foster collaborative engagement between the government and its people [52]. Our results provide support for the idea that collaboration can work.

As we enter a new wave of development in the United States and world-wide, it is more important than ever that we ‘look before we leap’ and ensure decisions are made with people and the environment in mind. Our study provides evidence that public comment influences agency decisions and is a valuable tool for agencies to gather information and refine plans, which could lead to more sustainable outcomes for affected communities and the natural world. Ultimately, the true impact and lasting power

of public engagement depends not just on its implementation by government agencies, but on the active participation of the public itself.

4. Materials and methods

To examine the influence of public engagement on agency decisions, we determined the frequency with which agencies explicitly credited public comments as their reason for modifying an existing alternative, modifying mitigation plans, or selecting a new preferred alternative between the draft and final EIS. To determine if these changes were substantive, we drew upon the literature to develop a rubric for distinguishing substantive versus non-substantive changes based on whether or not the comment was ‘decision-altering.’ We used proportion tests to determine if agencies make changes more often than not, and if the changes were substantive more often than not. We used Fisher’s exact tests to determine if agencies act on public comments differently from one another. To be able to make consistent comparisons across agencies and action-types, we studied EIS processes from the three most common action-types and five agencies.

4.1. Data source

We used nepaaccess.org, a knowledge, discovery, and engagement platform for NEPA, to find EISs completed between 2000 and 2022. NEPAAccess covers the period from 1970 to the present, and contains full-text searchable PDFs of EISs, U.S. Environmental Protection Agency (EPA) metadata records since 2012, and additional metadata developed by NEPAAccess. At the time this search was conducted in October 2022, nepaaccess.org was the most comprehensive source of NEPA documentation in the United States. [<https://about.nepaaccess.org/nepaaccess-2021-2024/>;] [53]. NEPAAccess contained 3,012 of the 4,149 final EISs (73%) that were published during the study period (according to the Federal Register). A logistic regression comparing the 3,012 final EISs in NEPAAccess against the total completed during the period showed no statistical bias in the NEPAAccess repository with respect to agency (coefficient of determination = 0.99).

NEPAAccess uses natural language processing techniques to categorize documents by action-type. The platform parses the text of each EIS document to find keywords identifying action-types and assigns each EIS the most relevant action-type from a list of 11 possibilities [54]. The most common action-types pertain to conservation, restoration and biological resource use; energy generation and transmission; and mineral resource extraction (MRE).

4.2. Study sample: selection of action type and agency

Our goal was to analyze EIS processes from the top EIS-producing agencies that carried out multiple types of actions. We used NEPAAccess to identify EIS processes between 2000 and 2022 with published draft and final impact statements (a total of 2,293 processes). As public participation guidelines issued by the Council on Environmental Quality (CEQ) have remained relatively unchanged to date, we selected a wide timespan to analyze a broad range of EISs while also including recent documents. We then chose agencies that completed a high volume of projects of the three most common action-types: conservation/restoration/biological resource use, energy generation/transmission, and MRE. We selected agency-action-type combinations with at least six EIS processes each. This resulted in five agencies: BLM, FERC, U.S. Army Corps of Engineers (USACE), USFS, and USFWS. We excluded from our sample some top EIS-producing agencies (e.g. department of transportation) because those agencies lacked variation in action-types (table 4). For those agencies that annually produce a large number of EISs (BLM and USFS), we coded public engagement data on twelve randomly selected EIS processes per three action types. For agencies that produce fewer EISs (FERC, USACE AND USFWS), we coded six EIS processes per two action types

To select the sample of EIS processes, we used the following random sampling procedure:

1. For each qualifying agency-action-type combination, we identified all matching EIS processes using NEPAAccess.
2. If there were more processes than needed (e.g. more than six for smaller agencies or more than twelve for larger agencies), we assigned each process a unique number.
3. We then used a random number generator to select the required number of EISs for that combination. For BLM and USFS (high-volume agencies), we selected 12 EISs for each of the three relevant action types. For FERC, USACE, and USFWS (lower-volume agencies), we selected six EISs for each of two relevant action types.
4. If an agency-action-type combination had only six processes, we included all of them.

We ultimately selected 108 EIS processes and coded public engagement data from 216 documents (i.e. 108 draft EIS and 108 final EIS documents). To ensure consistency in the coding, all documents were coded by the lead author using a rubric developed by coding a test batch of representative EIS documents and reviewed by the co-authors.

Table 4. Agency and action-type selection.

Agency	Action-type
Bureau of Land Management ($3 \times 12 = 36$ EIS processes)	Conservation/restoration/biological resource use Energy generation/transmission Mineral resource extraction
Federal Energy Regulatory Commission ($2 \times 6 = 12$ EIS processes)	Energy generation/transmission Mineral resource extraction
U.S. Army Corps of Engineers ($2 \times 6 = 12$ EIS processes)	Conservation/restoration/biological resource use Mineral resource extraction
U.S. Forest Service ($3 \times 12 = 36$ EIS processes)	Conservation/restoration/biological resource use Energy generation/transmission Mineral resource Extraction
U.S. Fish and Wildlife Service ($2 \times 6 = 12$ EIS processes)	Conservation/restoration/biological resource use Energy generation/transmission

Selected agency and action type combination.

4.3. Do agencies credit public comment for modifications?

To examine the influence of public engagement on agency decisions, we determined the frequency with which agencies explicitly credited public comments as a reason for modifying an existing alternative, modifying mitigation plans or selecting a new preferred alternative between draft and final EISs.

In final EISs, agencies report changes to alternatives or mitigation plans and note whether the changes were in response to public comment. These changes are typically discussed in a dedicated section summarizing modifications from the draft EIS. However, in some cases the changes may be noted in the comment and agency response section, alternatives section, or mitigation section.

We reviewed the aforementioned sections for each final EIS and coded for changes between draft and final. If the language indicated that alternatives or mitigation plans were modified because of public comment, the final EIS was coded as ‘yes’; otherwise, it was coded as ‘no’. If, between the draft and final, a new preferred alternative was chosen and it was explicitly noted that the change was because of public comment, we coded the final EIS as ‘yes’. Otherwise, it was coded as ‘no’.

4.4. Are the modifications substantive?

To assess if changes were substantive, we created a rubric based on Eckerd [42]. A comment was addressed substantively if it is ‘decision-altering’. In addition, we conducted our own systematic documentation of changes between draft and final EISs. We identified three categories of substantive modifications: (i) partial modifications of an aspect of the proposed project; (ii) partial modification involving the addition or removal of an aspect of the proposed project; and (iii) creation of an entirely new alternative. We also assessed for two categories of non-substantive modifications: (iv) simple textual

modifications; and (v) cases where the agency did not explicitly explain what was changed in response to public comment. We compared the draft EIS and final EIS and coded each modification as substantive or non-substantive. The rubric was developed iteratively based on a test batch of 12 EISs representing the diversity of our sample. The lead author initially drafted categories and decision rules guided by the work of [42] and refined through feedback from the co-authors. Refer to table 2 for examples of what constitutes a substantive versus non-substantive modification.

4.5. Proportion tests to determine (1) how often agencies make changes and (2) if the changes were substantive

To examine the influence of public engagement on agency decisions, we used proportion tests to evaluate whether, more often than not, agencies explicitly credited public comments as their reason for modifying an existing alternative, modifying mitigation plans, or selecting a new preferred alternative. In four of the 108 processes, a preferred alternative was never declared. We thus excluded the corresponding EISs from the analysis of the influence of public engagement on the preferred alternative, but they were included in the analysis of the influence of public engagement on alternatives and mitigation. We also used proportion tests to determine if the frequency of substantive modifications was greater than non-substantive modifications across agencies and action-types.

4.6. Fisher’s test to determine if agencies behave differently from one another

We used Fisher’s exact tests to determine if agencies act on public comments differently from one another when making modifications to alternatives, making modifications to mitigation, or selecting a new preferred alternative in response to public comment, and

whether these modifications were substantive. Both Fisher's exact and chi-squared tests are commonly used statistical methods for identifying significant associations between variables in a contingency table. When sample sizes are small, the Fisher's exact test calculates the exact probability of observing a given contingency table whereas the Chi-squared provides an approximation. Thus, we elected to use Fisher's exact test as they are more appropriate for the small sample sizes in our study.

Fisher's exact test requires a random sample and independent observations, and each observation must fit into only one category (i.e. categories must be mutually exclusive). These conditions hold for our dataset. We note, however, that some EISs are co-authored by multiple agencies and are therefore not mutually exclusive. For instance, the BLM and FERC could co-author an EIS for energy transmission along wildlife corridors through BLM land. However, such EISs did not occur in our randomly selected dataset.

In most cases, the randomly selected EISs were a subset of the available EISs per combination agency and action type. In other words, there were more EIS processes per agency-action-type combination than we needed for the study. However, for the combinations of USFWS and energy generation/transmission, there were only six EISs; therefore, it was not possible to expand the dataset. Nevertheless our dataset represents a sizable fraction of available EISs.

We note that in the contingency table of agency, action-type, and all possible responses, several cells had counts of 5 or fewer (e.g. of the 12 USFS conservation/ restoration/biological resource use projects in our sample, there were only four cases where alternatives were modified in response to public comment). Fisher's exact tests appropriately accommodate these situations with low-count observations.

Data availability statement

All data that support the findings of this study are included within the article (and any supplementary files).

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Author contributions

A S, L L H, R M wrote the manuscript. A S, L L H, R M, and W E T designed the statistical analysis and sampling design. S B, E L, and F C developed the underlying machine learning and NLP algorithms. B S, C W and K R C helped with data analysis and visualization. A S, L L H, R M, W E T, A L, S B, K E, M M, J D and E M conceived the overall study goals and questions. All authors reviewed and commented on the final manuscript.

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EXHIBIT 2

Democracy in Practice

Public Participation in Environmental Decisions



Thomas C. Beierle and Jerry Cayford

Democracy in Practice

*Public Participation in
Environmental Decisions*

**Thomas C. Beierle
and Jerry Cayford**

Resources for the Future
Washington, DC

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Chapter 1

Introduction

Over the past 30 years, public participation has taken center stage in the play of influences that determine how society will manage and protect the environment. Its increasing role in environmental policymaking has led to much recent discussion—accompanied by some cheering, some hand-wringing, a great deal of speculation, and always a recognition of its growing importance.

A broad array of processes that emphasize face-to-face deliberation, problem-solving, and consensus building have joined traditional public hearings and public comment procedures. Policy dialogues, stakeholder advisory committees, citizen juries, facilitated mediations, and various other processes are now familiar components of the public participation mix. The amount of influence the public can wield has changed as well. Agreements in regulatory negotiations among interest groups, for example, actually determine the content of proposed environmental rules. Understanding the role of public participation is increasingly crucial for understanding how government makes and carries out environmental policy.

Over the past three decades, the thousands of cases in which the public has become involved in U.S. environmental policy decisions have produced many hundreds of documents that describe what happened in one case or another. In this book, we provide a systematic analysis of this case study literature and evaluate how well public participation has performed in its central role in environmental policymaking. We synthesize the work of hundreds of researchers to describe what public participation has accomplished and to understand what leads to effective processes.

Two main objectives guided our research. First and foremost, we wanted to develop an understanding of the social value of public participation, that is, its “value added” for society. To do so, we identified several “social goals” for

public participation and used these goals as criteria for evaluating the success of public participation efforts. Second, we wanted to understand what makes some processes successful and others not. We examined how the success of public participation varies with the kinds of issues under debate and other aspects of the context in which participation takes place. We also compared the effectiveness of several different approaches to public participation, from public hearings to formal mediations. The literature is full of hypotheses about what makes public participation successful, and data from the case study record allowed us to test some of these hypotheses empirically.

Our study is the first to apply a consistent evaluation framework to such a large, diverse set of public participation cases. It joins a small but growing body of research that draws lessons from numerous cases of particular types of participation, such as environmental mediation (Bingham 1986), collaborative watershed partnerships (Leach, Pelkey, and Sabatier 2000), and regulatory negotiations (Coglianese 1997). However, the bulk of the previous literature on public participation analyzes one case study or a few case studies. Such analyses are not comprehensive enough to facilitate understanding of how the practice of public participation changes from one decisionmaking context to another or from one method of participation to another. Previous studies have used widely varying definitions of success, making it difficult to compare their conclusions or extrapolate beyond a given study's focus. Several researchers have noted the need to draw more broadly applicable lessons from the experience of public participation (Kraft 1995; Lynn and Busenberg 1995; NNOTF 1997; Stern and Fineberg 1996). This book responds to these calls.

A Brief History of Public Participation in Environmental Decisionmaking

Public participation is best understood as a challenge to the traditional management of government policy by experts in administrative agencies. From the late nineteenth century until the middle of the twentieth century, public administration in the United States was dominated by the “managerial” model in which government administrators were entrusted to identify and pursue the common good.

As government responsibilities increased in scope and complexity, large professional bureaucracies grew to manage them. Around the turn of the century, for example, Gifford Pinchot established a strong managerial ethos for the nascent U.S. Forest Service, which was responsible for managing vast tracts of public land. Through “scientific forestry,” Pinchot sought to serve the public interest by applying conservation policies that produced the greatest good for the greatest number for the longest time (Hays 1959). Such a concept of social welfare maximization still drives managerialism. It is most often

associated in modern environmental policymaking with the decision tools of risk assessment and cost-benefit analysis (Breyer 1995).

The managerial approach to decisionmaking has always occupied a tenuous position in democracy. In the context of regulatory rulemaking, for example, the demands of expert management and the demands of democratic accountability can be at odds with each other:

On the one hand, we have established that in order for government to be truly responsive to the incessant demands of the American people for public programs to solve private problems, rulemaking is essential.... On the other hand, as an indispensable surrogate to the legislative process, rulemaking has a fundamental flaw that violates basic democratic principles. Those who write the law embodied in rules are not elected; they are accountable to the American people only through indirect and less than foolproof means. (Kerwin 1999, 157)

A fundamental challenge for administrative governance is reconciling the need for expertise in managing administrative programs with the transparency and participation demanded by a democratic system. Kerwin (1999) argues that major expansions of government programs have brought this tension between managerialism and public accountability to a head at various times in the nation's history, each time to be relieved by new legislation promoting public participation.

The first example is the New Deal of the 1930s, which dramatically increased the influence of the executive branch of government in the workings of the economy. It provoked legislative reaction in the form of the Administrative Procedure Act (APA) in 1946. The APA systematized for the first time the process that federal agencies must use when making law through rulemaking. It requires that agencies provide public notice about the rules they are proposing, information on which the rules are based, an opportunity for public comment on those rules, and judicial review of the rulemaking process. The APA continues to govern all regulatory proceedings and is the cornerstone of public participation in administrative governance.

The decades after the passage of the APA saw increasing challenges to the managerial model. Traditional tensions between expertise and accountability were exacerbated by increasing skepticism that managers could adequately identify a public interest in ever-more-complicated administrative systems. The concept of pluralism began to replace managerialism as the dominant paradigm of administrative decisionmaking (Stewart 1975; Reich 1985). According to the pluralist view, government administrators were not a source of objective decisionmaking in the public interest but arbiters among different interests within the public. Whereas the managerial perspective identified maximization of social welfare as the ultimate social goal, pluralism did not

recognize an objective sense of the “public good.” Rather, a contingent public good was to be debated and arrived at by negotiation among interests (Williams and Matheny 1995).

Pluralism flourished in a burst of public participation legislation that followed the expansion of government under President Lyndon Johnson’s Great Society programs in the 1960s. From 1966 to 1976, the U.S. Congress passed the Freedom of Information Act (1966), the Federal Advisory Committee Act (1972), the Privacy Act (1974), and the Government in the Sunshine Act (1976). Together, these laws greatly expanded citizens’ access to government information and decisionmaking. The major environmental statutes of the 1970s were also “pluralist-created and pluralist-driven,” with their strong provisions for public review and citizen suits, which gave interest groups bargaining rights with industry (Gauna 1998, 24). During the past three decades, interest group membership and representation in Washington have risen dramatically to take advantage of the pluralism enshrined in environmental laws (Coglianese 1999b).

In recent years, the pluralist paradigm has come under pressure from an even more intensely participatory perspective. This “popular” democratic theory stresses the importance of the act of participation, not only in influencing decisions but also in strengthening civic capacity and social capital. Like pluralism, popular democracy emphasizes interaction among often adversarial interests, but that interaction is viewed less as a competitive negotiation than as a way to identify the common good and subsequently act on shared communal (versus individual) goals (Dryzek 1997).

From the popular democratic perspective, participation “makes people more aware of the linkages between public and private interests, helps them develop a sense of justice, and is a critical part of the process of developing a sense of community” (Laird 1993, 345). In environmental policymaking, the popular perspective has focused attention on the role of communities in environmental protection, spawning, for example, the U.S. Environmental Protection Agency’s (EPA’s) efforts at “community-based environmental protection” and the National Environmental Justice Advisory Committee’s *Model Plan for Public Participation* (NEJAC 1996).

What Society Expects from Public Participation

Although one can chart a historical progression from managerialism to pluralism to popular democracy, all three perspectives continue to compete in contemporary debates about how environmental policy should be made and implemented (Reich 1985).

What have evolved are society’s expectations about what public participation should accomplish. Throughout the managerial era, the main justifica-

tion for public involvement was accountability: to ensure that government agencies were acting in the public interest. With the ascendancy of pluralism and popular democracy, participation has been seen as a necessity for establishing what that public interest really is. The purpose of participation has shifted from merely providing accountability to developing the substance of policy.

The change in expectations is apparent in the proliferation of public participation activities in federal environmental programs in the 1990s. Federal departments and agencies have introduced much more complex forms of public participation than the traditional approaches of public comment and public hearings. The rise in the use of consensus-based participation (in which interest groups are expected to negotiate and agree on policy outcomes) has been particularly noticeable. The U.S. Department of Energy (DOE) has used consensus-based advisory committees in making cleanup decisions at its contaminated facilities around the country (Bradbury and Branch 1999). EPA's Project XL and Common Sense Initiative programs have relied on consensus-based committees (Yosie and Herbst 1998). Consensus-based grassroots stakeholder councils have sprung up around the country to decide how to manage natural resources, and participation has become integral to resource management at the Department of the Interior and the Forest Service (Weber 2000). Reflecting the ascendancy of stakeholder negotiation in developing policy, in 1990 Congress passed the Negotiated Rulemaking Act, which allows agencies to use formal negotiations among interest groups to develop proposed regulations.

One reason that participation has become more central to environmental decisionmaking is an expectation that it can temper the confrontational politics that typify environmental policy. Modern environmental policymaking has been described as beset by a group of "wicked problems," meaning "problems with no solutions, only temporary and imperfect resolutions" for which there are no "narrowly defined technical definitions and solutions" and no "clear-cut criteria to judge their resolution" (Fischer 1993, 172–173). In short, such problems are ill-suited to a managerial approach and rife with the politics that participation can address.

One example of Fischer's wicked problems is the siting of hazardous waste facilities. Greater participation in decisionmaking has been viewed as a possible remedy for NIMBY (not-in-my-backyard) syndrome, which has bedeviled governments and industries seeking to build industrial facilities across the country (Rabe 1994). Another example is the massive cleanup of cold war-era nuclear weapons facilities, in which DOE has instituted participation to stem a crisis in public trust and confidence that is undermining the department's ability to perform complex environmental management and cleanup operations (SEAB 1993). In these and many other examples, public participation is

being used not only to keep government accountable but also to help agencies make good decisions, help resolve long-standing problems of conflict and mistrust, and build capacity for solving the wicked problems of the future.

What Is Public Participation?

The public participates in society's decisions in countless ways, from voting to violence and from "letters to the editor" to lawsuits. Only some of these ways are covered in this book. We define *public participation* as any of several "mechanisms" intentionally instituted to involve the lay public or their representatives in administrative decisionmaking. Such mechanisms range from town meetings at which citizens express their opinions to formally mediated negotiations in which parties write regulations; they also include advisory committees, citizen juries, and focus groups.

Our definition excludes some methods of participation that are important in their own right and have extensive traditions as well as legal foundations. For example, we exclude voting for elected officials, referenda, and initiatives as well as lobbying and citizen lawsuits. We also exclude less regulated methods (such as striking and picketing) and extralegal ones (such as violence). We focus on organized bureaucratic processes, not individual actions or power politics.

Although our definition is narrower than it could be, it is broader than some. In particular, many analysts and practitioners distinguish between *public participation* and *stakeholder involvement*. The former term generally connotes a popular democratic notion of lay citizens' involvement in local issues and the latter term a more pluralist notion of interest group involvement in policy-level questions. We make no such distinction here and use *public participation* as an umbrella term that encompasses diverse definitions of who the public is, how the public is represented, why the public is involved, and what the public is involved in.

Evaluating Public Participation: Overview

We evaluate public participation on the basis of contemporary claims about what it can accomplish in environmental decisionmaking. These claims can be summarized as five "social goals" for public participation (Beierle 1999):

- Goal 1: Incorporating public values into decisions
- Goal 2: Improving the substantive quality of decisions
- Goal 3: Resolving conflict among competing interests
- Goal 4: Building trust in institutions
- Goal 5: Educating and informing the public

In this book, *success* is defined as the extent to which public participation efforts achieve these social goals. To evaluate the success of public participation as practiced in the United States over the past 30 years, we turn to the case study record and synthesize data from several hundred published studies covering 239 cases of public involvement in environmental decisionmaking. (The process of selecting cases is described in Appendix A, and the list of cases is presented in Appendix E.) Case studies were published in journals, books, dissertations, conference proceedings, and government reports. They cover diverse planning, management, and implementation activities carried out by citizens and agencies at many levels of government. Each case involves a participation process specifically designed to engage people outside of government in helping to make decisions concerning the environment (e.g., public hearings, advisory committees, negotiations, or mediation).

In preparation for our study, we coded each public participation case based on a standard conceptual model composed of more than 100 attributes that describe the context, process, and results of the particular case. This conceptual model, the social goals used to evaluate the results of each case, and the methods used to select and analyze the case studies are described in Chapter 2.

In Chapter 3, we explain how the cases measure up against the social goals and illustrate the results with specific examples. The view of public participation derived from the analysis is quite positive. In most of the cases, public values and knowledge made important contributions to the quality of decisions; the participation processes often also resolved conflict, increased trust, and educated the participants. We discuss important caveats about how positive results should be interpreted.

Next, we examine the roles of context and process. In Chapter 4, we discuss how the type of issue being debated, the preexisting relationships among parties, and the institutional context relate to success. In Chapter 5, we evaluate the relative success of different participatory mechanisms (e.g., public hearings and advisory committees) and specific process elements (e.g., the participants' degree of motivation and the quality of their deliberation). The analysis demonstrates that the process of participation, rather than its context, is largely responsible for the success or failure of public participation.

We examine the relationship between public participation and implementation in Chapter 6. The cases provide only partial support for the claim that good public participation helps smooth the path to implementation. They reveal several forces acting on implementation that are not related—or only tangentially related—to public participation.

In Chapter 7, we pull the lessons from the report together into a discussion of how to design successful public participation processes. Rather than advocating the use of particular mechanisms, we present a process of strategic design, starting with an understanding of whether public participation is

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EXHIBIT 3

REPORT JAN 16, 2018

The Benefits of NEPA: How Environmental Review Empowers Communities and Produces Better Projects

President Donald Trump's pledge to fast-track infrastructure projects threatens to roll back essential environmental review regulations that safeguard natural habitats and local communities.

AUTHORS



Kevin DeGood

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Washington is currently considering an increase in federal infrastructure spending, and the word swirling around the debate is “streamlining.”¹ Specifically, the Trump administration wants to streamline the environmental review process required under the National Environmental Policy Act (NEPA) for major infrastructure projects.²

The Oxford English Dictionary defines streamline as to “make (an organization or system) more efficient and effective by employing faster or simpler working methods.”³ As a matter of political messaging, the administration’s use of this word is rather brilliant; few people are likely to oppose bureaucratic streamlining. After all, bureaucracies are not known for being lithe. Yet this messaging turns out to be sophistry.

The president is conjuring up images of red tape, lumbering civil servants, and a Washington leviathan that saps the U.S. economy of dynamism, all to hide his administration’s true intent: to eviscerate foundational environmental laws that protect natural habitats, clean air and water, and the quality of life for local communities.⁴

NEPA is fundamentally about community empowerment and democratic decision-making, both of which require people to have access to information. When a state or local government wants to use federal funds to build something, it must first complete an environmental review.⁵ This review is intended to discover any significant individual or cumulative environmental impacts that the project would create.⁶ These impacts could include anything from habitat fragmentation and species loss to adverse social, economic, health, or cultural effects on low-income individuals or communities of color.⁷

As part of the review process, the public has the right to comment on the proposed project. Before a project can receive federal approval, the state or local government sponsor must address these comments and, where possible, make changes to mitigate community and environmental impacts. In short, NEPA is the sunshine that illuminates governmental planning, allowing the public to understand and shape proposed projects before a single shovel goes into the ground.

Importantly, the federal government did not stumble into requiring environmental review. NEPA is not the result of thoughtless regulatory accretion. The law represents a hard-fought political victory decades in the making. Congress enacted NEPA in 1969 because the status quo of developing projects behind closed doors and without careful study had produced truly dreadful results.⁸

Unfortunately, this victory is under assault like never before. In the place of thoughtful study and robust public participation, NEPA opponents are promising drastic changes in service of one thing: speed. “Better, faster, cheaper” is the prevailing mantra. The problem with this approach to infrastructure development is that shaving a few months off the project review timeline can result in facilities that produce real harm for decades, all at a steep cost to taxpayers.

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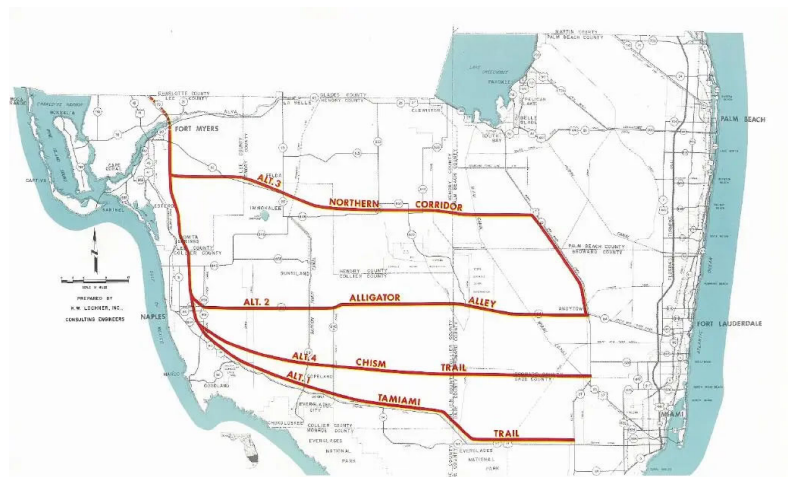
with slogans like “protect the process!” For this reason, it is critical to tell NEPA’s story through concrete examples.

This issue brief highlights two projects—the Everglades Parkway and the Charlotte Blue Line light rail extension—that offer powerful examples of how undertaking an environmental review can produce fundamentally better infrastructure with fewer harmful impacts.

The Everglades Parkway

Following the passage of the Federal-Aid Highway Act of 1956, the United States began a national program of highway construction to facilitate more efficient connections between metropolitan areas and provide farmers with better access to local markets.⁹ The act authorized the construction of a 41,000-mile system.¹⁰ In 1968, Congress passed another highway bill to expand the interstate system by an additional 1,500 miles.¹¹ The legislation included an authorization to extend Interstate 75 (I-75) south and east from Fort Myers on the Gulf Coast to an area west of Fort Lauderdale on the Atlantic Coast.¹² The 114-mile extension would become known as the Everglades Parkway.

In 1969, the Florida Department of Transportation (FDOT) began to study alternative routes. Unlike the planning for earlier interstate segments, FDOT was required to comply with NEPA. As a result of the procedural requirements that NEPA set forth, the I-75 extension included numerous design elements tailored to minimize impacts on the natural environment. Importantly, none of these design elements undermined the original goal of the project: to construct a limited-access, four-lane, divided highway that would connect Gulf and Atlantic Coast population centers, providing increased travel speeds and reduced travel times.



ALTERNATIVE PARKWAY ROUTES

Photo courtesy of the Florida Department of Transportation.

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solve the engineering puzzle in a way that minimizes the negative spillover that often accompanies major infrastructure projects.

Environmental review minimizes negative ecological impacts

The environmental review produced by FDOT for the Everglades Parkway states clearly—albeit in rather subdued bureaucratic language—the damage that new highway facilities can produce: “Evaluation has revealed that some existing transportation systems, including highways, permit or encourage development in areas ill-suited for it from a regional resource standpoint.”¹³ In the case of the Everglades Parkway, the problem of this induced development was of particular concern.

In order to connect Fort Myers with Fort Lauderdale, FDOT knew that the I-75 extension would have to cut through highly sensitive areas, including both the Big Cypress and Everglades watersheds. Taken together, these two watersheds cover thousands of square miles and provide vital habitat to many different species. The state described South Florida and its unique watersheds as a “rare and endangered complex.”¹⁴ Additionally, FDOT planners noted that these areas were “vital to [the] maintenance of groundwater supplies for areas already urbanized.”¹⁵ In short, a poorly designed highway could unleash land development that would threaten critical habitats and essential drinking water supplies.

In response, FDOT developed a design that achieved the goal of an efficient connection between the coasts while reducing the harm to wildlife and clamping down on unwanted development. FDOT states that the goal of the extension was to provide “fast, safe, and efficient transportation across South Florida, not to improve transportation and accessibility for the intermediate land areas.”¹⁶

To reduce the impacts on animal populations, such as roadkill, the final design included 24 wildlife underpasses and fencing along 40 miles of the route.¹⁷ In addition, FDOT purchased local access rights and eliminated frontage roads. To understand why this decision was so important, it helps to step back and look at the role of frontage roads in transportation.

On a basic level, land only has value if it can be used; and land can only be used if it can be accessed. A real estate developer that builds houses on inaccessible land will not be in business for very long. The most common form of land access is provided by roadways, which exist on a design spectrum. On one end of this spectrum are roadways that provide low travel speeds and a high degree of access. For example, local neighborhood streets typically have a driveway that connects each house to the road. Vehicles on these local roads travel slowly to safely accommodate cars pulling in and out of traffic. On the other end of the spectrum, highways provide limited access and high travel speeds. For instance, interstate highways are grade-separate and limited-access, meaning that crossing roadways must pass over or under and that vehicles are only able to enter or exit at interchanges that are spaced far apart.¹⁸ The limited-access design is both

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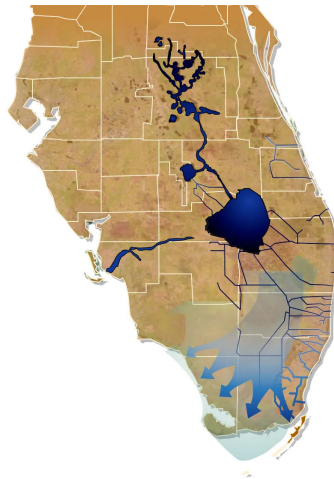
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—also known as Alligator Alley—which provided adjacent land owners with certain access rights. FDOT stated in its review that, “Presently, uncontrolled access along Alligator Alley enhances the saleability of subdivision lots with little else to recommend them.”¹⁹

This left FDOT with a choice to either build a frontage road that would run parallel to the interstate and provide the access to which landowners were entitled or buy out those access rights. By building a frontage road, Florida would be providing landowners with the access necessary for future commercial and residential development. However, in order to limit future growth along the corridor to the greatest extent possible, FDOT chose to purchase local access rights instead of building a frontage road.

Finally, FDOT wanted to improve the flow of fresh water through the Big Cypress and Everglades wetlands. The ecology of South Florida is based on a large volume of water flowing south from Lake Okeechobee, through the wetlands, and into the Gulf of Mexico. The flow consists of a massive, shallow, slow-moving sheet as opposed to a river contained within a defined channel. Decades of agricultural and urban development—including the construction of the original State Route 83—substantially disrupted this flow. Through the NEPA process, FDOT recognized that the Everglades Parkway project represented an opportunity to improve the natural flow.



IMPROVED EVERGLADES FLOW

Photo courtesy of the U.S. Department of the Interior.

Improving flow involved several design modifications. According to FDOT design policy at the time, highways were required to provide at least 100 feet of land between the edge of the roadway and any adjacent body of water.²⁰ This requirement was intended to reduce the risk of passengers drowning in the event that a driver loses control of a vehicle. In effect, the 100-foot buffer provided a chance for a driver to slow the vehicle and regain control, hopefully avoiding entering the water. In the case of the Everglades Parkway, complying

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Experience with the channels along the original State Route 83 showed that the state needed to both modify their depth and regularly remove aquatic vegetation that could reduce sheet flows by as much as 90 percent.²² FDOT also scheduled construction activity to avoid the heaviest seasonal rains. By adjusting the sequence and timing of work, the state was able to significantly reduce sedimentation—rainwater carrying dirt, rocks, and other loose debris from the construction site into the wetlands.²³

The environmental review process provided FDOT with the information necessary to make smart and effective changes to the design, construction, and maintenance of the Everglades Parkway, all with an eye toward reducing harmful impacts on the surrounding ecosystem. Far from being a burden, NEPA brought forward the technical expertise of scientists across numerous fields to help the state build a fundamentally better, more sustainable facility that continues to provide benefits to this day.

The Charlotte Blue Line light rail extension

In Charlotte, North Carolina, NEPA provided the Charlotte Area Transit System (CATS) with a process to identify the most appropriate route and transit technology combination as well as other design elements and construction practices to meet local mobility needs while minimizing social and ecological impacts.

The environmental review process seeks to minimize negative project impacts on both macro and micro scales. In other words, NEPA requires project sponsors to ask two related questions: First, what should be built? And second, how should it be built? This means that sponsors must focus on mitigating project impacts from the outset rather than simply polishing any rough edges at the end.

The NEPA process begins with the requirement that state and local government project sponsors clearly define the transportation challenge that the proposed project will resolve. This is known as the statement of purpose and need. This statement is significant because it serves as the basis for another major element known as an alternatives analysis. Essentially, the sponsor must analyze different options for meeting the defined need, including a no-build option.

The alternatives analysis process is critical because it answers the question of what should be built to meet the defined local need. The truth is that all infrastructure projects produce environmental impacts. Each project alternative involves tradeoffs to both transportation performance and environmental impacts. By considering multiple project options, the state or local government sponsor is able to find a preferred alternative that delivers the optimal combination of performance and mitigation.

For a public transportation project such as the Charlotte Blue Line, the range of alternatives could include different route and transit technology combinations. One alternative could be a light rail line operating within a dedicated right of

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fewer passengers and would likely rely on diesel or natural gas.

After selecting a preferred alternative, the state or local government sponsor carries out additional engineering and design work. This stage of the process allows the sponsor to revise and refine the design in order to achieve additional mitigation and performance improvements. For instance, a sponsor may decide to grade separate a planned light rail line where it crosses a major arterial roadway. By routing the train above or below the intersection, vehicles would not be forced to sit and idle as trains passed by dozens of times each day in both directions. The Charlotte metropolitan area is one of the fastest-growing and most economically dynamic regions in the United States. Since 1990, the area has grown from 1 million residents to its current population of more than 2.3 million.²⁴ With growth has come additional congestion. In response, CATS has expanded public transportation service, including the construction of light rail transit.



BLAND STREET STATION

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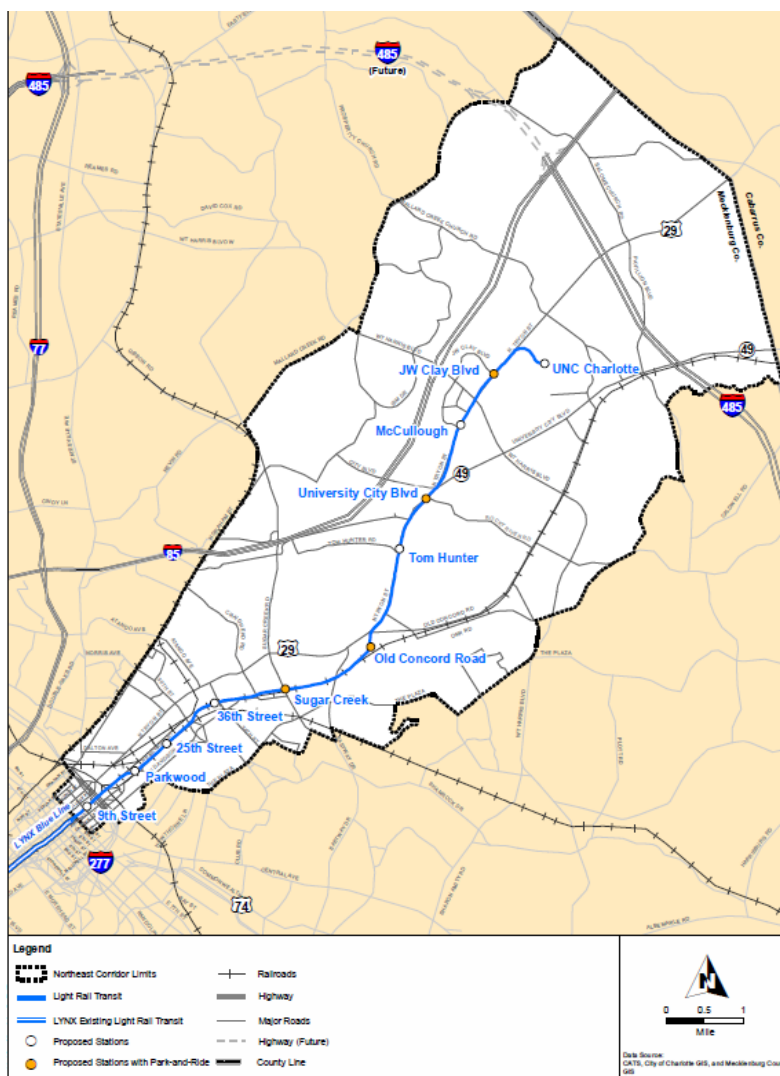
For local leaders, light rail transit not only provides mobility but also advances regional development goals. In 1994, the city of Charlotte adopted the first of several land use plans that called for focusing growth within the downtown and along five corridors extending out from the city center.²⁵ Over the years, Charlotte has refined its vision for growth to include a focus on building more mixed-use, pedestrian-friendly neighborhoods around transit stations in order to “minimize motor vehicle trips.”²⁶

In 2007, after years of planning and building political support, CATS opened its first light rail segment known as the LYNX Blue Line, which extends south 9.6 miles from downtown Charlotte.²⁷ Within the first year of service, ridership doubled the preconstruction forecast, providing more than 18,000 weekday trips.²⁸

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BLUE LINE EXTENSION CORRIDOR MAP

Photo courtesy of the Charlotte Area Transit System.

Before deciding to extend the Blue Line, however, CATS conducted a full alternatives analysis as required under NEPA. This included a review of a wide range of options, including rapid bus, light rail, streetcars, and commuter rail. From this broad set of possibilities, CATS narrowed its analysis to those options that were not “fatally flawed from an engineering or environmental perspective or would be unlikely to meet project goals and objectives.”³¹

CATS conducted detailed analysis of several rapid bus and light rail alternatives as well as one streetcar option.³² The analysis determined that “The BRT [bus rapid transit] alternatives would serve existing land use patterns better than the light rail alternatives, but light rail would have more potential to support the desired shape of future development.”³³ Thus, CATS used the transportation and land use goals established by the city of Charlotte to inform its NEPA

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environment, while best protecting, preserving and enhancing historic, cultural and natural resources.”³⁵

As intended, the NEPA alternatives analysis process allowed CATS to answer the macro question of what project should be built to advance the defined local purpose and need. Next, CATS used NEPA to answer the micro question of how to deliver the project in a sustainable manner.

As part of the review process, CATS conducted a detailed traffic impact analysis of 55 intersections along the rail route in order to identify where the line should be grade-separated from existing roadways.³⁶ For urban rail lines, grade separations affect safety, train run times, cost, intersection delays, and traffic spillover to adjacent intersections. The CATS analysis determined that the extension should include grade separations at all major intersections, railroad crossings, and entry and exit points for U.S. Route 29.³⁷ In total, the Blue Line extension includes 11 new grade separations.³⁸ For instance, the inclusion of a grade separation of the light rail line with 36th Street will allow intersection performance—known in traffic engineering terms as “intersection level of service”—to remain unchanged at the intersection of 36th and North Davidson.³⁹

To understand the importance of including multiple grade separations, one must consider how the Blue Line extension might have looked if CATS engineers had focused narrowly on delivering fast train run times in the most cost-effective manner possible. For starters, grade separations are expensive compared with standard at-grade crossings, which only require the installation of a flashing gate. CATS could have chosen to construct the line at grade, granting trains travel priority and forcing vehicles to wait throughout the day. This approach would have saved the agency money without sacrificing train run times.

However, while at-grade crossings may save the project sponsor money in the short run, they increase roadway delay and air pollution from idling vehicles traveling within the rail corridor. As a result, the Charlotte region would suffer from reduced economic productivity and more polluted air. Fortunately, NEPA requires project sponsors to take into account how new facilities will affect safety, air quality, and roadway conditions, among other measures of community and environmental impact.

Safety is another core community impact under NEPA. This means that project sponsors must consider how a new facility may increase injuries and fatalities. A portion of the Blue Line will travel along roadways with numerous cross streets that are not signalized, meaning that pedestrian and vehicle movements are not controlled by traffic lights but by stop signs and individuals’ discretion. For roadways with few pedestrians and low traffic volumes, this approach works well. However, the presence of a new light rail line would increase development, travel demand, and pedestrian use. In response, CATS added traffic lights to fully control vehicle and pedestrian movements along U.S. Route 29, Orr Road, Arrowhead Drive, Owen Boulevard, Orchard Trace Lane, and at the University City Station. CATS notes in the environmental impact statement: “Traffic lights

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choice to build an infrastructure project can itself be a form of discrimination. This impact may take the form of increased pollution and noise; increased household costs; reduced transportation access; or the loss of local businesses, housing, religious institutions, and social service providers through eminent domain, among other impacts.

As part of the environmental review process, CATS was required to conduct both a demographic analysis based on census data and an extensive inventory of community assets. The Blue Line extension will run through several neighborhoods in which residents are predominantly people of color with incomes that fall substantially below the area's median household income.⁴²

In order to construct the Blue Line, CATS had to acquire 90 acres of land, resulting in the displacement of 14 commercial or industrial businesses but no residential displacement.⁴³ CATS found that none of the businesses “provide a unique or special service to a community of concern.”⁴⁴ Therefore, the project’s most significant impact would be increased noise and vibrations. Eleven residential homes were expected to face a significant increase in noise or vibration. These impacts are considered adverse “due to the intensity of the impacts and disproportionate as no residential noise impacts would occur outside of minority and low-income communities of concern.”⁴⁵ In response, CATS made changes to the project design to include the installation of “an automated friction modifier, noise barriers, sound insulation, specially-engineered track work and vibration isolation treatments.”⁴⁶

Conclusion

The National Environmental Policy Act provides both the public and elected officials with access to the information necessary for informed decision-making, resulting in a more just, democratic, productive, and sustainable U.S. society. Opponents of NEPA want to curtail the flow of information in the name of expedience. On the surface, the prospect of building needed infrastructure projects more quickly may seem attractive. However, beyond the easy rhetoric of “better, faster, cheaper” lies an ugly reality of poorly conceived projects that produce long-lasting harms and ultimately cost our society and economy far more than any modest upfront savings. In short, the procedural requirements of NEPA yield real benefits. The time has come to recognize the service that environmental review provides and to allow the law to continue empowering local communities.

Kevin DeGood is the director of Infrastructure Policy at the Center for American Progress.

Endnotes

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- ¹ of Transportation Elaine L. Chao, “Secretary Chao Joins President Trump in Announcing Historic Infrastructure Regulatory Reform,” Press release, June 9, 2017, available at <https://www.transportation.gov/connections/president-trump-joins-secretary-chao-announcing-historic-infrastructure-regulatory>.
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EXHIBIT 4

NRDC

Overview

Never Eliminate Public Advice: NEPA Success Stories

February 1, 2015



Elly Pepper

Director, Forest Policy, Nature

Why Is the National Environmental Policy Act So Important?

With an emphasis on "smart from the start" federal decision making, the National Environmental Policy Act (NEPA) protects our health, our homes, and our environment. Passed by an overwhelming bipartisan majority and signed into law by President Nixon, NEPA has empowered citizens and demanded government accountability for more than 40 years. The law was prompted in part by concerns from communities whose members felt their views had been ignored in setting routes for the Interstate Highway System,

on which work began in the 1950s.

NEPA is democratic at its core. In many cases, NEPA gives citizens their only opportunity to voice concerns about a project's impact on their community. When the government undertakes a major project such as constructing a dam, highway, or power plant, it must ensure that the project's impacts—environmental and otherwise—are considered and disclosed to the public. And because informed public engagement often produces ideas, information, and even solutions that the government might otherwise overlook, NEPA leads to better decisions—and better outcomes—for everyone. The NEPA process has saved money, time, lives, historical sites, endangered species, and public lands while encouraging compromise and cultivating better projects with more public support.

Thanks to this law, hundreds of millions of Americans have participated in important federal decisions. We are able to know the risk a government project or practice could pose to our community or health because of NEPA—and we are guaranteed a voice.

How NEPA Works

NEPA is designed to ensure that the public has informed access and input into federal agency decisions that could affect the human or natural environment. It mandates environmental impact statements (EISs) for major projects—like power plants, roads, and bridges—that the federal government is planning to undertake (except in emergency situations). At the heart of this review process is the agencies' obligation to consider alternatives to their original project designs, which motivates them to think outside the box, resulting in better projects that save money and reduce

negative impacts. It also gives members of the public a voice in project design by letting them suggest alternatives, which promotes collaboration in planning and buy-in on final decisions.

EISs are first released in draft form, allowing the public and other agencies and levels of government to comment on decisions they care about, provide outside scientific opinion, and ask for improvements. In final EISs, agencies have to respond to reasonable input and explain any rejection of outside expert views. Smaller projects are reviewed through a less extensive Environmental Assessment (EA) process.

Threats to NEPA

Unfortunately, misperceptions about this cornerstone environmental law are driving congressional attempts to chip away at it. In particular, NEPA is frequently blamed as the leading cause of delays to projects when, in reality, lack of funding and project complexity are actually the culprits. Changing prices and shifts in the economic outlook may prompt companies to delay projects and wait for better timing; at the local or state level, the primary cause of delay is often a project's low priority or local controversies and politics.

As of this writing, the most recent and egregious threat to NEPA is the Senate's Water Resources Development Act (WRDA), which would effectively limit meaningful public participation on water projects, such as the construction of bridges and dams. And many in Congress have said they plan to apply the harmful provisions of WRDA to other types of projects in the future.

These legislative attacks strike at the fundamental principles of NEPA: environmental review, public participation, good science, examination of alternatives, and judicial review. The bottom line is that if we don't act now, Congress could, little by little, take away our right to have a say about federal government actions in our own backyards. Our message to Congress is simple: Never Eliminate Public Advice.

NEPA Success Stories

Learn more about how NEPA gives communities and individuals a voice by clicking a state below.

Alabama

Choctaw Point Shipping Terminal

In early 2000, Alabama sought to revive its Choctaw point shipping port terminal. Business at the port had changed since its dedication in 1928 such that it was no longer adequate for modern shipping needs. In 2001, the Army Corps of Engineers submitted a project proposal to upgrade the port with a modern, world-class container handling facility that would meet current needs. During the NEPA process, the Corps discovered that it needed to modify the original berthing configuration to avoid posing navigational safety issues to ships. Further, the review helped the Corps improve overall operational efficiency in the intermodal rail yard, intermodal container yard, and traffic control areas, reduce the port's environmental effects, including its impact on wetlands, and increase mitigation efforts. Today the terminal forms an important part of the Port of Mobile, Alabama, which provides over 120,000 jobs.

Arizona

Hoover Dam Bypass

The Federal Highway Administration (FHWA) developed the 3.5-mile Hoover Dam Bypass project, which would stretch from Clark County, Nevada, across the Colorado River to Mojave County, Arizona, to address increased congestion at the Hoover Dam crossing. However, the environmental impact statement for the project failed to explore an adequate variety of options. Project manager Dave Zanetell admitted as much, stating that the FHWA had "grossly underestimated some of the alternatives and too quickly dismissed them." To ensure full NEPA compliance, Zanetell's team more thoroughly researched an alternative proposed by environmental groups and added some important features to the project in response to public comments. In its final form, the bypass, which opened in October 2012, runs closer to developed areas instead of cutting through pristine corridors; it also includes accommodations such as sidewalks, pedestrian facilities, and parking to enable pedestrian access. "Oftentimes the public is a huge influence on the project. NEPA is certainly the foundation for public participation," said Zanetell. "We don't look at it as a burden; it is something we relish," he added.

Arkansas

Shady Lake Recreation Area

In 2011, the Forest Service proposed to construct a new entrance road to the Shady Lake Recreation Area in Arkansas' Ouachita National Forest to improve visitors' experiences, provide safe vehicular access to the Shady Lake Recreation Area, and minimize conflicts with residents living nearby. While the Environmental Assessment proposed to wait to open the new

entrance to visitors until the project was complete, thanks to NEPA, the Federal Highway Administration and Forest Service put their heads together to reach a better solution. They decided to open the new entrance road to public traffic upon completion of the project's first phase, ensuring that visitors could access the area and that nearby residents would benefit from diminished traffic as soon as possible.

California

Bolinas Lagoon

In California, the NEPA review process exposed the devastating impacts of the Army Corps of Engineers' plan to dredge the Bolinas Lagoon, one of the most pristine tidal lagoons in the state. While the proposal aimed to prevent silting in the lagoon, environmental reviews actually found that it would increase siltation. As a result, this misguided plan was abandoned in 2001, saving taxpayers \$133 million.

Crenshaw/LAX Transit Corridor

The Los Angeles County Metropolitan Transportation Authority's (LACMTA) Crenshaw/LAX Transit Corridor project is an 8.5-mile light-rail metro extension that will serve the cities of Los Angeles, Inglewood, Hawthorne, and El Segundo by offering an alternative transportation option to congested roadways. The project was one of the Federal Transit Administration's first projects piloting a new process that helped identify and mitigate project risks more efficiently. Through the project review process, the LACMTA determined that a five-mile stretch of the project could utilize a rarely-used existing freight rail line corridor, instead of building new tracks in that section. The railroad agreed to abandon the line and allow LACMTA to use it. That decision decreased project costs, saved

time, and reduced disturbances for the nearby community by using an existing right-of-way, while providing significant environmental benefits, economic development, and employment opportunities throughout Los Angeles County.

Colorado

I-70 Mountain Corridor

For years, the I-70 Mountain Corridor, which runs from Denver, Colorado to Glenwood Springs, experienced hours of congestion—particularly on weekends—as travelers accessed ski areas, hiking areas, and other recreational destinations in the Rocky Mountains. Initial plans for improving the corridor's capacity and mobility included blasting through cliff, building unattractive retaining walls, and channeling the Colorado River. For these reasons and others, the majority of stakeholders, did not support the plan. So, the Colorado Department of Transportation (CDOT) used NEPA to initiate a collaborative decision-making process to identify a new reconstruction plan. Thanks to NEPA-generated public input, CDOT chose a plan that was not only safer than the original one, but also had fewer impacts on the environment and river. The project has since won more than 30 awards for innovative design and environmental sensitivity.

North Fork Valley

In late 2011, the Bureau of Land Management (BLM) announced its intention to lease approximately 30,000 acres of public and private lands in Colorado's North Fork Valley for oil and gas development. Yet, a wide range of stakeholders, including farmers, conservationists, wineries, ranchers, ditch companies, chambers of commerce, local and state politicians, and hunters and fishermen, felt the plan was ill-conceived,

unnecessary, and ignored the North Fork Valley's economic and environmental attributes. In particular, stakeholders were concerned about the proposal's affects on the area's economy, which depends largely on orchards, vineyards, meat production, and tourism. Using NEPA, this diverse coalition of people negatively affected by the proposal were able to voice their concerns. BLM listened and, in the end, deferred the parcels.

Canyons of the Ancients National Monument

Created in 2000 by President Clinton, Canyons of the Ancients National Monument in southwestern Colorado contains over 6,000 archaeological sites representing Ancestral Puebloan and other Native American cultures. As a result of the designation, the existing oil and gas leases on the land were permitted to run their course, but would not be renewed after their current term expired. On the eve of the lease's expiration, the lessees proposed a new seismic exploration project for the land. However, the Bureau of Land Management's (BLM) Environmental Assessment was based on inadequate cultural resource surveys, and, as a result, allowed exploration on the edges of several sensitive sites, including standing "towers" and multiple collections of artifacts. In an effort to protect these irreplaceable areas, a coalition of groups led by San Juan Citizens Alliance, filed suit in federal district court and were granted an emergency injunction. Negotiations between all stakeholders ensued, with conservation groups, BLM, and the lessees coming to the table to work out a compromise. The result: an exploration project that enabled lessees to obtain the seismic information they needed while avoiding the National Monument's most significant cultural features and fragile habitats. All in all, it was a win-win that balanced energy exploration with cultural resource protection, and exemplifies effective multiple use management of the public lands.

State Highway 9

When considering improvements to a 9-mile stretch of State Highway 9 (SH9) between Frisco and Breckenridge, Colorado, the Colorado Department of Transportation and the Federal Highway Administration used NEPA to help meet project goals of improving safety and mobility on a budget. The selected alternative proposed a four-lane reduced section roadway including necessary turn lanes, acceleration and deceleration lanes, curbs and gutters, medians, and shoulders between milepost 97 and milepost 85. This alternative was selected through the public comment process and interagency involvement fostered by NEPA because it offered a way to achieve project objectives while minimizing the physical impacts on the environment. In the end, the project included wider shoulders for cyclists, bus priority signals, ways to minimize dust emissions during the construction process, wetland mitigation, minimization of tree removal, and a bridge over Blue River to avoid wildlife damage. Additionally, the final project ended up costing less than the original plan!

Grand Mesa, Uncompahgre, and Gunnison National Forests

In 1989, the Forest Service released a draft environmental impact statement for its plan to clearcut every aspen grove in the Grand Mesa, Uncompahgre, and Gunnison National Forests in western Colorado in order to supply a waferboard plant operated by Louisiana Pacific Corporation. The plan was met by outrage from the public, who argued that scenery, wildlife habitat, and water quality in the forests are essential to the region's quality of life and tourism-recreation economy. After receiving a record-setting number of letters during NEPA's public comment period from private citizens, businesses, and local officials, the Forest Service substantially scaled back its clearcutting proposal. Forest Service rangers and scientists acknowledged that the initial proposal was more than the

land could bear but said they had felt pressured to "get the cut out."

Absent the NEPA public review process, hundreds of thousands of acres of majestic Rocky Mountain landscapes would have disappeared.

Connecticut

Plum Island

The Department of Homeland Security (DHS) had a terrible idea: expand a scientific lab on Plum Island, just eight miles off the Connecticut coast, so it could start handling some of the most dangerous and deadly pathogens known to man, including pathogens transmitted from animals to humans that have no known cures or vaccines. While Plum Island had long hosted research into animal disease, the new facility would have taken the public health threat to a new level. However, the environmental impact statement (EIS) that DHS completed under NEPA failed to address the risks that this facility could pose to the 20 million people who live within 50 miles of Long Island Sound. Senator Blumenthal, who was then Connecticut Attorney General, was able to use NEPA to challenge the government's proposed plan on the basis that it failed to assess the intolerable security risks in an area so densely populated, heavily traveled, and environmentally valued. For example, the EIS did not address the proximity of Plum Island to New York City—the nation's most populous city and a repeated target of terrorist attacks—or the extreme difficulty of providing emergency response services to an island. Result: DHS reexamined alternatives and relocated the laboratory to Kansas, far from major population centers, where the governor welcomed the facility.

Delaware

Mid-Atlantic Power Pathway (MAPP)

PJM Interconnection, a regional transmission organization, planned to build a 150-mile transmission line in parts of Delaware, Maryland, and Virginia called the Mid-Atlantic Power Pathway (MAPP). This high-voltage transmission line would have connected Calvert County, in Southern Maryland, to the Indian River power plant in Delaware, by way of the Chesapeake Bay, and up the Choptank River. Local residents strongly opposed the poorly planned project, which would have traversed sensitive areas and contributed to a number of health problems, including increased risk of childhood leukemia associated with living near high-voltage transmission lines and respiratory illness associated with increased air pollution from nearby coal plants. Using NEPA, residents voiced their concerns, resulting in a number of proposed project alternatives that would make everyone happier. Eventually, PJM decided to terminate the project, citing the economic downturn and the installation of new gas-fired power plants as their main reasons.

Florida

Lake Belt EIS

In 2000, the Army Corps of Engineers conducted an environmental review for what would eventually total over 5,700 acres of limestone mining permits in the Lake Belt region of Miami-Dade, Florida. However, their Environmental Impact Statement (EIS) relied entirely on industry information, failing to consider the risk of contamination to the surrounding wetlands, which provide drinking water to over 1 million South Florida residents. Regardless, the Army Corps went ahead with the project. By the time the environmental review was determined to be unlawful and the mining stopped, blasting agents used for the mining had caused benzene–

a carcinogen—to leak into local water supplies. Subsequently, the Corps undertook a much more comprehensive supplemental environmental review of the project, providing better mitigation and protection of wetlands and local wells and requiring miners to switch explosives. Had the Corps used NEPA properly from the beginning, they would have likely required use of alternative explosives from the start, drinking water contamination could have been avoided, and the funds required to clean up the contaminated wells would have been saved.

Scripps Florida Research Institute Project

In October 2003, Palm Beach County and Scripps Research Institute jointly developed plans for a Biotechnology Research Park to be built on the Mecca Farms site—a 1,919 acre parcel in rural western Palm Beach County. The County and Scripps sought a Clean Water Act Section 404 permit from the Army Corps of Engineers to fill wetlands at the Mecca Farms site so they could build there. And in February 2005, the Corps issued the permit, along with an Environmental Assessment (EA) under NEPA, concluding there were no significant environmental impacts associated with filling the wetlands. However, it was soon discovered that the Corps' environmental review had been limited to only 25 percent of the 1,919 acre Mecca Farms site. Based on this finding, in 2005, a court held that the Corps' issuance of the permit had violated NEPA and the Clean Water Act and ordered the Corps to prepare an environmental review of the entire Mecca Farms site, as required by law. During the comprehensive evaluation process that ensued, the County and Scripps decided to move the research park to a location that would save money by utilizing existing access roads instead of having to build new ones, as they would have been forced to do on the Mecca Farms site. Building on the new site would also result in fewer environmental impacts.

Port St. Lucie Crosstown Parkway Extension

In 2004, Port St. Lucie, Florida was the fastest growing city in the nation. After several years of unprecedented growth, the area had greatly exceeded its transportation capacity. For this reason, the Federal Highway Administration (FHWA), in conjunction with the Florida Department of Transportation (FDOT), proposed a highway expansion project to relieve high traffic congestion. Specifically, FHWA and FDOT proposed to build a bridge for an existing six-lane highway to cross the St. Lucie River's North Fork, thus providing a crosstown connection between U.S. 1 and I-95. In accordance with NEPA, the agencies prepared a draft Environmental Impact Statement (DEIS) and accepted public comments. After examining six different locations and a no build alternative, the agencies identified Alternative 1-C as the preferred alternative: a six-lane divided highway with two bridge structures designed to support automobile, bicycle, and pedestrian traffic. While this alternative was generally supported by the community, many commenters used the NEPA process to urge the agencies to adopt certain measures to mitigate the project's environmental and community impacts. Based on these comments, FHWA and FDOT modified the plan so that it ultimately resulted in zero commercial relocations, fewer residential relocations, less residential noise, and fewer wetland impacts. The NEPA commenting process provided the agencies with the tools to develop an alternative that best balances local impacts with environmental concerns, resulting in a final project with strong community support and a better environmental outcome.

Georgia

Savannah Harbor Expansion

The Savannah Harbor Expansion Project calls for the deepening the

Savannah Harbor navigation channel from 42 feet to 47 feet to accommodate larger ships coming through the expanded Panama Canal. The original plan would have pushed salt water upstream, threatening the vitality of the Savannah National Wildlife Refuge's valuable tidal freshwater wetlands. Additionally, the plan would have further endangered the federally protected shortnose sturgeon, negatively impacted local drinking water resources, and forced the City of Savannah to move its drinking water intake. Thanks to NEPA, an agreement was reached that directed funds towards wetlands protection and restoration efforts that benefit the Savannah River, supported water quality monitoring of the Savannah River and shortnose sturgeon, and started an initiative to restore certain river bend "oxbows" cut off from the river by earlier Corps navigation projects between Augusta and the Houlihan Bridge above Savannah to improve water quality, boost fishing and recreation opportunities, and help to restore the river's natural ecosystem.

Atlantic Steel Redevelopment Project (Atlantic Station)

In 1998, and contaminated land in the heart of metropolitan Atlanta. Shortly thereafter, a developer came forward with a plan to redevelop the site into a multi-use residential community for approximately 3,000 individuals. In compliance with NEPA, the EPA, consulting with the Federal Highway Administration and the Federal Transit Administration, conducted an environmental assessment in August of 2000. During the public comment process, local citizens filed 255 comments identifying several concerns about the project, including the belief that it would create traffic congestion and have negative impacts on historic properties. As a result, 15 historic architectural sites were identified, listed in the National Register of Historic Properties, and preserved under the supervision of an archaeological consultant. The comments also prompted significant design modifications

to reduce traffic congestion and increase the project's transportation connectivity. The development is now easily accessible from two major interstates and a nearby public transit station, in addition to being pedestrian and bicycle friendly. The EPA estimates that the modifications to Atlantic Station reduced residents' number of vehicle miles traveled by 34 percent and resident's car emissions by 45 percent. The NEPA commenting process was vital in making these improvements.

Northwest Corridor Project

In 2007, the Federal Highway Administration and Georgia Department of Transportation (GDOT), in cooperation with other state and federal agencies, proposed to expand I-75 and I-575 in the Atlanta metropolitan area's Northwest Corridor to alleviate traffic congestion. The initial plan proposed to expand sections of the interstates to ten lanes by adding four general-purpose lanes. Community members used the NEPA process to express environmental, public health, and economic concerns about the project, which ultimately motivated GDOT to improve the plan. The final plan will convert existing medians and road space on I-75 into reversible HOV traffic lanes instead of adding lanes. This simple change will minimize adverse effects on low-income and minority communities by reducing the number of residences and businesses displaced by the project from over 300 to 18. This modification will also reduce the acres of wetlands impacted from 4.2 to 0.3, protecting endangered species. And, to top it all off, the project modifications will save a significant amount of money. While any project of this magnitude will inevitably affect the surrounding environment, thanks to NEPA, the Northwest Corridor Project has fewer impacts on local homes, businesses, and the environment, and is more cost effective than the original plan.

Hawai'i

Advanced Technology Solar Telescope (ATST) at the Haleakala High Altitude Observatory Site on the Island of Maui, Hawai'i

The National Science Foundation (NSF) proposed to build the Advanced Technology Solar Telescope, which will be the world's largest optical solar telescope, in order to research solar activity that no other existing or proposed telescope can. To achieve the best functionality, the NSF planned to locate the telescope atop the summit of Maui's Haleakala Volcano. Many Native Hawaiians expressed concern as the volcano is a very important cultural site for them. NSF used the NEPA and local procedural laws to engage in extensive discussion with local communities and other agencies on possible alternatives and methods of mitigation. In the end, NSF agreed to not only undertake a collection of mitigation measures during construction and operation of the telescope in order to be as unintrusive as possible, but to also deconstruct the telescope and divest itself from the area once the research project is completed. Construction of the telescope is currently in progress.

Idaho

Lakeview-Reeder Roads Project

In Idaho, the Forest Service proposed the Lakeview-Reeder Roads project to improve fish passage in Priest Lake and reduce sedimentation. Public participation in the plan's NEPA review brought a mistake to light, thereby preventing possible litigation and a waste of taxpayer money. Specifically, a public comment identified a discrepancy between the planned buffer zone for the protection of the endangered boreal toad and the federal requirement for such a zone. In response, the Forest Service redesigned the

road to adequately protect the species. By informing the public of its plan and listening to citizen comments, the Forest Service avoided irretrievably committing taxpayer dollars to a project that violated federal laws and might have led to litigation.

Illinois

Chicago Harbor Lock Gates

An Army Corps of Engineers plan for repairs to existing breakwaters and replacement of the lock gates of Chicago Harbor in Lake Michigan was greatly improved when NEPA revealed a better method of repairing and extending the life of the breakwaters at a fraction of the replacement cost. The NEPA analysis also verified the need to replace the Chicago Harbor lock gates to ensure their flood-control reliability.

Building 330 at Argonne National Laboratory

In 2009, the Department of Energy (DOE) proposed to demolish Building 330, which housed the decommissioned Chicago Pile-5 research nuclear reactor at Argonne National Laboratory in Illinois. The DOE used the NEPA process to ensure the demolition, which included the removal and transport of radioactive and toxic waste, did not harm the surrounding community and environment. Specifically, the DOE used NEPA to bring together operational and environmental expertise to develop demolition and transportation approaches that better protected workers and the public from potential hazards. For example, the final project mandated that air monitoring be performed at the building site during demolition to ensure that the public would not be exposed to dangerous levels of radionuclides. It also required airborne contamination controls such as filters and barriers, along with personal protective equipment like

respirators, to ensure the safety of the demolition workers.

Indiana

Flagship Enterprise Center

In Anderson, Indiana, NEPA facilitated proper planning of a 2.7 million dollar project to build the Flagship Enterprise Center—a 80,000 square foot technological business incubator. Through NEPA's environmental review process, the project applicant became aware of the project's impacts on the area's forested wetlands, which are used by migratory waterfowl. As a result, provisions were added to the project to preclude negative effects on wetland hydrology, prevent stormwater runoff from being directed to the wetland, and provide retention facilities to contain stormwater within the current footprint of the project site. Additionally, a 26.5 acre forested wetland southwest of the Flagship Enterprise Center was protected.

Iowa

Southeast Connector U.S. 65

Iowa's Southeast Connector project will link the local Martin Luther King parkway in Des Moines to U.S. Highway 65. The Federal Highway Administration, Iowa Department of Transportation, and City of Des Moines worked alongside other agencies and local communities through the NEPA process to identify issues with the original proposal that might have led to damage to the nearby levee. Other improvements included consideration of previously-unidentified hazardous material sites, improved wetlands mitigation, and better efforts to engage Spanish-speaking communities affected by the project. Construction for the project began in 2012.

Kansas

John Redmond Dam and Reservoir

The U.S. Army Corps of Engineers built the John Redmond Dam and Reservoir for flood control, water conservation, recreation, and water supply. However, sediment built up 80 percent faster than anticipated in the pre-NEPA project, requiring the Corps to fix the problem in order to meet its local water supply requirements. During the NEPA process, other agencies discovered that the proposed raising of the conservation pool would inundate hundreds of acres of nearby wildlife refuge areas, posing a risk to both protected wildlife and deer and turkey hunting, and destroy the one of the only local boat ramps to the lake. The Corps was able to work with the state to replace both the ramp and wildlife areas and minimize environmental impacts, and is continuing to work with both local and federal interests to make sure the reservoir meets local needs.

Kentucky

Paris Pike

Kentucky's Paris Pike is a scenic road between Lexington and Paris that runs for 13.5 miles through rolling hills dotted with historic thoroughbred farms. However, its beauty was overshadowed by congestion and safety hazards, such as a lack of passing and turning lanes. The Kentucky Transportation Center (KTC) proposed building a standard four-lane highway but faced opposition from local communities concerned about irreparable harm to the historic corridor's natural landscape. A judge agreed with the communities and instructed KTC to return to the planning process and seek a workable alternative. As a result, KTC and community members decided on a design that fit the aesthetics and contours of the land while minimizing environmental impacts. The new design, which has won national awards, added a shoulder; preserved existing trees, fences, and stone walls; and

installed additional walls and guardrails to increase safety and enhance the highway's aesthetics. The new design also converted a historic farmhouse into a visitors' center, generating tourism dollars for a town that would have lost money if the original project had been implemented. "It has been an immensely successful project," said Cumberland Sierra Club chapter chair Lane Boldman. "It preserved aesthetic integrity while doing what it was supposed to do: increase safety and capacity. It has significantly improved the corridor." Local resident Hank Graddy said the NEPA process was essential, noting that it "brought people and ideas to the table that otherwise would not have been there." Paris Pike represents a true compromise facilitated by the NEPA process: road expansion without accompanying aesthetic and natural destruction.

Louisiana

Bastrop Senior Housing Project

Built in 1927, Bastrop High School is a sprawling, two-story, brick Tudor Revival structure located just outside downtown Bastrop, Louisiana. After serving as an education center for six decades, the building fell into disrepair. Rains from Hurricane Katrina led to roof leaks, causing further deterioration of the historic structure. In 2009, a number of partners including the Department of Housing and Urban Development raised funds to convert the building into 76 affordable-housing units for elderly individuals. The NEPA review process helped identify numerous issues with the historic building that, if left unaddressed, could have endangered the lives of the building's future occupants; these included structural instability, lead-based paint, asbestos, and lead-contaminated water pipes. The final project design incorporated solutions to these problems, ensuring the safety of the senior citizens who would soon call the building home, while

preserving and restoring the building's historic features such as its original redbrick exterior. The project also benefited the community by converting a public nuisance into a facility that locals believe will contribute greatly to the town's downtown redevelopment plan and attract investors to the area, which lost its major employer, International Paper, in 2009.

Maine

Acadia National Park's Park Loop Road

In developing a project to repair damaged culverts and headwalls along Acadia National Park's Park Loop Road in Maine, the National Park Service realized that one of the culverts to be repaired spanned Hunters Brook, a high-quality trout fishery. At this culvert, paving stones had been used to armor the stream bank in the past. However, due to stream movement and erosion over the years, the stones had fallen into the stream channel, causing additional erosion and sedimentation of the trout stream. Through the NEPA scoping process, which included consultation among various state and federal agencies, an alternative emerged that will restore the health of Hunters Brook and the trout that live there while preserving the historic character of the nationally-recognized Park Loop Road. If not for the NEPA and permitting processes, the agencies would have likely just replaced the paving stones, providing a short-term fix that would have required future repairs and done nothing for the fishery. But thanks to this law, the relevant stakeholders developed an innovative approach that will restore the health of the stream in the long term, contribute to the trout fishery, and enhance park visitors' experience.

Umbagog National Wildlife Refuge Final Comprehensive Conservation Plan and EIS

Over the last decade, the economy and landownership patterns of the communities surrounding New Hampshire and Maine's Umbagog National Wildlife Refuge have changed and public access pressures have increased. For this and other reasons, the U.S. Fish and Wildlife Service (FWS) felt it was necessary to develop a master plan for the refuge, which would provide a 15-year strategic guide for conserving land, helping FWS determine how to expand the refuge and where to locate a new refuge headquarters and visitor's center. During the NEPA process for the plan, the community expressed interest in new public uses of the refuge, including dog-sledding, horseback riding, bicycling, and increased boat access, all of which FWS incorporated into the plan. FWS also expanded hunting opportunities on the refuge in response to the public's request to hunt turkeys there. The final plan balances conservation and public use, while also identifying areas for expansion. In 2012, as the refuge moves towards its acreage goal with conservation purchases and easements, refuge manager Paul Casey said, "This project is an excellent example of what can be accomplished through partnerships. By working with the forest industry, private conservation organizations, and the state, we have been able to craft a broad scale conservation effort that meets each of the partners' needs."

Maryland

Maryland Oyster Restoration

When first proposed about a decade ago, it seemed like a promising means to revive the Chesapeake Bay's devastated oyster crop: bring in Chinese oysters, which are impervious to the diseases killing the native stock and also grow faster. If successful, the plan would resurrect an oyster industry that had almost been wiped out. But under NEPA, a major step

such as introducing an alien species into an ecosystem requires a thorough environmental review by the federal government. More than 2,000 comments poured into the U.S. Army Corps of Engineers. Scientists, federal agencies, and other coastal states raised numerous red flags about the Chinese oysters' potential dangers, many of which are irreversible, including harm to the remaining native stock and possible threats to human health. After carefully weighing all the evidence, and considering a number of alternate solutions, the Corps ruled that the Chinese oysters posed "unacceptable ecological risks." Result: a reinvigorated effort to bring back the native oyster species, which so far seems to be paying off. Indeed, fall oyster survey results released by the Maryland Department of Natural Resources in April 2013 showed population and reproduction increases for the second year in a row.

CSX Corp. Transportation Facility

When CSX Corp. wanted to relocate an existing freight container transportation facility in downtown Baltimore to Elkridge, Maryland, it triggered a federal environmental review under NEPA to assess the impact that a new 24/7 operation visited by 300 trucks a day would have on the small city. During the extensive public comment period, Elkridge citizens expressed concern that the facility would be too close to a planned middle school and would undermine their quality of life and the environment. As a result, CSX worked with Maryland Governor Martin O'Malley and Baltimore mayor Stephanie Rawlings-Blake to find a more appropriate site for the facility. In the end, CSX relocated its project to an existing South Baltimore rail yard site that CSX already owns—a plan that has received broad community support and will expand the economic and job-growth potential for the Port of Baltimore, which currently generates more than 14,000 direct jobs and \$5 billion annually. Thanks to NEPA, a more suitable

location was found and between \$50 and \$240 million will be saved.

Massachusetts

Route 146

Route 146 runs through an area of central Massachusetts rich with American history, industrial development, and growing communities. The Federal Highway Administration's \$290 million proposal to transform Route 146 and improve travel would have expanded a section of a two-lane, unlimited-access road into a four-lane divided parkway, modifying major interchanges and bridges in the process. To integrate NEPA principles into the process, the Massachusetts Highway Department (MassDOT) established a Citizens Advisory Committee of local business owners, residents, political leaders, environmental groups, and representatives from federal and state agencies to help inform the final design. The final plan links towns to the highway and the history of the Blackstone River, while enhancing natural and historic resources. For example, the project includes construction of a bike path through the corridor, building preservation, historic bridge restoration, stormwater and wetlands mitigation, and creation of wildlife passages. George Batchelor of MassDOT said the Citizens Advisory Committee was "a meeting of the minds" ensuring that "what was done was done properly." Without the input of citizen groups, the road design would not have addressed the region's historic and environmental resources. Local leaders hope Route 146 will become a renowned historic parkway that will attract tourism.

Michigan

US-23 Improvements

The Michigan Department of Transportation (MDOT) pushed for the construction of a four-lane freeway parallel to the existing two-lane US-23 for close to a decade. The expansion would have rerouted US-23 through undeveloped country in the northeastern part of the state, causing the largest single wetlands loss in Michigan and severely compromising protected wildlife habitat, state and national forestland, coastal wetlands, and the Au Sable River Corridor. Residents opposed the expansion, instead preferring to fix the existing highway by adding passing lanes and making other safety improvements. "Right from the start, that was our whole focus: Fix what we have and don't build a new, billion-dollar freeway," said Paul Bruce, founder of People for US-23 Freeway Alternatives, a citizens' group in Alpena. MDOT issued a draft environmental impact statement in 1995 that considered only two choices: Build the extension or do nothing. Upon discovering this failure to fully analyze alternatives to new construction, the Federal Highway Administration stepped in. It rejected the proposal, directed MDOT to upgrade the existing highway or study the creation of a less-damaging boulevard, and recommended resident-supported alternatives such as the addition of passing lanes and turn lanes and traffic signal upgrades. Kelly Thayer, transportation project coordinator at the Michigan Land Use Institute, said the intervention was a huge success. "NEPA kept alive the public's opportunity to give input," said Thayer. Due to the NEPA process, these communities will be spared the devastating impacts of unneeded and unwanted expansion. And in the end, an eye-popping \$1.5 billion will be saved.

Midland Manufacturing Facility Construction

In 2010, the Department of Energy (DOE) proposed construction of a manufacturing facility for vehicle batteries and hybrid components in Midland, Michigan. Through the NEPA process, the DOE became

increasingly aware of potential safety issues related to dioxin contamination of the soil at the site from past manufacturing activities there. Dioxin can cause reproductive and developmental problems, damage the immune system, interfere with hormones, and cause cancer. As a result, the DOE incorporated measures into their plan to minimize the risk of exposing workers and children at the nearby daycare facility to contaminated soil during construction. These included more rigorous management and monitoring of fugitive dust emissions at certain times, temporary relocation of daycare services on days of exposure, scheduling construction around daycare operations, and temporary enhanced air filtration during construction.

Minnesota

Central Corridor Light Rail

The Central Corridor Light Rail is a 10.9-mile light rail transit line connecting downtown Minneapolis and St. Paul. Running along University Avenue for most of the route, the project includes the construction of 18 new stations and is expected to cost \$1 billion by completion in 2014. In January 2011, the National Association for the Advancement of Colored People (NAACP) filed suit against the U.S. Department of Transportation (DOT) and the Metropolitan Council (the regional transit authority) claiming that the final environmental impact statement for the project was inadequate, in part because it failed to analyze the short-term impact of project construction on surrounding businesses. Specifically, the businesses were concerned with the project's removal of street parking, which would prevent customers from patronizing their stores, negatively affecting their revenues.

In response, the DOT used NEPA to hold town meetings, hearings, and

otherwise engage the community, resulting in a supplemental environmental assessment that suggested a range of mitigation measures to help small businesses affected by construction activities. In total, the Metropolitan Council, City of St. Paul, City of Minneapolis, Metro Transit (the regional transit authority), and contractor committed nearly \$15 million to helping small, local businesses in the corridor cope with the impacts of construction and loss of street parking.

Mississippi

Yazoo Pump

The U.S. Army Corps of Engineers wanted to build the world's largest hydraulic pump so that a handful of large farmers could increase production on lands within Mississippi's Yazoo River floodplain. However, the project would have damaged or destroyed 200,000 acres of wetlands—an area roughly two-thirds the size of the City of Los Angeles—which acts as a natural buffer to storm surges and thus protects communities. The true cost of this ill-conceived proposal revealed by the NEPA review led the George W. Bush Administration to cancel the Yazoo Backwater Pumping Plant project, which would have cost taxpayers \$220 million in order to benefit a select few.

Missouri

Palestine Commons Senior Living Facility

The Department of Housing and Urban Development (HUD) proposed to construct the Palestine Commons Senior Living Facility project—69-units of elderly housing in a three-story structure in Kansas City, Missouri. HUD planned to build the facility on an old petroleum-tank site to contribute to

Kansas City's redevelopment plan and support community revitalization. However, the NEPA process revealed potential soil and groundwater contamination on the site. Thanks to this law, the project plan was modified to include site remediation and thereby protect the facility's future residents.

Montana

U.S. Route 93

Thanks to the NEPA process, a highway project in Montana addressed safety concerns while minimizing damage to a unique cultural landscape. US-93, located north of Missoula in western Montana, saw an increase in traffic fatalities and injuries on a heavily traveled stretch heading toward Glacier National Park. To address concerns, the Montana Department of Transportation (MDT) proposed to widen a 56-mile segment from two lanes to five. This segment runs through the Flathead Indian Reservation, including territory in the heart of the Rocky Mountains—a popular recreational destination—and the Ninepipe Wetlands Area, which supports unique and fragile wildlife species. NEPA gave the Confederated Salish and Kootenai Tribal Government and citizen groups an opportunity to participate in the project design process. MDT looked for creative solutions and considered alternatives for the highway mitigated impacts on tribal culture, family farms, and the environment. The final design successfully addressed safety, environmental, and cultural concerns. Slow curves in the roadway were planned along the most scenic areas to discourage speeding and follow the contour of the land. One mile of the highway was relocated around the Ninepipe Wetlands area, and wildlife crossings and fencing were added at the request of the Tribes to make the roads safer for commuters and wildlife.

Blindhorse Outstanding Natural Area

In early 2004, the Bureau of Land Management (BLM) began reviewing proposals for new drilling permits on several existing leases located on public lands in the heart of Montana's Rocky Mountain Front, spurring public outcry. During the public participation process mandated by NEPA, 99% of the more than 49,000 comments received by the BLM urged the agency to halt the drilling proposal. Those opposing the project included 45 state hunter and angler groups from around the nation who sign a resolution calling for a moratorium on oil and gas drilling on Montana's Rocky Mountain Front; a bipartisan coalition of sportsmen, ranchers, local business owners, public officials, and conservationists working to protect the front; and Senators Baucus (D-MT) and Burns (R-MT). In response to the widespread opposition, BLM stopped the environmental review process. This decision removed the immediate threat of drilling on the Rocky Mountain Front and fostered a realistic discussion of a lease buy-out and permanent protection of the Front as wilderness. Mary Sexton, a Teton County Commissioner said, "[t]he strong public support for the Front, questionable benefit of drilling, and limited natural gas resource available along the Front all lead to this sensible step to halt the permitting process. Now the door is open for people to work together...to find resolution to this contentious issue through a lease buy-out or swap that is fair to everyone."

"This decision will help protect our tradition of ranching, farming and working along the Rocky Mountain Front," said rancher Karl Rappold. "We have the opportunity to protect the Front—both for today and for our grandchildren. It's important that we don't let this moment slip away, and we're looking to Congress for initiative, leadership and creative solutions to complete the job and protect this important part of Montana's heritage."

Nevada

Hoover Dam Bypass

The Federal Highway Administration (FHWA) developed the 3.5-mile Hoover Dam Bypass project, which would stretch from Clark County, Nevada, across the Colorado River to Mojave County, Arizona, to address increased congestion at the Hoover Dam crossing. However, the environmental impact statement for the project failed to explore an adequate variety of options. Project manager Dave Zanetell admitted as much, stating that the FHWA had "grossly underestimated some of the alternatives and too quickly dismissed them." To ensure full NEPA compliance, Zanetell's team more thoroughly researched an alternative proposed by environmental groups and added some important features to the project in response to public comments. In its final form, the bypass, which opened in October 2012, runs closer to developed areas instead of cutting through pristine corridors; it also includes accommodations such as sidewalks, pedestrian facilities, and parking to enable pedestrian access. "Oftentimes the public is a huge influence on the project. NEPA is certainly the foundation for public participation," said Zanetell. "We don't look at it as a burden; it is something we relish," he added.

Nellis Solar Power Plant

In response to increasing oil prices, the Air Force decided to construct a solar plant at Nellis Air Force Base. The plant would be the largest yet built in North America and would meet 30 percent of the base's energy needs. Under the NEPA process, the Air Force conducted an Environmental Assessment (EA). Because the facility would be partially built on a former landfill site, the EA prescribed measures to be taken during construction to prevent contamination, but the project did not present any problems and

the Air Force issued a Finding of No Significant Impact (FONSI). The facility was completed in 2007 and exceeded expectations in its first year, generating 8 percent more power than anticipated and saving the Air Force an additional \$1.2 million in energy costs. In fact, the project was so successful that the Air Force is currently considering the construction of a second solar array in the area that would include renewable energy storage.

New Hampshire

Highway 93

The proposal to double—from a total of four lanes, to a total of eight lanes—the highway capacity of Interstate 93 between the NH/MA border and Manchester, NH raised numerous issues. Concerns related to the project ranged from water pollution, to the inducement of yet further traffic demand and traffic congestion, to the inducement of sprawl development. Thanks to NEPA, the final project addressed many of these concerns. Instead of adding two additional lanes in each direction, the project is proceeding incrementally, adding one lane in each direction to accommodate traffic demand and to reduce water pollution problems associated with chlorides. The project also included the creation of the I-93 Interagency Task Force on Travel Demand Management, which is working to identify and develop measures to reduce traffic, thereby maximizing the capacity of the project to achieve a more economically and environmentally sustainable result.

Umbagog National Wildlife Refuge Final Comprehensive Conservation Plan and EIS

Over the last decade, the economy and landownership patterns of the

communities surrounding New Hampshire and Maine's Umbagog National Wildlife Refuge have changed and public access pressures have increased. For this and other reasons, the U.S. Fish and Wildlife Service (FWS) felt it was necessary to develop a master plan for the refuge, which would provide a 15-year strategic guide for conserving land, helping FWS determine how to expand the refuge and where to locate a new refuge headquarters and visitor's center. During the NEPA process for the plan, the community expressed interest in new public uses of the refuge, including dog-sledding, horseback riding, bicycling, and increased boat access, all of which FWS incorporated into the plan. FWS also expanded hunting opportunities on the refuge in response to the public's request to hunt turkeys there. The final plan balances conservation and public use, while also identifying areas for expansion. In 2012, as the refuge moves towards its acreage goal with conservation purchases and easements, refuge manager Paul Casey said, "This project is an excellent example of what can be accomplished through partnerships. By working with the forest industry, private conservation organizations, and the state, we have been able to craft a broad scale conservation effort that meets each of the partners' needs."

New Jersey

Route 52

The Route 52 causeway between Ocean City and Somers Point, first built in the 1930's, faced restricted lane and speed usage as it fell into disrepair, and the lack of shoulders posed a safety hazard to motorists. New Jersey and the Federal Highway Administration sought to rebuild the route to better serve the area. Thanks to input from area residents and other federal agencies during the NEPA process, the final environmental impact

statement identified an alternative that minimized the route's environmental and socioeconomic impacts. For example, the final project avoided potentially extensive dredging and damage to wetlands as well as extensive property takings and changes in land usage. New bike paths, walking trails, and boat ramps are part of the causeway and mitigation measures were taken to account for the limited dredging and wetlands loss. Construction was finished in 2012.

New Mexico

Solar PEIS

The Solar Programmatic Environmental Impact Statement (PEIS) was prepared by the U.S. Department of Energy (DOE) and the U.S. Department of the Interior (DOI) to assess environmental impacts associated with the development and implementation of environmentally responsible solar energy development in six western states, including New Mexico. The BLM and the DOE identified a need to respond in a more efficient and effective manner to the high-interest in utility-scale solar energy development (in particular development to be sited on public lands), and to ensure consistent application of measures to avoid, minimize, or mitigate the adverse impacts of such development. The process of developing this PEIS uses the NEPA process to select areas with low natural resource values, high solar potential, and needed infrastructure that are suitable for development. By guiding projects to appropriate zones, the agencies ensure that solar projects are built faster, cheaper, and better for the environment, developers, and consumers.

Fence Lake Mine

In 1996, the Bureau of Land Management (BLM) granted an Arizona utility

company a permit to mine coal on federal land near New Mexico's Zuni Salt Lake—a shallow, briny lake sacred to the Zuni, Hopi, Acoma, Laguna, Apache, and Ramah Navajo tribes. Zuni Salt Lake is the home of the deity Salt Mother, and the area surrounding the lake is a sanctuary zone where warring tribes have met since ancient times without conflict to collect salt from the lake in reverence of Salt Mother. However, the mining permit would have allowed the utility company to pump water from underground aquifers that feed Zuni Salt Lake to use at the proposed Fence Lake Mine, thereby significantly depleting the lake's water levels. Due to the environmental and tribal impacts, environmentalists and Native American groups voiced concerns through NEPA's commenting process. In response, BLM issued a hydrological study that determined Zuni Salt Lake would not be impacted by the mine, but the Zuni leadership commissioned their own study showing that the loss of water in the lake would be significant—about four feet of the five-foot deep lake. In the end, the utility company scrapped the Fence Lake Mine plans and decided to instead mine lower-sulfur coal from already-operating mines in Wyoming. Because of NEPA, groups were able to voice concerns that resulted in the preservation of priceless Native American cultural and religious sites, and prevented disruption to the local environment and habitat loss. Additionally, the utility saved money and minimized impacts by using an existing coal mine. In a statement before a Congressional committee, Calbert Seciwa, a member of the Zuni tribe, stated that "[w]ithout NEPA, the membership of the [Zuni Salt Lake] Coalition, affected Tribal Governments, organizations and individuals, Native and Non Native, would have been largely powerless to play any productive role in the decisionmaking process regarding this area of sacred land."

New York

Tappan Zee Bridge Replacement

The Tappan Zee Bridge Replacement project in Westchester County, New York is a good example of efficiency through NEPA. The bridge serves about 138,000 vehicles a day, and represents a vital link in the regional and national transportation network. Large and complex projects can require as many as four years or more for review, but through a coordinated effort by numerous State and Federal agencies, this project team was able to set an aggressive schedule completing the Federal permitting and requisite NEPA review in 1.5 years, saving up to three years on the timeline of a multi-billion project expected to create an estimated 45,000 jobs.

North Carolina

Monroe Bypass

In 2012, the state of North Carolina led an environmental review of the proposed Monroe Bypass—a four lane toll road with nine interchanges, concluding that the area around the proposed toll road was already so developed that the new highway would have "no appreciable environmental impact." The 4th Circuit U.S. Circuit Court of Appeals disagreed, finding that the agency failed to analyze environmental impacts, conducted a flawed analysis of alternatives, and presented false and misleading information to the public. The Court found that the agencies had even ignored their own study concluding that congestion could be greatly reduced by improving the existing intersections along the U.S. 74 corridor for only \$15 million—far below the proposed new bypass's \$700 million price tag.

South Toe River

One of the most-valued aspects of our national forests are the outstanding

fishing streams they provide. So, when local anglers caught wind of a proposed project re-routing a portion of North Carolina's South Toe River, they were understandably concerned. The NEPA process gave them and other locals concerned with the proposed project's potential impacts on the river's water quality and prize trout fishing a chance to ask for alternatives. In response, the Forest Service withdrew the original proposal and is currently considering options that will preserve the sportsmens' use of the river for recreational fishing.

Interstate 26

Many local leaders, officials, and citizens questioned the size and scope of a proposed Interstate 26 highway-widening project, especially the proposed 8- to 10-lane section through the heart of West Asheville, North Carolina. It was only through NEPA's public disclosure and review process that the community learned the Federal Highway Administration (FHWA) had wildly overstated highway accident rates in order to justify the project's first phase. On top of that, they actually found that the first phase would exacerbate—rather than alleviate—traffic congestion. A federal district court ultimately ruled that NEPA required the FHWA to reassess the project with accurate data and take a comprehensive new look at the overall plan. NEPA ensured sensible and informed decision making rather than a piecemeal and misinformed approach to a project that will have significant and long-term impacts on Asheville and western North Carolina.

Triangle Transit Authority Light Rail Proposal

Fast-paced growth in Wake and Durham counties' Research Triangle region has led to traffic congestion and air quality problems in the area. This, in turn, resulted in the area's designation as a nonattainment area for ground-level ozone standards. While the Triangle Transit Authority ("TTA")

increased bus service, ride sharing, and vanpooling, it knew that it also needed to increase Amtrak accessibility for residents to fully address the area's air quality problems. To this end, TTA developed a light rail proposal to connect Raleigh, Durham, and Chapel Hill. TTA completely integrated its planning functions, public outreach, and NEPA compliance, creating a model of transparency and proactive decisionmaking. For example, they produced common English materials explaining NEPA's scoping process. They also met with citizens in public workshops held as open houses. These steps encouraged robust discussion and greatly boosted public participation and confidence in the results of the process.

North Dakota

U.S. Highway #2 Minot to Williston

Conducting Tribal consultations early and effectively in the NEPA process has many benefits including the protection of culturally valuable sites and avoiding litigation that can occur when these sites are overlooked. In the initial design phase of U.S. Highway #2 Minot to Williston, North Dakota Department of Transportation (NDDOT), as prescribed by NEPA, discussed the project extensively with five potentially affected Tribes, which requested that NDDOT work with a chosen representative—Sam Little Owl—to determine the project's impacts on their cultural sites. NDDOT took Mr. Little Owl to each site and recorded his interpretations and discussions of the cultural importance of each. With Mr. Little Owl's permission, the recording was transcribed and non-sensitive information was later summarized for the NEPA document, helping shape the final project design.

Ohio

U.S. 33 Nelsonville Bypass

The U.S. 33 Nelsonville Bypass was the last of four segments required to connect I-77 (Ravenswood, West Virginia) to I-70 (Columbus, Ohio). Around half of the highway's 8.5 miles would bisect Wayne National Forest—Ohio's only National Forest—which provides over 300 miles of trails for hiking, horseback riding, off-road vehicles, and mountain biking. The NEPA process helped mitigate the impacts of project construction in many ways. For example, the final project included tree and grass planting along the sides of the highway for erosion control and native plant restoration and fencing to prevent deer from coming onto the highway. It filled 500,000 cubic yards of newly discovered abandoned underground mines near the highway to prevent car slippage. And, to top it all off, the final plan resulted in the creation of 5.1 miles of new ATV trails to make up for the temporary loss of trails from highway construction.

Oregon

Columbia River Crossing

From 2008 through 2012, the Federal Highway Administration and Federal Transit Administration developed an environmental impact statement (EIS) for a large and complex project to replace a bridge in Portland, Oregon. To build the superstructure for the new bridge, the project required installation of more than 1,000 temporary steel piles, which could injure or kill the 13 threatened and endangered fish species, including salmon and smelt, that used the river as a migratory corridor. Working closely with regulatory agencies as part of the NEPA process, the project team developed a method for reducing the impacts of underwater noise levels caused by installation of the steel piles to fish by using a "bubble curtain" (i.e., wall of air bubbles). This innovative technology reduced the project

impacts to fish so drastically that state regulators granted a 12-week extension for in-water work, which allowed construction to be completed several years earlier than it would have otherwise been. As a result, the project received both the National Association of Environmental Professionals (NAEP) Best Available Environmental Technology Award and the NEPA Excellence Award for an outstanding EIS.

Wyeth Treaty Fishing Access Site

The Wyeth Treaty Fishing Access Site project was a plan to increase access to fishing sites on the Columbia River, in Oregon, by building rock and cement groins from which people could fish. The NEPA process fostered cooperation between the Oregon Department of Agriculture and the Fish and Wildlife Service, resulting in a project that was not only less costly but also larger, therefore providing greater public benefit. The NEPA process also helped identify and minimize the project's potential negative impacts on the environment. For example, the groins were redesigned to allow fish passage, and the project footprint was reduced to minimize impacts to river-bottom habitat.

Gifford Pinchot National Forest

A massive timber sale proposed for Oregon's Gifford Pinchot National Forest, stalled by controversy over impacts on sensitive forest habitat, was entirely rethought as a result of the NEPA process. A coalition of environmentalists, the timber industry, labor representatives, and local citizens worked together to develop a plan to use timber harvesting to restore—instead of destroy—the forest's natural ecosystem. Instead of clearcutting, the new proposal, which the Forest Service adopted and is currently implementing, focuses on thinning dense stands of Douglas fir (the result of previous clearcutting) to re-create a more natural, diverse

forest structure while still yielding 5.2 million board feet of commercial timber.

Skeleton Mountain Timber Sale

In 2012, the Bureau of Land Management (BLM) proposed a timber sale from Oregon's Butte Falls Resource Area. However, during NEPA's public comment process, locals expressed concerns about the sale's impacts—mainly on old forest stands along the Rogue-Umpqua Divide Wilderness and the area's watersheds, including Evans Creek. In response, BLM agreed to modify the timber sale by, among other measures, replacing logging slated for older native forests with an equal amount from younger denser stands, decommissioning excess logging roads, and avoiding new road construction on sensitive soils to protect the watershed and minimize impacts to Coho salmon. These modifications resolved many objections and the project was implemented to widespread public acclaim.

Heceta Shores Stabilization Project

The Forest Service proposed to construct a 325-foot streambank stabilization structure—mainly out of boulders—on the bank of Sutton Creek in the Siuslaw National Forest to prevent erosion. However, comments submitted through the NEPA process revealed that hardened structures built to prevent erosion often did the opposite by preventing the beach from replenishing itself. Comments also revealed that such structures often interfered with the public's access to and use of the beaches and river banks on which they are constructed—for example, by shortening the length of the beach. After listening to the public's information and concerns, the Forest Service expanded its environmental review and redesigned the project. Most importantly, they replaced the hard engineered boulders originally proposed to prevent erosion with "soft"

erosion protection structures like sand bags and logs, thereby maintaining the beach's ability to regrow, better protecting the stream's water quality, providing more public access to the area, and minimizing the project's visual impact.

Modoc Restoration Project

Fremont Winema National Forest's Yamsay Mountain is a culturally important feature of eastern Oregon. Not only is the snow-covered mountain majestic, but it is also central to the mythology of the Klamath people. So folks were concerned when the Forest Service's Modoc Restoration Project proposed an aggressive treatment of white fir, which would have resulted in virtual clearcuts on Yamsay Mountain. Fortunately, through the NEPA process, conservationists were able to convince the Forest Service to modify the heavy-handed treatments to culture individual legacy trees and thin the white fir on about 252 acres of the project.

Pennsylvania

PA Turnpike/ I-95 Interchange Proejct

The NEPA process for the PA Turnpike/I-95 Interchange Project, which will close the "gap" in I-95, minimized local and environmental impacts with local and governmental support. Issues of potential impact to historical sites, demands of the construction process, and water or other environmental features led to the development of a thorough monitoring and mitigation plan implemented in the planning and construction of the interchange. There was significant public involvement in the planning process, and testimony and comments received at the Public Hearing, written comments received on the Draft EIS during the comment period, and written comments received on the Final EIS were part of shaping the

project. Public participation helped choose an alternative with the lowest environmental impact, the lowest number of business and residential displacements, and the most support from public officials and the general public.

Puerto Rico

El Yunque Rainforest Preserve

At under 30,000 acres, El Yunque (also known as the "Caribbean National Forest") is our country's smallest national forest, as well as the only tropical rainforest in the national forest system. For Puertoricaños, El Yunque is a cultural jewel, largely because of the unique rock engravings made by their ancestors—the Taino people. So, the community was understandably upset when the Federal Highway Administration (FHWA) proposed to slice the preserve in half to rebuild a road long-closed due to massive landslides. Ignoring endangered species, increased slide risks, drinking water impacts, and requests from federal and local agencies, FHWA decided not to conduct an environmental impact statement (EIS). When a court found that this violated NEPA, FHWA dropped the project rather than study and disclose all of its impacts. Today, the rainforest is intact and the drive around it to the new Forest Service recreation area on its far side takes a mere 25 minutes on existing roads.

Rhode Island

Route 403

In order to alleviate congestion, the Rhode Island Department of Transportation (RIDOT) proposed relocating Route 403—a two-lane road through residential North Kingstown—and building a new four-lane

highway. In accordance with NEPA, RIDOT considered alternatives to its original plan, involving the public early in the design process. The NEPA process resulted in modifications to the original plan suggested by local citizens that the RIDOT would not have otherwise thought of, including a reduction in acreage that lessened damage to wetlands. "The people that live [in the affected area] know more than I do," said said Peter Healey, Principal Civil Engineer for RIDOT. He explained that a key benefit of public involvement was giving a voice to those who will be regular users of a project. "NEPA played a vital role in balancing [...] views," Healey said. The idea behind NEPA is to, "make a concept available to the public. [...] You can't make all parties happy, but you can certainly balance their interests....The public wants to help you make a project better."

Providence Community Health Center

Rhode Island's Providence Community Health Center needed additional space for service delivery and ancillary programs at its facility in South Providence, an economically depressed area of the state. The health center chose the abandoned Federated Lithographers complex for this project due to its proximity to the center's existing facilities. In considering this important brownfield redevelopment project, the NEPA process helped the Department of Health and Human Services (HHS) uncover the existence of potential residual contaminants from lithography chemicals and underground tanks left by the site's former inhabitants. As a result of this finding, HHS worked with the Environmental Protection Agency and the Rhode Island Department of Environmental Quality to ensure that the plan for the site included measures necessary to protect the health of construction workers and, eventually, the health center's staff and patients. In the end, the project was constructed in a way that not only protected its occupants from dangerous chemicals, but also contributed to the

development of one of the most economically distressed neighborhoods in Providence.

South Carolina

Savannah River Site

Built during the 1950's, to refine nuclear materials for deployment in nuclear weapons, the Department of Energy's (DOE) Savannah River Site covers 340 square miles of land in South Carolina. Past disposal practices of contaminants such as radioactive waste, arsenic, lead, mercury, and plutonium, have caused significant site contamination, leading DOE and the South Carolina Department of Health and Environmental Control to consider the site the greatest human health risk in South Carolina. Thanks to NEPA's scoping process, DOE has taken a comprehensive approach to the cleanup process that has employed groundbreaking technologies to increase the effectiveness of cleanup efforts and reduce risk. The Environmental Assessment analyzed the waste streams of both low-level and mixed low level radioactive wastes for the past, current, and anticipated scope of work, and all potential government and commercial waste facility destinations. This resulted in solutions that were much more cost and time efficient, and limited the expected transportation impacts over the long term in the surrounding communities. For example, DOE has immobilized contamination with impermeable clay caps to save money while minimizing potential impacts on worker health and safety and reseeded damaged portions of some areas of the site with native vegetation. While cleanup of the site still has a long way to go before it is no longer considered a threat to human health, NEPA has helped ensure the federal government uses the most effective methods available.

South Dakota

PrairieWinds Project

The PrairieWinds Project is the largest wind project owned solely by a cooperative. Basin Electric proposed the wind farm as part of its initiative to supply 10% of its generating capacity from renewable sources. The project includes 108 turbines that supply 162 megawatts of electricity. Through the NEPA analysis, the U.S. Department of Agriculture and Department of Energy minimized both environmental impacts, such as wetland degradation and potential avian hazards, and local disturbances, such as noise. Further, they structured the project so that the turbines are located on leased farmland, 98% of which is still being used for farming. And that's not the only economic benefit this project has contributed to the area! Indeed, the wind farm will provide \$3.1 million to the Tri-Central Schools Fund and \$400,000 in tax revenue to support the cumulative capital development fund and local fire fund. Construction was completed in 2012 and it currently operational; Basin Electric now draws 12% of its energy capacity from renewable sources.

Tennessee

Oak Ridge National Laboratory Cleanup

To accelerate the cleanup work at the Oak Ridge National Laboratory, the Department of Energy (DOE) submitted plans to build the Transuranic Waste Processing Center (TWPC). While drafting the project's environmental impact statement (EIS) required by NEPA, DOE discovered that it would need to further treat the radioactive waste processed by the TWPC to reduce the risk of human and environmental exposure to radioactive waste and ensure that all parts of the processing facility are

placed outside the 500 year floodplain. The EIS also suggested a number of best management practices to ensure that the project would not adversely impact nearby fragile wetlands. Along with protecting the wetlands, the NEPA process made the public aware of the alternatives that DOE was considering, and resulted in \$500 million saved.

Texas

Bolivar Beneficial Use Marsh

Historically, deep-draft channel dredged materials had been dumped into unconfined placement areas in Galveston Bay, adversely affecting fish habitat. While going through the NEPA process to create a 200-acre Bolivar Beneficial Use Marsh in the bay, the Army Corps of Engineers worked with other agencies to form the Beneficial Use Group. The group devised a plan that addressed the problems that result from dumping dredged material into the bay while brainstorming creative ways to enhance the existing bay ecosystem. Having identified the loss of intertidal marsh as a critical problem in the Galveston Bay estuary, the Beneficial Use Group decided to use dredged materials to create intertidal marsh and nesting islands for colonial water birds, resulting in a better, smarter, more functional project for the Corps, the community, and the environment.

Utah

Timpanogos Cave National Monument Visitor Center

Since the visitor center at Utah's Timpanogos Cave National Monument burned down in 1991, staff have been working out of a double-wide trailer. Not only was the visitor center inadequate in terms of space, but it was also located in a dangerous rock-fall zone. For this reason, the National Park

Service proposed to build a new facility. The NEPA analysis included comments from experts who estimated the average size, frequency, and velocity of rock falls in the area. Their input revealed that the hazards from rock falls was much greater than originally thought and allowed the Park Service to identify where such falls were most likely. As a result, the National Park Service was able to site the visitor center in an area that will maximize visitor and staff safety.

Virginia

Route 50 Traffic Improvements

The segment of Route 50 passing through the Virginia towns of Aldie, Middleburg, and Upperville in the foothills of the Blue Ridge Mountains is a classic example of a traditional small-town main street. It was never a major truck or commuter route. However, it began to suffer from problems of speeding, aggressive driving, and congestion during rush hours at one particular intersection. Virginia's Department of Transportation (VDOT) came up with a conventional solution: expand the road into a four-lane divided highway with bypasses around the small towns. The citizens, however, had a different vision. They seized the opportunity for public involvement afforded by the NEPA process and ran with it, creating a coalition to seek alternatives to the plan. The coalition found that a four-lane highway would only increase speeding and local businesses would suffer if bypasses redirected traffic around the towns. So they came up with an alternative plan that would solve the roadway's problems, promote local businesses, protect the area's rural and historic character, and cost much less than conventional highway expansion. Instead of a wider road that bypassed the town, the solution included entranceway features at the edges of the towns, planted medians, raised intersections, changes in

pavement for parking areas, and guardrails made from natural materials. In addition to their aesthetic advantages, these additions will reduce speeding and promote pedestrian safety. VDOT approved this design in 2003 and is now implementing it through a partnership with the local communities and local government. In the end, NEPA delivered an innovative, less expensive solution that can be, as coalition member Susan Von Wagoner said, "a model for the nation."

Onley Community Health Center

The Department of Agriculture granted money to Eastern Shore Rural Health Systems to build the Onley Community Health Center in Onley, Virginia, as part of its Rural Community Facilities Program. However, the proposed construction, which included a new medical building, parking, and infrastructure, was located within an aquifer that supplies more than 50 percent of the surrounding community's water needs. As a result of the NEPA process, the Environmental Protection Agency reviewed the project proposal and suggested modifications to address potential groundwater contamination, and these changes were incorporated into the project. For example, the local Soil and Water Conservation District planted native vegetation on facility grounds to create a healing garden for patients and their families that acts as a natural filter for runoff from the facility, thereby reducing the risk of groundwater contamination.

Washington

Huckleberry Land Exchange

Under the proposed Huckleberry Land Exchange, the U.S. Forest Service would trade nearly 7,000 acres of mature and old-growth forest in Washington's Mt. Baker-Snoqualmie National Forest, including a portion of

the Muckleshoot Tribe's historic Huckleberry Divide Trail, for about 30,000 acres of high-elevation land held by Weyerhaeuser Timber Company. Citizen groups and the Muckleshoot Indian Tribe challenged this proposal. The court found that the Forest Service violated NEPA by failing to consider an adequate range of alternatives and by neglecting to analyze the cumulative impacts of the proposed exchange. As a result, the Forest Service improved their analysis and altered their plans for carrying out the exchange. Ultimately, the Huckleberry Land Exchange went forward with a better design that protected old-growth forest and culturally and recreationally important public lands.

West Virginia

Mingo-Logan Coal Spruce No. 1

The environmental impact statement (EIS) developed under NEPA for Mingo-Logan Coal's Spruce No. 1 mine exposed the project's devastating impacts on the surrounding community. Indeed, after extensive scientific study, a major public hearing in West Virginia, and more than 50,000 public comments, it became clear that the environmental repercussions of disposing mining waste into surrounding streams would be so great that alternatives must be explored.

Wisconsin

Highway 26 Bypass

Highway 26 is a regional road that runs through southcentral Wisconsin, connecting Illinois to Wisconsin's Fox River Valley. To address increasing traffic from trucks and regional drivers on the road, Wisconsin's Department of Transportation (WisDOT) proposed the construction of a

bypass. NEPA provided the opportunity for stakeholders to engage in discussions about the project development. "NEPA forces us into providing alternatives that are representative of the interests from all agencies involved," said James Oeth, WisDOT project manager. As stipulated by NEPA, several alternatives were selected, studied in detail, and made available for public comment. "Without NEPA, we would have just asked what the shortest distance was and built the road through there," said Oeth.

The final decision created a route with the least impact and disruption to the community. For example, while the original route would have plowed through Ed McFarland's dairy farm, which sits west of Watertown, the final plan navigated around it. "Public involvement helped us...the less land we lose, the better," said McFarland. Additionally, under the final plan, the bypass skirted the community's urban service area, instead of destroying pristine land. While not all of the community's major requests were accommodated, residents appreciated the opportunity to be involved in the process. "I believe NEPA allowed for these alterations to take place," said Andy Didion, a Jefferson resident. "The DOT is getting much better and realizing this affects people's lives." "We talked out problems and came up with solutions that were agreeable to most participants," stated Greg David, a Jefferson County Supervisor. "The NEPA process has saved us a lot of money, and mitigated many of the externalized consequences of a freeway expansion project."

Wyoming

Clark River Seismic Survey

In 2004, Windsor Wyoming Inc. proposed a seismic survey on land owned

by the Bureau of Land Management (BLM), the Forest Service, and private landowners. The environmental analysis called for the drilling of 3,420 seismic shot holes in a 47-mile area surrounding Wyoming's Clark River—the state's only designated Wild and Scenic River. Under the proposal, explosive charges would be fired into the holes to create a 3-D picture of the area's available resources. After reviewing the draft plan, nearby private property owners represented by Powder River Basin Resources Council—a bipartisan community group—noted that it failed to consider how these explosions would affect scarce water resources, elk and other game species, hunting opportunities, Native American historical sites, and private property values. This public input led BLM to re-examine the draft plan and consider the use of a new survey technology called "passive seismic" that would mitigate the damaging effects of the explosive charges. In the end, thanks to NEPA, private property owners, land managers, and industry achieved a seismic exploration plan that protected game species, Tribal sites, private property rights, and critical water resources.

Bridger-Teton National Forest Off-Highway Vehicle Route Designation Project

In January 2009, the Forest Service developed a plan to better balance conflicting uses of Wyoming's Bridger-Teton National Forest. The plan designated roads and trails for Off-Highway Vehicles (OHVs) to reduce conflicts between the area's multiple users, reduce resource impacts, and improve route maintenance while allowing for effective enforcement. After conducting an environmental analysis for the project and listening to public comments, as required under NEPA, District Rangers decided to implement a modified plan that addressed concerns from local business owners, citizens, and environmental organizations. The final plan better defined the trail system as a whole, benefitting the environment and individuals using

the park for non-OHV activities, as well as OHV enthusiasts. As Bob Hatton, owner of Bob's Quads—a local ATV service and repair shop—stated, "I can't really see a downside to it. The last thing I want to see is off-highway vehicles running all over the place. I want to be able to go up the Gros Ventre and hike and enjoy the wilderness as well as motorized travel...not to mention the wildlife. Just having an organized trails system with this much research, it's hard to find fault with that." The OHV trails were sited to avoid ecologically-important areas like Wilderness Study Areas, roadless areas, and critical wildlife habitat. Thanks to open communication with the public and the Forest Service's willingness to look at impacted resources and the sustainability of the system as a whole, the project struck a remarkable balance between the area's multiple attributes and users.

Bighorn National Forest Babione Vegetation Management Project

The Forest Service's Babione Vegetation Management Project in Bighorn National Forest, Wyoming, was designed to reduce hazardous fuels—accumulated dry brush and dead trees that increase the likelihood of large wildland fires—and restore forest health through various means such as cutting and prescribed burns. However, private landowners adjacent to the project were concerned that increased access to the area necessary to perform these activities would lead to trespassers on their land. Thanks to NEPA, the landowners were able to express their concerns to the Forest Service and, in response, the agency incorporated several design elements into the project to address this issue, such as the erection of gates at key access points.

DOWNLOADS

EXHIBIT 5

Examples of Benefits from the NEPA Process for ARRA Funded Activities

May 2011

In addition to reporting results, this report explores benefits resulting from the NEPA process for ARRA funded activities. Managers who use the NEPA process to holistically consider environmental issues and requirements find that the NEPA process helps them with program and project delivery in addition to improving environmental performance.

Managers are in a better position to determine how best to implement their programs and projects by considering alternatives for meeting program needs, policy objectives, and environmental requirements. They use the NEPA process to compare the relative benefits and tradeoffs associated with the alternative ways in which they can implement the projects and activities. The NEPA process was designed to allow Federal agencies to do more than “check the box” showing that they had complied with the law. The CEQ regulations set out the principle enshrined in NEPA over 40 years ago:

...it is not better documents but better decisions that count. NEPA's purpose is not to generate paperwork – even excellent paperwork – but to foster excellent action. The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment. (40 C.F.R. § 1500.1).

The following examples show how managers improved project performance, operationally and environmentally, and reached better outcomes. They provide an illustrative sampling of agency environmental reviews that have resulted in taxpayer dollars and energy saved, resources better protected, and the fostering of community agreements. Several agencies reported that a well run NEPA process improved working relationships with regulatory agencies and thereby contributed to better cooperation, which facilitated project delivery and implementation. These benefits were gained while expeditiously completing NEPA reviews for the ARRA funded projects.

a. Department of Agriculture:

While completing the Environmental Assessment for the NRCS's Calaveras Creek Watershed Rehabilitation Project to repair structural components of a dam in Texas, a prehistoric bedrock mortar cultural feature was identified. If the site had not been properly surveyed and analyzed during the NEPA process, the cultural feature may not have been discovered and documented. The feature is unique in that no other bedrock mortars are known in this area of Texas. Design measures are planned to avoid adverse effects to the feature by covering it with appropriate protective fill material.

The NRCS's Gering Valley Watershed Operations Project in Nebraska is a watershed operations project which is installing a drain system for an existing dam. The original dam was built before NEPA became law; therefore, not all of the environmental

resource concerns were identified. Based on the analysis completed for NEPA, NRCS opted not to select the original planned alternative that had design features that would have affected natural prairie resources in the project area and potentially impacted the visual aesthetics for the adjacent Scott's Bluff National Monument viewshed. Instead, another alternative analyzed in the EA that avoids those specific natural prairie resources and addresses the landscape/viewshed concerns will be selected. Thus, this project has benefited from the NEPA process by identifying the need to protect native prairie areas as well as protecting scenic beauty and visual aesthetics for the Scott's Bluff National Monument.

During the NEPA review of the Carolina Mountain Land Conservancy ARRA-Floodplain Easement project in Henderson County, North Carolina, NRCS consultation with the U.S. Fish and Wildlife Service (FWS) resulted in a collaborative partnership with FWS and other funders to restore, enhance and protect recovery habitat for federally listed endangered Bunched Arrowhead (*Sagittaria fasciculata*), a small plant that inhabits early succession saturated wetlands. A restoration design is being produced to provide appropriate hydrologic regimes and light levels to restore and expand habitat for the rare plant. An existing colony of Bunched Arrowhead has been temporarily removed from the site for conservation while the floodplain and wetland are restored. When restoration is completed, the Bunched Arrowhead will be re-introduced to the site.

The Forest Service Butler II/Slide Post-Fire Fuels Reduction Project in the San Bernardino Forest, California, is a vegetation management project designed to protect adjacent communities from the risk of future high-intensity wildfire and provide a safe environment for work crews. Two organizations objected to the project as designed. During the EA process, the forest met with the groups and found resolution. Both groups were also brought into the implementation monitoring to ensure their concerns were addressed.

The Environmental Impact Statement prepared by the Forest Service for the Lakeview-Reeder Roads project in Idaho, analyzed road maintenance reconstruction and new road construction in an area where the endangered boreal toad species exists. The project was intended to improve fish passage and reduce sedimentation in the area. Through public review of the draft EIS, a public comment identified a discrepancy regarding a buffer zone for the protection of the boreal toad. The road was redesigned to provide an adequate buffer to protect the species.

The Forest Service Babione Vegetation Management Project in Bighorn National Forest, Wyoming, was designed to conduct various vegetation treatments to reduce hazardous fuels and restore forest health. Through the public involvement process the agency worked with adjacent landowners to address concerns that on-the-ground activities could lead to increased trespass on their private land. In order to alleviate this concern and still meet the project's purpose several design elements were incorporated to address the landowners concerns.

The analysis of access and travel management in the Tongass National Forest, Sitka Ranger District assisted the Forest Service in determining how the road system on the Sitka Ranger District will be managed. The NEPA process revealed that many local residents favored leaving all or nearly all roads open, while a number of residents favored closing roads to protect water quality, fish habitat, and old-growth forest reserves. In considering the competing positions, the responsible official determined that hard choices had to be made. The Ranger closed roads where use would have unacceptable impacts on resources and left open roads where use would have no or limited impacts. The ranger district will pursue partnerships to facilitate improved access, including adopt-a-road agreements to maintain roads.

The Forest Service funded a Roan Mountain, North Carolina Facilities Maintenance project to repave existing trails, a parking area, and an access road. During the scoping process individuals requested the use of porous pavement be considered to reduce rain runoff. The use of porous pavement requires a 47 inch minimum clearance from the bottom of the paved surface to bedrock and in response to the scoping comments studies found the bedrock at the site is 6-12 inches below the surface. The NEPA process allowed the public to better understand why an alternative action that appeared to be environmentally friendly was not pursued.

The Forest Service funded Vegetation Management Project on Crooked River, Idaho was designed to conduct various vegetation treatments to reduce hazardous fuels and restore forest health. The Agency identified the State of Idaho's Department of Fish and Game as a cooperating agency. The state brought forward new information on flammulated owl habitat, which modified the acres treated and protected the habitat.

The Rural Development Rural Community Facilities Program included the proposed construction of the Eastern Shore Rural Health Medical Center in Olney, Virginia. This project involved construction of a new medical building, parking, and infrastructure, which required the installation of on-site groundwater sources and septic system. This site is located within the Columbia and Yorktown-Eastover Multiaquifer System which is a Sole Source Aquifer supplying more than 50 percent of the water needs for the communities within the service area boundaries. As a result of the NEPA process, the EPA reviewed the proposal in the planning stages and suggested modifications to the proposal to address the potential adverse risk to ground water from contamination. Also, due to the concerns of the public and agencies involved in permitting this project, to protect this sole source aquifer, the local Soil and Water Conservation District is using the facility grounds and surrounding area to plant native vegetation for a native and healing planted garden. Planting of native vegetation in this way will help to treat runoff from the proposed facility and contribute to protection of adjacent wetland and waterways, which recharge the aquifer.

The Rural Development Community Facilities Program also funded the adaptive reuse of the Milton Public Library in Milton, Pennsylvania, an existing structure eligible for listing on the National Register of Historic Places and located within an historic district. The reuse of this significant structure involved the purchase, relocation, and

renovation (including construction of an addition) on an existing two-story single family residence, the Rose Hill House, within the Milton Historic District. The dwelling was originally constructed in the late 1800s, was destroyed by fire in the mid-1900s and then subsequently rehabilitated, along with the carriage house also located on the property. Through the NEPA process and consultation with the State Historic Preservation Officer and interested parties, Rural Development was able to make a 'no adverse affect' determination for the adaptive reuse plan for this National Register of Historic Places eligible structure.

The Rural Development Community Facilities Program funded a proposal to renovate dorms and construct apartments for student housing at Bridgewater College, in Bridgewater, Virginia. The college is located next to the Town of Bridgewater's historic district. The college, founded in 1880, has a number of historic buildings on campus, many dating to the late 1800s. Pursuant to Section 106 of the National Historic Preservation Act, the college's architect, in close consultation with the Virginia Department of Historic Resources, provided a design that would appropriately blend the new construction and renovations with the existing historic character of the area. The new apartment buildings are Victorian in appearance and are consistent with the adjoining historic district. The renovations of the dorms blend in with the existing buildings on the campus. As a result of the application of NEPA and the related Section 106 consultation process, the college was able to provide modern student housing with a historic character that is an asset to the college and the historic flavor of the Town of Bridgewater.

Rural Development funded the installation of a 12 million gallon per day water intake and pump station, along with a transmission line to the Middle Holstein South Fork Water Treatment Plant in Washington County, VA. In addition, the Water Treatment Plant will be upgraded to handle the additional flow. Through implementation of the NEPA process in the planning stages, this project identified mitigation actions to protect the archaeological remains of two prehistoric Native American camps and minimize floodplain impacts. In addition, mitigation was included to protect the scenic beauty and visual aesthetics of the Virginia Creeper Trail, a "rails-to-trails" project in the National Recreation Trail inventory.

Rural Development's Rural Water & Waste Disposal Program funded a water distribution project, the Millwood-Bloomington Water System Improvement Project, that will provide for the installation of approximately 140 miles of pipeline in Williamsburg County, South Carolina. This will provide water service to residences currently served by individual private, unregulated wells. Through implementation of the NEPA process in the planning stages, this project identified potential species and habitat impacts on the American chaffseed (*Schwalbea americana*) and red-cockaded woodpecker (*Picoides borealis*), species protected under Section 7 of the Endangered Species Act. The mitigation resulted in adjusting the pipeline route as well as the location of construction equipment. In addition, mitigation was developed to protect the scenic beauty and visual aesthetics of the Black River, a river segment included in the Nationwide Rivers Inventory.

b. Department of Commerce:

The Department of Commerce NOAA Operations, Research and Facilities actions include effective standard and special award conditions placed on the use of ARRA funds. Those conditions will ensure adequate protection for federally administered areas of coastal or marine habitat, and/or biological resources such as anadromous fisheries, federally listed endangered or threatened species and marine mammals. These conditions also ensure protection for historic structures and cultural resources that are listed, or eligible for listing, on the National Register of Historic Places.

The National Telecommunications and Information Administration's Broadband Technology Opportunities Program (BTOP) employed an iterative process with applicants to make them aware of the environmental review implications of the proposed projects for which they sought grants. In one case, the fiber optic cable project required trenching and excavating of wetlands. Through the environmental review process, the applicant became aware of the critical issues associated with wetlands and is working to avoid some impacts and fully mitigate those caused by their project.

In another Broadband Technology Opportunities Program project, the NoaNet was developed to serve the State of Washington by allowing the state to upgrade and expand broadband infrastructure to combat the social and economic issues facing local and rural communities and to enhance broadband connectivity to six Indian tribes in the State. The NEPA process was the key procedural step in identifying and protecting critical habitat and protected lands in the State of Washington, while still allowing the grantee to use ARRA funds to add fiber backbone capacity to existing networks and specifically target and develop broadband infrastructure in areas that were underserved.

As a result of the NEPA process, the Economic Development Administration protected a 26.5 acre forested wetland to the southwest of the Flagship Enterprise Center, a 80,000 square-foot multi-tenant business/industrial facility on an 8.4 acre site. The wetlands are important habitat because of the permanent aquatic habitat that might be used by migratory waterfowl. Conditions on the \$2.7 million in Recovery Act funding for the construction project will protect the wetland by (1) precluding impacts on the hydrology of the wetland through any changes of slope or drainage features; (2) preventing runoff from storm events from being directed to the wetland; and (3) providing retention facilities to contain storm water within the current footprint of the project site.

The programmatic environmental assessment process allowed the National Institute of Standards and Technology to evaluate the environmental effects of several construction projects in Gaithersburg, Maryland at the same time. By analyzing all ARRA projects and a few additional non-ARRA projects at once, a holistic approach to the campus was taken and environmental impact boundaries were outlined in the Finding of No Significant Impact for all present and future projects. Projects must fall within the boundaries or they will require additional environmental analysis.

c. Department of Defense:

The U.S. Army Corps of Engineers' NEPA process for the Lorain Harbor, Ohio dredging allowed a reiteration and reconsideration of dredged material management alternatives and provided the opportunity for public interest review. Analysis conducted in conjunction with the NEPA action verified that a greater volume of dredged material was suitable for unconfined open-lake placement thereby obviating the need to provide additional confined disposal capacity than was previously planned through the Lorain Harbor Dredged Material Management Plan (DMMP).

The NEPA process for the Norfolk District, U.S. Army Corps of Engineers (USACE) Winter Harbor, Virginia Federal Navigation Project alerted the District to the potential impacts of depositing channel sediments upon an eroding beach shoreline inhabited by the federally endangered Northeastern Beach Tiger Beetle. The District, during development of the Environmental Assessment and consultation with the FWS, developed conservation and mitigation measures designed to protect the beetle. These measures resulted in maintenance dredging that avoided work during seasons that would impact the beetle, created additional habitat, and completed the maintenance dredging to facilitate navigation.

The Tres Rios project connects Rio Salado and Rio Oeste environmental projects in Phoenix, Arizona, and continues the restoration of the Salt River west to the Agua Fria River. Tres Rios provides a net environmental benefit by maintaining the effluent thereby enhancing the riparian area in addition to protecting 600 structures from flooding this project maintains habitat for many species of birds, reptiles and mammals to live, nest and raise young. The NEPA process alerted the agency of the potential impact of placing dredged material in sensitive areas that would have impacted the wildlife and resulted in realigning the dredged material placement areas to maintain the habitat areas.

While reviewing the proposal to create a 200-acre Bolivar Beneficial Use Marsh in Galveston Bay, Texas, the U.S. Army Corps of Engineers worked with other agencies to form the Beneficial Use Group to devise a plan to eliminate open bay placement of dredged material and to use dredged material to create environmental features that provide a net benefit to the Bay ecosystem. Historically, deep-draft channel construction and maintenance material had been deposited into unconfined, open bay placement areas in Galveston Bay, which resulted in adverse impacts to bay bottom habitat now designated as essential fish habitat. Further, the loss of intertidal marsh has been identified as one of the critical problems of the Galveston Bay estuary by the Galveston Bay National Estuary Program. As a result of the environmental review for projects including the Bolivar Beneficial Use Marsh, the Group prepared a plan to create intertidal marsh and nesting islands for colonial water birds. The project also provides benefits to important recreationally and commercially valuable fish species.

Over the years, frequent flooding impacted large numbers of Des Moines, Iowa residential, commercial, and industrial properties. In cooperation with Des Moines, The

Rock Island District (District) conducted a flood reduction feasibility study with an integrated environmental assessment. The project's study team evaluated many alternatives involving levee operation and maintenance, improvements, and new alignments that would reduce operation and maintenance costs and improve safety during flood events. Due to the importance and value to the City of Des Moines, the District expedited their report preparation with emphasis on adaptive management. The NEPA process established mitigation requirements and agency coordination pivot points based on the desired final plans. The close project coordination between the District and City of Des Moines resulted with the feasibility report/EA including wetland mitigation based on a series of levee alignment scenarios within the preferred alternative. All the scenarios resulted in no significant impacts.

The District COE proposed a project to construct emergency streambank and erosion protection for a major city thoroughfare in Iowa City, IA, along the Iowa River. The original plan and environmental assessment included bank protection encroaching approximately 15 feet into the river. During the NEPA process, the Iowa Department of Natural Resources (IDNR) indicated there was a possibility the project may impact two state threatened mussel species. The District completed the mussel survey, which found 11 native mussel species, including the state endangered Pistolgrip. Based on the mussel survey findings, the District and IDNR worked together to relocate all the recovered mussels to a nearby mussel sanctuary and the District reduced the project footprint in the river to avoid impacts on the mussels.

The Department of Defense reports that the NEPA reviews for the Energy Conservation Investment Program benefited the Department. This program is designated for ARRA projects that reduce energy and water usage and include proposed construction of high efficiency energy systems. The NEPA process required a separate look at the project planning stage to identify impacts and alternatives in support of sustainability and energy conservation that have led to a reduction of energy and water needs and costs.

The formation of a Beneficial Use Group (BUG) during the NEPA process for the Army Corps of Engineers, Galveston, TX District's Houston-Galveston Navigation Channels (HGNC) Project led to a plan to eliminate open bay placement of dredged material and to use dredged material to create environmental features that provide a net benefit to the Galveston Bay ecosystem. As a result of the NEPA process, the BUG came up with a plan to create intertidal marsh and restore and create colonial water bird nesting islands with HGNC dredge material. This project will result in a net benefit to the Galveston Bay ecosystem by creating 88 acres of intertidal marsh for mitigation of impacts, that will provide benefits to important recreationally and commercially valuable fish species.

d. Department of Energy:

DOE used the NEPA process for the loan guarantee for construction and operation of a flywheel-based frequency regulation facility at an undeveloped seven acre site in Stephentown, New York. This Environmental Assessment provided a forum to

document and explain the benefits of the project to the public and decision makers, specifically, the greenhouse gas savings that could be achieved by using the proposed flywheel-based frequency regulation technology as opposed to the fossil fuels-based frequency regulation technology.

An Environmental Assessment was used to consider a loan guarantee for construction and startup of the proposed Neal Hot Springs Geothermal Facility in Vale, Oregon. The NEPA process helped DOE to identify and address potential low level induced seismicity associated with enhanced geothermal systems where injection is used to improve reservoir permeability and sustainability. The identification of these issues occurred early in the process, which allowed for efficient inclusion of practicable environmental control measures to ensure that the project was not a potential source of seismic activity.

An Environmental Assessment was also used by DOE to integrate project planning and environmental concerns for demolition of Building 330, which housed the former Chicago Pile-5 research reactor at Argonne National Laboratory in Illinois. The scoping phase of the process brought operational and environmental expertise together and facilitated development of demolition and transportation approaches to better protect workers and the public.

DOE used the Environmental Assessment process to take a more comprehensive look into future planning at the Savannah River Site in South Carolina. The Environmental Assessment analyzed the waste streams of both low-level and mixed low-level radioactive wastes, for the past, current, and anticipated scope of work, and all potential government and commercial waste facility destinations. This resulted in solutions that were much more cost and time efficient, and limited the expected transportation impacts over the long term in the surrounding communities. This comprehensive approach was achieved due to input received during agency and public scoping.

The Bonneville Power Administration used the Environmental Impact Statement process for the construction and operation of a new 500-kilovolt transmission line along the Columbia River in Oregon and Washington. The NEPA process helped refine the transmission line route to avoid conflicts with local community and private property land use. The route refinement would not have been apparent without public participation in the NEPA review. The process facilitated public understanding of the project and identified appropriate mitigation measures relative to cultural sites, sensitive plants, wildlife, wetlands, and land use.

A DOE Environmental Assessment analyzed the then-proposed molecular foundry, a nanoscience research facility at the Lawrence Berkeley National Laboratory in Berkeley, California. The DOE Environmental Assessment influenced the design, construction, and operation decisions and identified mitigation measures to avoid impacts to the Alameda whipsnake, a species listed as threatened under the Endangered Species Act. As a result of the NEPA process, DOE sited the facility outside of critical habitat,

restricted construction activities to daylight hours, disposed of soils in a manner to reduce the potential for encountering and injuring whipsnakes, and implemented landscape design and maintenance during and after construction so as to reduce potential impacts to the whipsnakes.

NEPA analysis was conducted for construction of a vehicle battery and hybrid components manufacturing facility, sited in Midland, Michigan. The NEPA process increased the project team's awareness of issues related to preexisting dioxin-contaminated soil, including the potential for impacts in the vicinity of the project site. The applicant incorporated measures to minimize the risk of exposure to dioxin-contaminated soils during construction, including notifying the affected facilities (including a day care) of the construction activities and potential exposures, more rigorous management and monitoring of fugitive dust when direct fugitive dust emissions would impact nearby facilities, providing for temporary relocation during days of exposure, scheduling around day care operation, and providing temporary enhanced air filtration during construction.

DOE proposed to issue a grant for the development and production of electric drive vehicle systems in Detroit, Michigan. The project initially involved construction of more than 2 million square feet of manufacturing space on multiple undeveloped sites. Environmental implications identified during the NEPA scoping process led to an iterative process between the applicant and DOE staff to reshape the proposal into one that involved retooling and retrofitting existing manufacturing facilities, with only minor new construction on a previously disturbed site. Potential environmental impacts were greatly reduced through this process.

In accelerating clean-up work at the Transuranic Waste Processing Center located within the Oak Ridge Reservation in Oak Ridge, TN, DOE implemented mitigation measures for a small wetland that was identified during the NEPA review. Early consideration of environmental information during the review of proposals for the project helped DOE avoid costly analysis of alternatives that may not have been viable. The NEPA process facilitated communication with other agencies regarding the alternatives and their associated impacts. It also provided an educational tool for the public, showing that various alternatives were considered and that DOE was moving forward with the alternative that would least impact the environment in the short-term and improve the environment in the long-term.

DOE funded the construction of a light source facility at Brookhaven National Laboratory in Upton, NY. The light source will deliver x-rays with unprecedented intensity and brightness for research to find solutions to important energy challenges. During the EA scoping process, DOE learned that a state mining permit would be required to acquire sand from outside the immediate project area, which would delay the start of construction. Input to the design process identified a sufficient volume of sand from the immediate project area, and the delay was avoided. The NEPA process also identified the potential for project storm water discharge to affect recharge basins considered designated habitat for the tiger salamander, a state threatened species. This

triggered changes to the project design to adjust discharge location points and maintain flows to ensure the area continues to be suitable salamander habitat.

An environmental assessment was produced for a proposed Advanced Vehicle Battery and Hybrid Components Manufacturing project in Sanborn, New York. The program, listed under Energy Efficiency and Renewable Energy, is a grant program to accelerate the development and production of electric drive vehicle systems to substantially reduce petroleum consumption in the United States. In response to comment during the NEPA process, the project will use landscaping techniques, including replacement vegetation native to the area and free of invasive plant species, to reduce the need for water to maintain landscapes and to benefit native plant communities and wildlife.

Idaho National Laboratory, located in southeast Idaho, is accelerating disposition of remote-handled transuranic (radioactive) waste. Information received from external technical experts during the comment period on the draft environmental assessment facilitated the selection of a transportation route that minimized the risk of potential impacts to cultural and biological resources.

e. Department of Health and Human Services:

In considering an important Brownfield redevelopment project in South Providence, Rhode Island, the NEPA process for the Providence Community Health Center helped to uncover the existence of potential residual contaminants from lithography chemicals and underground tanks at the historic site. Working with EPA Region I and the Rhode Island Department of Environmental Quality, HHS ensured that the necessary measures were incorporated as part of redevelopment of the site to protect human health and minimize the potential for future liability. Upon receiving the appropriate findings that remediation standards have been met to ensure that the future health of workers and patients is protected, HRSA moved forward with funding the project.

f. Department of Homeland Security:

The Environmental Assessment for the U.S. Coast Guard Cutter Sycamore housing project in Cordova, Alaska, identified potential wetlands impacts which resulted in considering additional alternatives for site locations and housing configurations. An Environmental Assessment published in 2002 identified a requirement for additional site hydrology studies of wetlands within the building location. The environmental field studies discovered extensive on-site wetlands, the impact to which could not be totally avoided. The supplemental Environmental Assessment process provided the opportunity to consider additional alternatives for configuration of the housing as well as an opportunity for public input on those alternatives. The supplemental Environmental Assessment and Finding of No Significant Impact provided recommendations that preserve and maintain much of these wetlands and minimize down slope storm water runoff.

The NEPA process allowed the Coast Guard proposed alteration of the Burlington Northern Santa Fe Railroad Bridge between Iowa and Illinois to determine and address the potential impacts the bridge construction would have on the Spectaclecase mussels located on the existing bridge piers. The mussels are a species of conservation concern in Iowa and endangered in Illinois. As part of the NEPA process, a Biological Assessment concluded the mussels would be relocated prior to construction in order to avoid an adverse effect on the mussels and construction processes were modified to mitigate impacts to these species.

In a similar example, the NEPA process allowed the Coast Guard to determine the potential impacts of the alteration of the Galveston Causeway Bridge in Texas on species of concern and construction processes were modified to mitigate impacts to affected meiofauna and microfauna species.

The Federal Emergency Management Agency (FEMA) is using the NEPA process for ARRA grants to engage grantees early in the process so that environmental issues can be addressed to avoid or minimize potential impacts to the environment. FEMA's grant awards are intended to help strengthen the resiliency of communities in their overall homeland security preparedness, and the grant award documents are written to help ensure that grant funded projects are accomplished with little to no impact to the environment. Grant award terms and conditions prevent the release of grant funding until FEMA has determined that a project is eligible for a categorical exclusion, a finding of no significant impact or the grantee has agreed to implement mitigation activities. Grantees are taking into account ways to minimize impacts to sensitive resources, including historic structures, endangered species, wetlands, and floodplains. This encourages grantees to identify ways to minimize the impacts of the projects that they are proposing, but it also helps to raise the grantees' awareness and improve their planning for future grant-funded projects so that they can proactively begin data gathering and will know what resources to avoid as they move forward. In addition, as more projects progress through the NEPA process, mitigation measures will be identified and implemented in order to protect valuable resources. This process is most evident in the types of projects implemented by the ARRA Fire Fighter Assistance and Fire Station Construction Grants, where the award making decisions consider potential impacts to sensitive resources.

g. Department of Housing and Urban Development:

The Housing and Urban Development NEPA process for the Palestine Commons Senior Living Facility project, which involves the construction of 69-units of elderly housing in a three-story structure in Kansas City, Missouri, helped ensure that soil and groundwater contamination will be remediated to state cleanup levels and that all units will be constructed to the Energy Star performance standard. This will likely be one of the largest multi-family buildings in the Kansas City metropolitan area to meet Energy Star requirements.

The Housing and Urban Development NEPA process for the Snohomish Multi-family Rental Housing project involved Neighborhood Stabilization Program funds and Public Housing Recovery Act Capitol Funds to construct multi-family housing in Marysville, Washington. Snohomish County Housing Authority, as project sponsor, is responsible for preparing the environmental analysis. The site is directly adjacent to Interstate 5, the main interstate highway on the West Coast. As part of the environmental review, HUD environmental officers worked extensively with Snohomish County to calculate the noise levels and to determine appropriate mitigation measures for the housing and an on-site tot lot. Mitigation for the housing will incorporate the best sound-attenuation construction technologies for windows, walls, and ceilings. Mitigating noise for the tot lot was achieved by altering the site plan and re-arranging building footprints to block sound transmission in the tot lot area. The NEPA process allowed alternative mitigations to be considered and encouraged creatively applying HUD standards in the planning phase of the project in order to minimize noise impacts to future residents.

The Housing and Urban Development NEPA process for the Historic Bastrop High School building in Bastrop, Louisiana involved the ARRA Tax Credit Assistance Program (TCAP) to convert the historic building into 76 units of housing for the elderly. The project converts a public nuisance into a project that supports the Bastrop Main Street downtown redevelopment plan. The historic building had deteriorated in recent years and the NEPA review identified numerous issues with the unsecured building, including structural instability, roof leaks, and, notably, lead-based paint, asbestos, and lead contaminated galvanized water supply pipes. Project design and rehabilitation plans were coordinated with the State Historic Preservation Office to preserve and restore the building's original red brick exterior with expansive new permanent windows. As a result of the project, the structure has now been secured and stabilized with the installation of new roofing and windows.

HUD provided ARRA funding to the Topeka Housing Authority to construct 64 units of new public housing in Topeka, Kansas. The mixed-financing Echo Ridge project will comply with the Enterprise Green Communities Criteria for sustainable development. Owing to HUD's NEPA review process, the project will also be quieter than otherwise would have been the case, because the need for a noise barrier was determined. A 1,700 foot noise barrier will be built to protect the project residents from roadway noise using a combination of earthen berm and masonry wall, which, in conjunction with landscaping, will soften the effects of the noise barrier itself.

h. Department of the Interior

The 56 ARRA Hazardous Fuels Reduction projects implemented by the Department's Office of Wildland Fire Coordination are small but highly visible model projects for public outreach and participation, planning and implementation. Each project showcases within local communities the efforts to reduce hazardous accumulations of vegetation and woody fuel that pose potential wildfire risks to these same communities as well as the potential benefits of utilizing woody materials that would otherwise be disposed of in landfills. Making use of the NEPA public

involvement process, projects were identified either through the development of local, collaborative community wildfire protection plans, or to meet the objectives of land and resource management plans which prioritize the protection of communities from the risk of wildfire as well.

The Lime Kiln Salvage Road project north of Lewistown, Montana, was successful in large part due to the Bureau of Land Management (BLM) NEPA public involvement process. The public involvement process was instrumental in helping to design a road system to access and salvage blow down timber as well as recognize the recreational values of the area. The public emphasized the need for the area to be maintained as a non-motorized use area but also came to recognize the need to address the blow down timber and subsequent forest health issues. Several proposals were presented, discussed and refined during public meetings and ultimately led to the decision to build a road to access salvage logging and then close the road to motorized use. Additionally, portions of the road will be rehabilitated to the extent possible while other portions will be incorporated to expand the existing recreational trails in the existing Limekiln Trail System and provide future recreational opportunities.

The National Park Service (NPS) prepared an EA that analyzed the proposals to reuse the historic Shirley House at Vicksburg National Military Park, Mississippi, in an Environmental Assessment. Shirley House is currently inaccessible to visitors and access is limited to only those park employees performing necessary repairs and inspections. Given its condition, visitors cannot enter the building or fully appreciate its historic significance. The park originally proposed to adaptively re-use the structure for offices or for a visitor contact station. However, as a result of the NEPA Environmental Assessment and comments received during public scoping, the original scope of the project was modified to focus more on preserving, rehabilitating, and restoring the historic fabric of the structure and providing a more historically accurate setting for visitors. The preferred alternative will allow the Shirley House to be opened to the public while at the same time protecting the integrity of the historic structure and the surrounding cultural landscape.

The NEPA process for considering closure of several abandoned mines in four Arizona parks allowed the NPS to consider the actions of abandoned mine closures comprehensively and on a landscape-scale. The environmental assessment evaluated the impacts associated with abandoned mine closures at Coronado and Organ Pipe Cactus National Monuments and Grand Canyon and Saguaro National Parks and identified specific mine closure activities for each feature in the four parks, and indicated specific mitigation measures to protect sensitive cultural and natural resources. Combining the NEPA public involvement processes (public scoping and review) in conjunction with enhanced agency consultation efforts for abandoned mine closures at the parks provided the public with a more thorough understanding of the overall project activities and helped to streamline the review and comment by interested and affected parties.

Providing a forum and opportunity for public involvement is a primary objective of the NEPA process. The FWS Alaska Region conducted an environmental assessment

(EA) for a project aimed at restoring habitats for nesting seabirds on isolated oceanic islands (entitled Invasive Species Eradication for Habitat Restoration on Tangik, Poa and Sud Islands, Alaska). The public's participation in this NEPA action was positive and highly supportive. When the EA was circulated for public comment, the majority of the responses received were in favor of the project. In one case, a member of the public suggested that the FWS not use lead shot to terminate invasive rabbits and marmots because of the potential threat of ingestion by birds that might prey on or scavenge carcasses that cannot be retrieved. Based on this input, the FWS clarified the project description to make clear that only steel shot or non-toxic lead alternatives will be used, thereby protecting bird species from the adverse impacts associated with ingesting lead shot.

The Environmental Assessment for the Bureau of Reclamation's Sunnyside Conduit project in Washington was developed with input from stakeholders to ensure all aspects of the project were addressed. The public scoping process provided feedback that identified a key storm water issue which needed to be analyzed. A public review of the assessment was conducted to allow another opportunity for the public and stakeholders to comment on the incorporation of the storm water item, as well as other components of the NEPA review. As a result of NEPA process, the project will benefit fish and conserve water by leaving more water in the natural system.

In the course of conducting the necessary research associated with the underground tank removal project at the Steilacoom Warehouse and Storage Facility in Washington, the USGS established a strong working relationship with the State of Washington Department of Ecology, Department of Archeology and Historical Preservation, the Steilacoom Tribe, the Nisqually Tribe, and the Puyallup Tribe. These new relationships allowed USGS to complete the NEPA review for the project and begin implementation expeditiously and efficiently.

A National Park Service project will replace a learning center, intern housing and employee housing that were destroyed by a wildfire in the Santa Monica National Recreation Area, CA. The project will also remove hazards that resulted from the wildfire and make the area safe for visitors. The NEPA process allowed for public and regulatory agency input on the project, as well as input from regional and park experts. As a result of the review, the project will be more protective of park resources. Because of the NEPA review, the final project included 30 mitigation measures designed to protect the dark night sky, viewsheds, vegetation, water quality, archeology, and natural resources.

A National Park Service project will repair damaged culverts and headwalls along the Park Loop Road in Acadia National Park (ME). One of the culverts to be repaired under this project spans Hunters Brook, a high-quality trout fishery and sensitive resource of concern. In this location, paving stones were used to armor the stream bank in the past. Due to stream movement and erosion over the years, the paving stones have fallen into the stream channel, causing additional stream bank erosion and sedimentation into the trout stream. The NEPA scoping process for this project resulted in the development

of an alternative that will restore the health of Hunters Brook while preserving the historic character of the road that passes over the brook. The road and associated culvert and headwalls are part of the Park Loop Road system, which is listed on the National Register of Historic Places. This solution was developed through consultation with a number of agencies, including the Army Corps of Engineers, the Maine Department of Environmental Protection, the Maine Department of Inland Fisheries and Wildlife, and the Maine Historic Preservation Officer. If not for the NEPA and permitting processes, it would likely have been a "band-aid" repair and not the long-term solution that was needed to restore the health of the stream.

i. Department of Labor:

A wind turbine for Treasure Lake Job Corps in Oklahoma was to be located in the Wichita Mountains Wildlife Refuge which is a habitat for Eagles and other soaring birds. Another wind turbine at Boxelder Job Corps, South Dakota was to be located in the Black Hills National Forest, which is also a habitat for soaring birds. Environmental Assessments were prepared for those projects. Based on the results of the Environmental Assessments, Job Corps management decided on September 1, 2009, that placement of the turbines would not be appropriate at these locations because the risk of threatening migratory birds in the areas outweighed the advantages of these renewable energy projects. DOL was able to redirect those funds to two renewable energy projects, the North Texas and Hawaii/Maui Job Corps Centers Wind Turbine projects, that did not have the potential for significant impacts.

j. Department of State:

The Department of State benefited from the Environmental Assessment prepared for improvements to the Arroyo Colorado Floodway in Hidalgo and Cameron Counties in Texas. The International Boundary and Water Commission, U.S. Section, proposed raising the levees to allow for adequate protection of a 100 year flood event and to meet the standards of the Federal Emergency Management Agency. The NEPA process allowed the US Section to involve the surrounding community and stakeholders in an evaluation of potential impacts that may occur to cultural resources in the project area and developed protective measures to preserve the resources.

k. Department of Transportation:

The Federal Highway Administration has processed or is currently processing ARRA-funded projects in many States that demonstrate the benefits provided by the NEPA analysis and documentation. The involvement of stakeholders and collaboration with resource agencies have resulted in projects which incorporate features such as context sensitive solutions and non-motorized facilities into the improvements to highway facilities. For example, on the Yuma Pivot Point Plaza project in Arizona, the NEPA process led to the recognition of the importance of protecting the Swing Span project, a historic feature of the transcontinental railroad system, as well as connecting the Plaza with the adjacent Gateway Park. In the case of the U.S. 33 Nelsonville Bypass in Ohio, the NEPA process led to mitigation measures during and after construction,

including tree and grass planting for erosion control and native plant restoration, provisions for large and small animal crossings, special fencing to prevent animal encroachments into the right-of-way, and special lighting to direct the flight of bats over the roadway.

In the case of the Newtown Pike Extension project in Kentucky, as a result of the early coordination of the NEPA and National Historic Preservation Act processes, FHWA introduced measures to record the history of National Register of Historic Places eligible structures, collect local oral histories, and use the results from phase 3 archaeological studies for public education efforts.

The Federal Aviation Administration prepared an Environmental Impact Statement for the construction of a replacement airport at St. George, Utah. The replacement airport at St. George is designed for larger aircraft, contributing to fewer overall operations and a decrease in jet fuel demand and emissions. Through alternatives development in the NEPA process, the EIS allowed for the evaluation of alternatives with environmental benefits for airport noise, air quality and energy efficiency. As a result, under the proposed action, no dwellings fall within the 65 decibel Day-Night Sound Level (DNL) noise contour. In addition, the proposed facilities were designed to be more energy efficient.

The Federal Railroad Administration's NEPA review of ARRA projects has resulted in the early identification and documentation of valuable historic resources. For example, environmental analysis considering the Replacement of the Safe Harbor Transmission Lines in Lancaster County, Pennsylvania has determined that the transmission poles involved are historic resources. A cultural resources assessment for the same project indicated the possible presence of tribal cultural resources within the area of potential effects. FRA efforts resulted in the crafting of a Memorandum of Agreement regarding the use of historic resources signed by all parties.

I. Department of Veterans Affairs:

NEPA reviews conducted by the National Cemetery Administration provide a framework for VA to evaluate proposed energy projects and compare them to other alternatives, thereby optimizing their locations. For example, the Environmental Assessment for the Wind Turbine at Bourne, Massachusetts allowed VA to evaluate a range of potential wind turbine capacities and conclude the optimal turbine capacity for the Massachusetts Military Reservation, taking into account and reducing potential noise and visual impacts.

The EA for a biomass boiler project at White River Junction Medical Center in Vermont, by using a holistic NEPA review, allowed VA to evaluate the installation of additional equipment in combination with the biomass boiler, and to consider different potential storage areas for wood chips.

In another example, the Environmental Assessment for the ground mounted solar photovoltaic system at San Joaquin Valley National Cemetery in California considered and eliminated other locations due to proximity to burial sites, proximity to existing electrical systems, and roof composition. An Environmental Assessment for another photovoltaic array project at the Dublin, Georgia VA Medical Center was helpful in studying issues of aesthetics, hydrology, and noise.

m. Environmental Protection Agency:

The Environmental Protection Agency addressed the Diesel Emission Retrofit (DERA) Program through a programmatic (rather than individual) NEPA review process. As a result of that decision, and the expeditious completion of a comprehensive Environmental Assessment (which was circulated for a 30-day national review), EPA was able to issue a Finding of No Significant Impact for the entire DERA Program. This allowed EPA to expedite the award of over \$290 million in Recovery Act funds.

n. General Services Administration:

The Environmental Assessment process and associated consultation with the Puerto Rico SHPO on the Federal Bureau of Investigation Field Office Consolidation project that proposed a new parking garage adjacent to the existing Hato Rey Federal Building identified a new building eligible for listing on the National Register of Historic Places. The Hato Rey Federal Building was identified as a structure eligible for listing on the National Register, although it had not yet reached the age of 50 years. The NEPA review for the proposed parking garage ensured that the design and of the parking garage did not negatively impact the viewshed of the Hato Rey Federal Building.

During development of the Edith Green/Wendell Wyatt Federal Building in Portland, Oregon, the Environmental Assessment and feasibility study investigated various alternative energy efficient technologies such as the installation of a ground source heat pump for the building. The NEPA process has also ensured that the public is involved with the entire process, by holding scoping meetings to disseminate information regarding the test well for the ground source heat pump and the determination of whether or not it can meet specifications to work in the building.

o. National Aeronautics and Space Administration:

NASA reported that its NEPA program ensures that the agency is proactive in meeting its Federal stewardship responsibilities while ensuring mission success and lowering costs. For example, within the Recovery Act Cross Agency Support (CAS) Program involving hurricane repairs at Johnson Space Center, in Texas, a reduction in energy, operations, and maintenance costs was identified as one of four overarching success criteria and sustainability practices were incorporated into the CAS projects. As a result, Johnson Space Center (JSC) is expected to gain between 20 to 30 percent in energy efficiency on each building where Recovery Act funded roof repairs are being undertaken.

p. National Science Foundation:

As a result of the NEPA process employed by the National Science Foundation (NSF) for the Advanced Technology Solar Telescope (ATST), NSF became aware of concerns about the ATST's potential impacts on cultural resources. In response to those concerns, NSF agreed to implement many forms of mitigation, including the formation of the ATST Native Hawaiian Working Group, a novel approach designed to help ensure continued consultation throughout the construction and operation phases of the ATST. This mitigation measure became part of both the NEPA and the National Historic Preservation Act Section 106 mitigation measures. In addition, the NEPA process led to a mitigation measure designed to address the intersection between Native Hawaiian traditional cultural practices and science by funding an educational initiative with Maui Community College.

EXHIBIT 6

3.7 Air Quality and Greenhouse Gases

This section describes the impacts on air quality and greenhouse gas (GHG) emissions that could result from construction and operation of the proposed rail line. Air quality is a concern because of the demonstrated effects of air pollutant emissions on human health. GHG emissions are a concern because of their contributions to global climate change. The subsections that follow describe the study area, data sources, OEA's analysis methods, the affected environment, and the potential environmental impacts of the proposed rail line.

3.7.1 Analysis Methods

This subsection identifies the study area, data sources, and analysis methods that OEA used to analyze impacts on air quality and GHG emissions.

3.7.1.1 Study Area

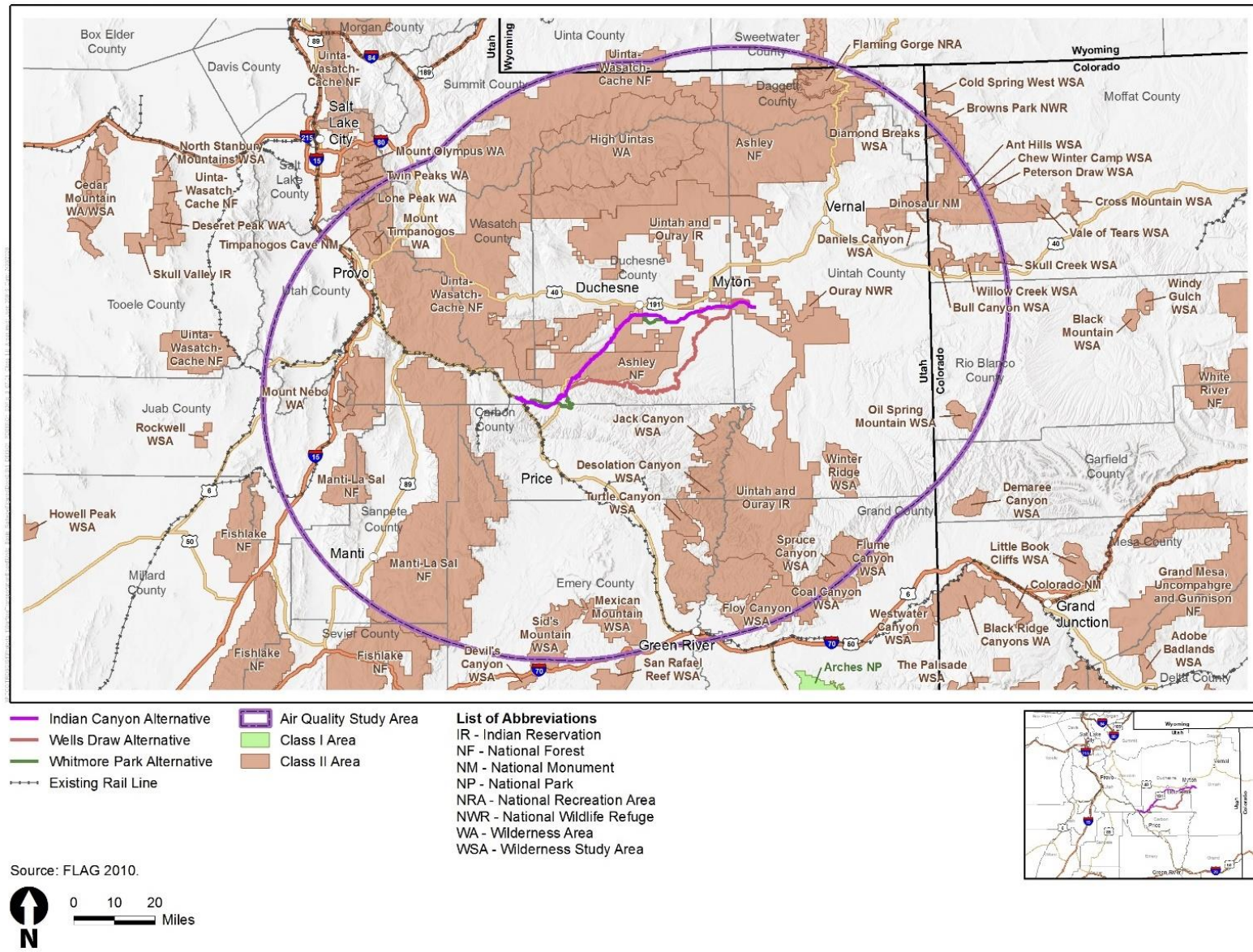
The study area for the air quality analysis includes a local study area, regional study area, and a downline impacts study area. The study area for GHG emissions is the global atmosphere because climate change is a global phenomenon.

- **Local study area.** The study area for local air quality includes an area extending generally 1,000 feet on either side of the centerline of each Action Alternative. OEA increased the size of the study area in some locations, however, to account for localized differences in factors that could affect air quality, such as local topography and certain design features of the proposed rail line. ~~The local air quality study area also includes existing rail lines between the proposed rail connection near Kyune, Utah, and the boundaries of the Denver Metro/North Front Range air quality nonattainment area that could experience an increase in rail traffic if the proposed rail line were constructed, as described in Section 3.1, *Vehicle Safety and Delay*.~~
- **Regional study area.** The study area for regional air quality includes the area within 100 kilometers (62 miles) of the proposed rail line as shown in Figure 3.7-1. It is located in the Wasatch Front Air Quality Control Region and the Utah Intrastate Air Quality Control Region in Utah, as designated by the U.S. Environmental Protection Agency (USEPA). The eastern edge of the regional study area also extends about 18 miles into the Yampa Intrastate Air Quality Control Region in Colorado. Within the regional air quality study area, OEA considered air quality related values (AQRVs), which are resources that could be adversely affected by a change in air quality, such as visibility¹ and acidic deposition.²

¹ Visibility impairment or haze is caused when sunlight encounters tiny pollution particles in the atmosphere and is either absorbed or scattered, which reduces the clarity and color of what can be seen. Deciviews or standard visual range are terms used to express visibility.

² Acidic deposition occurs when nitrates and sulfates formed in the atmosphere are deposited to soil, vegetation, and surface water. Acid deposition to lakes can impair water quality by reducing their acid-neutralizing capacity.

Figure 3.7-1. Air Quality Regional Study Area



- **Downline study area.** The study area for downline air quality includes segments of existing rail lines outside of the Basin that could experience an increase in rail traffic above OEA's thresholds at 49 C.F.R. § 1105.7(e)(5) if the proposed rail line were constructed. As described in Section 3.1, *Vehicle Safety and Delay*, the downline study area extends from the proposed connection near Kyune to the northern, eastern, and southern edges of the Denver Metro/North Front Range air quality nonattainment area (Appendix C, *Downline Analysis Study Area and Train Characteristics*, Figure C-1).

There are no federal Class I³ air quality areas within 100 kilometers of the proposed rail line, although there are Class II air quality areas in the study area. The study area includes part of Dinosaur National Monument, the Colorado portion of which is designated by the Colorado Department of Public Health and Environment as a state-level Class I area for sulfur dioxide (SO₂).

3.7.1.2 Data Sources

OEA reviewed the following data sources to determine the potential impacts on air quality and GHGs that could result from construction and operation of the proposed rail line.

- Ambient air quality information as measured by Utah Department of Environmental Quality (Utah DEQ) and USEPA.
- Information on existing emissions sources in the region (from Utah DEQ and USEPA).
- Information on oil and gas development in the region obtained from public sources and agency consultation.
- Information on truck traffic in the region obtained from public sources and agency consultation.
- Data on meteorology and climate in the region.
- Information on anticipated construction and operation activities provided by the Coalition.
- Standard air pollutant emissions rates for anticipated project-related construction and operation activities, such as for operation of locomotives, from USEPA.

3.7.1.3 Analysis Methods

OEA used the following methods to evaluate the impacts of air pollutant emissions, including GHG emissions, related to construction and operation of the proposed rail line.

- **OEA identified and characterized the emissions sources.** OEA reviewed information provided by the Coalition about the Coalition's plans for rail construction and operation to identify sources of air pollutant and GHG emissions. The emissions sources included equipment and vehicles that construction contractors would use during rail construction, as well as the locomotives that would pull the trains on the proposed rail line during rail operations, among other sources.

³ Class I air quality areas, as defined by the Clean Air Act, include national parks larger than 6,000 acres and wilderness areas larger than 5,000 acres that existed or were authorized as of August 7, 1977. Class I areas are areas of special national or regional natural, scenic, recreational, or historic value, and this category allows for very little degradation in air quality, whereas Class II areas allow for reasonable industrial/economic expansion.

- **OEA estimated total emissions related to rail construction and operation.** OEA calculated the emissions from each emissions source and aggregated them to estimate total emissions for rail line construction and total emissions per year for rail line operation for each air pollutant. OEA used the following references, methods, data, and models to estimate emissions.
 - The USEPA MOVES2014b (USEPA 2019a) model to estimate emissions rates from construction equipment and vehicles and from motor vehicles traveling on roads.
 - USEPA (2009) guidance to estimate exhaust emissions rates from locomotives. USEPA emissions standards for locomotives have become more restrictive over time. The emissions averaged over all locomotives in a fleet will therefore decrease over time as newer locomotives subject to lower (more restrictive) emissions standards enter the fleet and older locomotives are retired.
 - Western Region Air Partnership (2006) guidance and the USEPA AP-42 emissions factor compilation (USEPA 1998a, 1998b, 2006) to estimate emissions of fugitive⁴ particulate matter from earthmoving and exposed earth surfaces.
- **OEA modeled the concentration and deposition of air pollutants.** OEA used the USEPA AERMOD dispersion model (USEPA 2019b) to estimate the concentrations of airborne pollutants that could result from the operation of the proposed rail line. Concentrations of air pollutants are important for characterizing potential air quality impacts. OEA used the estimated emissions rates and meteorological data for the regional study area as inputs into the dispersion model. Appendix M, *Air Quality Emissions and Modeling Data*, contains further details on the modeling.
- **OEA compared air pollutant and GHG emissions from rail construction and operation to existing emissions in the study areas.** OEA compared the increases in emissions of criteria pollutants,⁵ hazardous air pollutants, and GHGs that would result from construction and operation of the proposed rail line with existing emissions levels in the regional study area and the state of Utah. OEA also compared the estimated concentrations of criteria pollutants to the applicable standards and thresholds.

3.7.2 Affected Environment

This subsection identifies the existing environmental conditions related to air quality and climate in the study areas. OEA relied on current air quality and climate information regarding the Uinta Basin (Basin) region for existing conditions. The Basin is a rural area of northeastern Utah where the majority of the state's oil and gas production occurs. The regional study area accounts for more than 90 percent of the state's criteria pollutant emissions from the oil and gas sector (Utah DEQ 2020).

3.7.2.1 Existing Emissions in the Region

Table 3.7-1 shows the total emissions of each pollutant in the regional study area and statewide.

⁴ Fugitive emissions are emissions that are not emitted from a stack, vent, or other specific point that controls the discharge. For example, windblown dust is fugitive particulate matter.

⁵ The criteria air pollutants are carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide.

Table 3.7-1. Existing Emissions in the Regional Study Area and Utah Statewide

Pollutant	Emissions ^a in 2014 ^b		
	Regional Study Area ^c	Utah Statewide	Regional Study Area Percent of State
Criteria Pollutants (U.S. tons/year)			
Carbon monoxide	152,372	657,617	23
Nitrogen oxides	61,911	181,844	34
PM10	54,500	186,074	29
PM2.5	10,708	39,643	27
Sulfur dioxide	17,204	26,964	64
Volatile organic compounds	286,281	957,968	30
Lead	1.18	8.33	14
Hazardous Air Pollutants (U.S. tons/year)			
1,3-Butadiene	63	305	21
Acetaldehyde	4,063	18,115	22
Acrolein	66	305	22
Benzene	1,238	2,481	50
DPM ^d	859	3,712	23
Ethylbenzene	360	1,028	35
Formaldehyde	5,710	25,496	22
Napthalene	77	359	21
POM (as PAH)	6.54	6.57	99
Greenhouse Gases (metric tons/year)			
Carbon dioxide	4,406,531	20,427,325	22
Methane	1,060	5,066	21
Nitrous oxide	120	546	22
CO ₂ e ^e (100-year GWP)	4,468,836	20,716,546	22
CO ₂ e ^e (20-year GWP)	4,517,531	20,949,871	22

Notes:

^a Emissions are rounded to the nearest ton, except lead and POM emissions, which are rounded to the nearest 0.01 ton.

^b 2014 is the most recent year for which complete data are available.

^c Emissions data are available at the county level. OEA compiled air quality data for the eight-county area consisting of Carbon, Daggett, Duchesne, Emery, Sanpete, Uintah, Utah, and Wasatch Counties. OEA selected these counties because they correspond most closely to the regional air quality study area. These differ from the seven counties of the Coalition (Carbon, Daggett, Duchesne, Emery, San Juan, Sevier, and Uintah Counties).

^d DPM values include PM10 emissions in all USEPA National Emissions Inventory mobile source sectors that specify use of diesel fuel.

^e CO₂e values were calculated using the 100-year potential GWP values from IPCC 4th Assessment Report (IPCC 2007). 100-year GWP values are: carbon dioxide = 1; methane = 25; nitrous oxide = 298. 20-year GWP values are: carbon dioxide = 1; methane = 72; nitrous oxide = 289.

Sources: U.S. Environmental Protection Agency 2014; IPCC 2007

PAH = polyaromatic hydrocarbons; PM10 = particulate matter 10 microns or less in diameter; PM2.5 = particulate matter 2.5 microns or less in diameter; DPM = diesel particulate matter; POM = polycyclic organic matter;

CO₂e = carbon dioxide equivalent; GWP = global warming potential

Within the regional study area, the largest contributions of criteria pollutant emissions by sector are as follows (Utah DEQ 2020).

- Point sources (e.g., power plants) account for about 39 percent of [emissions of nitrogen oxides \(NO_x\)](#) and about 96 percent of SO₂ emissions in the regional study area.
- Area sources (smaller, widespread sources as well as fugitive dust) account for about 88 percent and 74 percent of emissions of particulate matter with diameter equal to or less than 10 microns (PM₁₀) and 2.5 microns (PM_{2.5}), respectively, and 78 percent of volatile organic compound (VOC) emissions in the regional study area.
- Mobile sources account for about 47 percent of carbon monoxide (CO) emissions and 33 percent of NO_x emissions in the regional study area.
- The oil and gas sector accounts for about 20 percent of NO_x emissions and 19 percent of VOC emissions in the regional study area.

3.7.2.2 [Regional Meteorology](#)

The Basin is the most northerly portion of the Colorado Plateau, at an elevation of predominately 5,000 to 10,000 feet above sea level. Because of this elevation, the average temperatures tend to be lower than at lower elevations. The Basin is considered to have a semi-arid, mid-continental climate. The mountain ranges in the western United States alter the prevailing westerly air currents from the Pacific region by forcing the moist air to rise and drop much of its moisture as precipitation. As a result, the prevailing winds reaching Utah are comparatively dry, and there is relatively little precipitation in the Basin (WRCC 2020a). Table 3.7-2 summarizes representative meteorological data measured at locations from west to east in the local study area.

Table 3.7-2. Representative Meteorological Data in the Local Study Area

Description	Price	Nutters Ranch ^a	Duchesne	Myton
Average max. temperature (°F)	63.7	62.1	60.3	62.0
Average min. temperature (°F)	36.1	30.2	30.0	30.3
Average total precipitation (inches)	9.41	11.57	9.45	6.69
Average total snowfall (inches)	20.2	45.6	26.4	14.6

Notes:

^a The Nutters Ranch monitor is located in the Argyle Canyon area near the Wells Draw Alternative.

Source: WRCC 2020b

max. = maximum; °F = degrees Fahrenheit; min. = minimum

Wind speed and direction are important to the dilution and transport of air pollutants. The prevailing winds in the region are generally from the westerly directions. At Indian Canyon Summit, a meteorological monitoring station representative of the western part of the regional study area, winds are usually from the west-northwest or southeast and the average wind speed is 6.2 miles per hour (University of Utah 2020). At Five Mile, a meteorological monitoring station representative of the Argyle Canyon area along the Wells Draw Alternative, winds are usually from the south-southwest to west-southwest or the west-northwest to northwest and the average wind speed is 8.2 miles per hour (Iowa State University 2020). At Pleasant Valley, a meteorological monitoring station representative of the eastern part of the regional study area including the Myton area, winds are usually from the west and the average wind speed is 6.0 miles per hour (Utah State University

2020). Because of the rough topography in much of the region, winds in the area can vary considerably from regional conditions. For example, in a narrow valley or canyon the wind may tend to blow predominantly along the length of the canyon rather than across the valley or canyon.

3.7.2.3 Measured Pollutant Concentrations

Utah DEQ measures ambient air quality at numerous locations around the state including three monitoring stations located in the Basin. These are located in the cities of Price, Roosevelt, and Vernal. Table 3.7-3 summarizes ambient pollutant concentrations measured at these stations for the most recent 3 years of available data.

Table 3.7-3. Measured Ambient Concentrations in the Uinta Basin

Pollutant ^a	Monitor Location (USEPA Site Identifier)	Averaging Period, Unit, Form of Standard	NAAQSs	Measured Concentrations		
				2017	2018	2019
Nitrogen dioxide	Price (49-007-1003)	1-hour, parts per billion, 98th percentile	100	22	13	17
		Annual, parts per billion, annual mean	53	2.7	1.6	2.1
	Roosevelt (49-013-0002)	1-hour, parts per billion, 98th percentile	100	26.3	20.4	28.8
		Annual, parts per billion, annual mean	53	4.1	3.4	4.6
	Vernal (49-047-1004)	1-hour, parts per billion, 98th percentile	100	32	19	30
		Annual, parts per billion, annual mean	53	4.0	2.6	3.3
Ozone	Price (79-007-1003)	8-hour, parts per million, 4th maximum	0.070	0.066	0.073	0.068
	Roosevelt (49-013-0002)	8-hour, parts per million, 4th maximum	0.070	0.078	0.071	0.087
	Vernal (49-047-1004)	8-hour, parts per million, 4th maximum	0.070	0.068	0.069	0.065
PM2.5	Roosevelt (49-013-0002)	24-hour, micrograms per cubic meter, 98th percentile	35	28.2	24.9	23.0
		Annual, micrograms per cubic meter, annual mean	12	6.2	7.0	6.3
	Vernal (49-047-1004)	24-hour, micrograms per cubic meter, 98th percentile	35	20.6	19.8	16.1
		Annual, micrograms per cubic meter, annual mean	12	5.7	5.8	5.2

Notes:

^a There are no Utah DEQ monitoring stations in the Uinta Basin that measure carbon monoxide, lead, particulate matter - 10 microns, or sulfur dioxide.

Source: USEPA 2019c

PM_{2.5} = particulate matter 2.5 microns or less in diameter; USEPA = U.S. Environmental Protection Agency;
NAAQS = National Ambient Air Quality Standards

USEPA designates areas where criteria air pollutant levels are less than the National Ambient Air Quality Standards (NAAQS) as “attainment” areas and where pollutant levels exceed the NAAQS as “nonattainment” areas. USEPA designates former nonattainment areas that have attained the NAAQS as “maintenance” areas. USEPA has designated the Basin as an attainment area for all pollutants except ozone because measured concentrations of ozone in the eastern part of the Basin have exceeded the NAAQS in winter (Figure 3.7-2). For example, Table 3.7-3 indicates that ozone concentrations at the Roosevelt monitor exceeded the NAAQS in 2017, 2018, and 2019. These high ozone levels have been observed only in the Basin during winter when the ground is covered by snow and stagnant atmospheric conditions are present; ozone levels at other times have been less than the NAAQS (Utah DEQ 2015a).

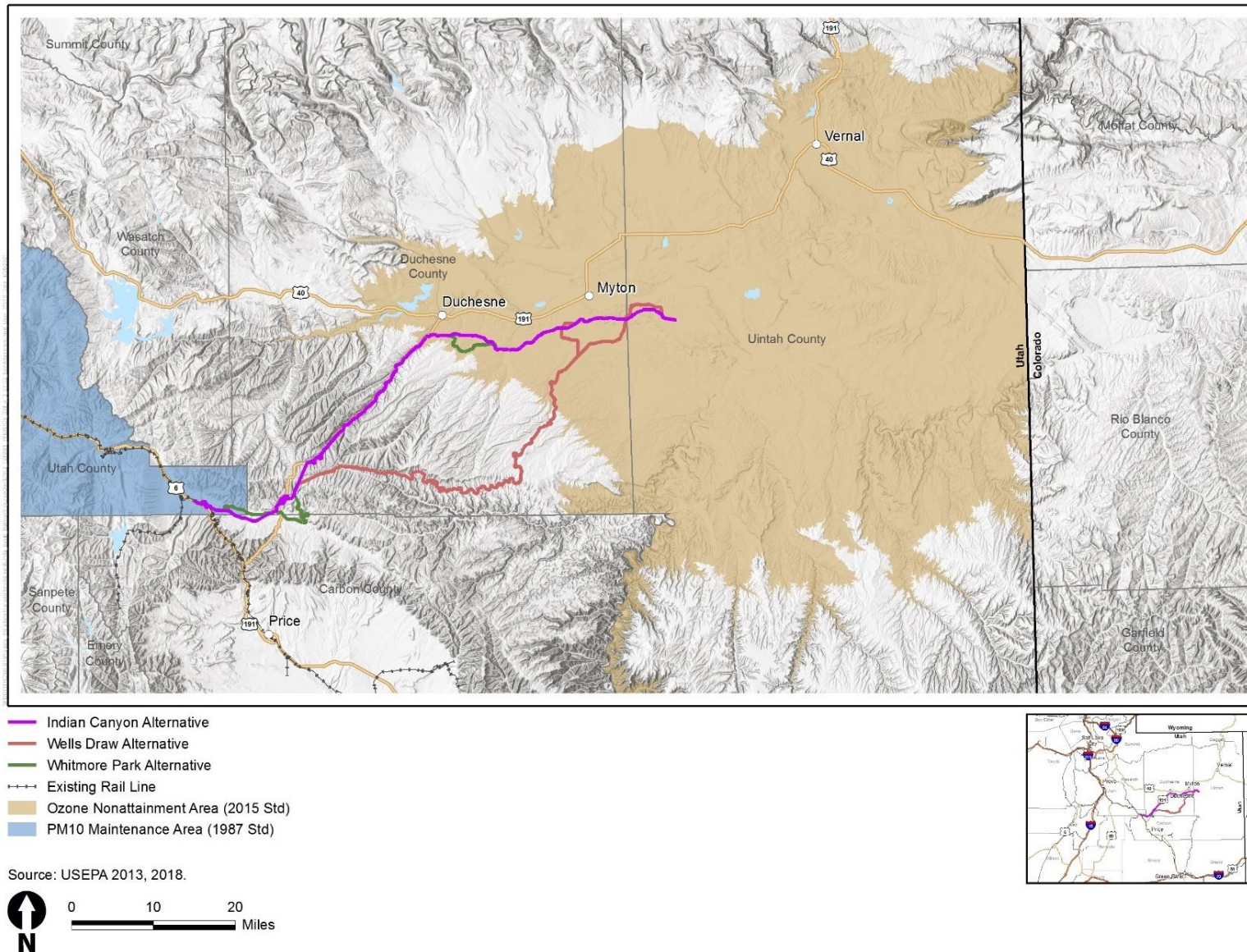
The eastern portion of the proposed rail line would be located in the Uinta Basin Ozone Nonattainment Area. A smaller portion of the proposed rail line, at the western edge of the Basin, would be located in Utah County, which is a maintenance area for PM₁₀ (Figure 3.7-2). The remainder of the proposed rail line would be located in attainment areas.

3.7.2.13.7.2.4 Air Quality Related Values

The primary AQRVs of concern in the regional study area are visibility and acid deposition. USEPA monitors visibility and acid deposition at national parks, national monuments, and other locations where AQRVs are of concern. USEPA monitors visibility at national parks through its Interagency Monitoring of Protected Visual Environments (IMPROVE) Program. The IMPROVE stations nearest to the regional study area are located at Capitol Reef and Canyonlands National Parks, approximately 44 miles and 37 miles from the regional study area, respectively. Visibility at these parks, measured in 2008 through 2018, was worse than natural conditions but showed improving trends for the clearest and haziest days (BLM 2018).

USEPA also monitors deposition of air pollutants at national parks through its Clean Air Status and Trends Network (CASTNET) program. The CASTNET stations nearest to the regional study area are located at Dinosaur National Monument, which is within the regional study area, and Canyonlands National Park, which is approximately 37 miles from the regional study area.

The National Park Service rates deposition levels as *good condition*, *moderate concern*, or *significant concern*. At Dinosaur National Monument, nitrogen deposition is rated moderate concern, while sulfur deposition is rated good condition (BLM 2018). At Canyonlands National Park, nitrogen deposition is rated significant concern, while sulfur deposition is rated good condition (BLM 2018).

Figure 3.7-2. Ozone Nonattainment and PM10 Maintenance Areas

3.7.2.5 Downline Study Area

The downline study area includes attainment areas as well as the Denver Metro/North Front Range air quality nonattainment area (Appendix C, *Downline Analysis Study Area and Train Characteristics*, Figure C-1), and maintenance areas for CO and PM10. The Colorado Department of Public Health and Environment has prepared plans to address air quality in the nonattainment and maintenance areas. These plans include the *Denver Metro 2008 8-hour Ozone NAAQS Moderate Nonattainment Area Plan* (2016), which will be superseded upon approval of the *Denver Metro 2008 8-hour Ozone NAAQS Serious Nonattainment Area Plan* (draft released in September 2020), the *Denver Metro Carbon Monoxide Maintenance Plan* (2005), and the *Denver Metro PM10 Maintenance Plan* (2005). Meteorological and climatic conditions in the downline study area vary widely because of its large geographic area, varied topography, and multiple airsheds.

3.7.2.6 Climate

There is broad scientific consensus that humans are changing the chemical composition of Earth's atmosphere. Activities such as fossil fuel combustion, deforestation, and other changes in land use are resulting in the accumulation of GHGs such as carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and several industrial gases in Earth's atmosphere. The International Panel on Climate Change (IPCC) estimates that the global average concentrations of CO₂, CH₄, and N₂O in the atmosphere have increased by around 40, 150, and 20 percent, respectively, from pre-industrial times until today (IPCC 2014). An increase in GHG emissions is thought to result in an increase in Earth's average surface temperature, primarily by trapping heat and, thus, decreasing the amount of heat energy radiated by Earth back into space. This phenomenon is commonly referred to as *global warming*. Global warming is expected, in turn, to affect land and sea surface temperatures, precipitation rates, weather patterns, average sea level, polar ice levels, ocean acidification, and other climatic variables, effects which collectively are referred to as *climate change*.

The IPCC Fifth Assessment Report (IPCC 2014) indicates that the climate system is warming. The report states that global mean surface temperature has increased since the late 19th century and that maximum and minimum temperatures over land have increased on a global scale since 1950. In addition, the globally averaged combined land and ocean surface temperature data show a warming of 0.85 degrees Celsius (°C) or 1.5 degrees Fahrenheit (°F) since 1950. The IPCC concludes that it is extremely likely that human influence has been the dominant cause of the observed warming. The IPCC (2014) has predicted that the average global temperature rise between 1986 and 2100 could be as great as 4.8°C (8.6°F), which could have massive deleterious impacts on the natural and human environments.

Observed data indicate that climate change is not uniform across the globe and varies by region. The U.S. Global Change Research Program (GCRP) has reported significant trends in regional climate over the last few decades. Data collected during the last half century in the Mountain West show an approximate 1.5°F increase in average surface temperature (GCRP 2009), with the largest increase in average temperature occurring in the winter months. The research also notes a decrease in the number of relatively cold days, an increase in the number of relatively warm days, and an increase in precipitation. The most recent assessment for the GCRP Southwest Region (GCRP 2018), which includes Utah, predicts that temperatures and precipitation over the region will continue to increase. In addition, the assessment predicts that the frequency of extreme weather events such as heat waves, droughts, and heavy rainfall will also increase and may affect water resources, forests and wilderness areas, agricultural and ranching activities, and human health.

[The U.S. Geological Survey \(USGS 2021\) notes that mountain ecosystems in the western United States are particularly sensitive to climate change, especially in the higher elevations, where much of the snowpack occurs, and which have experienced three times the global average temperature increase over the past century. Higher temperatures are causing more winter precipitation to fall as rain rather than snow, which contributes to earlier snowmelt. Additional declines in snowmelt associated with climate change are projected, which would reduce the amount of water available during summer \(GCRP 2009\). Rapid spring snowmelt due to sudden and unseasonal temperature increases can also lead to greater erosive events and unstable soil conditions. Increases in average summer temperatures and earlier spring snowmelt are expected to increase the risk of wildfires by increasing summer moisture deficits \(GCRP 2009\). Studies have shown that earlier snowmelts can lead to a longer dry season, which increases the incidence of catastrophic fire \(Westerling et al. 2006\). Together with historic changes in land use, climate change is anticipated to increase the occurrence of wildfire throughout the western United States \(USGS 2021\).](#)

[Predictions of climate change in Utah are similar to the more general predictions for the Mountain West and western United States and are summarized below \(Salt Lake County Health Department 2017\).](#)

- [Overall warming will continue, with longer and hotter heat waves in the summer, a longer freeze-free season, a higher average annual temperature, and fewer cold spells.](#)
- [Droughts will become hotter, more severe, and more frequent.](#)
- [Late--season snowpack will continue to decrease, as will levels of soil moisture and river flow.](#)
- [Precipitation extremes in winter will become more frequent and more intense.](#)
- [Seasonal flooding will become more frequent and intense.](#)
- [The distribution of plant and animal species in the region will change, as will the timing of species' regional life cycles.](#)
- [Occurrence of wildfires will increase.](#)

3.7.3 Environmental Consequences

Construction and operation of the proposed rail line could result in impacts on air quality and GHG emissions. This subsection first presents the potential impacts that would be the same for all three Action Alternatives and then compares the potential impacts that would be different for each Action Alternative. For comparison purposes, this subsection also describes air quality and GHG emissions under the No-Action Alternative.

3.7.3.1 Impacts Common to All Action Alternatives

This subsection describes the potential impacts related to air quality and GHG emissions that would be the same across the three Action Alternatives. The analysis in this subsection quantifies the emissions of air pollutants and discusses the predicted dispersion of criteria air pollutants in the study area. Section 3.15, *Cumulative Impacts*, and Appendix M, *Air Quality Emissions and Modeling Data*, include additional assessments of impacts on AQRVs, including visibility and acid deposition, in a larger geographic context. With the elimination of lead in automotive gasoline, lead is no longer emitted from transportation sources in more than negligible quantities. Therefore, this analysis does not address lead.

Construction

Exhaust Emissions

Construction of any of the Action Alternatives would emit air pollutants and GHGs. Construction equipment, trucks, and workers' personal vehicles would emit diesel and gasoline exhaust, which contain various air pollutants, including CO, NO_x, and particulate matter. Exhaust emissions from construction activities would be temporary and, at any given time, would occur only where construction is occurring or along roads traveled by construction vehicles. The effects of construction emissions on ambient air quality would vary with time due to the construction schedule, the mobility of the emissions sources, the types of equipment in use, and local meteorology. GHG emissions from construction activities would also only take place during the construction period, which would last between 20 and 48 months, depending on the Action Alternative and weather conditions. The majority of CO emissions during construction would be associated with vehicles commuting construction employees, which would account for between 73 and 83 percent of CO emissions. Much of NO_x and particulate emissions during construction would be associated with constructing surface track, which would account for between 46 and 53 percent of NO_x emissions, and between 61 and 63 percent of particulate matter emissions during construction, depending on the Action Alternative. Emissions related to tunnel construction would be temporary and located away from sensitive receptors; tunnel construction emissions from haul trucks would be well dispersed along access roads. Tunnel construction emissions from off-road equipment and blasting would be highly localized to the staging area immediately adjacent to the tunnel entrances, as well as within the tunnels themselves.

To minimize emissions from construction equipment, the Coalition is proposing voluntary mitigation (VM-24) to work with its contractors to make sure that construction equipment is properly maintained and that mufflers and other required pollution-control devices are in working order. In addition, OEA is recommending mitigation that would require the Coalition ensure that all engine-powered equipment and vehicles used in construction are inspected regularly and maintained on schedule (AQ-MM-1) and ensure construction contractors provide transportation for workers from a central location to reduce vehicular traffic in order to minimize air pollutant emissions (AQ-MM-2). OEA is also recommending mitigation requiring the Coalition to post signage and/or fencing during construction, including tunnel construction, to ensure that members of the public would be unable to enter areas within the construction easement that could experience temporary adverse air quality impacts (AQ-MM-7). If these mitigation measures are implemented, OEA does not expect that the exhaust emissions from construction activities would significantly affect air quality. [The construction emissions calculations include mitigation measures VM-24 and AQ-MM-1; emissions would be reduced further with mitigation measure AQ-MM-2.](#) Subsection 3.7.3.2, *Impact Comparison between Action Alternatives*, compares air pollutant emissions from construction activities, including exhaust emissions, and concentrations of air pollutants across the three Action Alternatives. Appendix M, *Air Quality Emissions and Modeling Data*, provides further detail on the construction emissions calculations, including exhaust emissions.

Fugitive Dust Emissions

Excavation and earthmoving activities, vehicle and equipment movement over unpaved roads and surfaces, and wind erosion of exposed soil and materials would emit fugitive particulate matter, including small particles (PM₁₀ and PM_{2.5}) that can reduce air quality and are dangerous for human health. These emissions would be temporary and would occur only in areas construction is

occurring at any given time. The Coalition has proposed voluntary mitigation to minimize fugitive dust emissions during construction by spraying water and implementing other dust treatments (VM-23). Because fugitive dust emissions from construction activities would be temporary and would move over time, OEA does not expect that those emissions would significantly affect air quality if the Coalition implemented its voluntary mitigation. [The construction emissions calculations assume implementation of mitigation measure VM-23.](#) Subsection 3.7.3.2, *Impact Comparison between Action Alternatives*, compares air pollutant emissions from construction activities, including fugitive dust emissions, and concentrations of air pollutants across the three Action Alternatives. Appendix M, *Air Quality Emissions and Modeling Data*, provides further detail on the construction emissions calculations, including fugitive dust emissions.

Operations

Locomotive Exhaust Emissions

During rail operations, locomotives would emit exhaust, which would affect air quality. Locomotives would be the largest source of emissions associated with rail operations, ~~but total locomotive emissions would be small relative to existing emissions in Utah and in the regional study area (Table 3.7-1).~~ The amount of locomotive exhaust emitted would vary depending on the volume of train traffic. The Coalition anticipates that average train traffic on the proposed rail line could be as low as 3.68 trains per day (low rail traffic scenario) or as high as 10.52 trains per day (high rail traffic scenario), including trains both entering and leaving the Basin. The number of trains that would actually move on the proposed rail line would depend on future market conditions, including demand for crude oil from the Basin, but would be between these two scenarios. The amount of locomotive exhaust emitted would also vary between the Action Alternatives, as described in Subsection 3.7.3.2, *Impact Comparison between Action Alternatives*. OEA is recommending mitigation (AQ-MM-3) requiring the Coalition develop and implement an anti-idling policy for rail operations. This mitigation measure would ensure that equipment operators receive training on best practices for reducing fuel consumption to reduce project-related emissions. Most impacts related to locomotive emissions, however, would be unavoidable.

During the scoping process, several commenters expressed concerns regarding air pollutant emissions in rail tunnels. Typically, air pollutants in rail tunnels are either expelled at the tunnel entrances and, for longer tunnels, at ventilation shafts. The Coalition would finalize the design of tunnels, including the design of any ventilation-related features, during the final design process following the end of the Board's environmental review. Mechanical ventilation could be provided by jet fans (small-diameter, ductless fans mounted to the tunnel walls or ceiling that move air at high velocity toward the entrances) or other fan types. OEA anticipates that air quality impacts related to locomotive exhaust emissions in tunnels would occur within the tunnels themselves or immediately adjacent to the tunnel entrances. If the Coalition were to install ventilation shafts, then air pollutant concentrations would be elevated in the area immediately adjacent to the ventilation shaft outlet.

Motor Vehicle Exhaust Emissions

Operation of any of the Action Alternatives would contribute vehicle exhaust emissions from vehicles that are idling while delayed at road-rail grade crossings. Idling emissions have decreased significantly since the Clean Air Act was passed. Exceedances of the NAAQS are now very rare even at the most congested, high-rail-traffic intersections. OEA estimated the increase in vehicle delays based on the estimated delays discussed in Section 3.1, *Vehicle Safety and Delay*. Based on the

estimated amounts of increased delay, OEA concluded that the increases in exhaust emissions from idling vehicles delayed at grade crossings under any of the Action Alternatives would be small, would be very unlikely to lead to an exceedance of the NAAQS, and as a result would not have a substantial impact on air quality.

Truck Exhaust Emissions

Operation of any of the Action Alternatives would reduce exhaust emissions from trucks carrying crude oil. Currently, crude oil from the well fields in the Basin is trucked to the Price River Terminal in Wellington, Utah, for shipment to refineries, or is trucked to refineries in Salt Lake City. OEA does not expect the proposed rail line to affect truck traffic to refineries in Salt Lake City in the short term. However, OEA expects that trucks that currently access the Price River Terminal would, instead, access the new terminals in Myton and Leland Bench for shipment on the proposed rail line, because the distance to the new terminals would be less than to the Price River Terminal. The resulting reduction in truck vehicle miles traveled would lead to reductions in the trucks' exhaust emissions. OEA quantified these reductions, which would reduce the regional air quality impacts of the proposed rail line. These emissions reductions (i.e., benefits) are presented in Table 3.7-4. [The values in Table 3.7-4 reflect the assumptions discussed in Section 3.1. Vehicle Safety and Delay.](#)

Depending on market conditions, including the price of crude oil, the production of crude oil in the Basin could increase significantly in the future. If the proposed rail line were constructed, trucks would likely transport much of the additional crude oil to the rail terminals near Myton and Leland Bench. This would increase local truck traffic and truck exhaust emissions. Because increased crude oil production in the Basin is not part of the Coalition's proposed action and because the Board has no jurisdiction over and no way to predict future oil development in the Basin, an assessment of increased exhaust emissions from local truck traffic in the Basin would not be appropriate in this section. OEA has instead assessed emissions related to increased oil production, including truck exhaust emissions, in Section 3.15, *Cumulative Impacts*.

Table 3.7-4. Emissions Benefits from Diverted Crude Oil Truck Trips

Pollutants and GHGs	Change in Emissions^a
Criteria Pollutants (U.S. tons/year)	
Carbon monoxide	-3.36
Nitrogen oxides	-9.21
PM10	-0.31
PM2.5	-0.29
Sulfur dioxide	-0.04
VOCs	-0.42
Hazardous Air Pollutants (U.S. tons/year)	
Acetaldehyde	-0.020
Acrolein	-0.003
Benzene	-0.004
1,3-Butadiene	-0.001
DPM	-0.002
Ethylbenzene	-0.053
Formaldehyde	-0.289
Napthalene	-0.005
POM	-0.006
Greenhouse Gases (metric tons/year)	
Carbon dioxide	-4,524
Methane	-0.143
Nitrous oxide	-0.006
CO ₂ e ^b (100-year GWP)	-4,529
CO ₂ e ^b (20-year GWP)	-4,536

Notes:

^a Negative emissions represent an emissions reduction or benefit.

^b CO₂e values were calculated using the 100-year ~~potential~~ global warming potential (GWP) values from the IPCC Fourth Assessment Report (IPCC 2007). GWP values: carbon dioxide = 1; methane = 25; nitrous oxide = 298. 100-year GWP values are: carbon dioxide = 1; methane = 25; nitrous oxide = 298. 20-year GWP values are: carbon dioxide = 1; methane = 72; nitrous oxide = 289.

PM10 = particulate matter 10 microns or less in diameter; PM2.5 = particulate matter 2.5 microns or less in diameter; VOCs = volatile organic compounds; DPM = diesel particulate matter; POM = polycyclic organic matter; CO₂e = carbon dioxide equivalent

Downline Air Quality

New rail traffic associated with operation of the proposed rail line would result in changes to rail traffic on existing downline routes. See Appendix C, *Downline Analysis Study Area and Train Characteristics*, for more information about the downline routes and existing traffic levels.

The analysis method for downline air quality impacts is the same as the method OEA used to assess direct air quality impacts in the study area (Subsection 3.7.1, *Analysis Methods*). Based on Board regulations (49 C.F.R. § 1105.7), OEA evaluated air quality impacts for downline segments meeting the following conditions.

- The proposed rail line would result in an estimated maximum increase of eight or more trains per day or at least a 100 percent increase in rail traffic (measured in annual gross ton-miles) in areas designated by USEPA as attainment or maintenance areas under the Clean Air Act for all criteria pollutants. OEA determined that rail traffic would exceed this threshold on one segment (Kyune to Denver) for attainment and maintenance areas. Portions of this segment also pass through designated nonattainment areas.
- The proposed rail line would result in an increase of three or more trains per day or a 50 percent increase in rail traffic (measured in annual gross ton-miles) in areas classified as Class I or nonattainment areas under the Clean Air Act. OEA determined that the estimated maximum increase in rail traffic would exceed this threshold on ~~one~~^{two} segments (Denver Northbound ~~and Denver Eastbound~~ and Denver East/North) that traverse nonattainment areas, in addition to the segment with an estimated increase in rail traffic of more than eight trains per day that also traverses nonattainment areas (Kyune to Denver). OEA also determined that the estimated maximum increase in rail traffic would not exceed the threshold of more than three trains per day on two additional segments that traverse nonattainment areas (Denver Eastbound and Denver Southbound).

OEA calculated air quality impacts related to additional trains resulting from the proposed rail line as follows.

- OEA added the emissions from new rail traffic in each downline segment.
- For rail segments with estimated emissions increases that would exceed the Board's air quality analysis thresholds in attainment areas, and for all segments in nonattainment and maintenance areas, OEA compared the emissions increases to the sum of county-level emissions for the counties through which each segment passes. This indicates how much rail traffic on that segment would contribute to regional emissions.

New rail traffic on ~~two~~^{three} downline rail segments (~~Denver Eastbound~~, Kyune to Denver, ~~Denver East/North~~, and Denver Northbound) would exceed the OEA regulatory thresholds as noted previously. All or parts of these segments are in areas that USEPA has designated as nonattainment areas or maintenance areas for the NAAQS. Most of the total mileage of the downline segments is part of the Kyune to Denver segment and located in attainment areas (Table 3.7-5).

Locomotive Exhaust Emissions

OEA estimated the impacts of locomotive exhaust emissions for the five downline segments (Table 3.7-5 and Table 3.7-6) based on the estimated increase in project-related rail traffic for the high rail traffic scenario in 2025. Emissions for the low rail traffic scenario would be less. As shown in Table 3.7-5 and Table 3.7-6, for rail segments in attainment areas, only rail segments with a traffic increase that exceeds the Board's air quality analysis thresholds are shown. In nonattainment or maintenance areas all rail segments are shown.

- Emissions increases of hazardous air pollutants from locomotives would be less than 5 tons per year for any segment and pollutant (Table 3.7-6). Diesel particulate matter (DPM) is an exception at about 108 tons per year because for diesel engines DPM is nearly equivalent to PM10.
- Segment emissions of criteria pollutants as a percent of county-level emissions would be higher for segments that are longer, have more rail traffic, and traverse counties with relatively low

emissions. Because segment emissions represent small percentages of county-level emissions, OEA concludes that comparison to county-level emissions is sufficient to describe the potential impact of the proposed rail line in downline areas, and that further analysis is not necessary. Emissions as a percent of county-level emissions would range as follows (Table 3.7-7).

- **CO:** from less than 0.02 percent (Denver Eastbound segment) to 0.5 percent (Kyune to Denver segment).
- **NO_x:** from 0.17 percent (Denver Eastbound segment) to 4.79 percent (Kyune to Denver segment).
- **PM₁₀:** from less than 0.01 percent (Denver Eastbound segment) to 0.17 percent (Kyune to Denver segment).
- **PM_{2.5}:** from less than 0.01 percent (Denver Eastbound segment) to 0.67 percent (Kyune to Denver segment).
- **VOC:** from less than 0.01 percent (Eastbound segment) to 0.06 percent (Kyune to Denver segment).

The emissions contributions would be spread out over the entire length of the rail segments and would be diluted and dispersed by wind and atmospheric turbulence. As a result, increases in concentrations measured at air quality monitoring sites, if any, are expected to be negligible. The increased downline rail traffic associated with the proposed rail line would not lead to a violation of the NAAQS for counties that are in attainment, and would not increase the severity of conditions in counties that are not in attainment.

- Downline impacts on ambient pollutant concentrations would be comparable to the impacts estimated for the study area. Total concentrations at any particular location would vary depending on total train traffic, local background concentrations, and local topographic and meteorological conditions.
- Emissions increases of GHGs from locomotives would be 712,828 metric tons per year (MT/yr) of ~~carbon dioxide (CO₂)~~, 56 MT/yr of ~~methane (CH₄)~~, and 18 MT/yr of ~~nitrous oxide (N₂O)~~, or 719,204 MT/yr of carbon dioxide equivalent (CO₂e). Compared to the total existing CO₂e emissions of 24,459,223 MT/yr from all downline counties, the locomotive emissions increases would represent 2.9 percent of the county total CO₂e emissions.

Motor Vehicle Emissions

Operation of any of the Action Alternatives would contribute vehicle exhaust emissions from vehicles that are delayed at downline road-rail grade crossings. OEA estimated the increase in vehicle delays based on the estimated delays discussed in Section 3.1, *Vehicle Safety and Delay*. OEA concluded that the estimated increase in vehicle exhaust emissions from idling vehicles delayed at downline grade crossings under any of the Action Alternatives would be small and would not have a substantial impact on air quality.

Table 3.7-5. Estimated Downline Emissions of Criteria Pollutants—Increase in Trains per Day

Rail Segment Description ^a (Attainment Status) ^b	Segment- Subsegment Number	Segment Length (miles)	Maximum Increase in Trains per Day	Locomotive Criteria Pollutant Emissions (tons/year)					
				CO	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC
Denver East/North (N)	DE-01	3.2	8.4	11.04	30.69	0.66	0.64	0.04	1.09
Denver Eastbound (N)	EB-01	1.4	1.1	0.65	1.82	0.04	0.04	0.00	0.06
Denver Eastbound (N)	EB-02	0.7	1.1	0.30	0.83	0.02	0.02	0.00	0.03
Denver Eastbound (N)	EB-03	8.6	1.1	3.91	10.86	0.23	0.23	0.01	0.39
Denver Eastbound (N)	EB-04	18.5	1.1	8.46	23.53	0.51	0.49	0.03	0.84
Denver Eastbound (N)	EB-05	1.1	1.1	0.50	1.39	0.03	0.03	0.00	0.05
Denver Eastbound (A/N)	EB-06	28.8	1.1	13.13	36.49	0.79	0.77	0.05	1.30
Kyune to Denver (A/N)	KD-01	11.1	9.5	43.78	121.68	2.63	2.55	0.15	4.33
Kyune to Denver (A)	KD-02	3.3	9.5	12.96	36.03	0.78	0.76	0.05	1.28
Kyune to Denver (A)	KD-03	171.2	9.5	675.34	1877.08	40.59	39.37	2.38	66.78
Kyune to Denver (A)	KD-04	3.1	9.5	12.35	34.32	0.74	0.72	0.04	1.22
Kyune to Denver (A)	KD-05	0.6	9.5	2.42	6.74	0.15	0.14	0.01	0.24
Kyune to Denver (A/N)	KD-06	265.8	9.5	1048.35	2913.84	63.00	61.11	3.70	103.66
Kyune to Denver (N)	KD-07	2.1	9.5	8.48	23.56	0.51	0.49	0.03	0.84
Denver Northbound (N)	NB-01	43.9	7.3	132.95	369.53	7.99	7.75	0.47	13.15
Denver Northbound (N)	NB-02	15.7	7.3	47.73	132.66	2.87	2.78	0.17	4.72
Denver Northbound (N)	NB-03	0.5	7.3	1.49	4.15	0.09	0.09	0.01	0.15
Denver Northbound (N)	NB-04	9.1	7.3	27.56	76.61	1.66	1.61	0.10	2.73
Denver Southbound (N)	SB-01	4.1	1.1	1.89	5.25	0.11	0.11	0.01	0.19
Denver Southbound (N)	SB-02	8.2	1.1	3.75	10.42	0.23	0.22	0.01	0.37
Denver Southbound (N)	SB-03	42.2	1.1	19.28	53.58	1.16	1.12	0.07	1.91

Rail Segment Description ^a (Attainment Status) ^b	Segment- Subsegment Number	Segment Length (miles)	Maximum Increase in Trains per Day	Locomotive Criteria Pollutant Emissions (tons/year)					
				CO	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC
Denver Eastbound (N) DE-013.28.411.0430.690.660.640.041.09 Kyune to Denver (A)	KD-01	1.2	9.5	4.85	13.47	0.29	0.28	0.02	0.48
Kyune to Denver (A)	KD-02	175.0	9.5	690.11	1,918.14	41.47	40.23	2.43	68.24
Kyune to Denver (N)	KD-03	29.9	9.5	118.04	328.09	7.09	6.88	0.42	11.67
Kyune to Denver (A)	KD-04	184.5	9.5	727.71	2,022.63	43.73	42.42	2.57	71.95
Kyune to Denver (N)	KD-05	2.1	9.5	8.48	23.56	0.51	0.49	0.03	0.84
Subtotal Kyune to Denver	KD-01-KD-05	457.4	9.5	1,803.68	5,013.24	108.39	105.14	6.36	178.34
Denver Northbound (N)	NB-01	69.2	7.3	209.73	582.95	12.60	12.23	0.74	20.74

Notes:

^a In attainment areas, only rail segments with a traffic increase that exceeds the Board's air quality analysis thresholds are shown. In nonattainment or maintenance areas all rail segments are shown.

^b A = attainment area, N = nonattainment or maintenance area.

CO = carbon monoxide; NO_x = nitrogen oxides; PM₁₀ = particulate matter 10 microns or less in size; PM_{2.5} = particulate matter 2.5 microns or less in size; SO₂ = sulfur dioxide; VOC = volatile organic compounds

Table 3.7-6. Estimated Downline Emissions of Hazardous Air Pollutants—Increase in Trains per Day

Rail Segment Description ^a (Attainment Status) ^b	Segment-Subsegment Number	Segment Length (miles)	Maximum Increase in Trains per Day	Locomotive Hazardous Air Pollutant Emissions (tons/year) ^c								
				Acetaldehyde	Acrolein	Benzene	1, 3-Butadiene	Ethylbenzene	Formaldehyde	DPM	Naphthalene	POM
<u>Denver Eastbound (N)</u>	<u>DE-01</u>	<u>3.2</u>	<u>8.4</u>	<u>0.02</u>	<u>0.00</u>	<u>0.02</u>	<u>0.00</u>	<u>0.00</u>	<u>0.03</u>	<u>0.66</u>	<u>0.00</u>	<u>0.00</u>
<u>Kyune to Denver (A)</u>	<u>KD-01</u>	<u>1.2</u>	<u>9.5</u>	<u>0.01</u>	<u>0.00</u>	<u>0.01</u>	<u>0.00</u>	<u>0.00</u>	<u>0.01</u>	<u>0.29</u>	<u>0.00</u>	<u>0.00</u>
<u>Kyune to Denver (A)</u>	<u>KD-02</u>	<u>175.0</u>	<u>9.5</u>	<u>1.16</u>	<u>0.14</u>	<u>1.41</u>	<u>0.06</u>	<u>0.00</u>	<u>1.78</u>	<u>41.47</u>	<u>0.13</u>	<u>0.03</u>
<u>Kyune to Denver (N)</u>	<u>KD-03</u>	<u>29.9</u>	<u>9.5</u>	<u>0.20</u>	<u>0.02</u>	<u>0.24</u>	<u>0.01</u>	<u>0.00</u>	<u>0.30</u>	<u>7.09</u>	<u>0.02</u>	<u>0.01</u>
<u>Kyune to Denver (A)</u>	<u>KD-04</u>	<u>184.5</u>	<u>9.5</u>	<u>1.22</u>	<u>0.15</u>	<u>1.49</u>	<u>0.06</u>	<u>0.00</u>	<u>1.88</u>	<u>43.73</u>	<u>0.14</u>	<u>0.04</u>
<u>Kyune to Denver (N)</u>	<u>KD-05</u>	<u>2.1</u>	<u>9.5</u>	<u>0.01</u>	<u>0.00</u>	<u>0.02</u>	<u>0.00</u>	<u>0.00</u>	<u>0.02</u>	<u>0.51</u>	<u>0.00</u>	<u>0.00</u>
<u>Subtotal Kyune to Denver</u>	<u>KD-01-KD-05</u>	<u>457.4</u>	<u>9.5</u>	<u>3.03</u>	<u>0.37</u>	<u>3.68</u>	<u>0.15</u>	<u>0.00</u>	<u>4.66</u>	<u>108.39</u>	<u>0.33</u>	<u>0.09</u>
<u>Denver Northbound (N)</u>	<u>NB-01</u>	<u>69.2</u>	<u>7.3</u>	<u>0.35</u>	<u>0.04</u>	<u>0.43</u>	<u>0.02</u>	<u>0.00</u>	<u>0.54</u>	<u>12.60</u>	<u>0.04</u>	<u>0.01</u>
<u>Denver East/North (N)</u>	<u>DE-01</u>	<u>3.2</u>	<u>8.4</u>	<u>0.02</u>	<u>0.00</u>	<u>0.02</u>	<u>0.00</u>	<u>0.00</u>	<u>0.03</u>	<u>0.66</u>	<u>0.00</u>	<u>0.00</u>
<u>Denver Eastbound (N)</u>	<u>EB-01</u>	<u>1.4</u>	<u>1.1</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.04</u>	<u>0.00</u>	<u>0.00</u>
<u>Denver Eastbound (N)</u>	<u>EB-02</u>	<u>0.7</u>	<u>1.1</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.02</u>	<u>0.00</u>	<u>0.00</u>
<u>Denver Eastbound (N)</u>	<u>EB-03</u>	<u>8.6</u>	<u>1.1</u>	<u>0.01</u>	<u>0.00</u>	<u>0.01</u>	<u>0.00</u>	<u>0.00</u>	<u>0.01</u>	<u>0.23</u>	<u>0.00</u>	<u>0.00</u>
<u>Denver Eastbound (N)</u>	<u>EB-04</u>	<u>18.5</u>	<u>1.1</u>	<u>0.01</u>	<u>0.00</u>	<u>0.02</u>	<u>0.00</u>	<u>0.00</u>	<u>0.02</u>	<u>0.51</u>	<u>0.00</u>	<u>0.00</u>
<u>Denver Eastbound (N)</u>	<u>EB-05</u>	<u>1.1</u>	<u>1.1</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.03</u>	<u>0.00</u>	<u>0.00</u>
<u>Denver Eastbound (A/N)</u>	<u>EB-06</u>	<u>28.8</u>	<u>1.1</u>	<u>0.02</u>	<u>0.00</u>	<u>0.03</u>	<u>0.00</u>	<u>0.00</u>	<u>0.03</u>	<u>0.79</u>	<u>0.00</u>	<u>0.00</u>
<u>Kyune to Denver (A/N)</u>	<u>KD-01</u>	<u>11.1</u>	<u>9.5</u>	<u>0.07</u>	<u>0.01</u>	<u>0.09</u>	<u>0.00</u>	<u>0.00</u>	<u>0.11</u>	<u>2.63</u>	<u>0.01</u>	<u>0.00</u>
<u>Kyune to Denver (A)</u>	<u>KD-02</u>	<u>3.3</u>	<u>9.5</u>	<u>0.02</u>	<u>0.00</u>	<u>0.03</u>	<u>0.00</u>	<u>0.00</u>	<u>0.03</u>	<u>0.78</u>	<u>0.00</u>	<u>0.00</u>
<u>Kyune to Denver (A)</u>	<u>KD-03</u>	<u>171.2</u>	<u>9.5</u>	<u>1.13</u>	<u>0.14</u>	<u>1.38</u>	<u>0.06</u>	<u>0.00</u>	<u>1.74</u>	<u>40.59</u>	<u>0.13</u>	<u>0.03</u>

Rail Segment Description ^a (Attainment Status) ^b	Segment-Subsegment Number	Segment Length (miles)	Maximum Increase in Trains per Day	Locomotive Hazardous Air Pollutant Emissions (tons/year) ^c								
				Acetaldehyde	Acrolein	Benzene	1, 3-Butadiene	Ethylbenzene	Formaldehyde	DPM	Naphthalene	POM
Kyune to Denver (A)	KD-04	3.1	9.5	0.02	0.00	0.03	0.00	0.00	0.03	0.74	0.00	0.00
Kyune to Denver (A)	KD-05	0.6	9.5	0.00	0.00	0.00	0.00	0.00	0.01	0.15	0.00	0.00
Kyune to Denver (A/N)	KD-06	265.8	9.5	1.76	0.21	2.14	0.09	0.00	2.71	63.00	0.19	0.05
Kyune to Denver (N)	KD-07	2.1	9.5	0.01	0.00	0.02	0.00	0.00	0.02	0.51	0.00	0.00
Denver Northbound (N)	NB-01	43.9	7.3	0.22	0.03	0.27	0.01	0.00	0.34	7.99	0.02	0.01
Denver Northbound (N)	NB-02	15.7	7.3	0.08	0.01	0.10	0.00	0.00	0.12	2.87	0.01	0.00
Denver Northbound (N)	NB-03	0.5	7.3	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00
Denver Northbound (N)	NB-04	9.1	7.3	0.05	0.01	0.06	0.00	0.00	0.07	1.66	0.01	0.00
Denver Southbound (N)	SB-01	4.1	1.1	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00
Denver Southbound (N)	SB-02	8.2	1.1	0.01	0.00	0.01	0.00	0.00	0.01	0.23	0.00	0.00
Denver Southbound (N)	SB-03	42.2	1.1	0.03	0.00	0.04	0.00	0.00	0.05	1.16	0.00	0.00

Notes:

^a In attainment areas, only rail segments with a traffic increase that exceeds the Board's air quality thresholds are shown. In nonattainment or maintenance areas, all rail segments are shown.

^b A = attainment area, N = nonattainment or maintenance area.

^c Values less than 0.005 have been rounded to zero.

DPM = diesel particulate matter; POM = polycyclic organic matter

Table 3.7-7. Estimated Annual Average Downline Emissions Compared to County-Level Emissions

Rail Segment Description ^a (Attainment Status) ^b	Segment-Subsegment Number	Segment Length (miles)	Maximum Increase in Trains per Day	Project Locomotives ^c (tons/year)						Total County Emissions Levels ^d (tons/year)						% of County Level ^e (tons/year)					
				CO	NOx	PM10	PM2.5	SO ₂	VOC	CO	NOx	PM10	PM2.5	SO ₂	VOC	CO	NOx	PM10	PM2.5	SO ₂	VOC
Denver Eastbound (N)	DE-01	3.2	8.4	11	31	1	1	0	1	60,756	18,029	11,084	2,833	3,314	17,127	0.02	0.17	0.01	0.00	0.02	0.00
Kyune to Denver (A)	KD-01	1.2	9.5	5	13	0	0	0	0	57,190	14,739	16,059	3,017	268	32,240	0.01	0.09	0.00	0.00	0.11	0.00
Kyune to Denver (A)	KD-02	175.0	9.5	690	1,918	41	40	6	68	82,003	34,336	16,731	4,144	16,895	142,396	0.84	5.59	0.25	0.97	0.01	0.05
Kyune to Denver (N)	KD-03	29.9	9.5	118	328	7	7	0	12	170,151	37,917	24,097	6,111	6,023	49,892	0.07	0.87	0.03	0.11	0.01	0.02
Kyune to Denver (A)	KD-04	184.5	9.5	728	2,023	44	42	3	72	88,543	22,940	13,700	4,099	347	111,155	0.82	8.82	0.32	1.03	0.74	0.06
Kyune to Denver (N)	KD-05	2.1	9.5	8	24	1	0	0	1	60,756	18,029	11,084	2,833	3,314	17,127	0.01	0.13	0.00	0.00	0.02	0.00
Subtotal Kyune to Denver	KD-01-KD-05	457.4	9.5	1,804	5,013	108	105	6	178	360,894	104,604	64,807	15,628	23,412	295,874	0.50	4.79	0.17	0.67	0.03	0.06
Denver Northbound (N)	NB-01	69.2	7.3	210	583	13	12	1	21	206,737	64,211	47,197	10,929	4,326	128,982	0.10	0.91	0.03	0.11	0.02	0.02
Denver East/North (N)	DE-01	3.2	8.4	11.04	30.69	0.66	0.64	0.04	1.09	60,756	18,029	11,084	2,833	3,314	17,127	0.02	0.17	0.01	0.02	0.00	0.01
Denver Eastbound (N)	EB-01	1.4	1.1	0.65	1.82	0.04	0.04	0.00	0.06	139,862	33,519	23,693	5,351	3,880	31,482	0.00	0.01	0.00	0.00	0.00	0.00
Denver Eastbound (N)	EB-02	0.7	1.1	0.30	0.83	0.02	0.02	0.00	0.03	79,106	15,490	12,609	2,518	566	14,355	0.00	0.01	0.00	0.00	0.00	0.00
Denver Eastbound (N)	EB-03	8.6	1.1	3.91	10.86	0.23	0.23	0.01	0.39	139,862	33,519	23,693	5,351	3,880	31,482	0.00	0.03	0.00	0.00	0.00	0.00
Denver Eastbound (N)	EB-04	18.5	1.1	8.46	23.53	0.51	0.49	0.03	0.84	135,579	28,868	23,577	5,522	3,485	33,566	0.01	0.08	0.00	0.01	0.00	0.00
Denver Eastbound (N)	EB-05	1.1	1.1	0.50	1.39	0.03	0.03	0.00	0.05	60,756	18,029	11,084	2,833	3,314	17,127	0.00	0.01	0.00	0.00	0.00	0.00
Denver Eastbound (A/N)	EB-06	28.8	1.1	13.13	36.49	0.79	0.77	0.05	1.30	142,694	30,747	27,186	6,159	3,491	42,249	0.01	0.12	0.00	0.01	0.00	0.00
Kyune to Denver (A/N)	KD-01	11.1	9.5	43.78	121.68	2.63	2.55	0.15	4.33	67,474	20,569	19,971	3,788	10,595	51,793	0.06	0.59	0.01	0.07	0.00	0.01
Kyune to Denver (A)	KD-02	3.3	9.5	12.96	36.03	0.78	0.76	0.05	1.28	57,190	14,739	16,059	3,017	268	32,240	0.02	0.24	0.00	0.03	0.02	0.00
Kyune to Denver (A)	KD-03	171.2	9.5	675.34	1,877.08	40.59	39.37	2.38	66.78	122,486	41,960	29,327	6,701	6,875	123,903	0.55	4.47	0.14	0.59	0.03	0.05
Kyune to Denver (A)	KD-04	3.1	9.5	12.35	34.32	0.74	0.72	0.04	1.22	36,994	5,328	5,780	1,744	121	39,808	0.03	0.64	0.01	0.04	0.04	0.00
Kyune to Denver (A)	KD-05	0.6	9.5	2.42	6.74	0.15	0.14	0.01	0.24	36,994	5,328	5,780	1,744	121	39,808	0.01	0.13	0.00	0.01	0.01	0.00
Kyune to Denver (A/N)	KD-06	265.8	9.5	1,048.35	2,913.84	63.00	61.11	3.70	103.66	195,118	50,967	30,287	7,970	4,613	172,518	0.54	5.72	0.21	0.77	0.08	0.06
Kyune to Denver (N)	KD-07	2.1	9.5	8.48	23.56	0.51	0.49	0.03	0.84	60,756	18,029	11,084	2,833	3,314	17,127	0.01	0.13	0.00	0.02	0.00	0.00
Denver Northbound (N)	NB-01	43.9	7.3	132.95	369.53	7.99	7.75	0.47	13.15	127,631	48,721	34,588	8,411	3,761	114,627	0.10	0.76	0.02	0.09	0.01	0.01
Denver Northbound (N)	NB-02	15.7	7.3	47.73	132.66	2.87	2.78	0.17	4.72	66,875	30,692	23,504	5,578	446	97,500	0.07	0.43	0.01	0.05	0.04	0.00

Rail Segment Description ^a (Attainment Status) ^b	Segment-Subsegment Number	Segment Length (miles)	Maximum Increase in Trains per Day	Project Locomotives ^c (tons/year)						Total County Emissions Levels ^d (tons/year)						% of County Level ^e (tons/year)					
				CO	NO _x	PM10	PM2.5	SO ₂	VOC	CO	NO _x	PM10	PM2.5	SO ₂	VOC	CO	NO _x	PM10	PM2.5	SO ₂	VOC
Denver Northbound (N)	NB-03	0.5	7.3	1.49	4.15	0.09	0.09	0.01	0.15	66.875	30.692	23.504	5.578	446	97.500	0.00	0.01	0.00	0.00	0.00	0.00
Denver Northbound (N)	NB-04	9.1	7.3	27.56	76.61	1.66	1.61	0.10	2.73	66.875	30.692	23.504	5.578	446	97.500	0.04	0.25	0.01	0.03	0.02	0.00
Denver Southbound (N)	SB-01	4.1	1.1	1.89	5.25	0.11	0.11	0.01	0.19	139.862	33.519	23.693	5.351	3.880	31.482	0.00	0.02	0.00	0.00	0.00	0.00
Denver Southbound (N)	SB-02	8.2	1.1	3.75	10.42	0.23	0.22	0.01	0.37	153.929	26.329	25.103	5.207	736	30.794	0.00	0.04	0.00	0.00	0.00	0.00
Denver Southbound (N)	SB-03	42.2	1.1	19.28	53.58	1.16	1.12	0.07	1.91	111.737	17.544	18.222	3.919	319	30.321	0.02	0.31	0.01	0.03	0.02	0.01

Notes:

^a In attainment areas, only rail segments with a traffic increase that exceeds the Board's air quality analysis thresholds are shown. In nonattainment or maintenance areas, all rail segments are shown.

^b A = attainment area, N = nonattainment or maintenance area.

^c Values less than 0.5 have been rounded to zero.

^d Sum of county-level emissions inventories for all counties through which segment passes (USEPA 2020).

^e Values less than 0.005% have been rounded to zero.

CO = carbon monoxide; NO_x = nitrogen oxides; PM10 = particulate matter 10 microns or less in size; PM2.5 = particulate matter 2.5 microns or less in size; SO₂ = sulfur dioxide; VOC = volatile organic compounds

3.7.3.2 Impact Comparison between Action Alternatives

This subsection describes the potential impacts related to air quality and GHG emissions that would be different between the three Action Alternatives.

Construction

Table 3.7-8 shows the total emissions of air pollutants during construction for each Action Alternative, including emissions from construction equipment, trucks, and workers' personal vehicles. As the table shows, construction of the Wells Draw Alternative would result in the most emissions of air pollutants and of GHGs, followed by the Whitmore Park Alternative and the Indian Canyon Alternative.

Table 3.7-8. Emissions during Rail Line Construction

Pollutants and GHGs	Action Alternative		
	Indian Canyon	Wells Draw	Whitmore Park
Criteria Pollutants (U.S. tons)			
Carbon monoxide	917	1,541	992
Nitrogen oxides	512	649	598
PM10	779	1,075	880
PM2.5	228	299	281
Sulfur dioxide	2	2	2
Volatile organic compounds	94	146	103
Hazardous Air Pollutants (U.S. tons)			
Acetaldehyde	3	5	4
Acrolein	1	1	1
Benzene	3	6	4
1,3-Butadiene	<0.5	1	<0.5
DPM	1	2	1
Ethylbenzene	8	10	9
Formaldehyde	15	17	18
Napthalene	<0.5	1	1
POM	3	3	3
Greenhouse Gases (metric tons)			
Carbon dioxide	206,592	286,499	242,910
Methane	14	21	18
Nitrous oxide	6	10	7
CO₂e^a (100-year GWP) Total (CO₂e^a)	208,697	289,737	245,304
CO₂e^a (20-year GWP)	209,411	290,788	246,200

Notes:

^a OEA calculated CO₂e values using the 100-year potential global warming potential (GWP) values from the IPCC Fourth Assessment Report (IPCC 2007). GWP values: carbon dioxide = 1; methane = 25; nitrous oxide = 298. 100-year GWP values are: carbon dioxide = 1; methane = 25; nitrous oxide = 298. 20-year GWP values are: carbon dioxide = 1; methane = 72; nitrous oxide = 289.

PM10 = particulate matter 10 microns or less in diameter; PM2.5 = particulate matter 2.5 microns or less in diameter; DPM = diesel particulate matter; POM = polycyclic organic matter; CO₂e = carbon dioxide equivalent
< = less than

In consultation with USEPA, OEA has determined that construction of the proposed rail line in the Uinta Basin Ozone Nonattainment Area and the Utah County PM10 Maintenance Area is subject to the USEPA General Conformity Rule (Appendix B, *Applicable Regulations*). OEA compared the estimated construction emissions in these areas to the thresholds in the rule for the applicable pollutants, as shown in Table 3.7-9. The table demonstrates that the estimated construction emissions in each area are less than the conformity thresholds. Therefore, the General Conformity Rule does not require further evaluation of conformity.

Table 3.7-9. Emissions during Rail Line Construction in Areas Subject to General Conformity

Applicable Pollutants (tons per year)	Action Alternative			General Conformity Threshold
	Indian Canyon	Wells Draw	Whitmore Park	
Uinta Basin Ozone Nonattainment Area ^a				
Nitrogen oxides	76.4	49.9	97.1	100
Volatile organic compounds	22.5	18.5	27.1	100
Utah County PM10 Maintenance Area ^a				
Nitrogen oxides ^b	9.6	5.5	15.6	100
PM10	16.2	9.5	26.8	100
Sulfur dioxide ^b	0.03	0.02	0.05	100

Notes:

^a For each Action Alternative and area, the emissions for the year having the largest construction emissions are shown.

^b The Utah DEQ PM10 maintenance plan identifies NO_x (but not SO₂) as a PM10 precursor in Utah County (Utah DEQ 2015b).

PM10 = particulate matter 10 microns or less in diameter; SO₂ = sulfur dioxide

Operations

Table 3.7-10 shows the estimated emissions during rail operations for each Action Alternative. The estimates include emissions from locomotives, worker commuting, and reductions in truck trips carrying crude oil from production areas in the Basin to the Price River Terminal. Because emissions would depend on the number of trains operating on the proposed rail line, OEA reported emissions for both the low rail traffic scenario and high rail traffic. To quantify locomotive emissions, OEA assumed that rail traffic would reach full volume in the first year of operation, which is a conservative⁶ assumption because locomotive emissions decrease over time as emissions standards become more restrictive and older locomotives are replaced by newer locomotives with lower emissions rates. Unlike construction emissions, locomotive emissions during rail operations are not subject to the General Conformity Rule because the Board does not exercise continuing program control over rail operations and would not exercise such control over the operation of the proposed rail line.

⁶ A conservative assumption is an assumption that tends to overstate impacts.

Table 3.7-10. Emissions during Rail Operations

Pollutants and GHGs	Low Rail Traffic Scenario			High Rail Traffic Scenario		
	Indian Canyon Alternative	Wells Draw Alternative	Whitmore Park Alternative	Indian Canyon Alternative	Wells Draw Alternative	Whitmore Park Alternative
Criteria Pollutants (U.S. tons/year)^a						
Carbon monoxide	136	176	147	373	479	405
Nitrogen oxides	343	413	374	969	1,162	1,056
PM10	10	13	11	29	35	32
PM2.5	7	9	8	21	26	23
Sulfur dioxide	0.4	0.5	0.4	1	2	1
VOCs	13	18	14	36	48	40
Hazardous Air Pollutants (U.S. tons/year)^a						
Acetaldehyde	0.2	0.3	0.2	0.6	0.8	0.7
Acrolein	<0.05	<0.05	<0.05	0.1	0.1	0.1
Benzene	0.3	0.4	0.3	0.8	1.0	0.9
1,3-Butadiene	<0.05	<0.05	<0.05	<0.05	0.1	<0.05
DPM	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	0.3	0.4	0.3	0.9	1.1	1.0
Formaldehyde	7	9	8	21	25	23
Napthalene	<0.05	<0.05	<0.05	0.1	0.1	0.1
POM	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Greenhouse Gases (metric tons/year)^a						
Carbon dioxide	40,106	52,837	44,036	119,041	154,026	129,950
Methane	3	4	4	10	12	10
Nitrous oxide	1	2	1	3	4	3
<u>CO₂e^b (100-year GWP)</u>	<u>40,511</u>	<u>53,359</u>	<u>44,476</u>	<u>120,162</u>	<u>155,466</u>	<u>131,169</u>
<u>CO₂e^b (20-year GWP)</u>	<u>40,685</u>	<u>53,584</u>	<u>44,666</u>	<u>120,656</u>	<u>156,101</u>	<u>131,708</u>

Notes:

^a Values greater than or equal to 1 are rounded to the nearest ton. Values less than 1 and greater than or equal to 0.05 are rounded to the nearest 0.1 ton.

^b CO₂e values were calculated using the 100-year potential global warming potential (GWP) values from the IPCC Fourth Assessment Report (IPCC 2007). GWP values: carbon dioxide = 1; methane = 25; nitrous oxide = 298. 100-year GWP values are: carbon dioxide = 1; methane = 25; nitrous oxide = 298; 20-year GWP values are: carbon dioxide = 1; methane = 72; nitrous oxide = 289.

PM10 = particulate matter 10 microns or less in diameter; PM2.5 = particulate matter 2.5 microns or less in diameter; VOCs = volatile organic compounds; DPM = diesel particulate matter; POM = polycyclic organic matter; CO₂e = carbon dioxide equivalent; < = less than

Regardless of the Action Alternative, the high rail traffic scenario would result in higher emissions than the low rail traffic scenario for all pollutants. Across the three Action Alternatives, the Wells Draw Alternative would result in the most emissions, primarily due to its greater length compared to the Indian Canyon Alternative and the Whitmore Park Alternative.

Under any of the Action Alternatives, air pollutant emissions (Table 3.7-10) would generally represent a small percentage of existing emissions in the regional study area (Table 3.7-1), ranging from less than 0.05 percent to 3.5 percent depending on the pollutant. For GHGs, the Wells Draw Alternative could result in up to 156,101,211,621 metric tons of CO₂e per year under the high rail traffic scenario based on 20-year GWP, which represents approximately 5 percent of GHG emissions in the regional study area, 1 percent of statewide GHG emissions, and 0.0004 percent of global GHG emissions (IPCC 2014). Emissions would be lower for the low rail traffic scenario and under the other two Action Alternatives and would, therefore, represent a smaller percentage of existing GHG emissions. OEA is recommending mitigation measures requiring the Coalition consider actions that would reduce GHG emissions during rail construction and operations (AQ-MM-4, AQ-MM-5, AQ-MM-6, AQ-MM-8).

Air Pollutant Concentrations

Emissions during rail operations would affect the concentration of air pollutants in the regional study area. To quantify air quality impacts for each Action Alternative, OEA modeled the potential ambient concentrations of nitrogen dioxide (NO₂) and PM_{2.5}, which are the pollutants of greatest concern for locomotive emissions. OEA compared the results of the modeling to the NAAQS for NO₂ and PM_{2.5}, to assess the severity of air quality impacts because the NAAQS were established as thresholds to protect human health. For diesel-fueled emissions sources, such as railroads and heavy trucks, the 1-hour NO₂ and 24-hour PM_{2.5} concentrations are the most likely to approach or exceed the NAAQS among all criteria pollutants and averaging periods. OEA assumed that if the modeled concentrations of NO₂ and PM_{2.5} would be less than the NAAQS, then concentrations of CO, PM₁₀, and SO₂ for operations also would be less than the NAAQS. OEA also assumed that if the modeled concentrations of NO₂ and PM_{2.5} would be less than the NAAQS, then there would be no other anticipated NAAQS exceedances in the study area due to operation of the proposed rail line. Appendix M, *Air Quality Emissions and Modeling Data*, provides further information on the air quality modeling methodology.

To determine whether localized pollutant concentrations with locomotive operations could approach or exceed the NAAQS, OEA identified the locations (known as receptors) along the three Action Alternatives that would be most likely to experience higher pollutant concentrations due to topography, meteorology, and rail alignment, as well as emissions. The conditions that can lead to high concentrations include the following factors:

- Steep grade
- Switchbacks
- Winds frequently oriented along the direction of the rail alignment
- Valley location where emissions could be trapped under temperature inversions⁷
- Frequent stagnation conditions⁸ or low wind speeds

⁷ In a temperature inversion, the temperature of the atmosphere increases with altitude in contrast to the normal typical decrease with altitude. During a temperature inversion, air pollution released into the atmosphere's lowest layer is trapped there and its dispersion is inhibited.

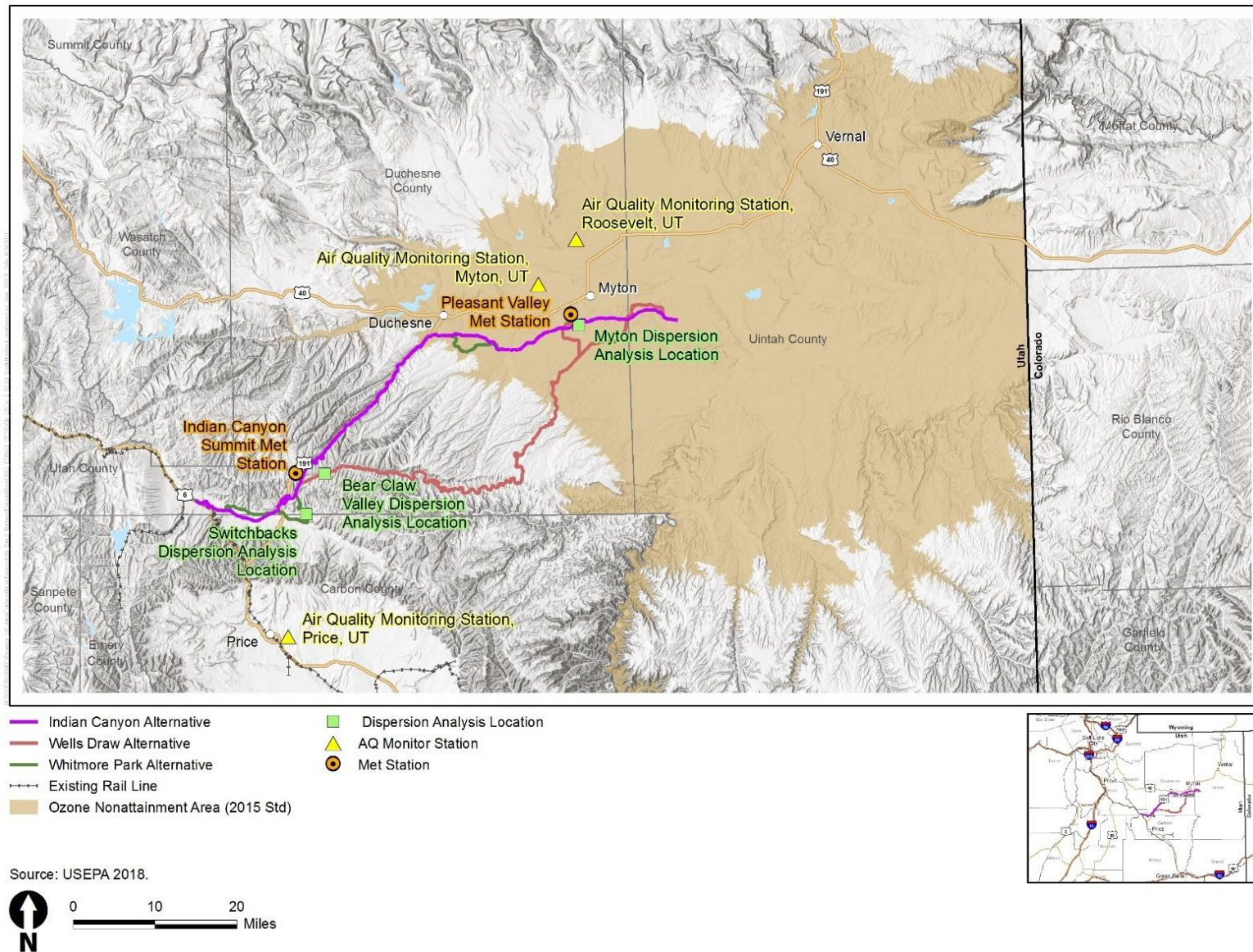
⁸ Stagnation is an atmospheric phenomenon where an air mass remains in place over a geographic region for an extended period of time. Stagnation typically consists of these conditions: light winds so that horizontal dispersion is at a minimum, a stable lower atmosphere that inhibits vertical dispersion of pollutants, and absence of precipitation to wash any pollution away.

Based on these criteria, OEA identified the following three locations (Figure 3-7.3) as having the greatest likelihood of experiencing concentrations that could exceed the NAAQS.

- **Switchbacks near Minnie Maud Road (Whitmore Park Alternative).** The rail tracks have four switchbacks climbing from about 7,435 feet to 7,795 feet elevation in 3.10 miles, a 2.2 percent grade. Meteorological data for the area suggest that the wind direction frequently aligns parallel to the rail alignment at this location. Very low wind speeds occur about 5 percent of the time, which could lead to high pollutant concentrations. No residences or other sensitive land uses are near this location.
- **Bear Claw Valley south of Argyle Canyon Road (Wells Draw Alternative).** Meteorological data for the area suggest that the wind direction frequently aligns parallel to the rail alignment at this valley location with relatively slow wind speeds. Very low wind speeds occur about 5 percent of the time, which could lead to high pollutant concentrations. The nearest sensitive land use to this location is a residence about 1,000 feet from the proposed rail alignment.
- **Rail alignment south of Myton (all Action Alternatives).** Meteorological data for the area suggest that the wind direction frequently aligns parallel to the rail alignment at this valley location with relatively slow wind speeds about 10 percent of the time, which could lead to high pollutant concentrations. However, very low wind speeds occur less frequently. There are nearby residences south of Myton. The distance to the nearest residence is about 650 feet for the Wells Draw Alternative, about 1,800 feet for the Whitmore Park Alternative, and about 2,000 feet for the Indian Canyon Alternative.

OEA determined that identifying three study locations based on the expected location of maximum concentrations was the appropriate analysis approach because the proposed rail line represents a single, linear, near-ground source. This analysis approach differs from USEPA's standard modeling guidance, which is oriented toward stationary-source permitting, typically of multiple elevated stationary sources. OEA modeled concentrations of NO₂ and PM_{2.5} that could occur at these locations just outside of the rail right-of-way,⁹ as the maximum concentrations for a rail line source are anticipated to occur within a few hundred meters of the track. OEA only modeled concentrations that could occur under the high rail traffic scenario because that scenario represents the maximum predicted rail traffic that could move on the proposed rail line. To be conservative, OEA assumed for purposes of analysis that the full train volume would occur in the first year of rail operations.

⁹ The air quality analysis does not consider concentrations within the right-of-way because entry by humans at any point would constitute trespass except at specific approved locations. These locations would include primarily grade crossings, where human crossing of the right-of-way would not lead to air quality impacts because exposure to pollutant concentrations within the right-of-way would last only seconds to minutes. In addition, portions of the right-of-way could be fenced, which would prevent entry by humans at fenced locations.

Figure 3.7-33. Modeling Analysis Locations

OEA used the USEPA AERMOD dispersion model, with the estimated emissions rates,¹⁰ along with meteorological and topographical data for both the local and regional study area, to estimate the concentrations of NO₂ and PM_{2.5}. OEA used background air quality data that are representative of the regional air quality. In modeling the 24-hour PM_{2.5} and the annual PM_{2.5} and NO₂ impacts, OEA assumed that the number of trains per day would be constant throughout the year. In modeling 1-hour NO₂ impacts, OEA assumed conservatively that two trains pass by the receptors in the same hour, for every modeled hour. With the predicted train volumes of up to 10.52 trains per day, the time between trains normally would be greater than 1 hour, but two trains passing by in the same hour would be possible. OEA expects that no more than two trains would pass by in the same hour during rail operations. Appendix M, *Air Quality Emissions and Modeling Data*, includes further details on the dispersion modeling. Table 3.7-11 reports the maximum predicted concentrations for the high rail traffic scenario. In all cases, the maximum concentration occurs at the assumed right-of-way boundary (50 feet from the track). Concentrations at larger distances from the track, including at the nearest residences, are lower.

Table 3.7-11 shows that predicted 24-hour PM_{2.5}, annual PM_{2.5}, [1-hour NO₂](#), and annual NO₂ concentrations would be less than the NAAQS at all three locations that OEA modeled. ~~Predicted 1-hour NO₂ concentrations would be less than the NAAQS at all locations for the Wells Draw Alternative.~~ As discussed previously, nitrogen oxides and particulate matter are the pollutants of greatest concern for locomotive emissions. Locomotive emissions are more likely to cause an exceedance of the 1-hour NO₂ and the 24-hour PM_{2.5} NAAQS than to cause an exceedance of the NAAQS for other pollutants. Because OEA's model predicts that concentrations of NO₂ and PM_{2.5} would be less than the 1-hour NO₂ and the 24-hour PM_{2.5} NAAQS for [all three locations, the Wells Draw Alternative](#), OEA concludes that locomotive emissions would not cause the concentrations of CO, SO₂, and PM₁₀ to exceed the NAAQS for [the Wells Draw Alternative any of the Action Alternatives](#). Because OEA's model was based on the high rail traffic scenario, which represents the maximum predicted volume of train traffic on the proposed rail line, OEA also concluded that lower levels of train traffic, such as what would occur under the low rail traffic scenario, would not result in concentrations of air pollutants that would exceed the NAAQS for any pollutant under any of the Action Alternatives.

¹⁰ OEA based the emissions rates for locomotives on USEPA (2009) guidance and determined that a fleet average emissions rate is the most appropriate approach for this analysis. Use of fleet average emissions is standard practice in mobile source emissions modeling [as conducted in state implementation planning \(SIPs\) as well as in EIS studies. A mix of locomotives that is older than the fleet average would have](#) Earlier years provide higher individual emissions rates and would provide more conservative estimates of short-term average concentrations paired with worst-case meteorological conditions. [Therefore, modeling an older fleet of locomotives than the fleet average would result in higher estimated concentrations than shown in Table 3.7-11. However,](#) modeling a train that is only pulled by lower-Tier, higher-emitting locomotives is [a worst-case, excessively conservative assumption equivalent to assuming that all trains are pulled by only such locomotives, and that they are operated simultaneously with the occurrence of meteorology that is not conducive to pollutant dispersion, and that this scenario occurs often enough to generate the number of NAAQS exceedances necessary to define a modeled violation of the NAAQS. OEA believes that this is a worst-case, excessively conservative assumption. NEPA does not require analysis of a worst-case scenario. Thus, a fleet average provides a realistic estimate of emissions.](#) Appendix M, *Air Quality Emissions and Modeling Data*, includes further details on modeled emissions rates.

Table 3.7-11. Modeled Maximum Air Pollutant Concentrations in the Project Opening Year under the High Rail Traffic Scenario

Analysis Location, Action Alternative		Receptor Type	PM2.5 (µg/m³)						NO2 (µg/m³)				
			24-Hour ^a			Annual ^b			1-Hour ^c			Annual ^d	
			Background ^e	Project	Total	Background ^e	Project	Total	Background ^{ef}	Project	Total	Background ^{ef}	Project
Switchbacks near Minnie Maud Road													
Whitmore Park	Maximum Impact	25.2	0.2	25.4	6.3	0.1	6.4	Variable hourly ^g		108.0	4.3	3.9	8.2
			0.1	25.3		<0.1	6.3	48.6	63.7	112.4	3.9	0.6	4.5
	Nearest Residence	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bear Claw Valley South of Argyle Canyon Road													
Wells Draw	Maximum Impact	25.2	0.1	25.3	6.3	<0.1	6.4	Variable hourly ^g		94.3	4.3	1.6	5.9
			<0.1			6.3	48.6	42.2	90.8	3.9	0.4	4.2	
	Nearest Residence	25.2	0.1	25.3	6.3	<0.1	6.4	Variable hourly ^g		91.0	4.3	0.9	5.2
			<0.1				6.3	48.6	25.1	73.7	3.9	0.3	4.2
Rail Alignment South of Myton													
Indian Canyon, Whitmore Park	Maximum Impact	25.2	0.2	25.4	6.3	0.1	6.4	Variable hourly ^{fg}		111.4	8.3	2.5	10.8
				25.3						197.4	3.9	2.8	6.7
	Nearest Residence	25.2	<0.1	25.3	6.3	<0.1	6.3	Variable hourly ^g		79.7	8.3	0.7	9.0
								48.6	59.6	108.2	3.9	0.6	4.5
Wells Draw	Maximum Impact	25.2	0.1	25.3	6.3	<0.1	6.3	Variable hourly ^g		103.8	8.3	2.2	10.5
								48.6	124.7	173.3	3.9	1.8	5.7
	Nearest Residence	25.2	<0.1	25.23	6.3	<0.1	6.3	Variable hourly ^g		37.2	8.3	0.5	8.8
								48.6	14.1	62.7	3.9	0.2	4.1
NAAQS				35.0			12.0			188			100

Notes:

^a Highest of the 35-year combinations of the 98th percentile of the annual distribution of 24-hour concentrations predicted each year at each receptor for Switchbacks near Minnie Maud Road and Bear Claw Valley South of Argyle Canyon Road, which were modeled with 5 years of meteorological data. For the rail alignment South of Myton, which only had 2 years of meteorological data, the 98th percentile of the daily average was averaged over 3-2 years.

^b Highest of the 35-year combinations-averages of the annual of the annual average concentrations at each receptor for the 5 years of meteorological data used for Switchbacks near Minnie Maud Road and Bear Claw Valley South of Argyle Canyon Road. For the rail alignment South of Myton, which only had 2 years of meteorological data, the value shown is the highest receptor concentration of the annual average concentration averaged over 2 years.

^c Highest of the multiyear averages used in the air quality modeling of the 98th percentile of the annual distribution of maximum daily 1-hour concentrations modeled each year at each receptor.

^d Highest of the annual mean.

^e Measured at Utah DEQ Roosevelt monitoring site, 290 South 1000 West, Roosevelt, Utah (EPA AIRS code 49-013-0002).

~~Values that exceed the NAAQS are shown in bold.~~ Measured at Myton Uinta Tribal Monitor, Utah (EPA AIRS code 49-013-7011) for rail alignment south of Myton and Price Utah DEQ monitoring site 351 South 2500 East, Price Utah (EPA AIRS code 49-007-1003) for rail alignment for Switchback near Minnie Maud Road and Bear Claw Valley South of Argyle Canyon Road.

~~^{f-g} Because high modeled concentrations were expected at this location, As explained in Appendix M, Air Quality Emissions and Modeling Data, hourly NO₂ background values varied both hourly and seasonally; were used for the rail alignment south of Myton under the Indian Canyon Alternative and Whitmore Park Alternative t. Therefore, there is no single value to report for the background value, as both vary hourly.~~ The range in the seasonal and hour of the day 1-hour NO₂ background concentration is ~~3.6-7.5 to 49.428.4~~ 3.6-7.5 to 49.428.4 µg/m³ ~~for Myton and 3.0 to 30.8 µg/m³ for Price.~~ The maximum combination of the paired background and project impact by hour of the day and season is reported as the total.

< = less than; NA = not applicable; NAAQS = National Ambient Air Quality Standards; NO₂ = nitrogen dioxide; PM_{2.5} = particulate matter 2.5 microns or less in diameter; µg/m³ = micrograms per cubic meter

Under the high rail traffic scenario for the Indian Canyon Alternative and Whitmore Park Alternative, OEA's modelling found that the 1-hour NO₂ concentration could exceed the NAAQS at one location south of Myton under certain conditions. If two trains were to pass by this area each hour under unfavorable local weather conditions, then the model suggests that NO₂ concentrations could reach as high as 197.4 µg/m³ near the rail right-of-way, which is higher than the NAAQS of 188 µg/m³ for 1-hour NO₂. OEA believes that this outcome is unlikely to actually occur during rail operations because trains would rarely pass a receptor as frequently as twice in an hour, even under the high rail traffic scenario. In addition, a number of studies have found that the AERMOD model may over-predict maximum 1-hour NO₂ concentration by between 1.7 and 2 times the observed concentration.¹⁴ The maximum modeled 1-hour NO₂ concentrations for the Indian Canyon Alternative and Whitmore Park Alternative might not exceed the NAAQS if the results were adjusted downward for this model bias. The potential exceedance, if it were to occur, would occur within or immediately adjacent to the rail right-of-way. Although there are several residences near the rail line, they are located well outside the right-of-way, and OEA does not expect that those sensitive receptors would experience NO₂ concentrations that would exceed the 1-hour NO₂ NAAQS.

In response to public comments on the Draft EIS, and in consultation with USEPA, OEA reran the dispersion models using different data inputs recommended by USEPA and different modeling parameters recommended by USEPA. Changes to the modeling procedure are documented in Appendix M, *Air Quality Emissions and Modeling Data*. Based on the results of the revised modeling, OEA does not expect that operation of the proposed rail line would result in exceedances of the 1-hour NO₂ NAAQS or the NAAQS for other pollutants. OEA does not expect that operation of the Indian Canyon Alternative or the Whitmore Park Alternative would result in an exceedance of the 1-hour NO₂ NAAQS or the NAAQS for other pollutants at the other modeled locations. Figure 3.7-4 shows the spatial distribution of the maximum predicted 1-hour NO₂ concentrations (with~~out~~ background concentrations) for the Indian Canyon Alternative and Whitmore Park Alternative in the area south of Myton where maximum impacts are predicted. The highest modeled concentrations are shown within the small areas close to and just south of the rail alignment labeled as having maximum 1-hour NO₂ concentrations of 100 ug/m³~~This is the only area in which a potential exceedance of the NAAQS was modeled. In Figure 3.7-4, the potential NAAQS exceedance could occur locations predicted to experience project-related NO₂ concentrations of 140 µg/m³ or higher. The small areas labeled as having NO₂ concentrations of 140 µg/m³ or higher are the only locations of predicted exceedances.~~

Figure 3.7-5 through Figure 3.7-7 show the maximum predicted 1-hour NO₂ concentrations (with~~out~~ background concentrations) for the Wells Draw Alternative south of Myton, the Whitmore Park Alternative at the switchbacks near Minnie Maud Road, and the Wells Draw Alternative at Bear Claw Valley south of Argyle Canyon Road, respectively. No exceedances of the NAAQS were predicted at any of those modeling locations. As the figures show, residences near the proposed rail line could experience air pollutant concentrations that would be elevated above background concentrations, but OEA does not expect that any residences or other sensitive receptors would experience air pollutant concentrations that would exceed the NAAQS.

¹⁴ USEPA is aware of this problem and has been actively working on approaches and methods to improve the modeling of the 1-hour NO₂ concentration (American Petroleum Institute 2012; Brode 2014; Owen 2014; RTP Environmental Associates 2013; Podrez 2015).

Figure 3.7-44. Maximum 1-Hour NO₂ Concentrations (with background) South of Myton (Indian Canyon Alternative and Whitmore Park Alternative)

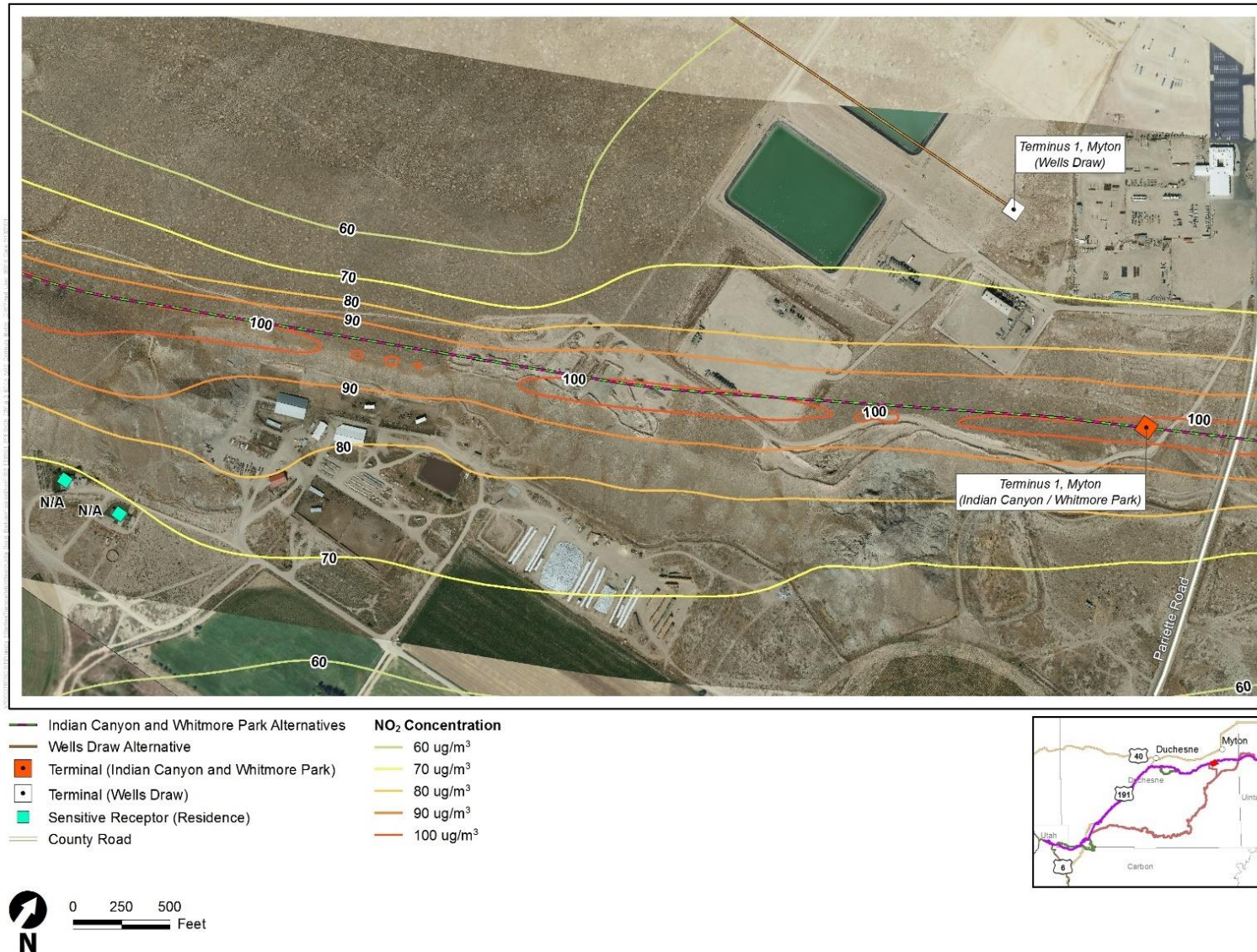


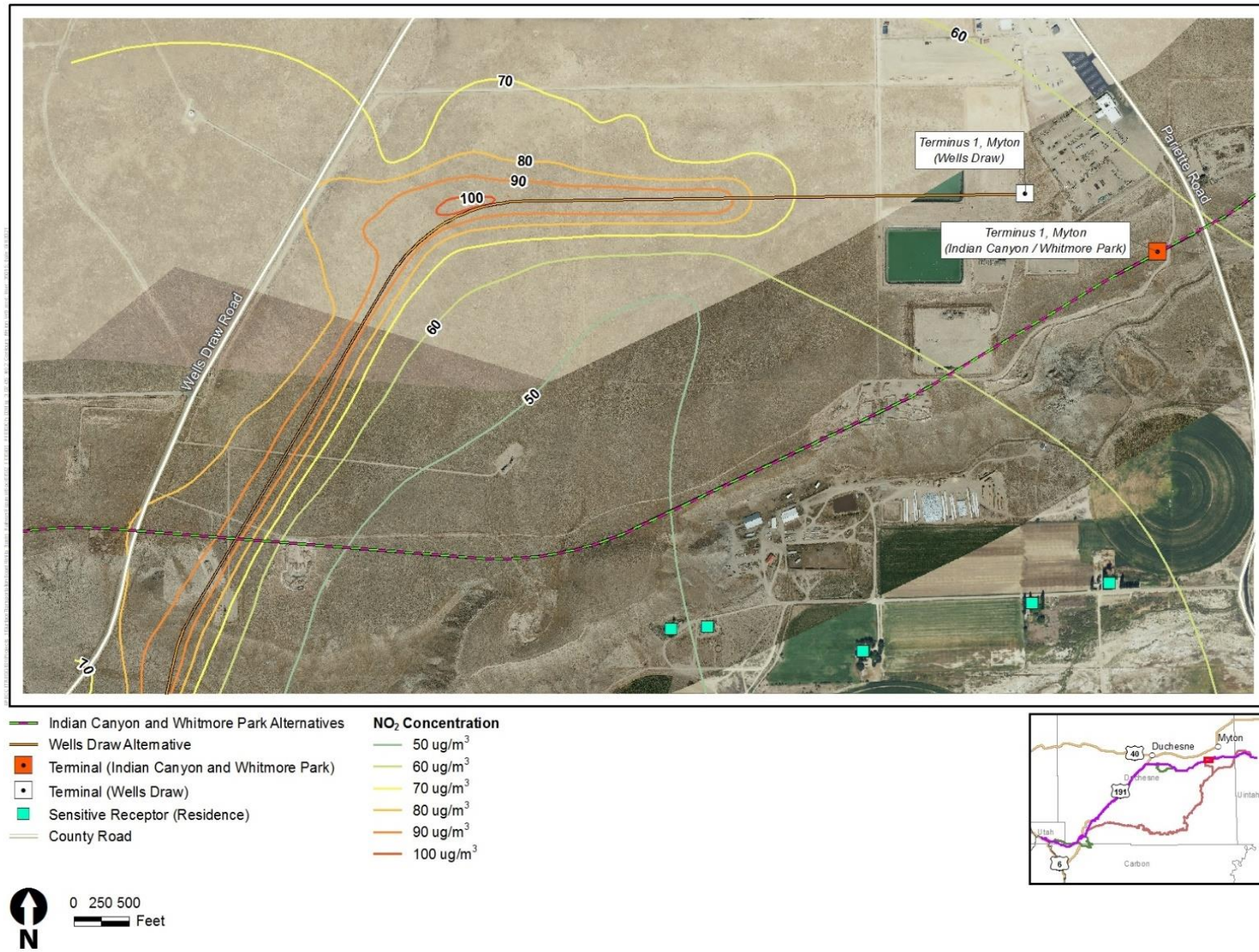
Figure 3.7-5. Maximum 1-Hour NO₂ Concentrations (with background) South of Myton (Wells Draw Alternative)

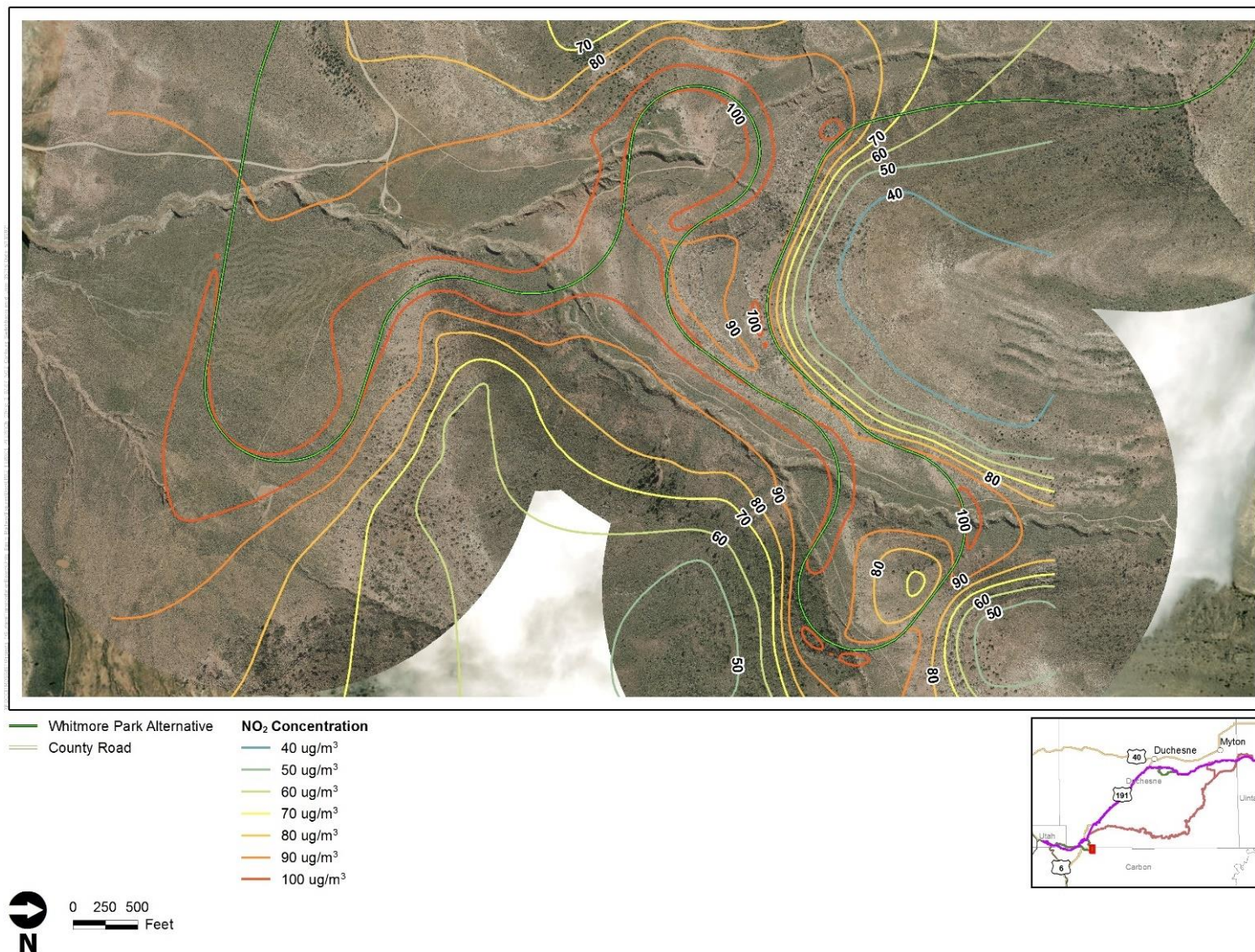
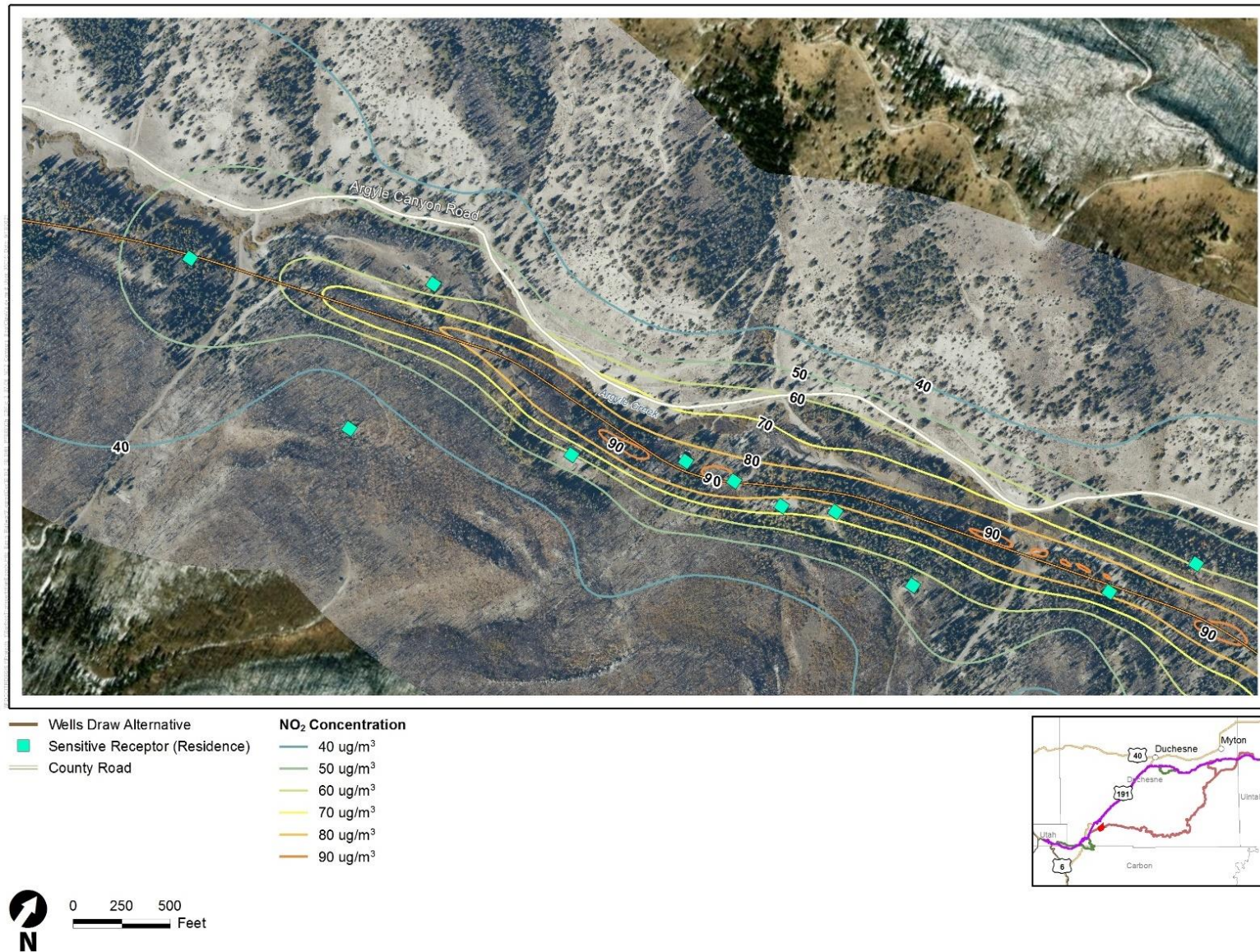
Figure 3.7-6. Maximum 1-Hour NO₂ Concentrations [\(with background\)](#) at Switchbacks South of Minnie Maude Road

Figure 3.7-7. Maximum 1-Hour NO₂ Concentrations (with background) at Bear Claw Valley South of Argyle Canyon Road

As discussed previously, commenters during the scoping process expressed concerns regarding air quality impacts related to rail operations in tunnels. OEA expects that air quality impacts would be most likely to occur in areas immediately adjacent to tunnel entrances. For the Indian Canyon Alternative and Whitmore Park Alternative, there are no receptors immediately adjacent to the tunnel entrances. For those two Action Alternatives, the closest receptors to tunnel entrances would be more than 1,000 feet of the tunnel entrances, well outside the area that OEA expects could experience adverse air quality impacts. Due to the distance of receptors from tunnel entrances, OEA concludes that the NAAQS would not be exceeded due to locomotive exhaust from tunnels under the Indian Canyon Alternative or Whitmore Park Alternative. For the Wells Draw Alternative, there are three residences within 1,000 feet of the northeastern entrance of the approximate 3.53-mile summit tunnel in Bear Claw Valley, just south of Argyle Canyon Road. These receptors are located 442 feet, 689 feet, and 822 feet from the tunnel entrance. At these distances from the entrances and the track OEA expects that all pollutant concentrations would be less than the NAAQS under the high rail traffic scenario.

3.7.3.3 No-Action Alternative

Under the No-Action Alternative, the Coalition would not construct and operate the proposed rail line, and no construction-related air pollutant emissions would occur. Trucks would continue to transport crude oil from the Basin to the Price River Terminal in Wellington and potentially to other intermodal facilities outside of the Basin. This truck traffic could increase depending on future market conditions, including the price of crude oil, which would result in increased truck exhaust emissions. However, there would be no new locomotive exhaust emissions in the study areas under the No-Action Alternative.

3.7.4 Mitigation and Unavoidable Environmental Effects

Construction of the proposed rail line would involve activities that would emit air pollutants and GHGs. Across the three Action Alternatives, the Wells Draw Alternative would result in the most construction-related air pollutant and GHG emissions, followed by the Whitmore Park Alternative and the Indian Canyon Alternative. Emissions from construction activities would be temporary and would move continually during the construction period. With implementation of the Coalition's voluntary mitigation measure and OEA's recommended mitigation measures, (Chapter 4, *Mitigation*), OEA concludes that impacts related to air quality and GHG emissions would not be significant if those mitigation measures were implemented.

During rail operations, the primary source of air emissions would be locomotives operating on the proposed rail line. Because it is the longest Action Alternative, the Wells Draw Alternative would result in the most total emissions of all pollutants, followed by the Whitmore Park Alternative and then Indian Canyon Alternative. Based on the revised air quality modeling, OEA concludes that operation of the proposed rail line would not cause air pollutant concentrations to exceed the NAAQS at any location. OEA's dispersion model suggests that the Wells Draw Alternative would not cause air pollutant concentrations to exceed the NAAQS under any rail traffic scenario or meteorological conditions. If the Indian Canyon Alternative or the Whitmore Park Alternative were constructed, the maximum 1-hour NO₂ concentration could exceed the NAAQS under the high rail traffic scenario at a location south of Myton in the Basin. This exceedance would be unlikely because it would only occur under unusual operational and meteorological conditions and only if rail traffic on the proposed rail line were at the maximum projected level. Residences in the vicinity of the

~~proposed rail line would not experience air quality that would exceed the NAAQS even under those unlikely conditions~~ Therefore, OEA concludes that operation of the proposed rail line would not result in significant air quality impacts. ~~The moderate air quality impacts that could result from locomotive emissions during rail operations would be unavoidable.~~ Because the Board does not regulate the volume or composition of train traffic on the interstate rail network or types of locomotives that can operate on rail lines, there is no mitigation that OEA can recommend or that the Board can impose to address air quality impacts related to locomotive emissions.

OEA is recommending mitigation measures (Chapter 4, *Mitigation*) related to GHG emissions, but operation of the proposed rail line would result in unavoidable GHG emissions even if these measures were implemented. GHG emissions from rail operations ([Table 3.7-10](#)) would represent a small percentage ([ranging from 0.9 percent to 3.5 percent](#)) of existing regional and statewide GHG emissions ([Table 3.7-1](#)), however, and would not contribute significantly to global climate change.

EXHIBIT 7

The EQUATION

Railroads Are Running Dirty Diesel Trains Through Communities and No One Is Doing Anything About It

June 17, 2025 | 9:00 am



JULIEN GOETTELMAANN/UNSPLASH



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California has [proposed repealing](#) its recent regulation on in-use emissions from locomotives, [another major step backwards](#) in the fight against freight pollution. The landmark regulation would have helped move the railroad industry away from diesel to electrification, like the [vast majority](#) of the global rail industry, and ensured in the interim that rail companies reduce pollution from their current locomotive fleets.

The rail industry has stymied progress in reducing emissions over the past decade, in spite of federal rules meant to clean up the sector due to the disproportionate impacts caused by the diesel-powered locomotives. Below, I walk through the harm this has on local communities, why it's happening, and why we need a strong national rule to coerce this dirty industry into cleaning up its act.

Railroads: Profits for me, pollution for thee

Just like the ol' robber baron heyday of the late 19th century, 21st century railroads are raking in the money, though now those [incredibly high profit margins](#) (at nearly 25 percent, roughly 3 times the market average) come from moving goods instead of people.

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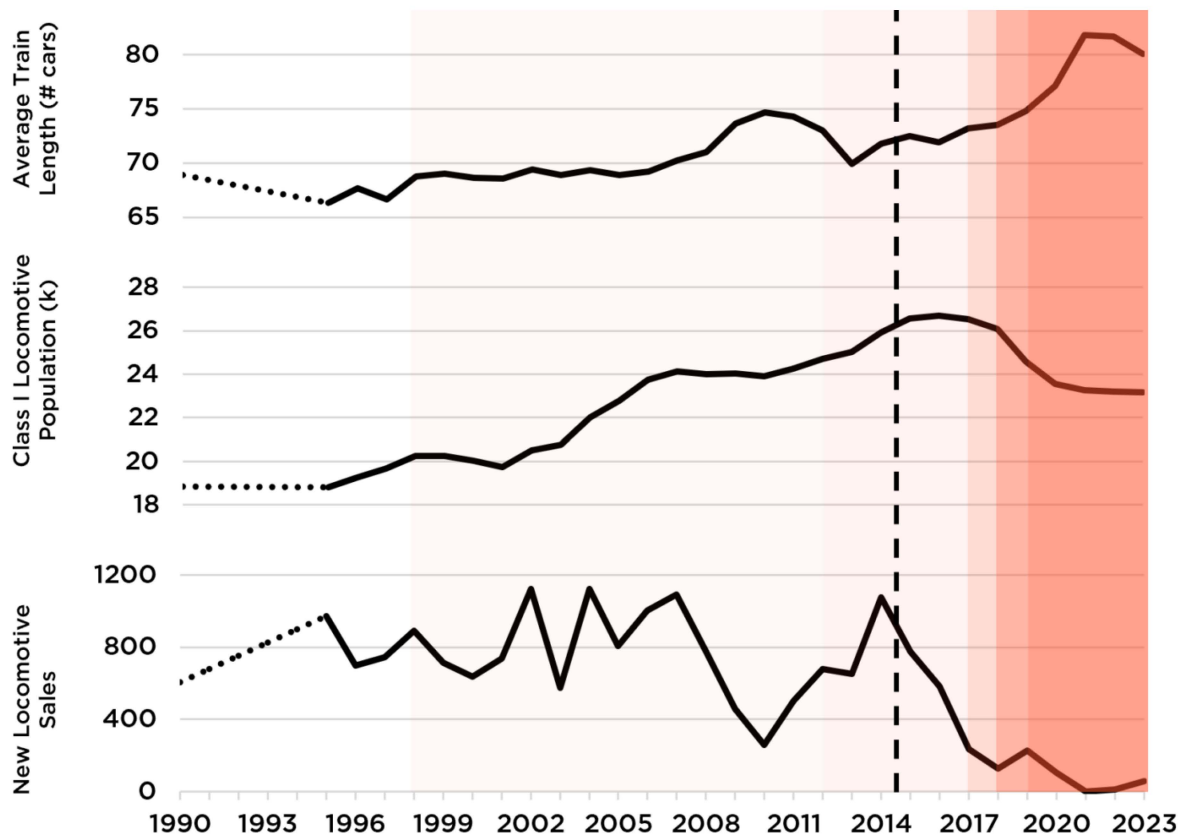
While exactly how this is implemented can vary from railroad to railroad, the primary metric by which PSR is measured is the operating ratio, the ratio of operating expenses to operating revenue. The goal of PSR is to minimize the operating ratio. PSR was first implemented by Canadian National in 1998, which represented less than 5 percent of Class I railroad freight revenues. However, a rapid adoption by three major railroads caused the share of Class I railroad revenue from PSR-utilizing firms to increase from less than 7 percent in 2016 to 70 percent by 2019, where it remains today (privately owned BNSF is the only Class I carrier not yet to adopt PSR).

The widespread adoption of PSR has had significant impacts on the railroad industry overall. According to [a report](#) from the Government Accountability Office, there are three consistent factors in the implementation of PSR: 1) cutting workers to reduce operating costs, something that has come under scrutiny recently in the wake of the [East Palestine derailment](#); 2) increased train lengths, which itself can lead to its own [safety issues](#); and 3) a reduction in assets, including locomotives.



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While precision-scheduled railroading (PSR) is not the only factor leading the freight rail industry to pollute more, it has accelerated some underlying issues, leading to an aging, polluting locomotive fleet. After slowing new purchases during the Great Recession, railroads bought a large volume of new locomotives, both to replace aging stock and to avoid stronger pollution controls. Combined with PSR, which pushes for a reduction in rolling stock, new locomotive sales have plummeted to nearly zero annually, which means older locomotives are being rebuilt with older pollution control technologies instead of replaced with Tier 4 emissions controls that are required on new locomotives.

Those impacts are clear when looking at the data. Employment in the rail industry is about two-thirds of what it was prior to the start of PSR implementation. The average train length has shifted from under 67 cars to 80 cars, a 17 percent increase. Freight volumes have increased by just 10

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Because railroads need fewer locomotives, this has caused a glut of locomotive availability. Not only does this reduce sales of new locomotives, but it makes it easier for railroads to resuscitate aging locomotives that previously would have been replaced.

We can rebuild it—we have the technology (and lax regulations)

Under the Clean Air Act, the Environmental Protection Agency sets emissions standards for engines in new locomotives. Each successively more stringent standard is defined as a particular “tier,” with today’s new engines currently required to meet Tier 4 emissions standards. The agency is also responsible for defining what it means for a locomotive to be “new.” It is a bit like the famous [ship of Theseus](#)—at what point does replacing individual pieces of a ship (or any object) constitute making an entirely different ship (object)?

This is particularly important when it comes to diesel-powered locomotives, which pull 100 percent of all freight rail in the U.S. These locomotives are powered by a diesel engine connected to an electric generator. That electricity is then used to power traction motors that drive the wheels. Now, it may be that components of the locomotive need to be

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together. EPA rules define at what point in this replacement or maintenance process the engine may be considered newly manufactured (versus remanufactured), and therefore at which point newer, more stringent rules would apply. If a rebuilt engine does not meet the threshold to be considered newly manufactured, the engine may have to meet additional requirements to ensure that the emissions controls operate at least as strong as the engine when it was first built.

With a glut of locomotive engines available, there is no shortage of old locomotives to be rebuilt or scavenged for spare parts. Just look at this “helpful” [how-to article](#) on how to save money and avoid those pesky, life-saving regulations while “supporting the return on asset goals of today’s PSR business model.”

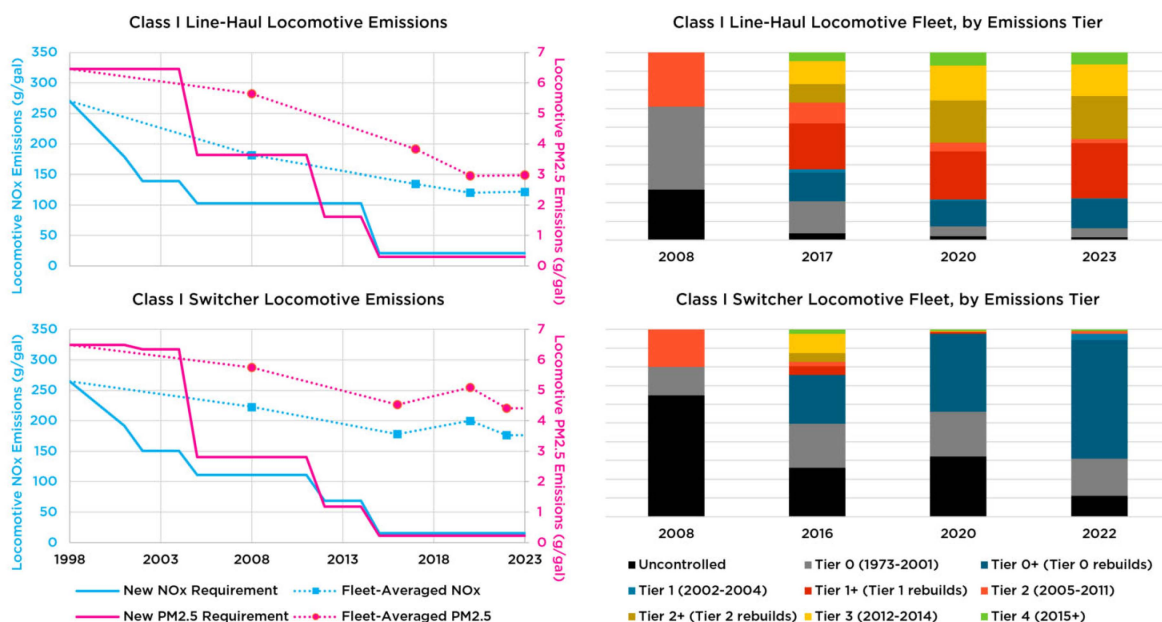
Predictably, the impact of this business practice has been to forestall adoption of newer and better performing (from an emissions perspective) locomotive engines. Emissions improvements from the locomotive fleet have effectively stalled.

Prior to 2015, when Tier 4 standards were introduced, locomotive sales averaged just under 800 new locomotives per year. Sales have now slowed such that the *total* sales since 2017 are just over 800 new locomotives—in other

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reduction in sales is a locomotive fleet emitting over 20 percent more pollution than it would have under the status quo deployment anticipated by EPA.



Beginning in 2001, emissions regulations were phased in for newly built locomotive engines, along with requirements for rebuilt engines. However, in the past 25 years, the average emissions from a Class I line-haul locomotive have decreased by just 54 and 55 percent for particulate matter (PM_{2.5}) and nitrogen oxide (NO_x) emissions, respectively, well short of the 95 percent and 92 percent respective reduction required of new line-haul locomotives. For switcher locomotives, which travel many fewer miles but operate in railyards directly in community backyards, there has been just a 32 and 33 percent reduction in emissions in PM_{2.5} and NO_x since over 90 percent of switcher locomotives were built prior to 2001.

Moving the United States beyond diesel, like the rest of the world

Locomotive engines certified to Tier 4 emissions standards

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percent and health-harming PM_{2.5} emissions by nearly 90 percent. For the switcher fleet operating in railyards, which tend to be in densely populated areas, deploying Tier 4 locomotives could cut NO_x and PM_{2.5} emissions by 95 and 91 percent, respectively, compared to the status quo.

The process to replace our nation's outdated diesel locomotives should already be well underway, but railroad behavior has limited turnover. But if we need to replace the fleet, which is capital intensive, why do so with a partial solution when the rest of the world has solved the problem entirely? We should be electrifying the rail industry like everywhere else and eliminate entirely the local emissions associated with locomotives.

There are a number of strategies to electrify locomotives. The most widely adopted technology is catenary locomotives, which are already used around the world: in Russia, on the Trans-Siberian Railway, spanning nearly 6,000 miles; in Europe, with more than 80,000 miles of electrified rail, including much of the Trans-European Transport Network and its dedicated freight corridors; in India, on freight routes like the Eastern and Western Freight Corridors which can handle double-stacked freight; and in China, with a rapid expansion of thousands of miles of freight rail, including the lengthy trade route with Europe.

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not available, whether that is because of as-yet-unconstructed power lines or in tunnels or other infrastructure where it may be expensive to deploy. One recent study highlighted in a [recent report of the Federal Railroad Administration](#) (FRA) found that discontinuous catenary rail could cut the capital costs of electrifying the studied rail corridor by 67 percent! This is part of the reason [the joint action plan](#) from the Department of Energy highlights discontinuous catenary as the #1 strategy around which to plan decarbonization of the rail sector.

Catenary and discontinuous catenary rail are not the only electrification strategies capable of meeting the needs of the freight rail industry, however: battery-electric locomotives are technologically capable of line-haul operation as the sole power unit as well. Additionally, they can also be phased into a manufacturers fleet in hybrid configurations with current diesel-electric locomotives, allowing for immediate fuel and emissions reductions as part of a holistic and swift transition to zero emissions rail.

While the FRA identified the promise of [freight rail electrification](#), the American Association of Railroads, the industry's trade group, pushed back with inflated costs and can't-do attitude, a symbol of the continued obstinance of the industry when it comes to cutting locomotive emissions.

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With sales of new locomotives at historic lows and locomotive operators sidestepping emissions improvements through rebuilt diesel engines, it's clear that the current approach to regulating emissions from rail has massive gaps.

To patch these gaping holes and adequately protect communities, regulators cannot let railroads engage in an infinite loop of rebuild and pollute. There are a number of regulatory strategies that can be used to reduce locomotive emissions and address the status quo:

- reducing the threshold below which rebuilding the engine constitutes a newly manufactured engine and/or eliminating disparities in emissions standards for rebuilt and newly manufactured engines to shift the economic case against extending the lifetime of older, dirtier diesel engines;
- updating requirements for rebuilt engines so that they are more in-line with the best available technologies of today, rather than when they were originally manufactured;
- setting fleet requirements to ensure continued progress on reducing emissions;
- and/or requiring the deployment of zero-emission locomotives to eliminate local rail pollution entirely.

In 2022, the California Air Resources Board (CARB) finalized

[a rule that would require all California diesel locomotives to be zero-emission](#)

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state meet minimum standards for pollution from their entire operating locomotive fleet; and, most importantly, it required steady progress towards eliminating emissions entirely from railroads operating in the state.

This rule was fought tooth and nail by the American Association of Railroads, the main trade group for the freight rail industry. Not only did they lobby hard against the regulation, but [they even sued CARB](#) over the lifesaving rule.

Unfortunately, CARB likely needs authorization from the EPA to enforce these standards, which is granted following the agency's request for [a waiver of pre-emption under the Clean Air Act](#). Unfortunately, the Biden administration did not grant such a waiver before leaving office. As a result, CARB withdrew its request for authorization and is now, to avoid any uncertainty about the program's status, [proposing to repeal](#) this landmark regulation.

The continued lack of federal action on rail is killing people

The [docket for the CARB regulation](#) makes clear the tremendous air quality and health benefits the In-Use Locomotive regulation could have made to Californians, if enforced, including a 67 percent decrease in particulate

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opportunity thanks to a lack of federal action on CARB's request.

But it isn't just the waiver request where the federal government has been missing in action. The most recent set of national locomotive engine standards were finalized nearly two decades ago, in June 2008, by EPA and left a massive loophole that industry has exploited to virtually nullify most of the requirements of the rule by repowering old locomotives indefinitely using outdated technology instead of replacing them with the lowest-emitting solutions available. Since finalizing that rule, the only action to clean up pollution of rail from the agency has been to empower states to set the very rules for which the Biden administration then neglected to provide a waiver.

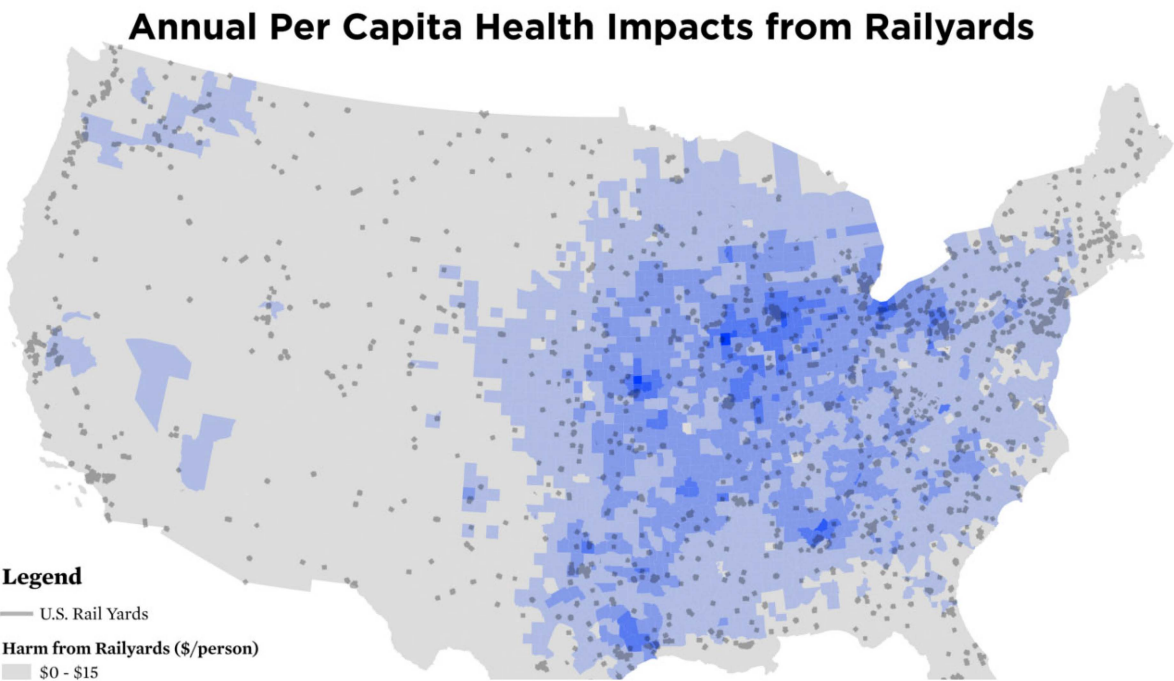
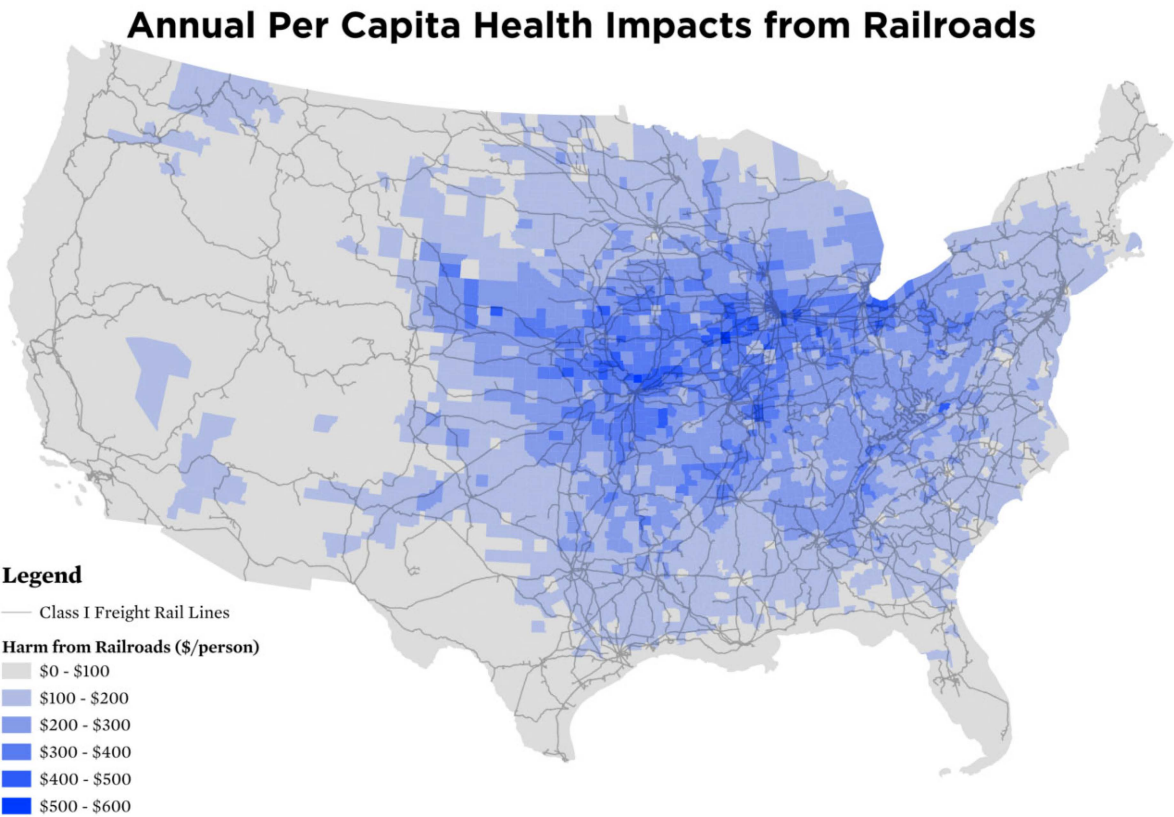
EPA affirmed the basis for California's regulation, noting "the large share of older locomotives in the Class I, II, and III railroad fleets and their emissions['] contribution to ambient concentrations of air pollution that may violate the ozone and particulate matter [air quality standards]." But it is not enough for the agency to point out the harm—EPA must *redress* that harm.

According to EPA's COBRA model, it is estimated that the rail industry is responsible for between 2,200 and 3,100

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activity leads to harmful particulate matter pollution (PM_{2.5}) and smog (in the form of ozone, O₃), which impacts health. While the total harm from the rail industry may follow the rail lines (above), these harms can be particularly acute in communities near rail yards (below), where there are concentrations not just of rail traffic but also truck traffic offloading rail-based freight for its final delivery destination. For example, the rail industry leads to \$3.3 billion in health costs in the Chicago metro area alone every year, with \$550 million of that harm due solely to the more than 30 railyards in the area.

Government must intervene to protect the public from the rail industry

The impacts of freight rail pollution are not uniform—despite representing just 5 percent of total fuel consumption from rail, Class I switchers represent 15 to 20 percent of the total health impacts of the entire rail sector, owing both to their proximity to population centers and them being older and more highly polluting than Class I line-haul locomotives, which consume the vast majority of diesel fuel used in rail.

The rail industry has failed to clean up its emissions, choosing to prioritize profit margins over modernizing its fleet. Those margins come on the backs of communities bearing the brunt of the pollution from this sector, resulting in premature death, asthma, hospitalization, lost school and work days, and so much more.

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address the issue. States and localities have failed to put forth robust solutions commensurate with the scale of the problem.

The case for rail electrification is clear in the benefits to the economy, public health, and the environment. But decisionmakers at all levels of government are needed to combat the entrenched interests of multibillion-dollar industry whose profits are built on ignoring the direct harms of their industry. Government must intervene immediately to set the rail sector on a path to zero emissions freight, or railroad companies will continue to endanger communities nationwide.

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EXHIBIT 8

How the US freight rail industry got dirtier than coal power plants

Tim McLaughlin

- Summary
- Companies
- BNSF accounts for a third of rail industry's NOx emissions
- Aging locomotives contribute to high pollution levels
- Rail industry resists adopting clean technologies due to cost concerns

Dec. 14 (Reuters) - BNSF Railway, one of the crown jewels of Warren Buffett's sprawling Berkshire Hathaway conglomerate, calls itself an environmental leader in the U.S. rail industry with the cleanest locomotive fleet in North America.

"When you see our orange locomotives' and freight cars' steel wheels moving on steel rails, think green," BNSF says in its latest sustainability overview.

Make sense of the latest ESG trends affecting companies and governments with the Reuters Sustainable Switch newsletter. Sign up [here](#).

But the company is the largest player in an industry that has a pollution problem: U.S. freight railroads are a major source of pollution, chuffing out more nitrogen oxide, the primary component of smog, than all the nation's coal-fired power plants combined, according to a Reuters calculation using government data.

U.S. railroads together produced about 485,000 tons of nitrogen oxide in 2024, compared to 452,000 tons emitted by U.S. coal-fired power plants, according to a Reuters calculation of reported annual fuel consumption multiplied by the EPA's 2023 weighted-average emission rates.

BNSF, the nation's largest freight railroad, accounts for about a third of that total, producing 161,500 tons of smog-causing nitrogen oxide in 2024, according to the data. "We don't dispute your number. BNSF is the biggest Class I railroad by volume," BNSF said in an email.

BNSF's position as largest in the rail industry, as well as its profitability, will be challenged if regulators approve the planned [\\$85 billion merger of Union Pacific and Norfolk Southern](#), which would create the first U.S. coast-to-coast freight rail operator, Morningstar railroad analyst Gregory Warren said.

Reuters shared its calculations with four industry experts and all agreed it was a fair methodology. About 80% of the industry's NOx tons are produced by Class I railroads, the industry term for the six major railroads with more than \$1 billion in annual revenue.

Locomotive NOx pollution is greater than the output of all U.S. coal plants

Details on the rail industry's recent NOx emissions performance, BNSF's share of those emissions, and the factors driving the ongoing high levels of pollution have not previously been reported.

Railroad locomotive pollution causes an estimated \$48 billion in healthcare costs and 3,100 premature deaths annually in the United States, according to the EPA's Co-Benefits Risk Assessment tool.

"Americans don't realize how much harmful pollution comes from old diesel locomotives," said Bill Magavern, policy director for the Coalition for Clean Air, a California group that advocates for public health. "EPA should require the railroad companies to modernize their fleets," he said.

The EPA declined to comment specifically on rail pollution for this story, but said: "The Trump EPA is committed to enhancing our ability to deliver clean air, water, and land for all Americans."

AGING FREIGHT LOCOMOTIVES

The railroad industry's poor emissions performance is due mainly to the fact that it has largely stopped replacing its aging fleet of locomotives. The average age of U.S. locomotives is about 28 years, compared with 20 years in 2009, according to EPA and industry reports.

That's a problem because federal emissions standards for locomotives depend on how old they are with the oldest grandfathered into the lightest limits.

With no requirement to retire old locomotives, the U.S. freight rail industry has dragged its feet on buying new ones, a dynamic amplified by industry fears that new regulations under future administrations could render their investments obsolete, according to Environmental Protection Agency data, and interviews with analysts and railroad executives.

Senator Edward Markey, a Massachusetts Democrat, says railroads have lost their taste for innovation. "Our air pollution standards for railroads have an engine-sized loophole in them, which companies are using to... keep old, dirty trains on the tracks," Markey said in a statement to Reuters.

The rail industry says that it is the cleanest option available to move freight over land, and cites data from the U.S. Department of Transportation. A locomotive can move a ton of freight about 500 miles on a gallon of fuel, which is three to four times more efficient than trucks.

The Association of American Railroads said it was also unfair to compare rail to power plants, saying locomotives have little choice but to burn diesel. "These power plants have multiple other viable options for generation – coal, natural gas, hydropower, wind, nuclear, etc. That is not the case for rail," the trade group told Reuters.

BNSF, meanwhile, told Reuters that it is working to reduce its emissions through efficiency and technology improvements, and stands by its claim to have the cleanest fleet in the industry based on the outright number of modern locomotives in its possession.

BNSF said 360 of its 6,780 total are modern locomotives subject to the strictest federal emissions standards, called Tier 4, the largest outright number in the industry.

That's just 5% of the company's total fleet that is active or in storage, according to Surface Transportation Board data. By contrast, rival Canadian National has nearly 300 Tier 4 locomotives, making up about 27% of its total fleet, according to analysts and CN press releases about new locomotive orders.

Tier 4 locomotives operated by BNSF's nearest competitors number about 270 at Union Pacific; about 225 at CSX Corp.; and about 80 at Norfolk Southern, according to EPA data, company press releases and trade industry reports.

BNSF spent \$394 million on 165 new and rebuilt locomotives from 2020 to 2024. That was down 69% from the prior five years when it spent \$1.26 billion on 558 locomotives, as replacement of aging engines—some lasting up to 40 years—slowed sharply, according to BNSF annual reports filed with the U.S. Surface Transportation Board.

CLEANEST FLEET?

BNSF's high emissions, however, are not just the result of its size.

BNSF's fuel economy is the worst among the country's six major railroads, according to railroad operating statistics filed with the U.S. Surface Transportation Board, the industry's economic regulator.

In 2024, BNSF burned 1.14 gallons of diesel for every ton of weight it moved 1,000 miles, an industry metric called a gross ton mile. Union Pacific burned 1.08 gallons to move the same weight the same distance, and the most efficient, Canadian National, burned 0.88 gallons, according to the data.

Diesel consumption rates for the largest U.S. railroads in 2024

Railroad industry analysts interviewed by Reuters said one reason for BNSF's low fuel economy is that it handles more intermodal freight than peers.

These high-priority shipping containers need to move faster than regular freight because they are typically more time-sensitive, said Jason Kuehn, a railroad analyst and vice president at consulting firm Oliver Wyman.

BNSF's intermodal shipments totaled 5.3 million in 2024, or nearly 60% more than No. 2 Union Pacific, according to company disclosures.

Analysts said BNSF's efficiency is also likely hurt by its limited adoption of precision-scheduled railroading, an industry practice meant to reduce costs and fuel use through longer trains, fewer locomotives, and less idling time. Fuel efficiency can also be hindered by mountainous terrain and congestion on a railroad's network.

BNSF declined to comment on the reasons behind its relatively low fuel economy, but maintains it is an environmental leader in the industry based on its adoption of new locomotives, which allow it to burn fuel more cleanly.

"BNSF has the most modern platform locomotives in the rail industry, the basis for our cleanest fleet statement," the company told Reuters.

It declined to provide details on its fleet-wide emissions intensity, and Reuters was unable to verify if it was better than rivals.

Tier 4 locomotives can reduce NOx emissions by about 80% compared to Tier 3 models, according to the EPA.

FEAR OF REGULATION

The main reason railroads stopped spending big money on new locomotives is because they are worried new regulations - including proposed zero-emissions standards in California - could quickly make them obsolete.

"These locomotives have a lifespan of 40 to 45 years, and you're saying they won't be able to use those because we'll have zero emissions," said Roger Nober, director of George Washington University's Regulatory Studies Center who retired as BNSF's chief legal officer in 2023.

"Railroads don't see that as an efficient use of their capital."

In 2008, the EPA hoped to clean up freight rail by setting new standards for locomotives, including higher standards for new Tier 3 and Tier 4 models. But rather than encourage replacement of old locomotives, rail companies have slowed down their purchases of new locomotives dramatically.

In 2008, the EPA estimated that at least 30% of freight locomotives would be operating under the strictest limits by 2025. But as of 2023 only 6.5% of 19,303 active locomotives operated by the big six railroads meet that limit, according to the EPA.

Before 2008, American railroads replaced their locomotives at a 4% rate per year, according to the U.S. Office of Transportation and Air Quality. By 2024, the industry replacement rate had dropped to 0.5% per year.

Neither BNSF nor its rivals provide exact data on the model years of active locomotives in their national fleets.

One key battle for the industry has been opposing California's proposed emissions standard, which would have banned locomotives older than 23 years from operating in the state, and required all locomotives to be zero-emissions by 2035.

Because California is such a large market, it can effectively set the national standard.

Officials at the California Air Resources Board (CARB) estimated that by 2050 the stricter rules would have reduced 7,400 tons of diesel soot, 386,000 tons of NOx and cut cancer risk for those living near rail operations by up to 90%.

But it would have also barred 65% of active freight locomotives from operating in the state, rail officials say.

A week before Donald Trump's inauguration as U.S. president in January, California withdrew the proposal.

Trump has been a frequent critic of CARB and was expected to block the initiative by denying California the waiver it would have needed to set state pollution rules that are tougher than federal ones.

In May, House Republicans introduced the Locomotives Act, which would prevent California from securing such waivers. The bill has been referred to the Energy and Commerce Committee.

FIGHTING GREEN TECHNOLOGY

The rail industry has also lobbied hard against the adoption of clean technologies. BNSF told the EPA last year at a public hearing that their test of a battery-electric locomotive failed to deliver enough power to move tons of freight over long distances.

"The battery had two megawatts of usable energy," John Lovenburg, BNSF's vice president for environment and sustainability, said. "That's roughly 1/40th of the energy we will need for line-haul locomotives."

Electric locomotives are viable for shorter routes and replacing diesel locomotives in switch yards, but for long distances they're limited by battery weight, said Alex Scott, a professor of supply chain management at the University of Tennessee.

Battery-electric locomotives are not prevalent in the United States and other parts of the world. But in China, India and Russia, a majority of their freight locomotives draw their power from overhead electric lines, or catenary systems.

That sort of electrification in North America would cost more than \$1.1 trillion for 139,000 miles of track used by the six major railroads, according to a February 2025 study by the Association of American Railroads.

"The railroad industry is slow to adopt new things because if you have problems, it's not just your problem," Scott explained. "You're creating problems for your customers and other railroads because they share track all of the time."

Reporting by Tim McLaughlin in Boston. Editing by Richard Valdmanis and Michael Learmonth.

Our Standards: [The Thomson Reuters Trust Principles., opens new tab](#)

EXHIBIT 9

Total Crude Oil by Rail

Thousand Barrels

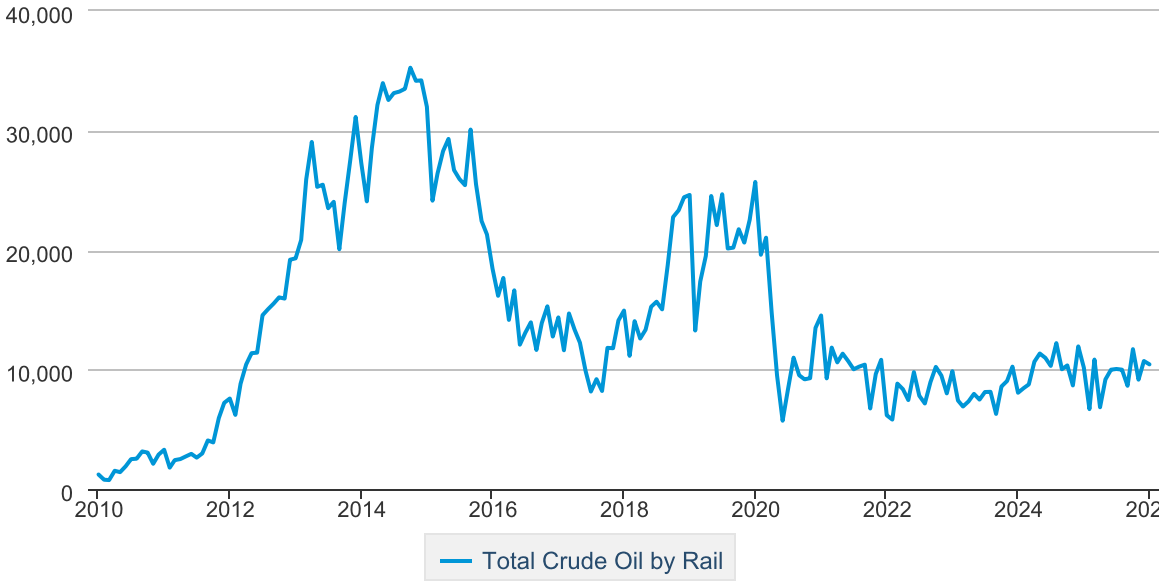


EXHIBIT 10



 (<https://www.desmog.com>)
DeSmog (<https://www.desmog.com>)

Overloaded: New Rules Allowed for Heavier Bakken Oil Trains



By **Justin Mikulka** (<https://www.desmog.com/user/justin-mikulka/>)

on Sep 19, 2016 @ 12:57 PDT

9 min read



This is the third article in a series looking at why oil trains derail at higher rates than

*ethanol trains (<http://www.desmog.com/oil-rail-why-are-ethanol-trains-not-bomb-trains-too>). More ethanol was moved by rail from 2010–2015 than oil, but oil trains derail at a higher rate and with more severe consequences. Part one addressed **train length** (<http://www.desmog.com/2016/09/14/bomb-trains-what-can-we-learn-ethanol-improve-safety>) as a factor and part two addressed “**sloshing** (<http://www.desmog.com/2016/09/15/why-do-oil-trains-derail-more-often-ethanol-trains>).”*

On January 25, 2011, a notice appeared in the Federal Register (<https://www.federalregister.gov/articles/2011/01/25/2011-1414/operating-certain-railroad-tank-cars-in-excess-of-263000-pounds-gross-rail-load-approval>) announcing a change in the rules on allowable weight for a rail tank car transporting hazardous materials. It declared the Federal Railroad Administration’s (FRA) approval to increase this weight limit, bumping it up to 286,000 pounds gross rail load (GRL) from the previous limit of 263,000 pounds.

Perhaps it was just a coincidence, but this rule change was well-timed for the Bakken oil-by-rail boom that was taking off at that point. Regardless, it had immediate impacts on the ability of the industry to move oil in long unit trains with cars that were heavier than previously allowed.

Prior to 2011, the largest volume of hazardous materials being moved by rail was ethanol and most of that was in tank cars with a gross rail load of 263,000 pounds, meaning the weight of the tank car plus the weight of the contents could not exceed this amount. However, this rule change allowed for crude oil to move tank cars with heavier loads, and the industry took advantage of that.

In July 2016 at a National Transportation Safety Board (NTSB) **roundtable meeting** (https://www.nts.gov/news/events/Pages/2016_rtcs_RT.aspx) on “What’s Next in Rail Tank Car Safety,” Richard Kloster of rail consulting firm Alltranstek (<http://www.alltranstek.com/executive-management.html>), explained the change:

“So we started out with the 30,000 gallon 263,000 pound capacity gross rail load car during the ethanol cycle. Then when CPC-1232 came in, that was when the Bakken was hot. And so the Bakken crude is more of a light sweet [crude] ... [it] didn’t require coils and insulation. So the cars were scaled up to 286. And that meant that 30,000 gallons jumped to 31,800.”

Thanks to that rule change and the production of new CPC-1232 tank cars with larger capacity, trains carrying Bakken crude oil became heavier than the ethanol trains, using a new class of heavier tank cars traveling in dedicated unit trains of more than 100 tank cars.

This change was also explained in two slides from a presentation titled, **"The Tank Car Story: A Builder's Perspective,"** (https://www.nears.org/oct2014/PRESENTATIONS/04_Bob_Pickel_National_Steel_Car_Company.pdf) that was presented to the Northeast Association of Rail Shippers. The first slide shows that prior to 2010, the tank cars were operating with weight limits of 263,000 pounds for a loaded car.

The next slide shows that starting in late 2011, oil trains began operating with tank cars with limits of 286,000 pounds for a loaded car.

When, in late 2011, industry started shipping Bakken oil in the new 286,000-pound cars via long unit trains, a new era of rail tank car transportation began. And a mere two years later, as oil-by-rail started to reach significant volumes, the risks of these bomb trains became more and more clear, with derailments and fires occurring in places including Lac-Mégantic, Quebec; Aliceville, Alabama; and Casselton, North Dakota (and those were just in 2013).

“These Trains Are Likely Too Long, Too Heavy”

As oil train derailments continued to happen, more people began to express concerns about the weight of these trains as a possible contributing factor in derailments.

Doug Finnson, president of the Teamsters Rail Conference of Canada, expressed concerns about the size and weight of the oil trains to **CBC News** (<http://www.cbc.ca/news/canada/sudbury/gogama-derailment-fix-tracks-or-slow-trains-down-union-says-1.2990080>) after an oil train derailment in Canada in 2015, saying, “These trains are likely too long, too heavy, and going too fast for the track conditions in place.”

And the *Los Angeles Times* reported in 2015 that investigators at **Canada’s Transportation Safety Board** (<http://www.latimes.com/nation/la-na-crude-train-safety-20151007-story.html>) suspected that the oil trains are causing unusual track damage.

“Petroleum crude oil unit trains transporting heavily loaded tank cars will tend to impart higher than usual forces to the track infrastructure during their operation,” the safety board said in a report. “These higher forces expose any weaknesses that may be present in the track structure, making the track more susceptible to failure.”

Excessive weight was thought to be a contributing factor in the recent oil train accident in Mosier, Oregon. That accident was caused when the bolts holding the rails in place sheared off.

As Desmog **reported at the time** ([//www.desmog.com/2016/07/07/are-oil-trains-just-too-long-and-heavy-tracks](http://www.desmog.com/2016/07/07/are-oil-trains-just-too-long-and-heavy-tracks)), there is precedent for this issue, according to rail consultant and former industry official Steven Ditmeyer. In the early 1990s, a similar problem was happening with some double-stacked container cars being too heavy for the infrastructure – because of overloaded containers – and resulting in sheared rail spikes.

“This sounds like a very similar circumstance to what was happening in the early 1990s with overloaded double stack container cars,” Ditmeyer told DeSmog.

That issue was resolved when the industry started weighing the cars to make sure no cars were over the weight limit. However, this isn’t done with rail cars transporting crude oil.

Hal Gard is the rail and public transit administrator for the Oregon Department of Transportation. After the accident in Mosier, he commented on the weight of the oil trains to the **Associated Press**, (<http://bigstory.ap.org/article/6a66c22bd1034b7b9b8c7ed16bb90d5c/apnewsbreak-railroad-blamed-fiery-oil-train-derailment>) saying, “The unit trains are big and very heavy, the cars are shorter, and the oil is sloshing around inside of those cars. Are there additional strains and dynamic forces associated with that that is different?”

These 286,000 pound cars are clearly heavier than the 263,000 pound cars used to move

ethanol and oil prior to late 2011. There is no question that they are creating greater forces on the tracks than the lighter cars. Is this what is contributing to the higher rates of derailments today?

Federal Railroad Administration Concerned About Train Weight in 2013

In the weeks following the oil train disaster in **Lac-Megantic** ([//www.desmog.com/2015/01/01/dangerous-oil-trains-return-lac-megantic-while-town-still-recovers](http://www.desmog.com/2015/01/01/dangerous-oil-trains-return-lac-megantic-while-town-still-recovers)), people began asking a lot of important questions.

Some of these questions were posed by the Federal Railroad Administration (FRA) in a July 2013 letter to the American Petroleum Institute (API).

In the July 2013 letter, Thomas J. Herrmann, Acting Director of the Office of Safety Assurance and Compliance addressed API CEO Jack Gerard, outlining several safety concerns regarding oil trains, including the following:

FRA notes that tank cars overloaded by weight are typically identified when the tank cars go over a weigh-in-motion scale at a railroad's classification yard. As indicated above, crude oil is typically moved in unit trains, and the cars in a unit train do not typically pass over weigh-in-motion scales in classification yards.

This means we know that in 2013 the FRA was questioning the API about "tank cars overloaded by weight." And also that in the same year, the FRA had information showing the oil industry wasn't using weigh-in-motion scales to check loaded tank car weights.

And we also know that using scales to weigh containers before double stacking them solved the overloading problem in the 1990s. Even though oil tank cars were approved for the new weight of 286,000 pounds, the FRA was questioning if they might be even heavier due to "overloading by weight."

What was the API's response to this letter? The Federal Railroad Administration told DeSmog it will require a Freedom of Information Act (FOIA) request to get a copy of that response, a request which has been filed. Since our last FOIA request about oil trains took almost two years to get a response, we may not know for a while. The American Petroleum Institute did not respond to a request for a copy of the letter.

However, we do know that no one likes to pay to move air by rail. Empty space in a tank car translates to lost profits. Could the oil industry be overfilling the tanks to increase profit margins, resulting in cars that are “overloaded by weight”? We got some insight into this at the 2016 NTSB roundtable when Richard Kloster explained the economics of moving freight by rail.

“The point is that rail is a high fixed cost proposition. So to move that first pound of freight the railroad has already incurred probably 60% of its cost to move that car. And so what shippers of anything from crude to ethanol to soda ash to grain or whatever, transportation can make or break markets. So being able to utilize the full capacity of that car and get every pound or extra ton shipped, helps them make their margins and can make or break a sale.”

Because crude oil can be quite heavy, we can infer that these rail tank cars are not fully loaded with liquid before reaching the 286,000 pound limit, which would leave empty space in the tank cars. But how much empty space is the industry really leaving in these oil rail cars?

Would the oil industry ever put profits above safety?

Weight Differences: Ethanol Versus Bakken Crude Oil

Ethanol is a manufactured product that weighs 6.59 pounds per gallon. Crude oil is a raw material and can vary greatly across an area like the Bakken formation, which underlies parts of North Dakota and Montana in the United States, and Saskatchewan and Manitoba in Canada. A ConocoPhillips **specifications sheet** (<http://www.conocophillips.com/sustainable-development/Documents/2014.05.30%2520825378%2520Bakken%2520Crude%2520Oil,%2520Sweet.pdf>) on Bakken crude gave a range of 5.83-8.58 pounds per gallon for Bakken crude oil.

Clearly, Bakken oil has the potential to be much heavier than ethanol, creating an opportunity for overloading tank cars with crude oil that isn't an option with ethanol. At the NTSB round table, Greg Saxton, engineer for tank car company Greenbrier, explained that with ethanol being so light, it is possible to fill up the car before reaching the weight limit, saying, “In some cases you won't be able to fully load that car to 286,000.”

But there is another factor about the ethanol industry that limits the car weights. Because ethanol is produced in rural areas where it may have to travel on tracks that aren't rated to carry the heavier 286,000 pound class of tank cars, the industry is still using the lighter 263,000 pound tank cars.

Kelly Davis, director of regulatory affairs for the **Renewable Fuels Association** (<http://ethanolrfa.org/>), an ethanol industry lobbying group, explained this to the NTSB roundtable:

"The ethanol industry is rural so we have plants that are restricted through bridges and other infrastructure projects that still will have to load at the 263 max pounds."

On September 18, 2016, an ethanol unit train in Albany, New York was hauling DOT-111 cars rated for 263,000 pounds, which is clearly marked on the tank cars. (The weight of the empty tank car is 66,600 pounds. The maximum weight of material that can be loaded into it is 196,400 pounds. The combined total weight is 263,000 pounds.)

DOT-111 tank car as part of ethanol unit train Image credit: Justin Mikulka

However, in response to the Bakken shale boom, North Dakota upgraded many of its rail lines to handle the larger, heavier tank cars that would be carrying crude oil.

For multiple reasons, oil trains are likely to be heavier than ethanol trains. Even though ethanol was moving by rail in large quantities for several years before the oil-by-rail business even began, ethanol trains were not derailling as the oil trains have been, and no one was calling them bomb trains.

Is the higher rate of derailments for oil trains compared to ethanol trains evidence that perhaps 286,000 pound loaded tank cars are just too heavy for existing rail infrastructure? Should the rule change from 2011 be revisited?

The Great Bakken Oil-by-Rail Experiment

When **hydraulic fracturing (fracking)** ([//www.desmog.com/fracking-the-future/](http://www.desmog.com/fracking-the-future/)) technology unleashed a flood of crude oil from North Dakota, there was a slight problem. It was primarily in rural North Dakota. And there was very little infrastructure in place, such as pipelines or ports, to move that oil. As a result, the industry started trucking it out, but this wasn't a good long term solution **because as reported by *The Globe and Mail*, (<http://www.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/the-hazardous-history-of-the-oil-that-levelled-lac-megantic/article15733700/?page=all>)** "The trucking frenzy was chewing up roads, driving accident rates to record highs, and infuriating local residents."

The Canadian newspaper further **reported (<http://www.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/the-hazardous-history-of-the-oil-that-levelled-lac-megantic/article15733700/?page=all>)** in late 2013, "What should have been an economic miracle for North Dakota has instead been a logistical nightmare. Since 2009, the state has been producing oil faster than it can be shipped to refineries."

The industry solved that problem by quickly constructing oil-by-rail loading facilities. However, what remains quite clear is that these new unit trains carrying volatile Bakken oil hit the rails without any serious study of the dangers they posed.

Bakken oil trains have several factors working against them in terms of safety. One is the obviously **dangerous nature of the cargo ([//www.desmog.com/2015/09/17/video-government-industry-ignore-scientific-case-improving-crude-rail-safety-let-bomb-trains-roll](http://www.desmog.com/2015/09/17/video-government-industry-ignore-scientific-case-improving-crude-rail-safety-let-bomb-trains-roll))** that has helped earn these trains the nickname, "bomb trains," due to their derailments causing dramatic fires and explosions. A second factor is that these trains are **much longer ([//www.desmog.com/2016/09/14/bomb-trains-what-can-we-learn-ethanol-improve-safety](http://www.desmog.com/2016/09/14/bomb-trains-what-can-we-learn-ethanol-improve-safety))** than the average freight train. Another is that tank cars carrying oil have a greater potential for the phenomenon known as "**sloshing**" ([//www.desmog.com/2016/09/15/why-do-oil-trains-derail-more-often-ethanol-trains](http://www.desmog.com/2016/09/15/why-do-oil-trains-derail-more-often-ethanol-trains)) than exists with ethanol cars.

Finally, thanks to the federal rule change in 2011 – which occurred in the midst of North Dakota's "logistical nightmare" – Bakken oil trains were now heavier than what had been the standard for the ethanol industry.

Oil trains' significantly higher rate of derailment than ethanol trains appears to reveal flaws in this oil-by-rail experiment, just as these heavier trains are more apt to reveal

flaws in the track infrastructure.

Unfortunately, the continued existence of these dangerous trains has also revealed the very serious flaws in the existing regulatory system that is supposed to be protecting the American public. The title of the NTSB hearing in July was, "A Dialogue on What's Next in Rail Tank Car Safety." The answer appears to be "more accidents that could have been easily prevented."

A similar hearing was held in 2014 (<http://www.desmog.com/2014/07/09/oil-rail-classification-standards-being-driven-american-petroleum-institute>) and was run by Deborah Hersman, the head of the NTSB at the time. She resigned shortly after that meeting and made the following statement, "We know the steps that will prevent or mitigate these accidents. What is missing is the will to require people to do so."

Hersman also explained (<http://www.npr.org/sections/thetwo-way/2014/04/30/308381227/train-carrying-crude-oil-derails-in-downtown-lynchburg-va>) the root of the problem:

"Follow the money. It all comes back to the money."

Main image credit: Justin Mikulka

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EXHIBIT 11

Long Freight Trains: Ensuring Safe Operations, Mitigating Adverse Impacts (2024)

Chapter: 6 Environmental Impacts

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6

Environmental Impacts

This chapter reviews the railroad industry's contention that long trains reduce fuel consumption and therefore greenhouse gas (GHG) emissions, and it describes the limitations of current research on the matter. The chapter then covers potential increases in motor vehicle emissions, building on the analysis of highway-rail grade crossings in [Chapter 5](#). The chapter closes with a brief discussion of changes in freight rail service and the likelihood of a shift in freight to or from trucks.

Potential environmental benefits of long trains are based on their ability to reduce the industry's consumption of diesel fuel by reducing the number of trains. However, it is possible that long trains have indirect effects that worsen environmental conditions by increasing the pollutants emitted from motor vehicles if, for instance, long trains increase motor vehicle congestion and disrupt travel at highway-rail grade crossings or if changes in rail service patterns associated with long trains encourage shifts of freight to trucks. Conversely, if long trains reduce crossing blockage and increase rail efficiency to lower shipping rates (such that freight is attracted from trucks), the net result could be reduction in fuel use and emissions.

LONG TRAINS AND LOCOMOTIVE FUEL CONSUMPTION

Rail transport, whether for passengers or freight, is one of the most fuel-efficient and therefore climate-friendly transport modes, producing only 2% of the U.S. transportation sector's greenhouse gas emissions in 2022. GHG emissions from the rail sector have also been decreasing, falling 16%

between 2018 and 2022.¹ The Class I railroads maintain that operating longer trains reduces fuel burn and therefore reduces GHG emissions.² While railroads have substantially increased fuel efficiency, the role of long trains in the reduction of fuel consumed is not clear.

Industry Position on Train Size and Fuel Consumption

To support the position that running longer trains reduces fuel usage and thus GHG emissions, two railroads presented analysis based on their own operations. One railroad used a Fuel Burn Report in which fuel efficiency was calculated based on the impact of a train with a re-

stricted length of 7,500 ft.³ The estimated increased fuel use from running longer trains amounted to 22%. Given that running trains with less horsepower per gross ton-mile is proven to reduce fuel burn,⁴ the 22% increase appears to come more from reduced horsepower per gross-ton. Another railroad presented a study comparing winter operations using shorter trains to operations over the rest of the year using longer trains.

LONG TRAINS AND MOTOR VEHICLE EMISSIONS

If long trains do affect the frequency and duration of highway-rail grade crossing blockages, they can have an indirect effect on the air pollution emitted from motor vehicles.⁵ Cars and trucks increase their GHG emissions when they idle while waiting for a crossing and any associated motor vehicle congestion to clear. GHG emissions may also increase if motor vehicles travel farther to avoid a grade crossing or if people switch from walking or biking to an automobile because blocked crossings disrupt the pedestrian or bicycle network. Other pollutants, such as particulate matter and nitrogen oxides, can also be associated with increased motor vehicle fuel consumption.⁶

As described in Chapter 4, the railroads maintain that long trains reduce the frequency and total daily duration of blocked crossings, but there are no publicly available data to confirm this claim. In addition, the

¹ EPA (U.S. Environmental Protection Agency). 2024. "Fast Facts: U.S. Transportation Sector Greenhouse Gas Emissions 1990–2022." EPA-420-F-24-022. May. <https://www.epa.gov/system/files/documents/2024-05/420f24022.pdf>.

² Class I presentations to the committee, January, March, and April 2023.

³ Norfolk Southern used 70-day waybills from November 22, 2020, to January 30, 2021, and an Operating Plan Developer (OPD) tool to conduct the

analysis.

⁴ Cetinich, J. 1975. *Fuel Efficiency Improvement in Rail Freight Transportation: United States*. Federal Railroad Administration.

⁵ Ibid.

⁶ California Air Resources Board. 2020. "Truck Versus Train Emission Analysis." September 23. <https://ww2.arb.ca.gov/resources/fact-sheets/truck-vs-train-emissions-analysis>.

impact of long trains on blocked crossings and motor vehicle congestion will be location specific. Therefore, it is possible that long trains may reduce motor vehicle congestion, idling, and emissions for one railroad,⁷ but the opposite may be the case for another railroad. For example, in a study of the environmental impacts of constructing grade separations at highway-rail crossings, Caltrans analyzed 18 crossings and found that a grade separation would reduce the annual metric tons of carbon dioxide emitted by motor vehicles from, depending on the crossing, 107 to 5,059 tons.⁸

Impacts on motor vehicle emissions can also happen when railroads shift the location of operations or utilize infrastructure differently. Concentrating activity in one location or shifting it away from a location that already suffers from motor vehicle congestion will also have localized impacts on motor vehicle emissions.⁹ A study of the environmental impacts of the merger that formed the Canadian Pacific Kansas City Railway (CPKC) found increased rail traffic would also increase motor vehicle emissions from idled vehicles at blocked crossings and from increased local truck traffic accessing the rail terminal.¹⁰

LONG TRAINS AND FREIGHT MOVED BY TRUCK

According to the Association of American Railroads (AAR), transporting freight by rail instead of truck reduces GHG emissions by up to 75%.¹¹ Therefore, it is important to ascertain whether the Class I rail-

roads are operating in a way to encourage or discourage freight traffic to shift from truck to rail. The evidence is mixed.

The 2023 merger of the Canadian Pacific and Kansas City Southern Railways to create CPKC could result in an overall decrease in emissions due to the expected diversion of freight from truck to rail transportation and the resulting removal of a projected 64,000 trucks per year from

⁷ Norfolk Southern presentation to committee, January 20, 2023.

⁸ Caltrans. 2016. "Railroad Grade Crossings Report to the Legislature." <https://dot.ca.gov/-/media/dot-media/programs/legislative-affairs/documents/railroad-grade-crossing-evaluation-report-v9-6-14-2016-a11y.pdf>. Analysis assumptions included the following: Passenger trains are 700 ft, freight trains are 5,000 ft, freight speed is 15 mph, frequency between 5 a.m. and 11 p.m. was evenly distributed, gates are in down position 30 seconds before and 10 seconds after trains clear the crossing, used current passenger timetables.

⁹ See, for example, AECOM. 2015. "Technical Memorandum: Benefit Cost Analysis of the Willmar Rail Connector and Industrial Access Project." May 28. <https://www.dot.state.mn.us/ofrw/willmar/15docs/04BCATechM.pdf>.

¹⁰ Surface Transportation Board (STB). 2023. "STB Issues Final Environmental Impact Statement for Proposed CP/KCS Merger." January 27. <https://www.stb.gov/news-communications/latest-news/pr-23-02>.

¹¹ AAR. n.d. "Freight Rail & Climate Change." Updated February 2024. <https://www.aar.org/wp-content/uploads/2023/06/AAR-Climate-Change-Fact-Sheet.pdf>.

the highways.¹² Despite increases in emissions from blocked highway-rail grade crossings and local truck traffic accessing rail terminals, the Surface Transportation Board (STB) concluded that the merger would result in a net reduction in emissions.¹³

On the other hand, since 2019 and the advent of long trains and Precision Scheduled Railroading, STB has intervened twice to require the Class II railroads to meet their common carrier obligations.¹⁴ There have also been concerns that the Class I railroads are reducing service.¹⁵

In addition, moving freight by long train implies reduced service frequency, because certain locations will receive fewer trains per day or week.

¹² STB. 2023. “STB Issues Final Environmental Impact Statement for Proposed CP/KCS Merger.” January 27. <https://www.stb.gov/news-communications/latest-news/pr-23-02>.

¹³ Ibid.

¹⁴ STB. 2022. “STB Continues Emergency Service Period for Foster Farms; Directs Service Commitments and Reporting.” July 1. <https://www.stb.gov/news-communications/latest-news/pr-22-35>; STB. 2023. “STB Grants Preliminary Injunction; Orders BNSF Railway Company to Transport 4.2 Million Tons of Coal for Navajo Transitional Energy Company, LLC.” June 23. <https://www.stb.gov/news-communications/latest-news/pr-23-11>.

¹⁵ STB. 2019. “Oversight Hearing on Demurrage and Accessorial Charges.” Docket No. EP 754 (Day 1). Washington, DC: Surface Transportation Board. <https://www.stb.gov/audio-meeting/oversight-hearing-on-demurrage-and-accessorial-charges-docket-no-ep-754-day-1>; STB. 2019b. “Oversight Hearing on Demurrage and Accessorial Charges.” Docket No. EP 754 (Day 2). Washington, DC: Surface Transportation Board. <https://www.stb.gov/audio-meeting/oversight-hearing-on-demurrage-and-accessorial-charges-docket-no-ep-754-day-2>.

⦿ Next Chapter: 7 Summary Assessment and Recommendations >>

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EXHIBIT 12



Getting Health on Track: Cleaner Locomotives for Healthy Air





Getting Health on Track: Cleaner Locomotives for Healthy Air

Introduction

The transportation sector is a leading source of harmful, lung-damaging air pollution. While much attention has focused on cars and trucks, the engines that power America's trains – locomotives – remain a major and often overlooked contributor to harmful emissions. Many of these locomotives were built decades ago and continue to operate under outdated standards, releasing high levels of nitrogen oxides (NOx), diesel particulate matter (DPM) and greenhouse gases. Pollutants from locomotives pose a serious threat to public health, especially for railyard workers and the communities living near rail lines, ports and major transit hubs.

America's aging locomotive fleet not only worsens asthma, heart disease and cancer risk, but also disproportionately harms low-income communities and communities who are already overburdened by pollution. At the same time, modern technologies capable of eliminating these emissions are available and cost-effective. Cleaning up locomotives is a critical step to protect human health, decrease health disparities and move the nation toward a cleaner transportation future.

This report examines the health risks of locomotive emissions across the United States, identifies the areas and populations most affected and highlights the solutions that can deliver healthier air for all. By understanding the scale of the problem and the tools at our disposal, we can chart a path toward stronger standards, cleaner technologies and healthier communities.





The Current State of Locomotives in the United States

Today, the majority of passenger and freight-carrying trains in the United States are powered by diesel engines originally constructed decades ago. Currently, operational emissions from just one train are worse than those of hundreds of heavy-duty trucks.¹

Federal emissions standards for locomotives have seen some strengthening over time, with new “tiers” being assigned for subsequent standards.² “Tier 4” locomotives are those certified to meet the cleanest standards of all diesel engine locomotives under regulations of the U.S. Environmental Protection Agency (EPA). EPA estimates Tier 4 locomotives have 90% lower particulate matter emissions, and 80% lower NOx emissions, than Tier 2 locomotives.³ However, there is no requirement for older trains to be upgraded or replaced. Regulatory loopholes allow the oldest, dirtiest locomotive engines to be rebuilt to meet their original outdated standards instead of upgrading to newer, more efficient technologies. These rebuilds can keep a heavier polluting train on the tracks for decades, without ever upgrading to meet the more health-protective standards. The most recent Tier 4 standards themselves have not been updated since 2008. Line-haul fleets, locomotives transporting passengers or goods long-distances across U.S. rail, remain dominated by engines operating under standards from over 25 years ago.⁴

Tier	Locomotive Manufacture Date	Date Standards Were Finalized
Tier 0	1973-2001	1997
Tier 1	2002-2004	1997
Tier 2	2005-2011	1997
Tier 3	2012-2014	2008
Tier 4	2015 and later	2008





The Health Implications

EPA is long overdue in setting new locomotive emissions standards that can greatly improve air quality, public health and reduce cancer risk. Locomotives are major sources of harmful pollution, emitting nitrogen oxides (NOx) and carcinogenic diesel particulate matter (DPM). These emissions harm millions of people nationwide, especially those living near railyards, ports and transit hubs, where pollution levels are highest.⁵ Nearly half of all Americans – 156.1 million people – already live in counties with unhealthy air, as found in the American Lung Association’s 2025 “State of the Air” report⁶, and locomotive pollution adds a heavy burden to many of these communities.

While rail is an efficient way to move goods and can become an important component of clean transportation, the older, less-efficient locomotive fleets remain a significant source of health harms. DPM can cause lung cancer, trigger asthma attacks and worsen heart and lung disease.⁷ Exposure to fine particle pollution, especially at higher concentrations, can trigger illness, hospitalization and is estimated to be responsible for nearly 48,000 premature deaths in the U.S. every year.⁸ Other pollutants from locomotives can cause various respiratory, cardiovascular and other health impacts, including asthma attacks, heart attacks, strokes and premature birth.⁹ Children, older adults and people with underlying health conditions including asthma, COPD, lung cancer, cardiovascular disease and pregnancy are all at greater risk. Additionally, greenhouse gas emissions from locomotives contribute to climate change.

Occupational Health Risks of Locomotive Emissions

The harmful effects of locomotive emissions extend beyond nearby communities; they also pose serious occupational health risks to the workers who operate and maintain trains every day. Locomotive engineers, conductors, railyard workers, maintenance crews and other railroad employees are frequently exposed to dangerous levels of diesel exhaust and related air pollutants because of their close and continuous proximity to operating diesel engines. For these workers, the air pollution caused by outdated locomotives is not a distant concern, it’s an unavoidable and dangerous part of the job that can seriously harm their health over time.

Diesel exhaust is a known human carcinogen, classified by the International Agency for Research on Cancer¹⁰, and long-term exposure is strongly linked to lung cancer, cardiovascular disease and chronic respiratory illness. Repeated exposure to DPM can irritate the eyes, nose and throat, cause persistent coughing and shortness of breath and worsen conditions such as asthma and chronic obstructive pulmonary disease (COPD).¹¹ For workers who spend hours each day in or around running diesel engines, the cumulative impact can be devastating.

A study conducted by the California Environmental Protection Agency found that railyard workers were among the most highly exposed occupational groups, with some exposed to levels of diesel particulate matter more than 20 times higher than ambient levels in surrounding neighborhoods.¹² Another investigation by the National Institute for Occupational Safety and Health highlighted elevated rates of respiratory illness and heart disease among locomotive crews, further underscoring the occupational hazards of diesel pollution in the rail industry.¹³

The risks are especially concerning given that many rail workers are employed at facilities where outdated, high-emission locomotives are still the norm. The regulatory loopholes that allow locomotives built as far back as the 1970s to remain in





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active use put workers in direct contact with pollution levels that would be unacceptable in most other workplace settings. These conditions fail to protect the very workforce that keeps our nation's freight and passenger systems running.

Rail yard workers that are part of the United Electrical, Radio & Machine Workers of America's Green Locomotive Project report respiratory health issues due to pervasive exposure.¹⁴

“

As an organizer with the United Electrical Radio and Machine Workers (UE), I work for both rail crew drivers and locomotive manufacturing workers. UE members who live near and work in rail yards are among the first people to inhale toxic pollution from locomotives. The concentration of older dirtier locomotives in yards is the result of the railroad industry's unwillingness to make necessary investments in cleaner, more efficient technology. When locomotives get too old to perform long-distance trips, they get demoted to switchers which never leave the yard. Workers describe these locomotives as “maintained just well enough to keep them running.” In some cases, there is doubt they would be able to start if they were turned off, so they are left on, spewing emissions 24/7.

The particulate matter from these decades-old switchers that populate this country's yards makes our members and their loved ones more likely to have asthma, COPD and lung cancer. UE members report getting headaches and shortness of breath on the job, as well as high rates of asthma among their kids and grandkids.” — Ryan Calbreath, CA

Modernizing federal locomotive standards is not only a matter of addressing community harm, but also a necessary step to safeguard worker health. By accelerating the shift toward zero-emission technologies and requiring the retirement or modernization of the oldest, dirtiest engines, we can protect railroad employees from preventable illness, improve working conditions and save lives. Clean air is a right, not just for the communities trains travel through, but for the people who keep those trains moving.





Health Implications for Communities Near Rail

Across the United States, communities living near railyards, ports and other major rail operations are disproportionately burdened by the health harms of diesel emissions. These areas are often home to low-income families and predominantly African American and Latinx residents, who already face higher rates of pre-existing health conditions such as asthma, heart disease and lung disease. Decades of discriminatory housing policies and land-use decisions have concentrated rail infrastructure in neighborhoods that are least able to bear additional environmental stress. The result is an unjust pattern: the same communities that have historically been excluded from decision-making are now exposed to some of the nation's highest levels of toxic locomotive pollution.¹⁵

A 2007 U.S. Environmental Protection Agency study found that more than 13 million Americans live near ports and railyards, with a “high percentage of low-income households, African Americans and Hispanics.”¹⁶ Communities already facing cumulative environmental and social burdens often lack the resources to relocate or to access quality healthcare to mitigate the harms of pollution. This makes strengthening locomotive standards an urgent priority for health. Cleaning up trains not only reduces greenhouse gas emissions and improves regional air quality but also directly protects the health of those most vulnerable.

EPA's responsibility is clear: ensuring strong, modernized standards for locomotives is not only a matter of reducing emissions, but also a matter of fairness. Transitioning to zero-emission technologies can deliver cleaner air, lower cancer risk and reduce the chronic health disparities that weigh most heavily on historically overburdened communities. By modernizing locomotive policy, the nation can take a meaningful step toward ensuring that everyone has the right to breathe clean, healthy air.

City-by-City Analysis

Pollution from locomotives affects people nationwide. However, some cities host larger rail hubs with more locomotive traffic, increasing their risks of health harms from air pollution, and exposure can vary neighborhood to neighborhood.

Chicago is the nation's busiest rail hub, handling nearly one-quarter of all U.S. freight rail traffic. A study done by the U.S. Department of Transportation Federal Highway Administration found that freight is a large source of NOx and particulate matter at the regional level, and in Chicago, NOx emissions from freight rail are nearly double that of other regions.¹⁷ Neighborhoods on the South and West Sides, home to predominantly Black and Latinx communities, are adjacent to major railyards and intermodal facilities. Residents here face some of the greatest exposure to toxic air pollution in the state.¹⁸ Asthma hospitalization rates in Chicago are twice the national rate, and some neighborhoods see one in every three children affected by asthma.¹⁹ This is a stark indicator of how pollution from locomotives compounds long-standing health inequities.

“I live on the southwest side of Chicago, and I'm bounded by four rail yards within a two to four mile radius. The polluting diesel locomotives used in Chicago's rail yards are harming railroad workers and drivers like myself, and people that live in these communities.”²⁰

— Larry Hopkins, UE Local 1177 President





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Houston is another major freight hub where multiple Class I – the largest – railroads converge, bringing high levels of diesel locomotive traffic into the city. The city’s East End and Fifth Ward neighborhoods, historically African American and Latinx communities, are located next to rail lines and yards. These same neighborhoods already face cumulative burdens from petrochemical facilities and highways, amplifying health risks from locomotive pollution.²¹ Elevated cancer risks in these areas underscore how overlapping sources of pollution reinforce patterns of injustice.

“

As a Nurse Practitioner in Houston, I see the heavy burden that diesel emissions place on health. Communities near the rail yards and busy freight corridors face higher rates of asthma and other respiratory illnesses, leading to higher healthcare costs and greater risk for missing work and school. Children are especially vulnerable and I’ve watched far too many kids struggle to breathe when they should be running, laughing, and learning. No child’s potential should be dimmed by the air they breathe. Reducing cancer-causing diesel pollution from locomotives can help provide a healthier future for them and for all of us.”

— Traci Gonzales, APRN, PNP-C, AE-C

The ports of Los Angeles and Long Beach form the largest port complex in the Western Hemisphere and are powered in large part by diesel freight rail. The California Air Resources Board has found that railyard-adjacent communities in Southern California are among the state’s most heavily impacted by DPM, another clear example of disproportionate environmental and health burdens.²²





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Emerging Technologies

The technology exists to modernize rail in America, and now updated locomotive standards are necessary to push the locomotive industry forward towards a cleaner, healthier and more sustainable future. To protect public health and clean up the air near our nation's railyards, ports and rail lines, we must embrace cleaner and more efficient technologies. As highlighted below, innovative systems like overhead catenary, transmission colocation and discontinuous catenary are ready-to-use examples of technologies that offer practical and powerful solutions to reduce toxic emissions and safeguard community health.

Overhead catenary systems deliver electricity directly to trains through overhead wires, eliminating the need for onboard diesel combustion. Widely used around the world, these continuous overhead catenary systems allow for fully zero-emission train operation which prevents dangerous pollutants like DPM and NOx that contribute to lung disease, cancer and premature death. Furthermore, this is reliable, high-speed technology that lowers operating costs while also supporting grid resilience.²³

Discontinuous catenary systems offer flexibility in places where full overhead wiring is challenging, such as tunnels, bridges or dense urban areas. These systems allow trains to operate on battery or hybrid power for short distances, then reconnect to overhead wires when possible, preserving zero-emission benefits without compromising reliability.²⁴

Transmission colocation takes advantage of existing power infrastructure by placing rail electrification lines alongside high-voltage transmission corridors. This approach can reduce project costs and environmental impacts, while accelerating the transition to electric rail, helping clean the air for communities living near major freight routes.²⁵

These modern technologies are already in use or under development globally, and they demonstrate that cleaner, healthier rail is possible today. EPA must begin developing stronger locomotive standards and solutions like these must be considered as the foundation of the path forward. Adopting and enforcing standards that embrace advanced technologies will reduce the cancer risk, asthma burden and other serious health harms caused by outdated diesel engines and deliver cleaner air to millions of Americans. The tools are available; what's missing are stronger policies to ensure their adoption.

Mitigation & Policy Solutions

Protecting public health and advancing cleaner rail requires federal action to hold manufacturers and operators accountable. The last update to locomotive emissions standards occurred more than 17 years ago, leaving EPA far behind technological progress. Stronger standards are urgently needed to close regulatory loopholes that allow decades-old locomotives to remain in service indefinitely, continuing to pollute communities and endanger workers.





Getting Health on Track: Cleaner Locomotives for Healthy Air

A new federal Tier 5 locomotive standard must be established to set ambitious emissions limits that reflect the cleanest available technologies. Tier 5 should include a clear phase-out schedule for the oldest, dirtiest engines and require that rebuilds include modern, cleaner technology, not allow outdated pollution levels to persist.

At the same time, federal and state governments should prioritize policies and investments that accelerate research, development and adoption of zero-emission rail technologies, including battery-electric locomotives and electrification through catenary systems.

These steps will not only reduce diesel emissions but also deliver multiple co-benefits: protecting rail workers, safeguarding overburdened communities and ensuring the rail sector modernizes in ways that protect our health and our climate. By pairing stronger regulatory standards with a bold commitment to zero-emission infrastructure, the U.S. can ensure that trains remain an efficient and sustainable mode of transportation, without sacrificing the health of millions of Americans.

“I’m a pediatrician practicing in Southern California, where the young patients that I see every day face an increased risk of health harm from the pollution coming out of local railyards. The heavy exposure to pollution – particularly the cancer-causing diesel pollution coming from the trains and equipment – worsens asthma and increases the risk and severity of upper airway illnesses. Cleaning up railyard pollution will help keep these kids in their classrooms and playing with their friends, not in my exam rooms.” — Afif El-Hasan, MD, FAAP

Conclusion

Locomotive emissions are a hidden but significant driver of toxic air pollution in the United States, endangering the health of rail workers, nearby communities and millions of Americans already struggling with unhealthy air. The evidence is clear: outdated diesel locomotives contribute to lung disease, cancer, heart disease, asthma and thousands of premature deaths every year. These harms fall disproportionately on low-income communities and communities of color, making locomotive pollution both a public health crisis and a matter of environmental justice.

Fortunately, the solutions are within reach. Proven zero-emission technologies such as battery-electric locomotives, overhead and discontinuous catenary systems and transmission colocation can eliminate harmful emissions while improving efficiency and reducing long-term costs. Stronger federal action is needed to accelerate their adoption.

The U.S. Environmental Protection Agency must close regulatory loopholes, set a bold new Tier 5 standard and require the phase-out of the nation’s oldest and dirtiest engines.

Cleaning up locomotives is not only possible, it is necessary. By modernizing standards and embracing zero-emission rail, we can reduce cancer risk, prevent asthma attacks, protect workers and deliver cleaner air to the communities that need it most. Ensuring that every person has the right to breathe clean, healthy air requires decisive action now. The tools exist, it is time to put health first and build a rail system that powers our economy without poisoning our lungs.





Getting Health on Track: Cleaner Locomotives for Healthy Air

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EXHIBIT 13

Environmental Justice

Guidance Under the National Environmental Policy Act



Council on Environmental Quality

Front cover photograph of John Heinz National Wildlife Refuge at Tinicum
by John and Karen Hollingsworth

Front cover photograph of school bus and children by Sam Kittner.

ENVIRONMENTAL JUSTICE

Guidance Under the National Environmental Policy Act



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December 10, 1997**

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I.

Introduction

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,"¹ provides that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." The Executive Order makes clear that its provisions apply fully to programs involving Native Americans.

In the memorandum to heads of departments and agencies that accompanied Executive Order 12898, the President specifically recognized the importance of procedures under the National Environmental Policy Act (NEPA)² for identifying and addressing environmental justice concerns. The memorandum states that "each Federal agency shall analyze the environmental effects, including human health, economic and social effects, of Federal actions, including effects on minority communities and low-income communities, when such analysis is required by [NEPA]." The memorandum particularly emphasizes the importance of NEPA's public participation process, directing that "each Federal agency shall provide opportunities for community input in the NEPA process." Agencies are further directed to "identify potential effects and mitigation measures in consultation with affected communities, and improve the accessibility of meetings, crucial documents, and notices."

The Council on Environmental Quality (CEQ) has oversight of the Federal government's compliance with Executive Order 12898 and NEPA.³ CEQ, in consultation with EPA and other affected agencies, has developed this guidance to further assist Federal agencies with their NEPA procedures so that environmental justice concerns are effectively identified and addressed. To the extent practicable and permitted by law, agencies may supplement this guidance with more specific procedures tailored to particular programs or activities of an individual department, agency, or office.

¹ 59 Fed. Reg. 7629 (1994).

² 42 U.S.C. §4321 *et seq.*

³ Certain oversight functions in the Executive Order are delegated to the Deputy Assistant to the President for Environmental Policy. Following the merger of the White House Office on Environmental Policy with CEQ, the Chair of CEQ assumed those functions. The Environmental Protection Agency (EPA) has lead responsibility for implementation of the Executive Order as Chair of the Interagency Working Group (IWG) on Environmental Justice.

II.

Executive Order 12898 and the Presidential Memorandum

In addition to the general directive in Executive Order 12898 that each agency identify and address, as appropriate, "disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations,"⁴ there are several provisions of the Executive Order and a number of supporting documents to which agencies should refer when identifying and addressing environmental justice concerns in the NEPA process.

First, the Executive Order itself contains particular emphasis on four issues that are pertinent to the NEPA process:

- The Executive Order requires the development of agency-specific environmental justice strategies.⁵ Thus, agencies have developed and should periodically revise their strategies providing guidance concerning the types of programs, policies, and activities that may, or historically have, raised environmental justice concerns at the particular agency. These guidances may suggest possible approaches to addressing such concerns in the agency's NEPA analyses, as appropriate.
- The Executive Order recognizes the importance of research, data collection, and analysis, particularly with respect to multiple and cumulative exposures to environmental hazards for low-income populations, minority populations, and Indian tribes.⁶ Thus, data on these exposure issues should be incorporated into NEPA analyses as appropriate.⁷
- The Executive Order provides for agencies to collect, maintain, and analyze information on patterns of subsistence consumption of fish, vegetation, or wildlife.⁸ Where an agency action may affect fish, vegetation, or wildlife, that agency action may

⁴ Executive Order No. 12898, 59 Fed. Reg. at 7630 (Section 1-101).

⁵ *Id.* at 7630 (Section 1-103).

⁶ *Id.* at 7631 (Section 3-3).

⁷ For further information on considering cumulative effects, see Considering Cumulative Effects Under The National Environmental Policy Act (Council on Environmental Quality, Executive Office of the President, Jan. 1997)

⁸ *Id.* at 7631 (Section 4-401).

also affect subsistence patterns of consumption and indicate the potential for disproportionately high and adverse human health or environmental effects on low-income populations, minority populations, and Indian tribes.

- The Executive Order requires agencies to work to ensure effective public participation and access to information.⁹ Thus, within its NEPA process and through other appropriate mechanisms, each Federal agency shall, "wherever practicable and appropriate, translate crucial public documents, notices and hearings, relating to human health or the environment for limited English speaking populations." In addition, each agency should work to "ensure that public documents, notices, and hearings relating to human health or the environment are concise, understandable, and readily accessible to the public."¹⁰

Second, the memorandum accompanying the Executive Order identifies four important ways to consider environmental justice under NEPA.

- Each Federal agency should analyze the environmental effects, including human health, economic, and social effects of Federal actions, including effects on minority populations, low-income populations, and Indian tribes, when such analysis is required by NEPA.¹¹

- Mitigation measures identified as part of an environmental assessment (EA), a finding of no significant impact (FONSI), an environmental impact statement (EIS), or a record of decision (ROD), should, whenever feasible, address significant and adverse environmental effects of proposed federal actions on minority populations, low-income populations, and Indian tribes.¹²

- Each Federal agency must provide opportunities for effective community participation in the NEPA process, including identifying potential effects and mitigation measures in consultation with affected communities and improving the accessibility of public meetings, crucial documents, and notices.¹³

- Review of NEPA compliance (such as EPA's review under § 309 of the Clean Air Act)

⁹ *Id.* at 7632 (Section 5-5).

¹⁰ *Id.* at 7632 (Section 5-5).

¹¹ Memorandum from the President to the Heads of Departments and Agencies. Comprehensive Presidential Documents No. 279. (Feb. 11, 1994).

¹² *Id.*

¹³ *Id.*

must ensure that the lead agency preparing NEPA analyses and documentation has appropriately analyzed environmental effects on minority populations, low-income populations, or Indian tribes, including human health, social, and economic effects.¹⁴

Third, the Interagency Working Group (IWG), established by the Executive Order to implement the order's requirements, has developed guidance on key terms in the Executive Order. The guidance, reproduced as Appendix A, reflects a general consensus based on Federal agencies' experience and understanding of the issues presented. Agencies should apply the guidance with flexibility, and may consider its terms a point of departure rather than conclusive direction in applying the terms of the Executive Order.

¹⁴ *Id.*

III.

Executive Order 12898 and NEPA

A. NEPA Generally

NEPA's fundamental policy is to "encourage productive and enjoyable harmony between man and his environment."¹⁵ In the statute, Congress "recognizes that each person should enjoy a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment."¹⁶ The following goals, set forth in NEPA, make clear that attainment of environmental justice is wholly consistent with the purposes and policies of NEPA¹⁷:

- to "assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings"¹⁸;
- to "attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences";¹⁹
- to "preserve important historic, cultural, and natural aspects of our natural heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice"²⁰; and
- to "achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities."²¹

These goals are promoted through the requirement that all agencies of the Federal government shall include in every recommendation or report on proposals for legislation and other

¹⁵ 42 U.S.C. § 4321.

¹⁶ 42 U.S.C. § 4331(c).

¹⁷ 42 U.S.C. § 4331(b).

¹⁸ 42 U.S.C. § 4331(b)(2).

¹⁹ 42 U.S.C. § 4331(b)(3).

²⁰ 42 U.S.C. § 4331(b)(4).

²¹ 42 U.S.C. § 4331(b)(5).

major Federal actions significantly affecting the quality of the human environment, a "detailed statement by the responsible official" on: the environmental impacts of the proposed action; adverse environmental effects that cannot be avoided should the proposal be implemented; alternatives to the proposed action; the relationship between local, short-term uses of man's environment and long-term productivity; and any irreversible or irretrievable commitments of resources involved in the proposed action itself.²²

Preparation of an EA may precede preparation of an EIS, to determine whether a proposed action may "significantly affect" the quality of the human environment. The EA either will support a finding of no significant impact (FONSI), or will document the need for an EIS. Agency procedure at each step of this process should be guided by the agency's own NEPA regulations and by the CEQ regulations found at 40 C.F.R. Parts 1500-1508.

B. Principles for Considering Environmental Justice under NEPA

Environmental justice issues may arise at any step of the NEPA process and agencies should consider these issues at each and every step of the process, as appropriate. Environmental justice issues encompass a broad range of impacts covered by NEPA, including impacts on the natural or physical environment and interrelated social, cultural and economic effects.²³ In preparing an EIS or an EA, agencies must consider both impacts on the natural or physical environment and related social, cultural, and economic impacts.²⁴ Environmental justice concerns may arise from impacts on the natural and physical environment, such as human health or ecological impacts on minority populations, low-income populations, and Indian tribes, or from related social or economic impacts.

1. General Principles

Agencies should recognize that the question of whether agency action raises environmental justice issues is highly sensitive to the history or circumstances of a particular community or population, the particular type of environmental or human health impact, and the nature of the proposed action itself. There is not a standard formula for how environmental justice issues should be identified or addressed. However, the following six principles provide general guidance.

²² 42 U.S.C. § 4332(c).

²³ The CEQ implementing regulations define "effects" or "impacts" to include "ecological...aesthetic, historic, cultural, economic, social or health, whether direct, indirect or cumulative." 40 C.F.R. 1508.8.

²⁴ 40 C.F.R. 1508.14.

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-
- Agencies should consider the composition of the affected area, to determine whether minority populations, low-income populations, or Indian tribes are present in the area affected by the proposed action, and if so whether there may be disproportionately high and adverse human health or environmental effects on minority populations, low-income populations, or Indian tribes.
 - Agencies should consider relevant public health data and industry data concerning the potential for multiple or cumulative exposure to human health or environmental hazards in the affected population and historical patterns of exposure to environmental hazards, to the extent such information is reasonably available. For example, data may suggest there are disproportionately high and adverse human health or environmental effects on a minority population, low-income population, or Indian tribe from the agency action. Agencies should consider these multiple, or cumulative effects, even if certain effects are not within the control or subject to the discretion of the agency proposing the action.
 - Agencies should recognize the interrelated cultural, social, occupational, historical, or economic factors that may amplify the natural and physical environmental effects of the proposed agency action. These factors should include the physical sensitivity of the community or population to particular impacts; the effect of any disruption on the community structure associated with the proposed action; and the nature and degree of impact on the physical and social structure of the community.
 - Agencies should develop effective public participation strategies. Agencies should, as appropriate, acknowledge and seek to overcome linguistic, cultural, institutional, geographic, and other barriers to meaningful participation, and should incorporate active outreach to affected groups.
 - Agencies should assure meaningful community representation in the process. Agencies should be aware of the diverse constituencies within any particular community when they seek community representation and should endeavor to have complete representation of the community as a whole. Agencies also should be aware that community participation must occur as early as possible if it is to be meaningful.
 - Agencies should seek tribal representation in the process in a manner that is consistent with the government-to-government relationship between the United States and tribal governments, the federal government's trust responsibility to federally-recognized tribes, and any treaty rights.

2. Additional Considerations

The preceding principles must be applied in light of these further considerations that are

pertinent to any analysis of environmental justice under NEPA.

- The Executive Order does not change the prevailing legal thresholds and statutory interpretations under NEPA and existing case law. For example, for an EIS to be required, there must be a sufficient impact on the physical or natural environment to be "significant" within the meaning of NEPA. Agency consideration of impacts on low-income populations, minority populations, or Indian tribes may lead to the identification of disproportionately high and adverse human health or environmental effects that are significant and that otherwise would be overlooked.²⁵
- Under NEPA, the identification of a disproportionately high and adverse human health or environmental effect on a low-income population, minority population, or Indian tribe does not preclude a proposed agency action from going forward, nor does it necessarily compel a conclusion that a proposed action is environmentally unsatisfactory. Rather, the identification of such an effect should heighten agency attention to alternatives (including alternative sites), mitigation strategies, monitoring needs, and preferences expressed by the affected community or population.
- Neither the Executive Order nor this guidance prescribes any specific format for examining environmental justice, such as designating a specific chapter or section in an EIS or EA on environmental justice issues. Agencies should integrate analyses of environmental justice concerns in an appropriate manner so as to be clear, concise, and comprehensible within the general format suggested by 40 C.F.R. § 1502.10.

C. Considering Environmental Justice in Specific Phases of the NEPA Process

While appropriate consideration of environmental justice issues is highly dependent upon the particular facts and circumstances of the proposed action, the affected environment, and the affected populations, there are opportunities and strategies that are useful at particular stages of the NEPA process.

1. Scoping

During the scoping process, an agency should preliminarily determine whether

²⁵ Title VI of the Civil Rights Act of 1964, U.S.C. 2000d *et seq.*, and agency implementing regulations, prohibit recipients of federal financial assistance from taking actions that discriminate on the basis of race, sex, color, national origin, or religion. If an agency is aware that a recipient of federal funds may be taking action that is causing a racially discriminatory impact, the agency should consider using Title VI as a means to prevent or eliminate that discrimination.

an area potentially affected by a proposed agency action may include low-income populations, minority populations, or Indian tribes, and seek input accordingly. When the scoping process is used to develop an EIS or EA, an agency should seek input from low income populations, minority populations, or Indian tribes as early in the process as information becomes available.²⁶ Any such determination, as well as the basis for the determination, should be more substantively addressed in the appropriate NEPA documents and communicated as appropriate during the NEPA process.

If an agency identifies any potentially affected minority populations, low-income populations, or Indian tribes, the agency should develop a strategy for effective public involvement in the agency's determination of the scope of the NEPA analysis. Customary agency practices for notifying the public of a proposed action and subsequent scoping and public events may be enhanced through better use of local resources, community and other nongovernmental organizations, and locally targeted media.

Agencies should consider enhancing their outreach through the following means:

- | | |
|---|---|
| • Religious organizations (e.g., churches, temples, ministerial associations); | • Rural cooperatives; |
| • Newspapers, radio and other media, particularly media targeted to low-income populations, minority populations, or Indian tribes; | • Business and trade organizations; |
| • Civic associations; | • Community and social service organizations; |
| • Minority business associations; | • Universities, colleges, vocational and other schools; |
| • Environmental and environmental justice organizations; | • Labor organizations; |
| • Legal aid providers; | • Civil rights organizations; |
| • Homeowners', tenants', and neighborhood watch groups; | • Local schools and libraries; |
| • Federal, state, local, and tribal governments; | • Senior citizens' groups; |
| | • Public health agencies and clinics; and |
| | • The Internet and other electronic media. |

²⁶ For more information on scoping, see Memorandum from Nicolas C. Yost, Scoping Guidance (Council on Environmental Quality, Executive Office of the President, April 30, 1981).

The participation of diverse groups in the scoping process is necessary for full consideration of the potential environmental impacts of a proposed agency action and any alternatives. By discussing and informing the public of the emerging issues related to the proposed action, agencies may reduce misunderstandings, build cooperative working relationships, educate the public and decisionmakers, and avoid potential conflicts. Agencies should recognize that the identity of the relevant "public" may evolve during the process and may include different constituencies or groups of individuals at different stages of the NEPA process. This may also be the appropriate juncture to begin government-to-government consultation with affected Indian tribes and to seek their participation as cooperating agencies. For this participation to be meaningful, the public should have access to enough information so that it is well informed and can provide constructive input.

The following information may help inform the public during the scoping process:

- A description of the proposed action;
- An outline of the anticipated schedule for completing the NEPA process, with key milestones;
- An initial list of alternatives (including alternative sites, if possible) and potential impacts;
- An initial list of other existing or proposed actions, Federal and non-Federal, that may have cumulative impacts;
- Maps, drawings, and any other appropriate material or references;
- An agency point of contact;
- Timely notice of locations where comments will be received or public meetings held;
- Any telephone number or locations where further information can be obtained;
- Examples of past public comments on similar agency actions.

Thorough scoping is the foundation for the analytical process and provides an early opportunity for the public to participate in the design of alternatives for achieving the goals and objectives of the proposed agency action.

2. Public Participation

Early and meaningful public participation in the federal agency decision making process is a paramount goal of NEPA. CEQ's regulations require agencies to make diligent efforts to involve the public throughout the NEPA process. Participation of low-income populations, minority populations, or tribal populations may require adaptive or innovative approaches to overcome linguistic, institutional, cultural, economic, historical, or other potential barriers to effective participation in the decision-making processes of Federal agencies under customary NEPA procedures. These barriers may range from agency failure to provide translation of documents to the scheduling of meetings at times and in places that are not convenient to working families.

The following steps may be considered, as appropriate, in developing an innovative strategy for effective public participation:

- Coordination with individuals, institutions, or organizations in the affected community to educate the public about potential health and environmental impacts and enhance public involvement;
- Translation of major documents (or summaries thereof), provision of translators at meetings, or other efforts as appropriate to ensure that limited-English speakers potentially affected by a proposed action have an understanding of the proposed action and its potential impacts;
- Provision of opportunities for limited-English speaking members of the affected public to provide comments throughout the NEPA process;
- Provision of opportunities for public participation through means other than written communication, such as personal interviews or use of audio or video recording devices to capture oral comments;
- Use of periodic newsletters or summaries to provide updates on the NEPA process to keep the public informed;
- Use of different meeting sizes or formats, or variation on the type and number of media used, so that communications are tailored to the particular community or population;
- Circulation or creation of specialized materials that reflect the concerns and sensitivities of particular populations such as information about risks specific to subsistence consumers of fish, vegetation, or wildlife;
- Use of locations and facilities that are local, convenient, and accessible to the disabled, low-income and minority communities, and Indian tribes; and
- Assistance to hearing-impaired or sight-impaired individuals.

3. Determining the Affected Environment

In order to determine whether a proposed action is likely to have disproportionately high and adverse human health or environmental effects on low-income populations, minority populations, or Indian tribes, agencies should identify a geographic scale for which they will obtain demographic information on the potential impact area. Agencies may use demographic data available from the Bureau of the Census (BOC) to identify the composition of the potentially affected population. Geographic distribution by race, ethnicity, and income, as well as a delineation of tribal lands and resources, should be examined. Census data are available in published formats, and on CD-ROM available through the BOC. This data also is available from a number of local, college, and university libraries, and the World Wide Web. Agencies may also find that Federal, tribal, state and local health, environmental, and economic agencies have useful demographic information and studies, such as the Landview II system, which is used by the BOC to assist in utilizing data from a geographic information system (GIS). Landview II has proven to be a low-cost, readily available means of graphically accessing environmental justice data. These approaches already should be incorporated into current NEPA compliance.

Agencies should recognize that the impacts within minority populations, low-income populations, or Indian tribes may be different from impacts on the general population due to a community's distinct cultural practices. For example, data on different patterns of living, such as subsistence fish, vegetation, or wildlife consumption and the use of well water in rural communities may be relevant to the analysis. Where a proposed agency action would not cause any adverse environmental impacts, and therefore would not cause any disproportionately high and adverse human health or environmental impacts, specific demographic analysis may not be warranted. Where environments of Indian tribes may be affected, agencies must consider pertinent treaty, statutory, or executive order rights and consult with tribal governments in a manner consistent with the government-to-government relationship.

4. Analysis

When a disproportionately high and adverse human health or environmental effect on a low-income population, minority population, or Indian tribe has been identified, agencies should analyze how environmental and health effects are distributed within the affected community. Displaying available data spatially, through a GIS, can provide the agency and the public with an effective visualization of the distribution of health and environmental impacts among demographic populations. This type of data should be analyzed in light of any additional qualitative or quantitative information gathered through the public participation process.

Where a potential environmental justice issue has been identified by an agency, the agency should state clearly in the EIS or EA whether, in light of all of the facts and circumstances, a disproportionately high and adverse human health or environmental impact on minority populations, low-income populations, or Indian tribe is likely to result from the proposed action and any alternatives. This statement should be supported by sufficient information for the public to understand the rationale for the conclusion. The underlying analysis should be presented as concisely as possible, using language that is understandable to the public and that minimizes use of acronyms or jargon.

5. Alternatives

Agencies should encourage the members of the communities that may suffer a disproportionately high and adverse human health or environmental effect from a proposed agency action to help develop and comment on possible alternatives to the proposed agency action as early as possible in the process.

Where an EIS is prepared, CEQ regulations require agencies to identify an environmentally preferable alternative in the record of decision (ROD).²⁷ When the agency has identified a disproportionately high and adverse human health or environmental effect on low-income populations, minority populations, or Indian tribes from either the proposed action or alternatives, the distribution as well as the magnitude of the disproportionate impacts in these communities should be a factor in determining the environmentally preferable alternative. In weighing this factor, the agency should consider the views it has received from the affected communities, and the magnitude of environmental impacts associated with alternatives that have a less disproportionate and adverse effect on low-income populations, minority populations, or Indian tribes.

6. Record of Decision

When an agency reaches a decision on an action for which an EIS was prepared, a public record of decision (ROD) must be prepared that provides information on the alternatives considered and the factors weighed in the decision-making process. Disproportionately high and adverse human health or environmental effects on a low-income population, minority population, or Indian tribe should be among those factors explicitly discussed in the ROD, and should also be addressed in any discussion of whether all practicable means to avoid or minimize environmental and other interrelated effects were adopted. Where relevant, the agency should discuss how these issues are addressed

²⁷ 40 C.F.R. § 1505.2(b)

in any monitoring and enforcement program summarized in the ROD.²⁸

Dissemination of the information in the ROD may provide an effective means to inform the public of the extent to which environmental justice concerns were considered in the decision-making process, and where appropriate, whether the agency intends to mitigate any disproportionately high and adverse human health or environmental effects within the constraints of NEPA and other existing laws. In addition to translating crucial portions of the EIS where appropriate, agencies should provide translation, where practicable and appropriate, of the ROD in non-technical, plain language for limited-English speakers. Agencies should also consider translating documents into languages other than English where appropriate and practical.

7. Mitigation

Mitigation measures include steps to avoid, mitigate, minimize, rectify, reduce, or eliminate the impact associated with a proposed agency action.²⁹ Throughout the process of public participation, agencies should elicit the views of the affected populations on measures to mitigate a disproportionately high and adverse human health or environmental effect on a low-income population, minority population, or Indian tribe and should carefully consider community views in developing and implementing mitigation strategies. Mitigation measures identified in an EIS or developed as part of a FONSI should reflect the needs and preferences of affected low-income populations, minority populations, or Indian tribes to the extent practicable.

D. Where no EIS or EA is prepared

There are certain circumstances in which the policies of NEPA apply, and a disproportionately high and adverse human health or environmental impact on low-income populations, minority populations, or Indian tribes may exist, but where the specific statutory requirement to prepare an EIS or EA does not apply. These circumstances may arise because of an exemption from the requirement, a categorical exclusion of specific activities by regulation, or a claim by an agency that another environmental statute establishes the “functional equivalent” of an EIS or EA. For example, neither an EIS nor an EA is prepared for certain hazardous waste facility permits.

In circumstances in which an EIS or EA will not be prepared and a disproportionately high and adverse human health or environmental impact on low-income

²⁸ See 40 C.F.R. § 1505.2(c).

²⁹ See 40 C.F.R. § 1508.20.

populations, minority populations, or Indian tribes may exist, agencies should augment their procedures as appropriate to ensure that the otherwise applicable process or procedure for a federal action addresses environmental justice concerns. Agencies should ensure that the goals for public participation outlined in this guidance are satisfied to the fullest extent possible. Agencies also should fully develop and consider alternatives to the proposed action whenever possible, as would be required by NEPA.

IV.

Regulatory Changes

Consistent with the obligation of all agencies to promote consideration of environmental justice under NEPA and in all of their programs and activities, agencies that promulgate or revise regulations, policies, and guidances under NEPA or under any other statutory scheme should consult with CEQ and EPA to ensure that the principles and approaches presented in this guidance are fully incorporated into any new or revised regulations, policies, and guidances.

V.

Effect of this Guidance

Agencies should apply, and comply with, this guidance prospectively. If an agency has made substantial investments in NEPA compliance, or public participation with respect to a particular agency action, prior to issuance of this guidance, the agency should ensure that application of this guidance does not result in additional delays or costs of compliance.

This guidance is intended to improve the internal management of the Executive Branch with respect to environmental justice under NEPA. The guidance interprets NEPA as implemented through the CEQ regulations in light of Executive Order 12898. It does not create any rights, benefits, or trust obligations, either substantive or procedural, enforceable by any person, or entity in any court against the United States, its agencies, its officers, or any other person.

APPENDIX A

GUIDANCE FOR FEDERAL AGENCIES ON KEY TERMS IN EXECUTIVE ORDER 12898

INTRODUCTION

Pursuant to Executive Order 12898 on Environmental Justice, Federal agencies are to make the achievement of environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations, low-income populations, and Indian tribes and allowing all portions of the population a meaningful opportunity to participate in the development of, compliance with, and enforcement of Federal laws, regulations, and policies affecting human health or the environment regardless of race, color, national origin, or income. To that end, set forth below is guidance for Federal agencies on key terms contained in Executive Order 12898.

This guidance is intended only to improve the internal management of the Executive Branch. It shall not be deemed to create any right, benefit, or trust obligation, either substantive or procedural, enforceable by any person, or entity in any court against the United States, its agencies, its officers, or any other person. Consequently, neither this Guidance nor the deliberative processes or products resulting from the implementation of this Guidance shall be treated as establishing standards or criteria that constitute any basis for review of the actions of the Executive Branch. Compliance with this Guidance shall not be justiciable in any proceeding for judicial review of Agency action.

TEXT OF EXECUTIVE ORDER 12898,
"FEDERAL ACTIONS TO ADDRESS ENVIRONMENTAL JUSTICE IN
MINORITY POPULATIONS AND LOW-INCOME POPULATIONS,"
ANNOTATED
WITH PROPOSED GUIDANCE ON TERMS IN THE EXECUTIVE ORDER³⁰

Section 1-1. IMPLEMENTATION.

1-101. *Agency Responsibilities.* To the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review, each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Marianas Islands.

Low-income population: Low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty. In identifying low-income populations, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect.

Minority: Individual(s) who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic.

Minority population: Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis. In identifying minority communities, agencies may consider as a community either a group of individuals living in

³⁰ Executive Order provisions are in standard font. Guidance is in **bold** font.

geographic proximity to one another, or a geographically dispersed/transient set of individuals (such as migrant workers or Native American), where either type of group experiences common conditions of environmental exposure or effect. The selection of the appropriate unit of geographic analysis may be a governing body's jurisdiction, a neighborhood, census tract, or other similar unit that is to be chosen so as to not artificially dilute or inflate the affected minority population. A minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds.

Disproportionately high and adverse human health effects: When determining whether human health effects are disproportionately high and adverse, agencies are to consider the following three factors to the extent practicable:

- (a) Whether the health effects, which may be measured in risks and rates, are significant (as employed by NEPA), or above generally accepted norms. Adverse health effects may include bodily impairment, infirmity, illness, or death; and
- (b) Whether the risk or rate of hazard exposure by a minority population, low-income population, or Indian tribe to an environmental hazard is significant (as employed by NEPA) and appreciably exceeds or is likely to appreciably exceed the risk or rate to the general population or other appropriate comparison group; and
- (c) Whether health effects occur in a minority population, low-income population, or Indian tribe affected by cumulative or multiple adverse exposures from environmental hazards.

Disproportionately high and adverse environmental effects: When determining whether environmental effects are disproportionately high and adverse, agencies are to consider the following three factors to the extent practicable:

- (a) Whether there is or will be an impact on the natural or physical environment that significantly (as employed by NEPA) and adversely affects a minority population, low-income population, or Indian tribe. Such effects may include ecological, cultural, human health, economic, or social impacts on minority communities, low-income communities, or Indian tribes when those impacts are interrelated to impacts on the natural or physical environment; and

(b) Whether environmental effects are significant (as employed by NEPA) and are or may be having an adverse impact on minority populations, low-income populations, or Indian tribes that appreciably exceeds or is likely to appreciably exceed those on the general population or other appropriate comparison group; and

(c) Whether the environmental effects occur or would occur in a minority population, low-income population, or Indian tribe affected by cumulative or multiple adverse exposures from environmental hazards.

1-102. Creation of an Interagency Working Group on Environmental Justice. (a) Within 3 months of the date of this order, the Administrator of the Environmental Protection Agency ("Administrator") or the Administrator's designee shall convene an interagency Federal Working Group on Environmental Justice ("Working Group"). The Working Group shall comprise the heads of the following executive agencies and offices, or their designees: (a) Department of Defense; (b) Department of Health and Human Services; (c) Department of Housing and Urban Development; (d) Department of Labor; (e) Department of Agriculture; (f) Department of Transportation; (g) Department of Justice; (h) Department of the Interior; (I) Department of Commerce; (j) Department of Energy; (k) Environmental Protection Agency; (l) Office of Management and Budget; (m) Office of Science and Technology Policy; (n) Office of the Deputy Assistant to the President for Environmental Policy; (o) Office of the Assistant to the President for Domestic Policy; (p) National Economic Council; (q) Council of Economic Advisers; and (r) such other Government officials as the President may designate. The Working Group shall report to the President through the Deputy Assistant to the President for Environmental Policy and the Assistant to the President for Domestic Policy.

(b) The Working Group shall:

(1) provide guidance to Federal agencies on criteria for identifying disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.

(2) coordinate with, provide guidance to, and serve as a clearinghouse for, each Federal agency as it develops an environmental justice strategy as required by section 1-103 of this order, in order to ensure that the administration, interpretation and enforcement of programs, activities and policies are undertaken in a consistent manner;

(3) assist in coordinating research by, and stimulating cooperation among, the Environmental Protection Agency, the Department of Health and Human Services, the

Department of Housing and Urban Development, and other agencies conducting research or other activities in accordance with section 3-3 of this order;

- (4) assist in coordinating data collection, required by this order;
- (5) examine existing data and studies on environmental justice;
- (6) hold public meetings as required in section 5-502(d) of this order; and
- (7) develop interagency model projects on environmental justice that evidence cooperation among Federal agencies.

1-103. *Development of Agency Strategies.*

(a) Except as provided in section 6-605 of this order, each Federal agency shall develop an agency-wide environmental justice strategy, as set forth in subsections (b)-(e) of this section that identifies and addresses disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. The environmental justice strategy shall list programs, policies, planning and public participation processes, enforcement, and/or rulemakings related to human health or the environment that should be revised to, at a minimum: (1) promote enforcement of all health and environmental statutes in areas with minority populations and low-income populations; (2) ensure greater public participation; (3) improve research and data collection relating to the health of and environment of minority populations and low-income populations; and (4) identify differential patterns of consumption of natural resources among minority populations and low-income populations. In addition, the environmental justice strategy shall include, where appropriate, a timetable for undertaking identified revisions and consideration of economic and social implications of the revisions.

Differential patterns of consumption of natural resources: The term "differential patterns of consumption of natural resources" relates to subsistence and differential patterns of subsistence, and means differences in rates and/or patterns of fish, water, vegetation and/or wildlife consumption among minority populations, low-income populations, or Indian tribes, as compared to the general population.

(b) Within 4 months of the date of this order, each Federal agency shall identify an internal administrative process for developing its environmental justice strategy, and shall inform this Working Group of the process.

(c) Within 6 months of the date of this order, each Federal agency shall provide the Working Group with an outline of its proposed environmental justice strategy.

(d) Within 10 months of the date of this order, each Federal agency shall provide the Working Group with its proposed environmental justice strategy.

(e) Within 12 months of the date of this order, each Federal agency shall finalize its environmental justice strategy and provide a copy and written description of its strategy to the Working Group. During the 12 month period from the date of this order, each Federal agency, as part of its environmental justice strategy, shall identify several specific projects that can be promptly undertaken to address particular concerns identified during the development of the proposed environmental justice strategy, and a schedule for implementing those projects.

(f) Within 24 months of the date of this order, each Federal agency shall report to the Working Group on its progress in implementing its agency-wide environmental justice strategy.

(g) Federal agencies shall provide additional periodic reports to the Working Group as requested by the Working Group.

1-104. *Reports to the President.* Within 14 months of the date of this order, the Working Group shall submit to the President, through the Office of the Deputy Assistant to the President for Environmental Policy and the Office of the Assistant to the President for Domestic Policy, a report that describes the implementation of this order, and includes the final environmental justice strategies described in section 1-103(e) of this order.

Sec. 2-2. FEDERAL AGENCY RESPONSIBILITIES FOR FEDERAL PROGRAMS.

Each Federal agency shall conduct its programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under, such programs, policies, and activities, because of their race, color, or national origin.

Sec. 3-3. RESEARCH, DATA COLLECTION, AND ANALYSIS.

3-301. *Human Health and Environmental Research and Analysis.*

(a) Environmental human health research, whenever practicable and appropriate, shall include diverse segments of the population in epidemiological and clinical studies, including segments at high risk from environmental hazards, such as minority populations, low-income populations and workers who may be exposed to substantial environmental hazards.

Environmental hazard and substantial environmental hazard: For purposes of research, data collection, and analysis under Section 3-3 of the Executive Order, the term "environmental hazard" means a chemical, biological, physical or radiological agent, situation or source that has the potential for deleterious effects to the environment and/or human health. Among the factors that may be important in defining a substantial environmental hazard are: the likelihood, seriousness, and magnitude of the impact.

(b) Environmental human health analyses, whenever practical and appropriate, shall identify multiple and cumulative exposures.

Environmental Exposure: For purposes of research, data collection, and analysis under Section 3-3 of the Executive Order, the term "environmental exposure" means contact with a chemical (e.g., asbestos, radon), biological (e.g., Legionella), physical (e.g., noise), or radiological agent.

Multiple Environmental Exposure: For purposes of research, data collection, and analysis under Section 3-3 of the Executive Order, the term "multiple environmental exposure" means exposure to any combination of two or more chemical, biological, physical or radiological agents (or two or more agents from two or more of these categories) from single or multiple sources that have the potential for deleterious effects to the environment and/or human health.

Cumulative Environmental Exposure: For purposes of research, data collection, and analysis under Section 3-3 of the Executive Order, the term "cumulative environmental exposure" means exposure to one or more chemical, biological, physical, or radiological agents across environmental media (e.g., air, water, soil) from single or multiple sources, over time in one or more locations, that have the potential for deleterious effects to the environment and/or human health.

(c) Federal agencies shall provide minority populations and low-income populations the opportunity to comment on the development and design of research strategies undertaken pursuant to this order.

3-302. *Human Health and Environmental Data Collection and Analysis.* To the extent permitted by existing law, including the Privacy Act, as amended (5 U.S.C. § 552a):

(a) each Federal agency, whenever practicable and appropriate, shall collect, maintain, and analyze information assessing and comparing environmental and human health risks borne by populations identified by race, national origin, or income. To the extent practical and appropriate, Federal agencies shall use this information to determine whether their programs, policies, and activities have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations;

(b) In connection with the development and implementation of agency strategies in section 1-103 of this order, each Federal agency, whenever practicable and appropriate, shall collect, maintain and analyze information on the race, national origin, income level, and other readily accessible and appropriate information for areas surrounding facilities or sites expected to have a substantial environmental, human health, or economic effect on the surrounding populations, when such facilities or sites become the subject of a substantial Federal environmental administrative or judicial action. Such information shall be made available to the public unless prohibited by law; and

Federal environmental administrative or judicial action includes any administrative enforcement action, civil enforcement action, or criminal enforcement action initiated by, or permitting or licensing determination undertaken by, a Federal agency to enforce or execute a Federal law intended, in whole or in part, to protect human health or the environment.

(c) Each Federal agency, whenever practicable and appropriate, shall collect, maintain, and analyze information on the race, national origin, income level, and other readily accessible and appropriate information for areas surrounding Federal facilities that are: (1) subject to the reporting requirements under the Emergency Planning and Community Right-to-Know Act, 42 U.S.C. section 11001-11050 as mandated in Executive Order No. 12856; and (2) expected to have a substantial environmental, human health, or economic effect on surrounding populations. Such information shall be made available to the public, unless prohibited by law.

(d) In carrying out the responsibilities in this section, each Federal agency, whenever practicable and appropriate, shall share information and eliminate unnecessary duplication of efforts through the use of existing data systems and cooperative agreements among Federal agencies and with State, local, and tribal governments.

Sec. 4-4. SUBSISTENCE CONSUMPTION OF FISH AND WILDLIFE.

4-401. *Consumption Patterns.* In order to assist in identifying the need for ensuring protection of populations with differential patterns of subsistence consumption of fish and wildlife, Federal agencies, whenever practicable and appropriate, shall collect, maintain, and analyze information on the consumption patterns of populations who principally rely on fish and/or wildlife for subsistence. Federal agencies shall communicate to the public the risks of those consumption patterns.

Subsistence consumption of fish and wildlife: Dependence by a minority population, low-income population, Indian tribe or subgroup of such populations on indigenous fish, vegetation and/or wildlife, as the principal portion of their diet.

Differential patterns of subsistence consumption: Differences in rates and/or patterns of subsistence consumption by minority populations, low-income populations, and Indian tribes as compared to rates and patterns of consumption of the general population.

4-402. *Guidance.* Federal agencies, whenever practicable and appropriate, shall work in a coordinated manner to publish guidance reflecting the latest scientific information available concerning methods for evaluating the human health risks associated with the consumption of pollutant-bearing fish or wildlife. Agencies shall consider such guidance in developing their policies and rules.

Sec. 5-5. PUBLIC PARTICIPATION AND ACCESS TO INFORMATION.

(a) The public may submit recommendations to Federal agencies relating to the incorporation of environmental justice principles into Federal agency programs or policies. Each Federal agency shall convey such recommendations to the Working Group.

(b) Each Federal agency may, whenever practicable and appropriate, translate crucial public documents, notices, and hearings relating to human health or the environment for limited English speaking populations.

(c) Each Federal agency shall work to ensure that public documents, notices, and hearings relating to human health or the environment are concise, understandable, and readily accessible to the public.

(d) The Working Group shall hold public meetings, as appropriate, for the purpose of fact-finding, receiving public comments, and conducting inquiries concerning environmental justice. The Working Group shall prepare for public review a summary of the comments and recommendations discussed at the public meetings.

Sec. 6-6. GENERAL PROVISIONS.

6-601. *Responsibility for Agency Implementation.* The head of each Federal agency shall be responsible for ensuring compliance with this order. Each Federal agency shall conduct internal reviews and take such other steps as may be necessary to monitor compliance with this order.

6-602. *Executive Order No. 12250.* This Executive order is intended to supplement but not supersede Executive Order No. 12250, which requires consistent and effective implementation of various laws prohibiting discriminatory practices in programs receiving Federal financial assistance. Nothing herein shall limit the effect or mandate of Executive Order No. 12250.

6-603. *Executive Order No. 12875.* This Executive order is not intended to limit the effect or mandate of Executive Order No. 12875.

6-604. *Scope.* For purposes of this order, Federal agency means any agency on the Working Group, and such other agencies as may be designated by the President, that conducts any Federal program or activity that substantially affects human health or the environment. Independent agencies are requested to comply with the provisions of this order.

6-605. *Petitions for Exemptions.* The head of a Federal agency may petition the President for an exemption from the requirements of this order on the grounds that all or some of the petitioning agency's programs or activities should not be subject to the requirements of this order.

6-606. *Native American Programs.* Each Federal agency responsibility set forth under this order shall apply equally to Native American programs. In addition, the Department of the Interior, in coordination with the Working Group, and, after consultation with tribal leaders, shall coordinate steps to be taken pursuant to this order that address Federally-recognized Indian Tribes.

Native American programs: Native American programs include those Federal programs designed to serve Indian Tribes or individual Indians, recognizing that such programs are to be guided, as appropriate, by the government-to-government relationship, the Federal trust responsibility, and the role of tribes as governments within the Federal system.

6-607. *Costs.* Unless otherwise provided by law, Federal agencies shall assume the financial costs of complying with this order.

6-608. *General.* Federal agencies shall implement this order consistent with, and to the extent permitted by, existing law.

6-609. *Judicial Review.* This order is intended only to improve the internal management of the executive branch and is not intended to, nor does it create any right, benefit, or trust responsibility, substantive or procedural, enforceable at law or equity by a party against the United States, its agencies, its officers, or any person. This order shall not be construed to create any right to judicial review involving the compliance or noncompliance of the United States, its agencies, its officers, or any other person with this order.

EXHIBIT 14



Preserving America's Heritage

Limitations on the Delegation of Authority by Federal Agencies to Initiate Tribal Consultation under Section 106 of the National Historic Preservation Act

A federal agency is allowed, in some circumstances, to delegate to its applicants the responsibility to initiate consultation pursuant to the regulations that implement Section 106 of the National Historic Preservation Act (NHPA), “Protection of Historic Properties” (36 CFR Part 800). The provision in Section 800.2(c)(4) of the regulations has been used frequently by federal agencies such as the Federal Communications Commission, the Surface Transportation Board, and the Department of Health and Human Services. Although federal agencies can delegate this responsibility without the involvement of the Advisory Council on Historic Preservation (ACHP), inquiries are often made about the applicability of this authority regarding consultation with Indian tribes. This guidance clarifies the restrictions on the use of this provision regarding Section 106 consultation with Indian tribes.

Federal agencies are required to consult with Indian tribes on a government-to-government basis pursuant to Executive Orders, Presidential memoranda, and other authorities. Section 800.2(c)(2)(ii)(B) of the ACHP’s regulations remind federal agencies that “the Federal Government has a unique legal relationship with Indian tribes set forth in the Constitution of the United States, treaties, statutes, and court decisions. Consultation with Indian tribes should be conducted in a sensitive manner respectful of tribal sovereignty. Nothing in this part alters, amends, repeals, interprets or modifies tribal sovereignty, any treaty rights, or other rights of an Indian tribe, or preempts, modifies or limits the exercise of such rights.”

Section 800.2(c)(2)(ii)(C) of the ACHP’s regulations further reminds agencies that “consultation with an Indian tribe must recognize the government-to-government relationship between the Federal Government and Indian tribes. The agency official shall consult with representatives designated or identified by the tribal government.”

Moreover, Section 101(d)(6)(B) of the NHPA specifically requires that “in carrying out its responsibilities under [Section 106], a Federal agency shall consult with any Indian tribe ... that attaches religious and cultural significance to [historic properties that may be affected by the undertaking].”

Accordingly, the authorization to applicants to initiate Section 106 consultation does not apply to the initiation of consultation with Indian tribes unless expressly authorized by the Indian tribe to do so. Indian tribes may certainly choose to meet with applicants that would like to initiate Section 106 early in project planning. However, federal agencies cannot unilaterally delegate their tribal consultation responsibilities to an applicant nor presume that such discussions substitute for federal agency tribal consultation responsibilities.

Finally, Section 800.2(c)(4) of the ACHP’s regulations states that “Federal agencies that provide authorizations to applicants [to initiate consultation] remain responsible for their government-to-government relationships with Indian tribes.” Simply stated, Indian tribes are not obligated by statute or

regulations implementing Section 106 to consult with applicants. And, nothing in the Section 106 regulations is intended to (or could) waive tribal rights to government-to-government consultation. Accordingly, it is not appropriate to assume that the lack of written or verbal response by a tribe to an applicant's outreach signifies a lack of interest in the project or waiver of its right to consultation during its review under Section 106.

In circumstances where an Indian tribe agrees to allow a federal agency to authorize an applicant to initiate or carry out Section 106 consultation for a particular program or undertaking, the ACHP recommends that any such delegations be articulated in written agreements between the federal agency and the Indian tribe to avoid confusion. Any such agreement, however, should include a provision that requires the federal agency to reenter the consultation process at any time at the request of the Indian tribe since the federal agency remains responsible for government-to-government consultation. Finally, federal agencies should ensure that applicants fully understand the role of Indian tribes in the Section 106 process and, have clarified what is required to ensure that Indian tribes are afforded a meaningful opportunity to participate.

July 1, 2011