



By Electronic Mail

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RE: Comments on the Draft Environmental Impact Statement for the Navajo Generating Station-Kayenta Mine Complex

I. Introduction

Thank you for the opportunity to comment on the Bureau of Reclamation's Draft Environmental Impact Statement (DEIS) concerning the Navajo Generating Station-Kayenta Mine Complex (NGS-KMC) Project. These comments are submitted on behalf of the Grand Canyon Trust, Sierra Club, and Center for Biological Diversity.

We appreciate the effort that the Bureau of Reclamation and cooperating agencies (collectively, "Reclamation") made to prepare the DEIS under the National Environmental Policy Act (NEPA), but we believe the analysis of whether to keep the Navajo Generating Station (NGS) and Kayenta Mine Complex (KMC or "the Mine") running until 2044 is deficient. The DEIS, among other flaws, has an unlawfully narrow purpose-and-need statement; omits alternatives capable of providing reliable and cost-effective power with fewer impacts than coal-fired generation; and inadequately analyzes how continued operation of NGS and the mine would contribute to regional haze, climate change, and conditions imperiling endangered fish in the Colorado River Basin.

We urge Reclamation to revise the DEIS to address the issues we raise in these comments; provide accurate, consistent, and complete data and analysis; and ensure that the action it ultimately takes complies with the Endangered Species Act of 1973 and other federal law. We request a written response to these and all other public comments submitted on the DEIS and written notification when any action is taken on the DEIS (such as a final EIS, supplemental EIS, or the like).¹

¹ We also reserve the right to rely, in any future litigation or otherwise, on all public comments submitted on the DEIS.

II. Commenting Organizations

The Sierra Club is America's largest and most influential grassroots environmental organization, with more than 2.4 million members and supporters nationwide, including more than 13,000 that live in Arizona. Sierra Club is dedicated to exploring, enjoying, and protecting the wild places of the Earth; to practicing and promoting the responsible use of the Earth's resources and ecosystems; to educating and enlisting humanity to protect and restore the quality of the natural and human environment; and to using all lawful means to carry out these objectives. In addition to creating opportunities for people of all ages, levels and locations to have meaningful outdoor experiences, the Sierra Club works to safeguard the health of our communities, protect wildlife, and preserve our remaining wild places through grassroots activism, public education, lobbying, and litigation.

The Grand Canyon Trust is a non-profit organization with over 3,000 members that is headquartered in Flagstaff, Arizona. The mission of the Grand Canyon Trust is to protect and restore the canyon country of the Colorado Plateau—its spectacular landscapes, flowing rivers, clean air, diversity of plants and animals, and areas of beauty and solitude. Founded in 1985, the Trust has long been an active stakeholder in NGS-related issues, in preventing NGS emissions from impairing visibility at the Grand Canyon and the region's other national parks and wilderness areas, in preventing irreversible harm to Colorado River watersheds, and in promoting clean and renewable energy and sustainable economic development in partnership with native communities.

The Center for Biological Diversity is a non-profit 501(c)(3) corporation with offices in Arizona, New Mexico, California, Nevada, Oregon, Washington, Alaska, Illinois, Minnesota, Vermont, Colorado and Washington, D.C. The Center works through science, law, and policy to secure a future for all species, great or small, hovering on the brink of extinction. The Center has 50,400 members throughout the United States, Arizona, Utah and the world. The Center is actively involved in species and habitat protection issues worldwide, including throughout the western United States.

III. Background

The Navajo Generating Station is the largest and dirtiest coal-fired power plant in the West. It was built during the early 1970s on land that is leased from the Navajo Nation located about 20 miles north of Grand Canyon National Park, near Lake Powell and Page, Arizona.

For more than four decades, NGS has been burning a thousand tons of coal per hour to power three 750MW generators that deliver electricity to customers in California, Arizona, and Nevada. Starting in 1974, its three 700-foot smokestacks have dumped more than a half billion tons of climate-changing gasses into the earth's atmosphere. Every year, NGS releases millions of more tons of harmful pollutants into the surrounding air, land, and water. Its steam and cooling systems consume enough water pumped from Lake Powell to sustain a city of 50,000 people for a year. Its emissions impair visibility at nearby parks and wilderness areas. Methyl mercury, selenium, and other toxic emissions accumulate in surrounding ecosystems. People who live near the power plant are statistically more likely to suffer from respiratory disease.

Coal from the Kayenta Mine Complex is hauled 80 miles by electric train from Black Mesa to NGS. The Kayenta Mine is located on Hopi and Navajo land. Thousands of residents were forced to abandon their aboriginal homeland to clear the way for Peabody Coal Company to strip-mine nearly 100,000 acres of land, permitted by the U.S. Department of the Interior, Bureau of Indian Affairs, and Office of Surface Mining Reclamation and Enforcement, and leased by the Hopi and Navajo governments. Remaining residents who live near the strip mines have been breathing coal dust for more than a generation. Many nearby wells and water sources have been depleted and contaminated by the mine's infrastructure.

The U. S. Department of the Interior has a 24.3 percent interest in NGS, entitling it to 24.3 percent of the electricity NGS generates—historically amounting to 547 MW of the plant's 2,250 MW capacity at maximum output. About 350 MW of Reclamation's share of NGS power is used to run 14 large pumps needed to lift 1.5 million acre feet of water uphill from the Colorado River through the 337-mile long Central Arizona Project (CAP) canal. The CAP and supporting reservoirs, land, and infrastructure are owned by the federal government. Revenues from the sale of "surplus" NGS electricity—electricity not needed for pumping water—repay part of CAP's capital cost, underwrite its operation, maintenance, and replacement costs, and feed a development fund (the "Development Fund") that is used, in part, to minimize the cost of water for cities and southern Arizona tribes under the Arizona Water Settlements Act of 2004.

To keep NGS and the Kayenta Mine open for another 25 years, numerous federal leases and permits need to be renewed beginning in 2019. The Proposed Action described in the DEIS is to renew the expiring leases and permits in order to continue operating NGS and the mine through the end of 2044 (the "Proposed Action" or "Project").² A comprehensive environmental impact assessment of this complex system of federal infrastructure and obligations has not previously been completed under NEPA. There are a large number of interconnected actions and adverse effects that must be considered and—where possible—mitigated.

IV. Comments

A. Legal Background

NEPA "is our basic national charter for protection of the environment."³ NEPA has two fundamental purposes: (1) to guarantee that agencies take a "hard look" at the consequences of their actions before the actions occur by ensuring that "the agency, in reaching its decision, will have available, and will carefully consider, detailed information concerning significant environmental impacts"; and (2) to ensure 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."⁴ NEPA "emphasizes the importance of coherent and comprehensive up-front environmental analysis to ensure informed decision making to the end that 'the agency will not act on incomplete information, only to regret its decision after it is too

² U.S. Bureau of Reclamation, "Draft Environmental Impact Statement: Navajo Generating Station-Kayenta Mine Complex Project," 2-13 (Sep. 23, 2016) *available at* <http://ngskmc-eis.net/draft-eis-files/>.

³ 40 C.F.R. § 1500.1(a).

⁴ *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989). *See also* 42 U.S.C. § 4332(C)(i).

late to correct.”⁵ Federal regulations require agencies to “integrate the NEPA process with other planning at the earliest possible time to ensure that planning and decisions reflect environmental values.”⁶

As the Ninth Circuit Court of Appeals has explained:

[B]y requiring agencies to take a ‘hard look’ at how choices before them affect the environment, and then place their data and conclusions before the public, NEPA relies upon democratic processes to ensure—as the first appellate court to construe the statute in detail put it—that the ‘most intelligent optimally beneficial decision will ultimately be made.’⁷

B. The DEIS’s stated purpose and need, and alternatives analysis do not comply with NEPA’s requirements.

The alternatives analysis is “the heart of the environmental impact statement,” designed to offer a “clear basis for choice among options by the decisionmaker and the public.”⁸ Fundamentally, an agency must “to the *fullest* extent possible ... consider alternatives to its action which would reduce environmental damage.”⁹ An agency must gather “information sufficient to permit a reasoned choice of alternatives as far as environmental aspects are concerned.”¹⁰ Thus, agencies must “ensure that the statement contains sufficient discussion of the relevant issues and opposing viewpoints to enable the decisionmaker to take a ‘hard look’ at environmental factors, and to make a reasoned decision.”¹¹

When determining whether an EIS analyzed sufficient alternatives, courts apply a “rule of reason.”¹² The reasonableness of the alternatives considered is measured against two guideposts. First, when considering agency actions taken pursuant to a statute, an alternative is reasonable only if it falls within the agency’s statutory mandate.¹³ Second, reasonableness is judged with reference to an agency’s objectives for a particular project.¹⁴ While an agency may restrict its analysis to alternatives that suit the “basic policy objectives” of a planning action, it

⁵ *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1216 (9th Cir. 1998) (internal citation omitted).

⁶ 40 C.F.R. § 1501.2.

⁷ *Or. Nat. Desert Ass’n v. BLM*, 625 F.3d 1092, 1099-1100 (9th Cir. 2010) (quoting *Calvert Cliffs’ Coordinating Comm., Inc. v. U.S. Atomic Energy Comm’n*, 449 F.2d 1109, 1114 (D.C. Cir. 1971)).

⁸ 40 C.F.R. § 1502.14.

⁹ *Calvert Cliffs’ Coordinating Comm. v. U. S. Atomic Energy Comm’n*, 449 F.2d 1109, 1128 (D.C. Cir. 1971) (emphasis in original).

¹⁰ *Greater Yellowstone Coalition v. Flowers*, 359 F.3d 1257, 1277 (10th Cir. 2004).

¹¹ *Kleppe v. Sierra Club*, 427 U.S. 390, 410 n. 21 (1976).

¹² *Westlands Water Dist. v. U.S. Dep’t of the Interior*, 376 F.3d 853, 868 (9th Cir. 2004)).

¹³ *Westlands*, 376 F.3d at 866.

¹⁴ *See Idaho Conservation League v. Mumma*, 956 F.2d 1508, 1520 (9th Cir. 1992). While an agency may restrict its analysis to alternatives that suit the “basic policy objectives” of a planning action, *Seattle Audubon Soc’y v. Moseley*, 80 F.3d 1401, 1404 (9th Cir. 1996), it may do so only as long as “the statements of purpose and need drafted to guide the environmental review process ... are not unreasonably narrow,” *Colo. Env’tl Coalition v. Dombeck*, 185 F.3d 1162, 1173 (10th Cir. 1999).

may do so only as long as “the statements of purpose and need drafted to guide the environmental review process ... are not unreasonably narrow.”¹⁵

Because alternatives are so central to decisionmaking and mitigation, “the existence of a viable but unexamined alternative renders an environmental impact statement inadequate.”¹⁶ Given the significance of the alternatives analysis to an adequate EIS, NEPA requires agencies to “study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources.”¹⁷

The alternatives analysis, in turn, is informed in part by the purpose and need of the project. Alternatives are partly measured by their ability to satisfy the project purpose and need. Reclamation articulated a purpose and need statement in the DEIS for NGS that is so narrow and exacting that it allowed Reclamation to eliminate from consideration numerous viable clean energy alternatives to the existing coal-fired NGS. In fact, current operations of NGS—which the Proposed Action would prolong—do not and cannot meet Reclamation’s expectations under the DEIS’s purpose-and-need statement. These NEPA deficiencies are explained below.

1. The DEIS relied on an unlawfully narrow statement of purpose and need.

The DEIS’s stated purpose “is to secure, after 2019, a continuously available and reliable source of power and energy to operate the CAP pumps, which would be competitively priced with NGS and could be sold as surplus power to generate revenues for deposit to the Development Fund, and to satisfy the purposes of the Arizona Water Settlements Act.”¹⁸ Reclamation assessed four project alternatives to the proposed project and rejected numerous other potential options without analysis. The four alternatives were:

1. Natural gas partial replacement;
2. Renewable energy partial replacement;
3. Tribal partial federal replacement; and,
4. No action.

In each of the three action-based alternatives, Reclamation baked assumptions into the alternatives analysis that improperly limited its options by severely narrowing the criteria by which any alternative could perform.¹⁹ The following three performance criteria are discussed in detail in below:

¹⁵ *Seattle Audubon Soc’y v. Moseley*, 80 F.3d 1401, 1404 (9th Cir. 1996).

¹⁶ *Oregon Natural Desert Ass’n v. Bureau of Land Mgmt.*, 625 F.3d 1092, 1100 (9th Cir. 2010).

¹⁷ 42 U.S.C. § 4332(2)(E), (2)(C).

¹⁸ DEIS § 1.5.1.

¹⁹ As shown below in section III.B.4, not even the proposed project meets Reclamation’s narrow description and performance criteria.

- a) Some portion of federal NGS ownership would continue;²⁰
- b) Any replacement power would have to maintain the same output profile as NGS;²¹ and,
- c) NGS would adjust its output specifically in response to the output of alternative energy sources.²²

As an initial matter, and in order to show how these three criteria unlawfully constrained the alternatives Reclamation could analyze, it is important to understand Reclamation's unique role in providing power for operations of the CAP and to other electricity customers.

According to the DEIS, the 2,250 MW NGS coal-fired power plant provides baseload power to over 1 million customers in Arizona, California, and Nevada.²³ NGS also provides over 90 percent of the power used by the CAP, a federal project that delivers approximately 1.5 million acre-feet annually of Colorado River water to tribal, agricultural, municipal, and industrial water customers in Arizona.²⁴ With these obligations, the Bureau of Reclamation operates like a conventional utility providing electricity to its customers. As a power provider, like any utility, Reclamation is required to provide a reliable level of service at a reasonable price. More specifically, virtually all public utilities engage in "least-cost planning" which requires scrutiny of all known generating resources for meeting the utility's energy load, including those which focus on the generation and purchase of power, or the "supply side," and those which focus on conservation and load management, the "demand side."²⁵ In short, the goal of utility planning is to assure an adequate and reliable supply of energy at the least-cost to the utility and its customers. Given Reclamation's role as an owner/operator of NGS, it must be held to the same planning obligations as any other power provider. Implementing simple utility planning procedures for Reclamation's NEPA and other decision processes would yield project alternatives that are more cost-effective to customers *and* that present fewer environmental impacts than coal-fired generation.

²⁰ DEIS at ES1.4.2.2 ("Under this alternative, a *portion* of the federal share of NGS power and energy would be replaced by natural gas.") (emphasis added); *id.* at ES1.4.2.3 ("Under this alternative, a *portion* of the federal share of NGS power and energy would be replaced by power generated by renewable resources that would be purchased through a Power Purchase Agreement.") (emphasis added); *id.* at ES1.4.2.4 ("Under this alternative, a *portion* of the federal share of NGS power and energy would be replaced by power purchased through a Power Purchase Agreement.") (emphasis added).

²¹ For example, the DEIS asserts that "NGS would curtail its output by the corresponding amount and would continue production to generate the co-tenants' entitlements and the remaining amount of the federal share, including power that is surplus to CAP operational needs. This surplus power would be sold at market rates to produce revenue for deposit to the Development Fund." DEIS at ES1.4.2.2.

²² *Id.*

²³ DEIS at ES 1.0.

²⁴ *Id.*

²⁵ See generally *Least Cost Planning in the Utility Sector: Progress and Challenges*, Research sponsored by the Offices of Buildings and Community Systems, U.S. Dept. of Energy (1989); see also <http://www.azcc.gov/divisions/administration/integratedresource.asp>.

Therefore, in order to assess viable project alternatives, Reclamation should have developed feasible alternatives by utilizing standard utility planning tools used to help power generators meet customer demands with reliable and cost effective power and energy. However, rather than employing these off-the-shelf, least-cost planning practices, Reclamation narrowly constrained its alternatives analysis with impossible-to-meet performance criteria. The three criteria impermissibly limited the DEIS's alternative analysis in three ways.

First, Reclamation's rationale—that all of the federal NGS share could not be replaced (“total replacement option”)—was based on a superficial analysis that relied on a clearly biased set of assumptions. Specifically, Reclamation concluded that a total federal replacement alternative would not be competitively priced with NGS, or generate surplus revenue for the Development Fund.²⁶

The DEIS's support for this notion is found in a memo that the National Renewable Energy Lab (NREL) provided to Reclamation.²⁷ This memo is important because: (a) it comes to a different conclusion than the DEIS; and, (b) the DEIS relies on an inappropriately simple levelized-cost of energy assessment.

According to the DEIS, “the most cost-effective potential total federal replacement [is a] hybrid facility ... near McCullough substation in Boulder City, Nevada.”²⁸ In contrast, “NREL's analysis suggests that the area around NGS tends to be somewhat more cost-effective for siting a potential NGS replacement alternative—full or partial—for consideration in the EIS.”²⁹ NREL's estimated costs of NGS replacement are substantially *lower* than the McCullough option cited by the DEIS. In short, Reclamation's analysis overstated the cost of the total-federal-replacement potential by focusing on the McCullough substation.

NREL's assessment of the relative levelized-cost of energy from three different types of replacement facilities is reasonable. However, Reclamation used NREL's levelized costs as a basis to reject full replacement because of how replacement resources would compete against either NGS or the market. This approach was unreasonable and inconsistent with utility practice and NEPA requirements. Standard utility practice would require an evaluator to run either a system planning model or a production cost model to determine the relative market value of NGS or a full system replacement. Again, these are off-the-shelf planning tools widely employed by electric generators. Reclamation's rejection of the total replacement option and its limitation of alternatives to partial replacement options renders the DEIS legally defective, because the record shows that cleaner and more cost-effective options were available to Reclamation for inclusion in the DEIS.

²⁶ DEIS § 2.2.3.3 at page 2-11, lines 17-25.

²⁷ National Renewable Energy Laboratory. 2015a. Cost Estimates for Screened Alternatives for the Navajo Generating Station/Kayenta Mining Complex Environmental Impact Statement – Technical Memorandum from D. Hurlbut and M. Day (NREL) to R. Callejo, U.S. Bureau of Reclamation. January 6, 2015 available at <http://ngskmc-eis.net/wp-content/uploads/2016/11/NREL-2015b-Cost-Estimates-for-Screened-Alternatives.pdf>.

²⁸ DEIS § 2.2.3.3, page 2-11, lines 3-6.

²⁹ National Renewable Energy Laboratory. 2015a. Page 5.

Similarly, an electric generator faced with the decision between continuing to operate an existing facility or replacing that facility would conduct basic resource planning in order to meet CAP's demands with the least-cost portfolio of power and energy options. For most vertically integrated utilities, that level of planning is conducted with rigorous electricity system capacity expansion models, which operate within the constraints of meeting customer demand while obeying legal requirements, and seeking least cost procurement—or opportunities for off-system sales. The fixed assumption that some component of the generator in question (NGS) *must* remain in service is ineffective system planning, resulting in a defective alternatives assessment.

Second, Reclamation's assumption that replacement power must maintain a similar operating profile to NGS unjustifiably constrained the alternatives analysis, and is inconsistent with electricity system operations and planning. Reclamation assumed, for each alternative, that the hourly profile of provided power must match the NGS profile. NGS does not operate in lock-step with CAP. Instead, it provides power to a regional market on a cost-effective basis. In turn, CAP withdraws power from the grid. Significantly, under the "no action" alternative, CAP is required to procure market power when NGS is unavailable, and CAP acquires it on an as-needed basis. Therefore, feasible alternatives to NGS need not provide power with the same profile as NGS. NGS is dispatched on an economic basis relative to all other resources in the regional market. A resource with a lower variable cost might dispatch more, while a renewable energy resource will dispatch on the basis of wind or solar availability. To force the NEPA alternatives to meet the same output profile as NGS is irrational, undermines the cost effectiveness of alternative options, and increases the environmental impact of the alternatives by favoring coal-fired generation.

Third, Reclamation assessed the impact of NGS by assuming that "NGS would curtail its output by the corresponding amount" of an alternative generation resource.³⁰ In making this assumption, Reclamation erroneously tied the output of NGS to the amount of power that would be generated from an alternative resource. Basic energy economics disproves this assumption: NGS's output is based on the plant's ability to produce power economically relative to wholesale electric market prices. While an alternative energy resource injected into the grid might be expected to displace a small fraction of NGS, it is far more likely to see change at the level of generation dispatched at multiple marginal electric generating units at the same time across state boundaries. Among other agencies, U.S. EPA explicitly discusses the potential for renewable resources to displace existing generators and has designed tools to allow stakeholders, utilities and other agencies, to assess the marginal impact of a new renewable resource on fossil fuel generators. EPA's AVERT tool and accompanying user guide clearly indicates that no single electric generating unit could be considered the resource displaced by new renewable energy or energy efficiency, and that at best, one can only estimate the reductions that would be incurred at a single plant.³¹

³⁰ DEIS at ES1.4.2.2 ("NGS would curtail its output by the corresponding amount and would continue production to generate the co-tenants' entitlements and the remaining amount of the federal share, including power that is surplus to CAP operational needs. This surplus power would be sold at market rates to produce revenue for deposit to the Development Fund.").

³¹ AVERT: Avoided Emissions and Generation Tool. <https://www.epa.gov/statelocalclimate/avoided-emissions-and-generation-tool-avert>. User guide: https://www.epa.gov/sites/production/files/2016-07/documents/avert_user_manual_07-14-16.pdf

Reclamation's assessment of the impacts of the proposed action versus the impacts of the alternatives is therefore severely flawed. Reclamation's faulty assumptions demonstrate decisively the inaccuracy of the alternatives analysis conducted in the DEIS.

In fact, the only alternative option that would be expected to result in substantial environmental impact reductions from NGS is the "no action" alternative, in which NGS is retired. In all other cases, NGS's output can, for default purposes, be considered effectively the same as if no additional resource were added into the western interconnect. For an estimate of the emissions and generation reductions that could have been expected under any of the alternatives explored by Reclamation, it should have used one of the publicly available system impact tools such as AVERT. In all cases, Reclamation was required to analyze cost-effective alternatives that meet the agency's purpose and need, rather than the arbitrary alternatives found in the DEIS.

In order to comply with NEPA, Reclamation was required to:

- Consider the total customer requirement (three million MWh)³² and find the least-cost set of energy and capacity options to meet that requirement;
- Evaluate the least-cost set of energy and capacity options using standard utility planning or dispatch models;
- The resulting planning portfolios would have provided the feasible alternatives for the DEIS.

Only the "no action" alternative approached a legally sufficient alternative assessment. Had Reclamation not unreasonably constrained the criteria for identifying alternatives it would have included options that were likely more cost-effective and posed fewer impacts.

2. The DEIS made other overly narrow assumptions that unlawfully constrained the alternatives analysis.

The proposed action's purpose is to secure continuously available power and energy for the CAP along with two added criteria:

- a) Secure power prices competitive with the existing NGS; and,
- b) Procure surplus power for the generation of revenue.

As to the first condition, Reclamation was required to analyze action alternatives in the DEIS that assumed NGS and Kayenta mine would cease full operation in 2019, but the CAP pumps would still receive an adequate supply of energy, and surplus power would be available to generate revenue for the Development Fund. Agencies must "[r]igorously explore and objectively evaluate *all* reasonable alternatives" in response to a "specif[ied] ... purpose and

³² DEIS Appendix 2A-3.

need.”³³ Here, Reclamation provided three “straw men” that were not real alternatives at all. Except for the no action alternative, the three action alternatives required the continued operation of NGS. Reclamation did not evaluate any action alternatives with CAP meeting 100% of its power needs *without* NGS. For example, the project’s objectives could be met with 100% renewable energy or 100% natural gas, or a combination of renewable energy, natural gas, demand side resources and market purchases. Under NEPA, Reclamation was required to present a reasonable range of action alternatives that completely excluded NGS as a power source. The DEIS should have included an alternative that secured non-NGS sources of energy generation to power the CAP. That too would have satisfied the stated purpose and need.

Second, the DEIS included a secondary purpose of providing “surplus power to generate revenues for deposit to the Development Fund,”³⁴ which Reclamation considered important enough to reject analyzing viable alternatives that did not yield revenue exactly like NGS.³⁵ The sale of energy “off system” (i.e. surplus) is a standard consideration for vertically integrated utilities (i.e. utilities that both serve load and provide generation). Under normal circumstances, utilities seek only to provide their own system requirements. The generation of off-system sales is considered a high risk endeavor by most regulated utilities because market prices are volatile, and the motivation to sell additional energy is often inconsistent with basic requirements to procure least-cost energy for consumers. With this caveat in mind, utility practice has standard mechanisms for assessing off-system sales in long-term planning.

Off-system sales—the sale of surplus power—is simply an additional incremental revenue stream when considering total system cost. In energy system planning, utility planners look at the cost of providing power to their own customers and selling any excess as elements of a whole cost. In some circumstances, a generator that can provide off-system sales may have higher fixed costs but generates sufficient off-system revenue to offset such costs. In other circumstances, even the sale of surplus power is insufficient to cover the fixed costs of generation, and a utility or generator decides not to pursue the continued use of an existing resource.

The total cost of a resource plan is comprised of multiple cost and revenue elements that, while reported individually, are inextricably linked. Basic plant costs are comprised of fixed capital and operational costs (e.g., labor), fuel costs, other variable operational costs (e.g., reagents and replacement parts), and emissions costs. Revenues are comprised of sales to customers, and off-system sales. However, utilities also consider off-system energy procurement—the inverse of surplus sales. In many cases, the procurement of regional market energy (i.e., off-system procurement) is a more cost effective mechanism of acquiring energy than generating it. The idea of seeking a total least cost portfolio—i.e., minimizing the entire cost of the system—is standard utility practice. Utilities cannot, and should not, consider off-system sales as a completely separable component of system planning. To do so risks making poor

³³ 40 C.F.R. §§ 1502.13, 1502.14(a).

³⁴ DEIS § 1.5.1.

³⁵ “The availability of surplus – an important component of the purpose and need – under a total federal replacement alternative is remote given current and reasonably foreseeable energy market conditions. Consequently, no total federal replacement alternative was carried forward for evaluation in the EIS.” DEIS § 2.2.3.3.

capital and environmental decisions just to encourage incremental off-system sales, which is inconsistent with reasonable utility practice.

Reclamation excluded from consideration alternatives that did not contemplate both off-system sales and procurement as a means of identifying clean-energy alternatives. This exclusion runs afoul of NEPA because Reclamation did not employ standard principles of utility planning for valuing surplus generation as a component of viable alternatives in the DEIS.

3. The DEIS rejected feasible project alternatives.

The DEIS summarily rejected feasible and likely cost-effective alternatives because they purportedly did not provide continuous power for the CAP pumps, and did not generate surplus revenue in the manner Reclamation wants. Reclamation should have considered a reasonable range of alternatives that included a combination of well-tested measures. As shown in the next section, the current project is not sufficiently cost effective to generate surplus revenue either. Therefore, imposing this constraint on potential alternatives was unreasonable. The CAP does not only purchase power from NGS; it sometimes purchases power from the marketplace because the costs are lower than operating NGS. Thus, imposing the “continuous power” constraint on the alternatives Reclamation considered is also unreasonable. As noted above, CAP pumps and the NGS coal-fired plant are part of an overall interconnected regional electric power marketplace and do not operate independently of this physical, electric-reliability, and economic system.

The DEIS determined that distributed power generation and conservation were infeasible alternatives. Distributed power in the form of a utility-scale solar photovoltaic (PV) system³⁶ and conservation measures are demonstrably proven to be cost-effective in the Southwest, if not throughout the entire United States.³⁷ Clearly, in combination with market procurement to balance out power needs, these two resource alternatives have the potential to be a cost-effective source of alternative power for the CAP pumping load. A portfolio of supply and demand side options mapped to the magnitude and hourly, daily, and seasonal profile of the pump load is likely to result in the least-cost alternative to serve the pumping loads of the CAP system.

For example, cost-effective conservation measures that could improve the motor drive, motor control, and hydraulic pump efficiency should have been directly considered and evaluated in the DEIS for cost-effectiveness. Similarly, the potential for time-shifting of any of the pumping load is also a demand-side measure that Reclamation should have considered

³⁶ Distributed solar PV is usually thought of as small solar PV, such as rooftop installed; but utility-scale solar PV (e.g., multiple MW size installations) can also be distributed solar when it is connected at distribution or sub-transmission voltages.

³⁷ See, e.g., Southwest Energy Efficiency Project, Arizona Electric Utility Energy Efficiency Programs: A Success Story, July 2016

(<http://www.swenergy.org/Data/Sites/1/media/documents/programs/utilities/dsm-factsheets/AZ-DSM-fact%20sheet-2016.pdf>), and see Lawrence Berkeley National Laboratories, Utility Scale Solar 2015, [An Empirical Analysis of Project Cost, Performance, and Pricing Trends in the United States August 2016](https://emp.lbl.gov/sites/all/files/lbnl-1006037_report.pdf) (https://emp.lbl.gov/sites/all/files/lbnl-1006037_report.pdf)

because the value of electric power in the Southwest marketplace varies by the hour. Where feasible,³⁸ time-shifting can lower the overall costs to provide power for pumping needs.

Similarly, the CAP pumping system includes components that could be upgraded for efficiency increases, and motor/pump/control systems are available that improve overall system efficiencies compared to older systems.³⁹ Careful monitoring of time-of-day pumping needs across all pumping stations, and updated systems to control the timing of pump operations can lead to lower-cost overall energy needs for pumping requirements.

Finally, distributed solar generation along the CAP system has the potential to be cost-effective at providing a significant share of the CAP's annual energy needs because of two major attributes: 1) it can be utility scale solar PV, which exhibits economies of scale and is considered the lowest per-unit-cost solar PV resource, and 2) it can contribute value downstream of the 500 kV interconnection point that exists for the NGS project, which is valued at a wholesale price point.

NREL demonstrated the continuing downward trending costs for utility-scale solar in its Federal Resource Planning document.⁴⁰ Levelized costs of utility-scale solar energy on the order of \$50/MWh is currently available,⁴¹ somewhat above the \$38/MWh all-in cost for NGS at this time, but projected to continue to decline.⁴² When comparing the costs of utility-scale solar PV to the NGS project, the additional value created by locating solar PV along the CAP system, electrically closer to CAP pumping loads, must be considered for an accurate comparison of costs. Reduced transmission, sub-transmission, and potentially distribution system losses add from a few percent to as much as ten percent or more to the value of distributed solar PV systems. Localized solar PV installation also has the potential to avoid projected expenditures on transmission and distribution systems. Finally, the levelized cost of land-based wind is now between \$32/MWh and \$62/MWh, lower than that of a combined cycle natural gas plant, which came in at between \$48/MWh and \$78/MWh in December, 2016.⁴³ Reclamation improperly dismissed these and other clean and cost-effective resources.

³⁸ The CAP pumping loads already incorporate some time shifting of demand. See Ty W. Morton and Mike Pulskamp, Energy Evaluation of Central Arizona Project (CAP) Operational and Pumping Efficiency, Presentation at the Arizona Water 89th Annual Conference, May 2016 (<http://www.azwater.org/mpage/2016Proceedings>). Slides 5-8.

³⁹ Pumping efficiency varies across the pumps used in the CAP, ranging from 75% to 91%. Pumping efficiency goals for all pumps are 89–90%. Ty W. Morton and Mike Pulskamp, Energy Evaluation of Central Arizona Project (CAP) Operational and Pumping Efficiency, Presentation at the Arizona Water 89th Annual Conference, May 2016 (<http://www.azwater.org/mpage/2016Proceedings>), slides 9–13, and slide 20.

⁴⁰ NREL page 26-28.

⁴¹ NREL, page 28.

⁴² NREL, page 28, Figure 2-8 (range of projected LCOE for utility-scale solar in Arizona, 2015-2030). Note that Figure 2-8 excludes the effect of investment tax credits.

⁴³ <http://ieefa.org/u-s-renewables-reach-price-parity-natural-gas/>.

4. Reclamation’s own Proposed Action—continued operation of NGS—cannot meet the DEIS’s stated purpose.

Again, Reclamation’s stated purpose for the proposed action “is to secure, after 2019, a continuously available and reliable source of power and energy to operate the CAP pumps, which would be competitively priced with NGS and could be sold as surplus power to generate revenues for deposit to the Development Fund, and to satisfy the purposes of the Arizona Water Settlements Act.”⁴⁴ This is the purpose by which the DEIS reviewed, and rejected, project alternatives. Yet NGS itself does not currently and cannot in the future meet this goal. As discussed above, one of the key criteria by which Reclamation assessed alternatives is the requirement that the alternative provide enough power to supply CAP *and* generate surplus sales.⁴⁵ The proposed action (maintain NGS beyond 2019) meets neither of these criteria under reasonably foreseeable conditions. If alternative actions were rejected because they did not meet these criteria, the proposed action must also be rejected.

According to the DEIS, CAP requires approximately 3 million MW hours (or 3 TWh) per year, which translates to an average hourly power requirement of 350 MW. The federal share of NGS is 24.3% or 547 MW.⁴⁶ Thus, through a full year, CAP would require the federal share of NGS to operate at a 64% capacity factor—i.e. provide about two-thirds of the maximum amount of power to which Reclamation is entitled all year long. According to records from the Energy Information Administration (EIA),⁴⁷ in 2015 NGS operated at a 71% capacity factor—just above CAP’s requirements. In the first ten months of 2016, NGS operated at just a 57% capacity factor, well below CAP needs. Even assuming that its operations in November and December 2016 were as robust as in 2015, it will have only achieved a 59% capacity factor—or produced the equivalent of 2.85 GWh on a federal share basis. In 2016, NGS did not meet the DEIS requirement to provide 3 TWh of generation.

In the same way that NGS does not totally power CAP, NGS’s federal share also does not provide surplus power for sale, and cannot be reasonably expected to do so in the future. NREL’s study⁴⁸ indicates that NGS will remain above off-peak market energy prices for almost every year through 2040, and may remain above NREL’s estimated on-peak prices for most years. Under these circumstances, NGS’s dispatch will remain low (because it cannot dispatch economically) and the unit will not generate substantial, if any, surplus energy. PacifiCorp, a major player in the intermountain west, finds forward market prices substantially lower than

⁴⁴ DEIS § 1.5.1.

⁴⁵ “The availability of surplus – an important component of the purpose and need – under a total federal replacement alternative is remote given current and reasonably foreseeable energy market conditions. Consequently, no total federal replacement alternative was carried forward for evaluation in the EIS.” Section 2.2.3.3.

⁴⁶ DEIS, Appendix 2A-3.

⁴⁷ Energy Information Administration. Application Program Interface (API) browser. Net generation Navajo (4941) all fuels all prime movers monthly. Available at.

<http://www.eia.gov/opendata/qb.php?category=3140&sdid=ELEC.PLANT.GEN.4941-ALL-ALL.M>

⁴⁸ NREL page 18.

NREL's estimates,⁴⁹ and are always lower than NREL's estimated cost of power at NGS. These facts show that NGS's dispatch will remain depressed and excess sales will not likely occur.

Regardless of whether NGS produces excess energy for sale, the revenues from those sales will remain substantially depressed because of low market energy prices. Rather than seeking to increase total surplus sales, Reclamation should seek least-cost energy for CAP's purposes, which might entail energy market purchases, rather than market sales. Because the proposed action does not and cannot in the future meet the DEIS's purpose, Reclamation must reassess its power needs and investigate cost-effective alternatives in a revised draft or supplemental EIS.

5. The DEIS was required to evaluate NGS as a stand-alone resource separate from the CAP.

Since NGS operates as a participating generator in the Western Electricity Coordinating Council (WECC) regional electric wholesale market area,⁵⁰ whether it is a cost-effective provider of capacity and energy should be evaluated on a stand-alone basis. The federal share of NGS does not directly provide power to the CAP system independent of the interconnected transmission grid, or independent of the least-cost dispatch and economically competitive wholesale market that exists in Arizona, the greater Southwest, and indeed entire Western region.⁵¹ For this reason, the NGS plant itself should be disconnected from the assessment of CAP load in order to ensure analysis of least-cost means to provide power for CAP pumping load. NGS is a supply participant, and CAP is a load participant, in the same regional marketplace. Importantly, CAP and NGS are only coupled by contract and policy, not by any fundamental technical or economic electric power construct. To treat them otherwise unfairly skews the analysis in favor of NGS.

Since the cost of wholesale market power is now less than the all-in costs for NGS power,⁵² NEPA required Reclamation to perform a stand-alone assessment of the full retirement of the Federal share of NGS. Since the CAP can source its power physically, reliably, and economically from the broader electric power wholesale market, there is no economic or technical need to tie the CAP load to NGS as a source of supply. A NEPA assessment of the economic implications of retiring the federal share of NGS would seek simply to economically optimize the DEIS alternatives that could provide replacement power. Moreover, economic alternatives to NGS such as renewable resources pave the way for fewer environmental impacts. An economic assessment would account for all costs to supply CAP pumping load under a

⁴⁹ PacifiCorp 2015 IRP Update, December 2015. Provided as public workpapers to stakeholders.

⁵⁰ The WECC regional wholesale market area is made up of many utilities and balancing authorities that coordinate power flows among themselves across the broad western region. This coordination respects electric power reliability constraints (e.g., limits on power transfers between areas) and operates in an economic manner, effectively aiming for least-cost provision of wholesale electric power to all loads in the West.

⁵¹ The entire western region interconnected electricity grid includes generation supply, transmission, and loads located in the Desert Southwest, California, the Rocky Mountain region, and the Pacific Northwest, and also includes parts of western Canada and northern Mexico.

⁵² NREL, Executive Summary, page viii.

number of alternative scenarios that are not constrained by the fictional “need” for a dedicated source of 24/7 supply, or a below-market cost of supply that could then provide surplus revenues to help fund the CAP system. Such alternative scenarios would directly consider both demand- and supply-side alternatives in combination, seeking to minimize total costs (and environmental impacts). These options would be compared to the costs of retaining NGS as a supply source. The analysis would follow those performed by utilities nationwide who assess the economics of continued operation of older coal-fired facilities that are faced with increased costs, environmental retrofit obligations, and competition from renewable energy supplies whose costs have been declining, and natural gas-fired capacity that has proven significantly more efficient and cost-effective than coal-fired power under recent natural gas price trends.

6. The DEIS improperly failed fully analyze the no action alternative based on speculative socioeconomic impacts on the Navajo Nation and Hopi Tribe.

Under the no action alternative, operation of NGS and the Kayenta Mine would cease by December 23, 2019. Any impacts associated with the no action alternative would be “temporary and short-term.”⁵³ Yet, Reclamation failed to fully analyze the no action alternative based on socioeconomic impacts on the Navajo Nation and Hopi Tribe: “implementation of the No Action Alternative and the resultant cessation of operations at these facilities would result in major, widespread, and long-lasting socioeconomic impacts for the Navajo Nation and Hopi Tribe. These impacts would directly and indirectly affect NGS and Kayenta Mine workers, Navajo and Hopi tribal services and employment, Navajo and Hopi households, and businesses. The loss of jobs and income and the reductions in revenues paid to the tribes would result in major adverse effects.”⁵⁴

However, the no action analysis relied on two unfounded premises to support the presumed widespread socioeconomic impacts: (a) the proposed action will result in continued employment and revenue for the Navajo Nation and Hopi Tribe; and, (b) no additional projects or programs are available to provide employment and revenue in the region aside from NGS and Kayenta Mine. As shown below, both assertions are incorrect, rendering the no action alternative factually and legally deficient.

First, the DEIS inaccurately assumed that the proposed project would reliably maintain employment and revenue for the two tribes. But NGS, like all electric generating units, is in a competitive business. To generate a profit, NGS must operate below the prevailing cost of energy, determined by the cost of running all other resources in the region. In recent years, the market price of energy has fallen substantially because of low natural gas prices, flat demand, and the increasing availability of low-variable cost renewable resources. Low market energy costs are driving down the dispatch of coal-fired power plants around the country. For example, the North Valmy power plant in northern Nevada recently began operating as a peaking power plant. One of its owners, Idaho Power Company, just announced that the “significant decrease in market prices has resulted in a decrease in the number of hours Valmy operates economically, as the dispatch cost is now typically higher than the market price. Rather than a resource used to

⁵³ DEIS 3.19-20.

⁵⁴ DEIS 3.19-30

generate off-system sales, Idaho Power has been relying on Valmy to meet the Company's peak energy needs."⁵⁵

Reduced dispatch due to lower market prices is not restricted to northern Nevada. Across the country, lower market prices have driven coal plant retirements. According to the EIA, in 2015, six percent of the U.S. coal fleet retired (14 GW) "largely because of competition with natural gas."⁵⁶ Forecasters and modelers are confident this trend will continue. Navigant consulting estimated that 73 GW of coal will retire between 2017 and 2035—or about a quarter of the remaining fleet, half of which has already ceased operation.⁵⁷ Looking forward, EIA's most recent Annual Energy Outlook (AEO) estimated that one-third of the U.S. coal fleet will retire by 2020.

NGS's economic future will be determined by its ability to compete on an open market, irrespective of the proposed action. NGS's non-federal co-owners will continuously assess its ability to meet that criterion. In the last two years, NGS has reduced its dispatch substantially in both peak summer and non-peak winter periods. This is a commonly recognized indicator that a power plant operates at a higher cost than the market will bear. National, regional and NGS-specific data calls into question NGS's future viability. Therefore, the notion that future long-term employment and revenue for the Navajo Nation and Hopi Tribe is a function of continued operation of NGS and the mine was speculative at best in the DEIS.

Second, the DEIS inaccurately assumed that NGS and the Kayenta mine was the only mechanism by which the Navajo Nation and Hopi Tribe could generate employment and local income. This is because the no action alternative claimed the "construction of new gas-fired, combined cycle generation located at low elevations and near existing gas supply lines" was the only feasible option. This assumption failed to consider the value of the northern Arizona site to develop reliable renewable energy to generate sustainable jobs and revenue.

Northern Arizona is one of the best solar resources in the country,⁵⁸ and provides some of the lowest cost solar energy in the nation, with the ability to economically deliver over 2,700 TWh of utility-scale generation annually.⁵⁹ The retirement of NGS would provide substantial opportunities for solar resources feeding directly into one of the most extensive transmission pathways in the west. Replacing the federal interest in NGS with an interest in solar power resources in northern Arizona would be an incentive to build out these valuable renewable

⁵⁵ In the Matter of Idaho Power Company's Application for Authority to Increase its Rates for Electric Service to Recover Costs Associated with the North Valmy Power Plant. Idaho Public Utilities Commission Docket IPC-E-16-24. Application, October 21, 2016. Page 8.

<http://www.puc.idaho.gov/fileroom/cases/elec/IPC/IPCE1624/20161021APPLICATION.PDF>

⁵⁶ US EIA. Coal made up more than 80% of retired electricity generating capacity in 2015. March 8, 2016. <http://www.eia.gov/todayinenergy/detail.php?id=25272>

⁵⁷ Impacts of the Clean Power Plan, Revisited. Navigant Research. September 22, 2016.

<https://www.navigantresearch.com/blog/impacts-of-the-clean-power-plan-revisited>

⁵⁸ NREL. http://www.nrel.gov/gis/images/eere_pv/national_photovoltaic_2012-01.jpg

⁵⁹ NREL. Estimating Renewable Energy Economic Potential in the United States: Methodology and Initial Results. August 2016. <http://www.nrel.gov/docs/fy15osti/64503.pdf>. Primary case 2a, accounts for avoided externality value. See Table F-3.

resources rather than continuing to operate NGS. Capitalizing on northern Arizona solar generation would have massive economic benefits, employ substantial local populations, and build demand for professional and educational tribal services.

In sum, the DEIS's no action alternative is inconsistent with NEPA because it fails to analyze economically viable and low-impact energy resources to both meet CAP demand and eliminate any socioeconomic impacts on the Navajo Nation and Hopi Tribe.

C. Reclamation failed to take a hard look at how the Proposed Action and alternatives would impact endangered fish in the Colorado River Basin.

Among the aquatic species that are negatively impacted by operation of NGS and the Kayenta Mine are four fish that have been listed as endangered under the Endangered Species Act of 1973 (ESA)—bonytail chub, Colorado pikeminnow, humpback chub, and razorback sucker.⁶⁰ Mercury, selenium, arsenic, and other metals from NGS and other sources are deposited in the habitat these fish occupy, killing some fish and injuring others.⁶¹ Populations of these fish have dwindled due to these toxins and numerous other sources of harm, including flow reductions in the Colorado River Basin, dams, temperature changes, and non-native predators.⁶² Once abundant in the Colorado River Basin, these fish are now “functionally extirpated” in some areas and rare everywhere else.⁶³ These fish were listed as endangered under the ESA between the late 1960s and early 1990s, and critical habitat has been designated for each fish covering various reaches of the Colorado River Basin.⁶⁴ Recovery plans were established for each fish between 1982 and 2002, but recovery goals have not been met.⁶⁵

Though there are other inconsistencies and unjustified assumptions in Reclamation's analysis of how the Proposed Action and alternatives would impact these endangered fish, five primary shortcomings undermine that analysis: (1) Reclamation has not adequately justified the scope of its analysis—both in regard to its geographic extent and the types of impacts assessed; (2) the DEIS mischaracterizes the magnitude of various impacts on the endangered fish; (3) the cumulative-effects analysis is flawed; (4) Reclamation's treatment of mitigation measures is deficient; and (5) Reclamation has not ensured that the Proposed Action and alternatives will comply with the ESA.

⁶⁰ DEIS at 3.13-6, 3.13-41 to 3.13-60 (discussing direct adverse impacts of mercury, selenium, and arsenic emissions from NGS on the four endangered fish).

⁶¹ See U.S. Fish and Wildlife Service, “Biological Opinion: Four Corners Power Plant and Navajo Mine Energy Project, New Mexico,” Opinion No. 02ENNM00-2014-F-0064, 81–93; 99–100 (Apr. 8, 2015) (describing the adverse effects of mercury and selenium on Colorado pikeminnow and razorback sucker) *available at* https://www.fws.gov/southwest/es/newmexico/documents/BO/2014-0064_USFWS_FINAL_BO_Four_Corners_Power_Plant_Navajo_Mine_Energy_Project.pdf; DEIS at 3.1-29 (listing “target metals,” among other pollutants emitted from NGS).

⁶² DEIS at 3.13-8 to 3.13-26.

⁶³ DEIS at 3.13-8 to 3.13-26 (describing historic populations and range in comparison to current populations and range).

⁶⁴ *Id.*

⁶⁵ *Id.*

1. The scope of analysis is not adequately substantiated.

The DEIS wholly ignores several potential impacts on the endangered fish and improperly relies on ecological risk assessments that use assumptions lacking adequate justification. Reclamation should revisit its analysis to address these deficiencies, and take a fresh look at its analysis to ensure that other similar flaws are remedied.

As an initial matter, the DEIS fails to discuss or analyze some activities that may negatively impact the endangered fish. For example, the DEIS acknowledges that reduced stream flows in the Colorado River Basin have been a major factor in declining populations of the endangered fish and that water scarcity continues to inhibit their recovery.⁶⁶ Yet the DEIS contains no analysis of how ongoing diversions of water from Lake Powell for use by NGS would impact the endangered fish in and downstream of the lake.⁶⁷

The scope of NGS-generated pollutants selected for the pollutant-deposition analysis in the DEIS is also not sufficiently explained. Of the pollutants emitted by NGS, only arsenic, selenium, and mercury were assessed for impacts on endangered fish. Yet many other metals are commonly emitted by coal-fired power plants.⁶⁸ Though the DEIS recognizes that selenium and mercury adversely affect the endangered fish and other species, the DEIS gives no explanation of why arsenic was selected for analysis and other metals that NGS emits were not.

The DEIS, furthermore, does not adequately justify the use of EPA's ecological soil screening level (Eco-SSL) for selenium to define the Near-Field ERA Study Area. The Near-Field Ecological Risk Assessment (ERA) and DEIS explain that the Near-Field Study Area used for examining impacts to special status aquatic species was defined with reference to the "lowest ecological soil screening level (Eco-SSL) for selenium" (0.52 milligrams per kilograms), so as to protect "the most sensitive ecological receptors."⁶⁹ The U.S. Environmental Protection Agency (EPA) has established Eco-SSLs for "many of the soil contaminants that are frequently of ecological concern for plants and animals at hazardous waste sites...."⁷⁰ These screening levels are expressed as "concentrations of contaminants in soil that are protective of ecological receptors that commonly come into contact with soil or ingest biota that live in or on soil."⁷¹ They apply to sites "where terrestrial receptors may be exposed directly or indirectly to contaminated soil."⁷² The DEIS misuses the selenium Eco-SSL in at least three ways to define the Near-Field ERA Study Area.

⁶⁶ DEIS at 3.13-10

⁶⁷ DEIS at 3.7-18 to 3.7-19 (explaining that NGS has an allocation of 34,100 acre-feet per year and has withdrawn between 26,000 and 29,000 acre-feet per year from Lake Powell over the past fifteen years).

⁶⁸ Ramboll Environ, "Human Health Risk Assessment: The Navajo Generation Station," 14 (Aug. 2015); Table 5-1 (listing numerous metals analyzed in the risk assessment because they are often emitted from coal-fired power plants).

⁶⁹ Ramboll Environ US Corp., "NGS Near-Field Ecological Risk Assessment: EIS Final Report for the Navajo Generating Station," 2 (July 2016) ("Near-Field ERA"); DEIS at 3.0-23.

⁷⁰ U.S. EPA, "Guidance for Developing Ecological Soil Screening Levels: OSWER Directive 9285.7-55," ES – 1 (Nov. 2003) *available at* https://www.epa.gov/sites/production/files/2015-09/documents/ecossl_guidance_chapters.pdf.

⁷¹ *Id.*

⁷² *Id.* at ES – 2.

First, the DEIS relies on selenium as a proxy for all other chemicals of potential ecological concern (COPECs) from NGS because “selenium was identified as having the highest deposition rate....”⁷³ Yet the DEIS contains no explanation of whether the deposition rate for all other COPECs from NGS is proportional to the ecological risk each COPEC poses once it is deposited in soil. Put differently, there is no discussion in the DEIS of whether any COPECs may present greater ecological risks than selenium despite being deposited at lower rates than selenium. If, for example, a COPEC presents an adverse ecological risk at much lower soil concentrations than selenium, or is removed from the environment at much slower rates than selenium, the relevant soil concentration for that COPEC could be exceeded despite deposition rates that are lower than selenium.

Second, a significant proportion of the area surrounding NGS includes aquatic environments, such as Lake Powell and the Colorado River, and many of the biological receptors of concern are aquatic organisms.⁷⁴ Yet, to define the extent of the Study Area, the Near-Field ERA and DEIS use a selenium screening level for soil, rather than a screening level for an aquatic environment. Whether that screening level adequately accounts for risks to aquatic environments is not explained.

Third, Reclamation arbitrarily defined the selenium “deposition threshold” to be 10 percent of the selenium Eco-SSL, which it described as a “conservative deposition rate” for the “30-year life of the NGS plant.”⁷⁵ This 10-percent adjustment is not adequately justified. Even at a deposition rate of one-tenth of the Eco-SSL, if selenium is not removed from the environment at a sufficient rate, the Eco-SSL would be exceeded over the course of the 30-year life of NGS. Yet there is no discussion of how much selenium would accumulate year over year at the deposition rate used to define the Near-Field ERA Study Area (52 micrograms per square meter per year).

Finally, the DEIS does not adequately justify the boundaries for the Gap Region ERA study area. From what we can discern, the only explanation given for the geographic scope of the Gap Region ERA is that the areas were discussed among Reclamation, the U.S. Fish and Wildlife Service and other “sub-team members” and were meant “to capture potentially sensitive areas along the Colorado River directly upstream and downstream of the NGS Near-Field 20 km Study Area in order to ascertain whether NGS emissions could potentially impact sensitive species directly adjacent to the defined NGS Near-Field Study Area.”⁷⁶ This explanation, however, makes no effort to tie the Gap Region Study Area to either the geographic scope of potentially harmful pollutants emitted by NGS or the habitat of the affected species. For example, the Northeast Gap Region terminates at the confluence of the Green River and Colorado River even though critical habitat for razorback sucker and Colorado pikeminnow extends upstream of the confluence in both rivers.⁷⁷ Similarly, the Southwest Gap Region ends at the confluence of the Colorado River and Little Colorado River even though critical habitat for

⁷³ DEIS at 3.0-23.

⁷⁴ See, e.g., DEIS at 3.0-24 (Figure 3.0-5); Near-Field ERA at 23.

⁷⁵ DEIS at 3.0-23; Near-Field ERA at 2.

⁷⁶ Ramboll Environ US Corp., “NGS Gap Region Ecological Risk Assessment: Environmental Impact Statement for the Navajo Generating Station” 9–10 (July 2016).

⁷⁷ See DEIS Figure 3.13-1.

the humpback chub and razorback sucker continue downstream of the confluence.⁷⁸ Similar evaluations of toxic-metals deposition from coal-fired power plants in the region suggest that the Study Area for NGS emissions is too small.⁷⁹ The Gap Region ERA Study Area should accordingly be reassessed to ensure that it covers all areas in which NGS-emitted pollutants may be deposited and consequently affect endangered fish (or other sensitive species), including areas downstream of the deposition region.

2. The DEIS understates the extent of negative impacts on the endangered fish.

The DEIS repeatedly characterizes impacts on endangered fish as having a magnitude that is at odds with the narrative description of those impacts. For example, the cumulative toxic effects of mercury and selenium on razorback sucker in the Southwest Gap Region and San Juan River are characterized as “moderate because the number of individuals potentially injured ... is likely outside of the natural variability of the population.”⁸⁰ Yet that characterization corresponds to the definition of a “major” effect—one that is outside the natural range of variability.⁸¹ And without a discussion of how effective mitigation measures are likely to be,⁸² there is no basis for characterizing these effects as “moderate” rather than major.⁸³ Similarly, the DEIS describes cumulative impacts of selenium on Colorado pikeminnow as “moderate” but gives no explanation whatsoever for that characterization, aside from observing that cumulative selenium concentrations would injure or kill 3,020 adult fish.⁸⁴

Along the same lines, for Colorado pikeminnow in the Northeast Gap Region, the DEIS estimates a maximum mercury critical-body-residue hazard quotient of 2, and a refined hazard quotient of 1.⁸⁵ The DEIS characterizes this mercury impact as “negligible,”⁸⁶ which means the impact is “at or below the levels of detection.”⁸⁷ But a hazard quotient of 1 or more, by definition, means that impact is detectible—that is, that the detected concentration of mercury equals or exceeds the ecological screening value at which no adverse effects are observed (or the lowest level at which adverse effects are observed).⁸⁸ Likewise, the DEIS characterizes the “potential injury” to bonytail from cumulative mercury deposition as “minor,” yet gives no explanation whatsoever for that conclusion.⁸⁹

⁷⁸ *Id.*

⁷⁹ *See, e.g.*, U.S. Dep’t of the Interior, U.S. Fish and Wildlife Service, Draft Biological Opinion for the Desert Rock Energy Project, U.S. Bureau of Indian Affairs, Gallup, New Mexico, 9–10 (Oct. 2009) (analyzing deposition area of 300km for proposed coal-fired power plant).

⁸⁰ DEIS at 3.13-75.

⁸¹ DEIS at 3.0-6.

⁸² DEIS at 3.13-77 (listing proposed mitigation measures with no analysis of whether any of the measures are likely to be effective in achieving the recovery of the endangered fish).

⁸³ *See* DEIS at 3.0-6 (distinguishing between “moderate” and “major” effects partly on the basis of how effective mitigation measures will be).

⁸⁴ DEIS at 3.13-70.

⁸⁵ DEIS at 3.13-69.

⁸⁶ DEIS at 3.13-69.

⁸⁷ DEIS at 3.0-6.

⁸⁸ DEIS at 3.0-33 to 3.0-34.

⁸⁹ DEIS at 3.13-69.

Similarly, the DEIS describes the direct impact of NGS emissions on the critical habitat of the endangered fish as “negligible” or “minor” because the Proposed Action would cause water quality standards for mercury and selenium to be exceeded only by “small” amounts.⁹⁰ Yet it only stands to reason that a “small” additional degradation of already impaired water quality cannot have an impact that is “at or below the levels of detection” (i.e., a “negligible” impact) or within “the natural or typical range of variability” (i.e., a “minor” impact).⁹¹

Given the pervasiveness of this problem, Reclamation should reconsider all the conclusions it reaches in the DEIS as to the magnitude of NGS-related impacts on the endangered fish, and it should do so taking full account of cumulative impacts on the endangered fish and a thorough analysis of mitigation measures (as discussed below).

3. Reclamation’s has not taken a hard look at cumulative impacts on the endangered fish.

A cumulative impact is defined 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. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”⁹² In taking a hard look at direct, indirect, and cumulative impacts, federal agencies must analyze all impacts that are “reasonably foreseeable.”⁹³ Further, “the purpose of an [EIS] is to evaluate the possibilities in light of current and contemplated plans and to produce an informed estimate of the environmental consequences.”⁹⁴

Cumulative impacts analyses “must be more than perfunctory; [they] must provide a ‘useful analysis of the cumulative impacts of past, present, and future projects.’”⁹⁵ The agency must, therefore, “give a realistic evaluation of the total impacts [of the action] and cannot isolate the proposed project, viewing it in a vacuum.”⁹⁶

Reclamation’s analysis of cumulative impacts on special status aquatic species fails to properly describe and account for the collective effect of the many ways in which the endangered fish and their critical habitat are and will continued to be impaired. Instead, the DEIS partitions the cumulative-impacts analysis into sections that describe discrete negative effects on the fish, characterizing the impact of NGS as relatively minor and failing entirely to characterize the magnitude of all the other effects on the fish and their habitat. This results in a skewed and fragmented analysis that yields no holistic evaluation of the cumulative impacts imperiling the fish and whether mitigation measures can or will diminish those impacts.

⁹⁰ DEIS at 3.13-42 to 3.13, 3.13-67.

⁹¹ DEIS at 3.0-6.

⁹² 40 C.F.R. § 1508.7.

⁹³ *Id.* § 1508.8.

⁹⁴ See *Kern v. U.S. Bureau of Land Management*, 284 F.3d 1062, 1072 (9th Cir. 2002).

⁹⁵ *Ocean Advoc. v. U.S. Army Corps of Engrs.*, 402 F.3d 846, 868 (9th Cir. 2005).

⁹⁶ *Grand Canyon Trust v. Federal Aviation Administration*, 290 F.3d 399, 342 (D.C. Cir. 2002).

First, the DEIS repeatedly attributes future cumulative effects on endangered fish solely to the baseline or “other cumulative emissions,” incorrectly suggesting that NGS would not also be partly to blame for those effects. For example, the DEIS concludes that cumulative mercury emissions from NGS, the Kayenta Mine, and other sources create a maximum “hazard quotient” of 2 for bonytail, and a “refined” hazard quotient of 1.⁹⁷ The DEIS then improperly credits this risk only to “other cumulative emissions,” even though the risk is partly attributable to NGS,⁹⁸ in combination with other mercury sources and the baseline mercury impacts on bonytail (which are no doubt partly attributable to the historic operation of NGS).⁹⁹ Likewise, the DEIS improperly attributes the cumulative impacts of mercury emissions on humpback chub in the Southwest Gap Region solely to the baseline and “other cumulative emissions,”¹⁰⁰ despite acknowledging in the “direct effects” section of the DEIS that mercury emissions from NGS would contribute to these impacts.¹⁰¹ In short, by faulting sources other than NGS, and only those sources, for cumulative effects to which NGS contributes, the DEIS is misleading.

Second, the DEIS improperly fails to fully consider how the endangered fish would be cumulatively affected by toxic metals in combination with other habitat and ecological impairments. This deficiency is serious given that existing conditions already present a substantial threat to the continued viability of the endangered fish.¹⁰² For example, the DEIS recognizes that water scarcity is a major threat to the endangered fish and that climate change will likely diminish the amount of water in the Colorado River Basin.¹⁰³ But the DEIS makes no effort to determine how future water scarcity will impact the endangered fish or how operation of NGS and the Kayenta Mine may contribute to that scarcity. Instead, the DEIS observes that climate change impacts on bonytail, for example, “could easily be masked by or attributed to other anthropogenic causes,” a statement that has no bearing on how significant climate-change impacts may be.¹⁰⁴

Similarly, the DEIS briefly describes predicted future declines in flow in the San Juan River and Colorado River and how those reduced flows generally would negatively impact the endangered fish, but it has no analysis of how those impairments would impact the fish in combination with other injuries, such as toxic metals deposition from NGS and other sources.¹⁰⁵ The DEIS observes, for example, that the planned Navajo-Gallup Water Supply Project would divert 35,893 acre-feet per year from the San Juan River beginning in 2024, an amount that far exceeds the 3,000 cumulative acre-feet per year at which the U.S. Fish & Wildlife Service has concluded that the continued existence of Colorado pikeminnow would not likely be

⁹⁷ DEIS at 3.13-69.

⁹⁸ See DEIS at 3.13-41 to 3.13-42 (describing the incremental additional mercury impacts attributable to future operation of NGS).

⁹⁹ *Id.*

¹⁰⁰ DEIS at 3.13-72.

¹⁰¹ DEIS at 3.13-51 to 3.13-52.

¹⁰² See, e.g., DEIS at 4.24-26 (explaining that “baseline” fish-tissue concentrations show that mercury is a threat to razorback sucker in the Southwest Gap Region).

¹⁰³ DEIS at 3.13-10, 3.13-15, 3.13-25, 3.13-69, 3.13-71 to 3.13-77.

¹⁰⁴ DEIS at 3.13-69.

¹⁰⁵ DEIS at 3.13-71.

jeopardized.¹⁰⁶ Yet the cumulative effects analysis in the DEIS is silent about how this and other diversions will affect Colorado pikeminnow and the other endangered fish.¹⁰⁷ Indeed, though the DEIS identifies several “reasonably foreseeable” projects that would modify existing diversions or require new diversions from the San Juan River,¹⁰⁸ the DEIS does not analyze the cumulative effect that those and other diversions would have on the endangered fish.

Finally, though the DEIS recognizes that toxic metals, such as selenium and mercury, threaten the endangered fish, the DEIS contains no discussion whatsoever of increased selenium loading in the San Juan River that is likely to result when the Navajo Indian Irrigation Project is completed.¹⁰⁹ The cumulative-effects analysis should be revised to analyze and account for this future source of additional selenium that would negatively impact the endangered fish in combination with NGS and other sources of selenium.

By evaluating cumulative impacts one by one, the DEIS implies that the outlook for the endangered fish is far more promising than is supported by the underlying discussion of the collective threats the fish face. Reclamation should revise its analysis to remedy this deficiency.

4. Reclamation’s treatment of mitigation measures is deficient under NEPA.

NEPA’s statutory language implicitly charges agencies with mitigating the adverse environmental impacts of their actions,¹¹⁰ and mitigation measures are required by NEPA’s implementing regulations.¹¹¹ Reclamation accordingly must analyze mitigation measures “in detail [and] explain how effective the measures would be...”¹¹² NEPA also directs agencies not to rely on the “possibility of mitigation” to avoid further environmental analysis.¹¹³

The analysis in the DEIS of measures to mitigate impacts to endangered fish does not meet these requirements. The measures proposed to mitigate impairments to the fish in the San Juan River, for example, are to provide funding for existing programs to stock fish in the river,

¹⁰⁶ DEIS at 3.13-15.

¹⁰⁷ DEIS at 3.13-71 (acknowledging that future diversions are likely to occur, that they could “influence the volume of water available for release for fish habitat maintenance purposes,” but failing to describe how that would impact Colorado pikeminnow); DEIS at 3.13-69, 3.13-73 (similar analysis for water depletions elsewhere in the Colorado River Basin).

¹⁰⁸ DEIS at 3.0-12 to 3.0-14.

¹⁰⁹ U.S. Bureau of Indian Affairs, “Navajo Indian Irrigation Project: Biological Assessment” 68 (June 11, 1999) (predicting increased selenium levels in the San Juan River from operation of the Navajo Indian Irrigation Project) *available at* http://www.ose.state.nm.us/Legal/settlements/NNWRS/Initial%20Disclosures/Reports%20and%20Memoranda/19990611_BA_NIIP.pdf.

¹¹⁰ *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 351-52 (1989); *Holy Cross Wilderness Fund v. Madigan*, 960 F.2d 1515, 1522 (10th Cir. 1992).

¹¹¹ 40 C.F.R. §§ 1502.14(f), 1502.16(h).

¹¹² *Nw. Indian Cemetery Protective Ass’n v. Peterson*, 764 F.2d 581, 588 (9th Cir. 1985), *rev’d on other grounds*, 485 U.S. 439 (1988).

¹¹³ Council on Environmental Quality, *Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations*, *available at* <http://ceq.hss.doe.gov/nepa/regs/40/40p3.htm>; *Davis v. Mineta*, 302 F.3d 1104, 1125 (10th Cir. 2002).

transport fish around a waterfall created by reduced water levels in Lake Powell, and improve habitat in the river.¹¹⁴ The DEIS describes various “expected benefits” of these efforts, but it lacks any analysis of whether these measures are likely to successfully diminish or eliminate the negative effects of operating NGS in concert with all the other impairments facing the endangered fish.¹¹⁵ Put differently, it is not enough to observe that mitigation measures will benefit the endangered fish without considering whether those measures will benefit the fish enough to actually mitigate the harms imperiling the fish.

The DEIS does not assess whether the stocking program, for example, is likely to lead to the recovery of the endangered fish in the San Juan River, as opposed to serving as a stopgap to postpone their extinction. The DEIS elsewhere suggests that the stocking program is indeed not leading to recovery of the endangered fish. According to the DEIS, 3.2 million pikeminnow have been stocked in the San Juan River between 2002 and 2011, yet there are only about 1,000 adult fish in the river as of 2013.¹¹⁶ Estimates put the number of wild Colorado pikeminnow in the San Juan River between 19 and 50.¹¹⁷ Razorback sucker stocking and population numbers follow similar trends.¹¹⁸ The inadequacy of the stocking program is unsurprising given that it does not redress the underlying conditions that are imperiling the endangered fish. Instead, the program just adds more fish to the river to be injured and killed by the toxic metals from NGS and other sources, inadequate flows in the river, and other threats to the fish.

Even assuming that the proposed measures provide some benefit to the endangered fish, the DEIS does not assess whether there is any commitment to continue implementing them until the effects of operating NGS dissipate (which will take until at least 2074, according to the DEIS).¹¹⁹ And none of the mitigation measures proposed would diminish the amount of toxic metals threatening the fish in the San Juan River or other affected areas in the Colorado River Basin. The proposed measures would at most be a lifeline for the endangered fish that does not alleviate the threats to their continued survival.

Reclamation should reassess the mitigation measures discussed in the DEIS, address whether those measures will indeed mitigate impacts on the endangered fish, disclose deficiencies in measures that will not achieve that outcome, propose additional mitigation measures as needed, and reassess the severity of impacts on the endangered fish in light of the most effective mitigation measures that can be implemented and enforced.

5. Reclamation has not properly determined whether the Proposed Action and alternatives threaten a violation of the ESA.

Among the matters that Reclamation must consider under NEPA when evaluating the severity of impacts from its proposed action is “[w]hether the action threatens a violation of

¹¹⁴ DEIS at 3.13-47 to 3.13-50; 3.13-60.

¹¹⁵ *Id.*

¹¹⁶ DEIS at 3.13-12.

¹¹⁷ DEIS at 3.13-12.

¹¹⁸ DEIS at 3.13-23.

¹¹⁹ *See* DEIS at 3.0-21 to 3.0-22.

Federal, State, or local law or requirements imposed for the protection of the environment.”¹²⁰ Reclamation cannot properly make this assessment because Reclamation has not yet completed consultation with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act and because the Biological Assessment Reclamation completed under the ESA suffers from the same flaws as the DEIS in regard to the endangered fish.

The ESA provides a safety net for species at risk of extinction. Its purpose is “to provide a program for the conservation [of] endangered species and threatened species” and “to provide a means whereby the ecosystems upon which [such] species depend may be conserved.”¹²¹ Pursuant to the ESA, the U.S. Fish and Wildlife Service (FWS) has a duty to list a species as threatened or endangered solely on the basis of biological criteria and the best available scientific and commercial data.¹²² A threatened species is “any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.”¹²³ An endangered species is “any species which is in danger of extinction throughout all or a significant portion of its range[.]”¹²⁴ Once a species is listed as threatened or endangered, its critical habitat must be designated.¹²⁵ Critical habitat includes both occupied and unoccupied areas that contain habitat features that are “essential to the conservation of the species[.]”¹²⁶

The ESA regulates federal agency actions that impact threatened and endangered species. Section 7(a)(2) of the ESA requires that all federal agencies avoid actions that are “likely to jeopardize the continued existence” of any listed species or “result in the destruction or adverse modification of” critical habitat.¹²⁷ Jeopardy results when it is reasonable to expect that the action would “reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.”¹²⁸ Adverse modification occurs when it is reasonable to expect that the action will result in “a direct or indirect alteration that appreciably diminishes the value of critical habitat for ... the survival [or] recovery of a listed species. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical.”¹²⁹

To ensure compliance with Section 7(a)(2), the “action agency” must undergo a consultation process with the U.S. Fish and Wildlife Service upon proposing to authorize, fund, or carry out an action that “may affect” a species or its critical habitat.¹³⁰ The consultation process ensures a rigorous review of the actions’ impacts on threatened and endangered species and serves as an independent check on the tendency of federal agencies to pursue their other

¹²⁰ 40 C.F.R. § 1508.27(b)(10).

¹²¹ 16 U.S.C. § 1531(b).

¹²² *Id.* at §§ 1533(b), 1533(c).

¹²³ *Id.* at § 1532(20).

¹²⁴ *Id.* at § 1532(6).

¹²⁵ *Id.* at § 1533(a)(3).

¹²⁶ *Id.* at § 1532(5)(A)(i)(I).

¹²⁷ 16 U.S.C. § 1536(a)(2).

¹²⁸ 50 C.F.R. § 402.02.

¹²⁹ *Id.* at § 402.02.

¹³⁰ 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.02.

goals and mandates at the expense of imperiled species. “Formal” consultation is required when the agency’s action is likely to “adversely affect” listed species or critical habitat.¹³¹ Formal consultation concludes with a FWS biological opinion. In a biological opinion, FWS determines whether “jeopardy” or “adverse modification” is likely to occur due to the action and, if so, sets forth the reasonable and prudent alternatives that could avoid such ESA violations.¹³²

As an initial matter, because FWS has not yet completed its biological opinion for the Proposed Action, Reclamation cannot yet determine whether the Proposed Action threatens a violation of the ESA. And by requiring submission of public comments on the DEIS before the biological opinion is complete, Reclamation has improperly deprived the public of an opportunity under NEPA to scrutinize and comment on whatever conclusions Reclamation and FWS reach in regard to compliance with the ESA.

Moreover, Reclamation’s analysis in its Biological Assessment of whether continued operation of NGS and the Kayenta Mine may adversely affect or jeopardize the endangered fish mirrors its analysis in the DEIS and accordingly has the same deficiencies. For example, Reclamation’s Biological Assessment relies on the same ecological risk assessments as the DEIS, corrupting its ESA analysis with the flaws in the ERAs that are described above (e.g., the unjustified assumptions underlying the Near-Field ERA and the improperly circumscribed boundaries of the Gap Region ERAs).¹³³ Likewise, the effects of ongoing diversions of water from Lake Powell to operate NGS are not considered in the Biological Assessment. Nor does the Biological Assessment evaluate additional selenium loading in the San Juan River from the planned completion of the Navajo Indian Irrigation Project. And the same flawed reliance on mitigation measures is repeated in the Biological Assessment.¹³⁴ These and the other deficiencies described above in regard to the DEIS undermine Reclamation’s conclusions about how the Proposed Action would affect the endangered fish for purposes of the ESA.

These problems are compounded by other flaws in the Biological Assessment. In its analysis of effects on the bonytail chub, for example, Reclamation totally dispenses with any discussion of cumulative effects on the argument that the Proposed Action “would not result in adverse effects to bonytail...”¹³⁵ Yet Reclamation acknowledges that operating NGS as proposed would indeed result in deposition of mercury, selenium, and arsenic in bonytail habitat, and that these metals negatively impact the fish at sufficient concentrations.¹³⁶ That conclusion is enough to require Reclamation to analyze cumulative effects of metals deposition on the bonytail. Even if the amount of toxic metals that NGS would deposit in bonytail habitat is slight, the ESA obligates Reclamation to consider how that increment of additional metals would impact the bonytail in combination with toxic metals from all other state, federal, and private

¹³¹ 50 C.F.R. §§ 402.13, 402.14(a). The agency is to make this assessment by considering the environmental baseline and the effects of the action throughout the “action area.” See 50 C.F.R. § 402.02.

¹³² 16 U.S.C. § 1536(b)(3)(A).

¹³³ Bureau of Reclamation, “Navajo Generating Station – Kayenta Mine Complex Biological Assessment,” 31–39 (Aug. 2016) (“Biological Assessment”).

¹³⁴ Biological Assessment at 20–26 (discussing “conservation measures” that would apply to the endangered fish).

¹³⁵ *Id.* at 78.

¹³⁶ *Id.* at 23, 77–78.

actions that are affecting the fish, and other threats to the survival of bonytail, such as water depletions and predation.¹³⁷

It appears that, despite these errors, Reclamation has now requested formal consultation with FWS for all the endangered fish and their critical habitat.¹³⁸ If that is not so, Reclamation should amend its consultation request to ensure that formal consultation for all four fish and their critical habitat is completed. Regardless, in the Biological Opinion, FWS must remedy the deficiencies in the Biological Assessment’s evaluation of the endangered fish. Reclamation too must revise the DEIS in light of the analysis completed in the Biological Opinion and should then provide the public with an adequate opportunity to review that analysis and comment on it.

* * *

Although we appreciate Reclamation’s effort to use air modelling and quantitative risk assessments to describe some impacts to the endangered fish, that effort did not yield a complete or coherent analysis. On the contrary, the DEIS is internally inconsistent, does not properly account for impacts that do not readily fit into the risk-assessment tools that were used, relies on assumptions that are not justified, leaves important elements of the analysis unexplained, overlooks key issues, and reaches conclusions that do not comport with the analysis performed. We accordingly urge Reclamation to revisit its analysis of how the Proposed Action and alternatives would impact the endangered fish.

D. Reclamation failed to take a hard look at climate impacts.

According to President Obama, “no challenge poses a greater threat to our children, our planet, and future generations than climate change.”¹³⁹ Given that the proposed action here envisions—and indeed, all considered action alternatives entail—the continued operation of one of the largest coal-fired power plants in the U.S. for an additional 25 years,¹⁴⁰ Reclamation rightly examined the climate impacts of the proposal. And while Reclamation’s DEIS aptly cites portions of the Council on Environmental Quality’s August 2016 NEPA climate guidance,¹⁴¹ Reclamation’s DEIS makes some critical errors with respect to its climate analysis, each of which impermissibly downplays the climate impacts of the agency’s preferred alternative. These errors are significant, as even Reclamation’s own calculations (which must be corrected as discussed below) indicate that the continued operation of the Kayenta Mine-NGS complex would

¹³⁷ 50 C.F.R. § 402.02 (defining “[e]ffects of the action”).

¹³⁸ Letter from L. Meyers, U.S. Bureau of Reclamation, to U.S. Fish and Wildlife Service, 1 (Sep. 22, 2016) *available at* http://ngskmc-eis.net/wp-content/uploads/2016/09/2016-09-21_NGS-KMC-BA-addendum-memo_signed.pdf.

¹³⁹ https://www.whitehouse.gov/sites/whitehouse.gov/files/achievements/atf_climate_booklet.pdf at 2 (last visited Dec. 20, 2016).

¹⁴⁰ *See* DEIS at 3.2-25 (noting that 2020-2044 “is the assumed operating life of the NGS under the Proposed Action and alternatives.”).

¹⁴¹ Council on Environmental Quality, Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews (August 1, 2016), *available at* https://www.whitehouse.gov/sites/whitehouse.gov/files/documents/nepa_final_ghg_guidance.pdf (last visited Dec. 20, 2016) (hereafter “CEQ NEPA Climate Guidance”).

add between \$18 billion and \$87 billion in global economic harm from climate-related damages for a 3-unit NGS operation, and between \$6 billion and \$58 billion for a 2-unit operation.¹⁴²

As explained in more detail below, here Reclamation violated NEPA by:

- (1) Using outdated scientific information that improperly reduces the known global warming potential of methane;
- (2) Failing to make any attempt to quantify the *impact* and not just the *amount* of methane emissions;
- (3) Downplaying the climate impacts of its decision by continually comparing Project and alternative carbon dioxide emissions to global greenhouse gas concentrations despite explicit direction from the Council on Environmental Quality (CEQ) to avoid such comparisons;
- (4) Downplaying the climate impacts of its decision by suggesting that the social costs of the Project's climate impacts would be reduced to match the percentage of federal ownership of NGS; and
- (5) Failing to address the conflict between the Proposed Project and scientific consensus on climate change, U.S. greenhouse gas emission reduction targets, and U.S. international climate commitments

Each of these errors prevents the public and decisionmakers from understanding the true extent of the climate impacts of Reclamation's decision, which would be magnified well beyond the extent disclosed in Reclamation's DEIS if the agency were to compare those impacts to an alternative that entails closing NGS and the Kayenta Mine by 2020 and securing replacement electricity from 100 percent renewable resources and energy efficiency programs.¹⁴³

1. Reclamation understates the climate impacts of the Project by relying on outdated science to quantify the amount of greenhouse gas emissions that will occur and by failing to use available tools to properly analyze and disclose the impact of those emissions.

i. Reclamation must stop relying on an outdated global warming potential for methane.

In the DEIS, Reclamation errs by using long-outdated estimates of the "global warming potential," or "GWP," of greenhouse gases other than carbon dioxide.¹⁴⁴ GWP expresses warming caused by a greenhouse gas relative to the warming caused by an equivalent mass of carbon dioxide. Although converting non-carbon dioxide greenhouse gasses into a CO₂-equivalent number, (often called "CO₂-e") can provide a useful framework for analyzing climate

¹⁴² DEIS at 3.2-31, Table 3.2-6.

¹⁴³ See *supra* section IV.B.3.

¹⁴⁴ DEIS at 3.2-13, 3.2-27.

impacts, Reclamation uses badly outdated information that makes the climate impacts of its proposal seem far smaller than they would likely be.

In the DEIS, Reclamation states that the GWP for methane “is now set at 25.”¹⁴⁵ This is inaccurate. The DEIS uses estimates provided by the Intergovernmental Panel on Climate Change (IPCC) more than twenty years ago. These estimates have twice been superseded by updated IPCC reports, most recently, in September 2013, when the IPCC released its Fifth Assessment Report.¹⁴⁶ For example, this report estimates, on the basis of more recent and thorough science, that methane from fossil sources has 36 times the global warming potential of carbon dioxide over a 100 year timeframe and at least 87 times the global warming potential of carbon dioxide over a 20-year timeframe.¹⁴⁷ Both the U.S. Environmental Protection Agency (EPA) and the Department of Energy have recognized that the newer estimates represent the best available science regarding the impact of non-CO₂ greenhouse gasses. Specifically, although EPA uses the older IPCC values in compiling EPA’s greenhouse gas inventory, EPA has explained that EPA believes more recent estimates to be more accurate and better reflect scientific consensus; EPA uses the old values for the narrow purpose of compiling the inventory because the convention establishing the inventory has specified old values and has not been updated.¹⁴⁸ The Department of Energy has similarly recognized that the Fifth Assessment Report values using climate feedbacks (*e.g.*, 36 and 87 for methane) reflect the current scientific consensus.¹⁴⁹

Using the incorrect global warming potential for methane leads Reclamation to understate the climate impacts of its proposal and various action alternatives. For example, with regard to the mine, the DEIS concludes (based on a conversion factor from tons-of-coal-mined to pounds-of-methane emitted for western coal mines) that, on average, Kayenta mine emits approximately 689 tons of methane per year during mining, handling, storing, and processing coal.¹⁵⁰ Reclamation then uses methane’s global warming potential of 25 to conclude that the mine would emit 15,600 metric tons of CO_{2e} each year over the duration of the mine operation.¹⁵¹ However, using Reclamation’s same conversion factors (including a fairly straight-forward conversion between tons of methane to metric tons of CO_{2e}) and the updated global warming potential of 36, the annual CO_{2e} of the mine’s methane emissions is not 15,600, but 22,500 metric tons of CO_{2e}. When multiplied over the assumed 25-year operation of the mine, the difference between Reclamation’s disclosed emissions and the actual emissions is significant.

¹⁴⁵ DEIS at 3.2-13.

¹⁴⁶ IPCC, *Climate Change 2013: The Physical Science Basis*: Chapter 8, page 714, Table 8.7.

¹⁴⁷ *Id.*

¹⁴⁸ <https://www3.epa.gov/climatechange/ghgemissions/gwps.html> (last visited Dec. 20, 2016).

¹⁴⁹ Department of Energy, Opinion and Order 3357-C, DOE/FE Dkt. 11-161-LNG, at 30 (Dec. 4, 2015) (“We agree with Sierra Club that using 20- and 100-year methane GWPs of 87 and 36 is most appropriate for use today and that climate carbon feedbacks should be captured in the GWP values for methane.”), *available at*

www.fossil.energy.gov/programs/gasregulation/authorizations/2011_applications/ord3357c.pdf.

¹⁵⁰ DEIS at 3.2-27.

¹⁵¹ *Id.*

The climate difference between reported and likely emissions is similarly amplified when analyzing impacts from NGS. The DEIS states that “NGS also emits methane ... formed in the combustion process.”¹⁵² However, the DEIS does not break down greenhouse gas emissions during combustion into carbon dioxide and methane. Instead, it only discloses the total for CO_{2e}.¹⁵³ Given that these disclosed figures are based on an inaccurately low GWP for methane, the public and decisionmakers can be sure that the reported annual emissions of CO_{2e} for NGS are too low, but cannot calculate an accurate figure.

ii. Reclamation must disclose the social cost of the methane emissions from the Kayenta Mine and NGS using the social cost of methane protocol published by the Interagency Working Group.

In addition to using an outdated global warming potential for methane to quantify *the amount* of greenhouse gasses emitted by the Project and action alternatives, Reclamation failed to even attempt to analyze *the impact* of those methane emissions. Although Reclamation estimates the social cost of carbon across the Proposed Action and considered alternatives, those figures here explicitly *do not* include any estimate of the climate harms caused by the methane emissions that result from both operation of the Kayenta Mine and combustion of coal at NGS. According to Reclamation, “per the draft CEQ guidance, the SCC analysis is based on tons of CO₂ emissions rather than the broader CO_{2e} or CO₂ equivalents.”¹⁵⁴ Reclamation’s decision to omit the social cost of the Project’s methane emissions, while simultaneously considering the social cost of the carbon dioxide emissions, has the effect of making it look as though there are no climate costs associated with the methane emissions. That is simply untrue. There are real and significant costs associated with each additional ton of methane emitted into the atmosphere. Reclamation has the tools and means to analyze those emissions, and it must do so here in order to comply with NEPA.

In August 2016, the Interagency Working Group (IWG) provided an update to the social cost of carbon technical support document,¹⁵⁵ and, for the first time, adopted a similar methodology for evaluating the climate impact of each additional ton of methane and nitrogen oxide emissions.¹⁵⁶ These social costs include, but are not limited to “changes in net agricultural productivity, human health, property damages from increased flood risk, and the value of

¹⁵² DEIS at 3.1-28.

¹⁵³ DEIS at Table 3.1-10.

¹⁵⁴ DEIS at 3.2-25 n.2.

¹⁵⁵ Interagency Working Group, Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866 (August 2016), available at https://www.whitehouse.gov/sites/default/files/omb/inforeg/scc_tsd_final_clean_8_26_16.pdf (last visited Dec. 20, 2016) (hereafter “IWG, Social Cost of Carbon, Technical Support Document”). The August 2016 update added some clarifying information around uncertainties in the modeling that supports the social cost of carbon, but did not adjust the damages values (the costs) published in the 2015 update.

¹⁵⁶ Interagency Working Group, Addendum to Technical Support Document on Social Cost of Carbon for Regulatory Impact Analysis under Executive Order 12866: Application of the Methodology to Estimate the Social Cost of Methane and the Social Cost of Nitrous Oxide (August 2016), available at https://www.whitehouse.gov/sites/default/files/omb/inforeg/august_2016_sc_ch4_sc_n2o_addendum_final_8_26_16.pdf (last visited Dec. 20, 2016) (hereafter, “IWG, Social Cost of Methane, Technical Support Document”).

ecosystem services due to climate change.”¹⁵⁷ Given its recent endorsement by the IWG, Reclamation must use the social cost of methane to quantify the expected climate damage caused by the continued operation of the Kayenta-NGS complex and compare those costs across alternatives.

Similar to the social cost of carbon, the social cost of methane provides a standard methodology that allows state and federal agencies to quantify the social benefits of reducing methane emissions through actions that have comparatively small impacts on cumulative global emission levels. The social cost of methane is intended to “offer a method for improving the analyses of regulatory actions that are projected to influence [methane or nitrogen oxide] emissions in a manner consistent with how [carbon dioxide] emission changes are valued.”¹⁵⁸ Like the social cost of carbon, the social cost of methane is presented as a range of figures across four discount rates; it is based on results from three integrated assessment models; displayed in dollars per metric ton of emissions; and increases over time because emissions become more damaging as their atmospheric concentrations increase.¹⁵⁹ Like the social cost of carbon, the social cost of methane has been subject to peer review and will be updated by the IWG to ensure it reflects the best available scientific information.¹⁶⁰ Both the social cost of carbon and social cost of methane provide decisionmakers and the public with useful information on reasonably foreseeable climate impacts, both are based on peer reviewed science, and both translate impacts into dollars—a scale readily understood by the public in a way that is more useful than the more abstract millions of tons of CO_{2e}, for example.

While we applaud Reclamation’s recognition that the social cost of carbon both provides a proxy for analyzing climate impacts and a means for comparing alternatives,¹⁶¹ Reclamation must use *both* the social cost of carbon and social cost of methane to analyze and disclose climate impacts and compare among alternatives. Reclamation’s failure to analyze the social costs of the methane emitted from both the Kayenta Mine and NGS is a significant omission. The IWG estimates that each additional ton of methane emitted in 2020, for example, will cause between \$540 and \$3,200 dollars (measured in 2007 dollars). By 2040, when NGS and Kayenta will still be operating under each of Reclamation’s considered alternatives, the range of climate damages will be between \$1,000 and \$5,500 per ton of methane emitted.¹⁶²

There is no rational distinction here for evaluating the climate harms associated with carbon dioxide emissions but not methane emissions. The social cost of carbon and social cost of methane protocols were developed by the same group of federal agency scientists (the Interagency Working Group), both protocols were subject to peer review, both were published prior to release of Reclamation’s DEIS and well before any final EIS, and both provide a consistent framework for evaluating climate damage of each additional ton of climate pollution

¹⁵⁷ IWG, Social Cost of Carbon Technical Support Document at 3.

¹⁵⁸ IWG, Social Cost of Methane Technical Support Document at 3.

¹⁵⁹ *Id.* at 7.

¹⁶⁰ *Id.* at 3.

¹⁶¹ DEIS at 3.2-2.

¹⁶² *Id.* at 7. For comparison purposes, the current social cost of carbon values for CO₂ emissions in 2020 range from \$12 to \$123 per ton. In 2040, those figures range from \$21 to \$183 per ton. IWG, Social Cost of Carbon, Technical Support Document at 4.

by using a range of values based on a consistent set of discount rates. Additionally, there is no reason why, based on the operation of the mine and the power plant, that it would make sense to consider the social cost of carbon but not the social cost of methane. Carbon dioxide emissions from coal combustion at NGS change across alternatives, which is precisely why evaluating levels of carbon dioxide emissions (and the associated social costs) provides a useful comparison. Of course, the carbon dioxide emissions change across alternatives not because of consideration of a CO₂-capturing technology, but because NGS burns less coal (or more coal) from one alternative to the next. The Kayenta Mine supplies all its coal to NGS, and NGS gets all its coal from Kayenta. Thus, changing the amount of coal burned and carbon dioxide emitted at NGS across alternatives necessarily entails changing the amount of coal mined and methane emitted at Kayenta (as well as the associated social costs of those emissions). Moreover, as Reclamation admits that NGS emits methane during combustion,¹⁶³ those methane emissions must be included as well.

Having undertaken a climate analysis of its decision, Reclamation should use the best tools available to it in order to fully analyze and disclose the climate impacts of its proposal. Given that both the social cost of carbon and social cost of methane have been adopted by the IWG, which includes a dozen federal offices and agencies including the Department of Interior and Department of Energy, Reclamation must use these tools to evaluate the climate impacts of a proposal that would extend the life of one of the largest coal-fired power plants in the country by more than two decades, resulting in significant emissions of carbon dioxide and methane.

2. Reclamation improperly downplays the climate impacts of its Proposed Action and alternatives by repeatedly comparing Project-level greenhouse gas emissions to global concentration levels and by suggesting that its responsibility for the climate impact caused by its decision is commensurate only with its share of ownership of Navajo Generating Station.

NEPA regulations require federal agencies to “provide full and fair discussion of significant environmental impacts,”¹⁶⁴ and to “evaluate the severity” of adverse environmental effects.¹⁶⁵ Federal agencies must analyze direct, indirect, and cumulative impacts.¹⁶⁶ Indirect impacts “are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.”¹⁶⁷ To serve NEPA’s “twin aims” of informing agency decisionmakers and the public, this evaluation must be in terms that will meaningfully inform these intended audiences of the magnitude and consequences of these effects.¹⁶⁸

¹⁶³ DEIS at 3.1-28.

¹⁶⁴ 40 C.F.R. § 1502.1.

¹⁶⁵ *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 352 (1989).

¹⁶⁶ 42 U.S.C. § 4332(2); 40 C.F.R. §§ 1508.7, 1508.8.

¹⁶⁷ 40 C.F.R. § 1508.8(b).

¹⁶⁸ *Natural Res. Def. Council v. Nuclear Regulatory Comm’n*, 685 F.2d 459, 487 n.149 (D.C. Cir. 1982) *rev’d on other grounds sub nom. Balt. Gas & Elec. Co. v. Natural Res. Def. Council*, 462 U.S. 87, 106-107 (1983); *Columbia Basin Land Prot. Ass’n v. Schlesinger*, 643 F.2d 585, 594 (9th Cir. 1981).

i. Reclamation must eliminate the repeated comparisons of Project-level greenhouse gas emissions with global concentration levels.

In the DEIS, Reclamation repeatedly compares the Project's expected 18 million metric tons of CO_{2e} annual emissions, and those of various Project alternatives, to global greenhouse gas concentrations.¹⁶⁹ An agency's "hard look" under NEPA must provide detailed analysis that will be "*useful to a decision maker* in deciding whether, or how, to alter [a project] to lessen cumulative environmental impacts."¹⁷⁰ These repeated comparisons are not useful in the NEPA context. These comparisons tell the public and decisionmakers little other than the obvious: climate change is caused by numerous individual sources that, when combined, emit massive levels of greenhouse gasses, all of which influence climate disruption. As CEQ concluded, "a statement that emissions from a proposed Federal action represent only a small fraction of global emissions is essentially a statement about the nature of the climate change challenge, and is *not an appropriate basis* for deciding whether or to what extent to consider climate change impacts under NEPA."¹⁷¹ In fact, CEQ unequivocally rejects the comparison to global greenhouse gas concentrations relied on so heavily by Reclamation here:

Moreover, these comparisons are also *not an appropriate method* for characterizing the potential impacts associated with a proposed action and its alternatives and mitigations because this approach does not reveal anything beyond the nature of the climate change challenge itself: the fact that diverse individual sources of emissions each make a relatively small addition to global atmospheric GHG concentrations that collectively have a large impact.¹⁷²

By continually presenting greenhouse gas emissions as a tiny fraction of global concentration levels, Reclamation impermissibly downplays the significance of the climate harms that will result from any of its considered action alternatives; fails to provide meaningful information on the severity, magnitude, or consequences of its decision; directly contradicts CEQ's NEPA Climate Guidance (which Reclamation favorably cites elsewhere); and violates NEPA.

ii. Reclamation improperly downplays its contribution to climate harms that it acknowledges are reasonably foreseeable.

In the DEIS, Reclamation helpfully uses the social cost of carbon to analyze and compare the climate impacts of its considered alternatives, (DEIS Tables 3.2-6, 3.2-12, 3.2-18, 3.2-24, 3.2-26), but then undercuts those calculations by immediately providing a far lower social cost of carbon calculation that includes only the federal share of NGS.¹⁷³ This approach must be

¹⁶⁹ See e.g., Tables 3.2-4, 3.2-5, 3.2-10, 3.2-11, 3.2-16, 3.2-17, 3.2-22, 3.2-23, 3.2-24, 3.2-25.

¹⁷⁰ *Natural Res. Def. Council v. Hodel*, 865 F.2d 284.8, 299 (D.C. Cir. 1984) (emphasis added).

¹⁷¹ CEQ, NEPA Climate Guidance at 11 (emphasis added).

¹⁷² *Id.* (emphasis added).

¹⁷³ See DEIS Table 3.2-7 (Proposed Action), Table 3.2-13 (Natural Gas Partial Federal Replacement alternative); Table 3.2-19 (Renewable Partial Federal Replacement alternative); Table 3.2-25 (Tribal Partial Federal Replacement alternative); Table 3.2-27 (no action alternative).

abandoned because it impermissibly downplays the climate impacts of Reclamation’s decision. The core decision Reclamation faces is whether to approve continued operation of the Kayenta Mine and Navajo Generating Station for an additional 25 years. NEPA requires federal agencies to analyze and disclose reasonably foreseeable impacts, whether or not those impacts result from federal action or the action of third parties.¹⁷⁴ Here, the reasonably foreseeable impact of Reclamation’s decision to authorize any of the action alternatives, as it admits, is continued operation of both the Kayenta Mine and NGS from 2019 to 2044.¹⁷⁵ Reclamation appropriately utilizes the social cost of carbon to help evaluate Project level emissions and compare impacts across alternatives, but then attempts to disavow its responsibility for the climate impact of those reasonably foreseeable emissions by immediately presenting far smaller social cost calculations “adjusted to reflect the federal share of emissions.”¹⁷⁶

Thus, for example, the social cost of carbon associated with a 3 percent discount rate for the Proposed Action is \$28.45 billion (that is, Reclamation’s Proposed Action will result in north of \$28 billion in climate damage).¹⁷⁷ The social cost of carbon for the federal share, using the same discount rate—and disclosed on the same page of the DEIS—is ‘just’ \$6.91 billion.¹⁷⁸ Similar reductions in reported carbon dioxide emissions and social costs are repeated *each time* Reclamation calculates social costs for an alternative, followed immediately by the same calculations but for the federal share of NGS.¹⁷⁹ This “federal share” value is an impermissible dodge. Federal agencies do not get to “discount” harms based on the fact that they own a portion of a proposal. Instead, agencies must disclose all reasonably foreseeable impacts of their actions. And absent Reclamation’s authorization, NGS and the Kayenta Mine would not continue to operate, meaning that the climate impacts of NGS and the mine as a whole, not just Reclamation’s share of NGS, are a reasonably foreseeable consequence of Reclamation’s proposed action. If Reclamation thinks that under NEPA it is permissible to report emissions and social costs only as to its share of NGS, it must say so. The DEIS, however, does not explicitly make this claim, nor could it do so credibly given NEPA’s clear obligation to analyze reasonably foreseeable impacts. Instead, the DEIS makes it appear as though the anticipated climate harms are actually far less than those that are reasonably foreseeable. This is misleading and violates NEPA by depriving decisionmakers and the public with a clear choice among alternatives and meaningful information on the likely consequences and severity of the reasonably foreseeable impacts of Reclamation’s decision.

¹⁷⁴ 40 C.F.R. § 1508.8(b).

¹⁷⁵ DEIS at 3.2-25.

¹⁷⁶ DEIS at 3.2-21.

¹⁷⁷ DEIS Table 3.2-6.

¹⁷⁸ DEIS at 3.2-31, Table 3.2-7.

¹⁷⁹ *Cf.* Tables 3.2-12 (social cost of Proposed Action) and 3.2-13 (social cost of federal share of Proposed Action); Tables 3.2-18 (natural gas alternative) and 3.2-19 (federal share of natural gas alternative); Tables 3.2-24 (renewables alternative) and 3.2-25 (federal share of renewables alternative); and Tables 3.2-26 (no action) and 3.2-27 (federal share of no action).

3. Reclamation fails to address the conflict between the continued operation of the Kayenta Mine - Navajo Generating Station complex and U.S. climate objectives, our international climate commitments, and the scientific consensus on the need to immediately reduce greenhouse gas emissions.

NEPA regulations direct federal agencies, “to discuss any inconsistency of a proposed action with any approved State or local plan and laws (whether or not federally sanctioned),”¹⁸⁰ and require agencies to address “possible conflicts between the proposed action and the objectives of Federal, regional, State, and local (and in the case of a reservation, Indian tribe) land use plans, policies and controls for the area concerned.”¹⁸¹ CEQ’s NEPA Climate Guidance interprets these regulations to encompass the requirement to address “approved federal, regional, state, tribal, or local plans, policies, or laws for GHG emission reductions or climate adaptation to make clear whether a proposed project’s GHG emissions are consistent with such plans or laws.”¹⁸²

Reclamation has made no attempt to comply with this mandate. The U.S. has set ambitious greenhouse gas emission reduction targets and established itself as an international leader on protecting the climate. For example, in December 2015 the international climate summit in Paris produced an historic agreement establishing the ambitious goal of limiting warming to 1.5 degrees Celsius above pre-industrial times, a target that will require ambitious emission reductions beyond those currently identified.¹⁸³

Domestically, President Obama’s Clean Power Plan, currently stayed pending litigation, calls for reducing power sector emissions to 30 percent below 2005 levels by 2030.¹⁸⁴ In November 2014, the President announced a joint U.S.-China agreement aimed at reducing climate pollution that called for even more aggressively cutting net greenhouse gas emissions to 26-28 percent below 2005 levels by 2025.¹⁸⁵

Recent climate science demonstrates that increasing greenhouse gas emissions from coal, oil, and natural gas extraction and combustion would undermine our national climate objectives and conflict with the international commitments our country made as part of the historic United Nations Framework Convention on Climate Change conference in Paris in December 2015. In September 2016, both the White House Council of Economic Advisors and the peer-reviewed journal *Nature* published reports concluding that existing domestic climate policies are very

¹⁸⁰ 40 C.F.R. § 1506.2(d).

¹⁸¹ 40 C.F.R. § 1502.16(c).

¹⁸² CEQ NEPA Climate Guidance at 28-29.

¹⁸³ White House, U.S. Leadership and the Historic Paris Agreement to Combat Climate Change (Dec. 12, 2015), <https://www.whitehouse.gov/the-press-office/2015/12/12/us-leadership-and-historic-paris-agreement-combat-climate-change> (last visited Dec. 20, 2016).

¹⁸⁴ White House Fact Sheet, U.S.-China Joint Announcement on Climate Change and Clean Energy Cooperation (November 11, 2014), available at <http://www.whitehouse.gov/the-press-office/2014/11/11/fact-sheet-us-china-joint-announcement-climate-change-and-clean-energy-c> (last visited Oct. 30, 2016).

¹⁸⁵ *Id.*

likely insufficient to meet our commitments made as part of the December 2015 Paris Agreement.¹⁸⁶ Even the White House’s own analysis shows that existing policies—including the currently stayed Clean Power Plan—*might* allow us to meet our Paris commitments, but only if we make the most optimistic assumptions possible for each of several uncertainties in our assessment of likely emissions and their impact.

Finally, Oil Change International’s recent “The Sky’s Limit” report identifies the global carbon budget needed to reach the Paris and Clean Power Plan emission reduction goals and concludes that “[t]he oil, gas, and coal in already-producing fields and mines are more than we can afford to burn while keeping likely warming below 2°C.”¹⁸⁷ The report further concludes that “at current rates of emissions, the carbon budget for a likely chance of limiting warming to 2°C will be fully exhausted by 2037, and by 2025 for a medium chance at 1.5°C.”¹⁸⁸ This finding underscores the urgent need to take immediate and drastic steps to reduce greenhouse gas emissions. Merely ten more years of status quo emissions would entirely exhaust the total amount of carbon dioxide we can emit—forever—and still have even a “medium chance (50%)” of limiting global temperatures to the internationally-agreed upon 1.5°C increase above pre-industrial times.¹⁸⁹

Decisions that purport to merely extend the status quo for greenhouse gas emissions would in reality drive us dangerously close to expensive and destructive global temperature increases. Reclamation must acknowledge this reality in order to give the public and decisionmakers the appropriate context in which to view the competing alternatives. Reclamation’s preferred action is in direct conflict with our international climate commitments and domestic greenhouse gas reduction targets, but Reclamation fails to reconcile or even acknowledge this conflict.

Increased mining and burning of fossil fuels, or even a continuation of the status quo, is totally out of step both with our national climate priorities and the latest science on the urgent need to reduce greenhouse gas emissions. At a minimum, NEPA requires Reclamation to address these inconsistencies and explain the extent of the conflict so that both the public and decisionmakers have an accurate understanding of the climate impacts of Reclamation’s proposed Project.

¹⁸⁶ Jeffrey B. Greenblatt and Max Wei, Assessment of the climate commitments and additional mitigation policies of the United States, Nature Climate Change (Sept. 26, 2016); White House Council of Economic Advisors, The Economic Record of the Obama Administration: Addressing Climate Change (Sept. 2016), available at

https://www.whitehouse.gov/sites/default/files/page/files/20160921_record_climate_energy_cea.pdf (last visited Dec. 20, 2016).

¹⁸⁷ Oil Change International, The Sky’s Limit: Why The Paris Climate Goals Require A Managed Decline Of Fossil Fuel Production, ES-6 (Sep. 2016), and available at

http://priceofoil.org/content/uploads/2016/09/OCI_the_skys_limit_2016_FINAL_2.pdf (last visited Dec. 20, 2016).

¹⁸⁸ *Id.* at 12.

¹⁸⁹ *Id.* at 13.

E. Reclamation’s analysis of haze-causing pollutants is deficient.

NGS emits nitrogen oxides (NO_x), sulfur dioxide, and particulate matter (PM), which reduce visibility and create haze in nearby national parks and wilderness areas. The Clean Air Act regulates these haze-causing emissions, requiring emission reductions in the near term and the goal of eliminating visibility impairments in designated national parks and wilderness areas.¹⁹⁰

1. The DEIS fails to consider the requirement to implement “best available retrofit technology” for NO_x.

The Environmental Protection Agency approved a Federal Implementation Plan (FIP) in 2014 to reduce NO_x emissions from NGS. That FIP has been challenged in federal court by the Hopi Tribe and environmental organizations. After argument on November 18, 2016, the case is now awaiting a decision by the Ninth Circuit Court of Appeals. As with all pending litigation, the outcome of the case is uncertain. Yet, the court has asked for additional briefing concerning remedy, signaling that it may send the FIP back to EPA for revision and, contrary to the assumptions in the DEIS, the 2014 FIP may not govern NGS operations from 2019 through 2044. EPA, instead, may be required to promulgate a new FIP that, at a minimum, ensures installation of “selective catalytic controls” as the best available retrofit technology, or “BART,” much sooner than 2030. Although the DEIS mentions the 2014 FIP has been challenged in court, it assumes that all scenarios set forth in the 2014 FIP remain in play.

However, in light of the pending litigation, the DEIS should have included and analyzed an alternative in which EPA requires the installation of selective catalytic reduction (SCR) according to the deadlines established in the Clean Air Act,¹⁹¹ and as required by the Ninth Circuit, which, as the petitioners in the pending appeal have requested, is no later than December 31, 2019. This omission is significant because, as the DEIS states, requiring BART “may have resulted in the NGS Co-tenants shutting down the plant for economic reasons.”¹⁹² The DEIS should be supplemented with a new alternative that assesses BART as contemplated in the draft FIP from 2013.

2. Reclamation failed to disclose the impact of NO_x that NGS would emit before the date on which the current FIP requires SCR to be installed.

Under the current FIP, as of December 2016, SCR would not be installed to control NO_x emissions until 2030.¹⁹³ Until then, low-NO_x burners would be used to reduce NO_x emissions

¹⁹⁰ See 42 U.S.C. § 7491(a)(1); see also 40 C.F.R. Part 51, Subpart P.

¹⁹¹ 42 U.S.C. § 7491(g)(4), 40 C.F.R. § 51.308(d)(3).

¹⁹² DEIS at 1-49.

¹⁹³ SCR could be installed sooner than 2030 only in the exceedingly unlikely scenario that Nevada Energy does not sell its NGS-ownership share or sells it to someone other than an existing NGS owner, and the owners choose to keep operating three units and install SCR sooner than 2030. This possibility is extremely remote, and the scenarios that are more likely to occur therefore deserve greater scrutiny in the DEIS.

from NGS. But that technology lowers NO_x emissions by only approximately 40 percent.¹⁹⁴ By comparison, other visibility-impairing pollutants from NGS are controlled to a far great degree: SO₂ is reduced by 90 percent and PM emissions are reduced by 99.5 percent.¹⁹⁵ And other regional coal-fired power plants have already installed SCR to limit NO_x emission or will be doing so in the near term, including: Four Corners Power Plant, Apache Generation Station, Cholla Power Plant, Coronado Generating Station, Laramie River Station, Dave Johnston, Naughton, and Wyodak.¹⁹⁶

The DEIS does not properly analyze and publicly disclose the haze impacts that would result from using low-NO_x burners through 2030 because the DEIS evaluates average NO_x emissions from 2019–2044. That obscures the variability in NO_x emissions (and NGS-related haze) that would occur over that time period and inaccurately depicts emissions during the time that only low-NO_x burners would be used to control NO_x emissions. This failure to take a hard look at the haze that the Proposed Action would cause between 2019 and 2030 violates NEPA. This analysis must be done under NEPA, even if, for the purpose of the Clean Air Act, EPA chose to cap total NO_x emissions through 2044 and then evaluate compliance with the Clean Air Act by looking at average annual emissions.

3. The DEIS presents incorrect NO_x emissions information and misleads the public about emission controls.

Table 3.1-15 of the DEIS¹⁹⁷ and the related narrative about NO_x emissions under the Proposed Action are flawed. That section of the DEIS purports to characterize baseline conditions and the expected “improvement” of conditions at 11 nearby national parks and wilderness areas—*i.e.*, “Class I” areas—under the Proposed Action. The so-called “improvements” reflect what would have occurred had EPA adopted BART as EPA proposed in 2013. But EPA did not adopt or impose BART at NGS in the 2014 FIP. Instead, EPA adopted a BART-Alternative. Yet Table 3.1-15 reflects, not the BART-Alternative, but what EPA included in its Federal Register notice when it was proposing BART in 2013.¹⁹⁸ And compounding this error, the purported “Baseline Impact” to visibility conditions in the Class I areas comes from 2003 data, thirteen years before the DEIS was prepared.¹⁹⁹ Baseline data from Class I areas should be based on current information in order to accurately portray the impacts the Proposed Action would have. So, in sum, the DEIS is comparing a fictional future scenario (based on a FIP that was not adopted in 2014) with a stale baseline. This assessment of NO_x impacts under the Proposed Action must be redone and resubmitted to the public for review and comment.

¹⁹⁴ DEIS at 1-25.

¹⁹⁵ *Id.*

¹⁹⁶ *See e.g.*, 77 Fed. Reg. 51,620 (Aug. 24, 2012).

¹⁹⁷ DEIS at 3.1-34.

¹⁹⁸ DEIS at 3.1-34 (citing 78 Fed. Reg. 8286–87).

¹⁹⁹ DEIS at 3.1-34.

The DEIS characterizes the haze impacts from NGS as “moderate” because visibility impairments in the affected Class I areas would exceed the 1.0-deciview threshold modestly.²⁰⁰ The conclusion falsely assumes, however, that BART is being implemented, which, as discussed above, is not true. Thus, NGS is not simply exceeding the 1.0 deciview threshold modestly, but in a far more substantial fashion than the DEIS represents.

Worse yet, Reclamation’s conclusion about haze impacts lacks context. According to Table 3.1-15, visibility impairments already exceed 1.0 deciview in all 11 Class I areas and would remain above 1.0 deciview if the Proposed Action is carried out even if BART, rather than the BART-alternative, had been adopted. Grand Canyon National Park will remain at 5.4 deciviews under any scenario.²⁰¹ If 1.0 deciview amounts to a “moderate” impact, impacts that are fivefold greater are plainly “major.” But the DEIS does not reveal the deciview level at which Reclamation deems impacts to be major as opposed to moderate. Indeed, if NGS cannot mitigate its haze impact on Grand Canyon National Park to 1.0 deciview, this would certainly qualify as a major impact based on the DEIS’s own definition.²⁰²

Another error is found within Table 3.1-3, which discloses the annual amount of NO_x emissions from various “major sources” in the region, including NGS. These emission numbers suggest that NGS’s emissions of NO_x are *less than* NO_x emissions at the Four Corners Power Plant. On its face, this is either wrong or extremely misleading, because Four Corners closed 3 units in 2013 and installed SCR on the two remaining units in 2014 to control NO_x emissions. The two operating Four Corners units generate 1,540 MW, which is less capacity than NGS’s 2,250 MW. Yet, according to the DEIS, Four Corners will emit 38,729 tons of NO_x per year with SCR, while NGS, which will be without SCR until 2030, will emit 19,840 tons per year despite generating more MWs. Accurate data and current information must be used under NEPA to assess NGS’s impacts for NO_x emissions.

4. The DEIS fails to disclose how cumulative emissions of all visibility-impairing pollutants would affect Class I areas within a 300-kilometer region.

NGS’s combined emissions of NO_x, SO₂ and PM (even with pollution controls) impacts visibility in 11 national parks and wilderness areas (Grand Canyon, Zion, Bryce, Capital Reef, Canyonlands, Arches, Mesa Verde, Petrified Forest, Sycamore Canyon Wilderness Area, Pine Mountain Wilderness Area and Mazatzal Wilderness Area). Within this same 300-kilometer region, there are 23 other major sources of pollution.²⁰³ The DEIS reveals an amount of emissions of each haze-causing pollutant from all these sources.²⁰⁴

However, the DEIS does not take the requisite “hard look” at these cumulative haze impacts. The emission data from the 24 major sources (including NGS) is from 2011.²⁰⁵ Because

²⁰⁰ DEIS at 3.1-46.

²⁰¹ DEIS at 3.1-34.

²⁰² See DEIS at 3.0-6 (defining “major” as impacts that cannot be effectively mitigated).

²⁰³ DEIS at 3.1-7.

²⁰⁴ DEIS at 3.1-7.

²⁰⁵ DEIS at 3.1-6.

emissions inventories are compiled every three years,²⁰⁶ data from 2014 was available at the time the DEIS was prepared, but inexplicably was not used. Because data for 2017 will soon be available, Reclamation should revise or supplement the DEIS to use that data so that the public can effectively comment on cumulative impacts relating to haze in Class I areas.

The emissions amounts being disclosed from the 24 sources are insufficient to fully understand what these emission numbers mean.²⁰⁷ The numbers do not disclose whether these major sources have installed BART or will be installing BART in the future and when and how BART will reduce emissions of the haze-producing pollutants. It is also not clear how these annual emissions are being calculated: for example, whether annual emissions are being averaged over some time period with an expectation that BART or other controls will eventually be implemented.

There is also no connection made between the cumulative emissions from these major sources and haze impacts within the 11 national parks and wilderness areas. Emissions from the 24 sources are listed in Table 3.1-3, but the cumulative effects of these emissions are not connected to the Class I areas. The DEIS fails to analyze and disclose how the cumulative emissions correlate to the adverse impacts.

5. The DEIS does not assess haze impacts in Class I areas from the no action alternative.

For the No Action Alternative, the DEIS states that “emissions...would not occur.”²⁰⁸ Yet no assessment of the reduced effect on haze and visibility-impairment in Class I areas is provided. NEPA requires an evaluation of the No Action Alternative.

V. Conclusion

Draft environmental impact statements must satisfy, as far as possible, the requirements established for final statements.²⁰⁹ And NEPA regulations mandate that “[i]f a draft statement is so inadequate as to preclude meaningful analysis, the agency shall prepare and circulate a revised draft of the appropriate portion.”²¹⁰

We urge Reclamation to do that here. The DEIS’s unjustifiably narrow purpose-and-need statement and failure to take a hard look at, among other matters, climate impacts, air-quality impacts, and impacts on endangered fish disserves NEPA’s goals—informed decisionmaking and full disclosure to the public—for it deprives the public and decisionmakers of the chance to understand those impacts, and to comment on an appropriate analysis of those impacts.²¹¹

²⁰⁶ *Id.*

²⁰⁷ See DEIS at 3.1-6.

²⁰⁸ DEIS at 3.1-69.

²⁰⁹ See 40 C.F.R. § 1502.9(a).

²¹⁰ *Id.*

²¹¹ *State of California v. Bergland*, 483 F. Supp. 465, 495 (E.D. Cal.74 1980), *judgment aff’d in part, rev’d in part sub nom.by State of California v. Block*, 690 F.2d 753 (9th Cir. 1982).

We therefore respectfully request that Reclamation prepare a revised DEIS that addresses the inadequacies described in these comments.

Sincerely,



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