

UNITED STATES OF AMERICA
DEPARTMENT OF ENERGY
OFFICE OF FOSSIL ENERGY

IN THE MATTER OF)
)
Alaska LNG Project LLC) FE DOCKET NO. 14-96-LNG

**REQUEST FOR REHEARING OF ORDER GRANTING AUTHORIZATION OF
THE ALASKA LNG PROJECT**

Pursuant to Section 19(a) of the Natural Gas Act, 15 U.S.C. § 717r(a), and 10 C.F.R. § 590.501, the Center for Biological Diversity, Cook Inletkeeper, and Sierra Club (Intervenors) hereby request rehearing of the U.S. Department of Energy (DOE or “the Department”), Office of Fossil Energy and Carbon Management’s Order Affirming and Amending DOE/FE Order No. 3643-A Following Partial Grant of Rehearing (Order or “Order 3643-C”), DOE/FECM Order No. 3643-C, issued on April 13, 2023, in the above-captioned matter.

Intervenors ask that this order be withdrawn and the underlying application denied, or in the alternative, that the order be withdrawn pending further inquiry and public process regarding the impact of the proposed exports.

DOE granted the Intervenors’ respective motions to intervene in these dockets.¹ As such, each Intervenor is a “party” to this proceeding with standing to file this request for rehearing.² This request for rehearing is timely, having been filed within 30 days of DOE’s Order.³

¹ Order 3643-C at 21 (granting intervention for Center for Biological Diversity and Cook Inletkeeper); DOE/FE Order No. 3643 at 27 (May 28, 2015) (granting intervention for Sierra Club).

² 10 C.F.R. § 590.102(l).

³ *Id.* § 590.501(a).

Intervenors include citations and other information in footnotes only to enhance the presentation to the reader. Intervenors do not waive any rights with respect to footnotes, and ask that DOE consider all the text of this request equally regardless of whether it appears in a footnote or the body of the request.

STATEMENT OF ERRORS

DOE should withdraw its Order because of the following errors in the Order and final supplemental environmental impact statement (FSEIS) upon which it relies:

I. DOE's determination that the Project's exports are consistent with the public interest was arbitrary and capricious, and violated the Natural Gas Act, because:

- A. There is no demonstrated global market need for the Project's exports.
- B. DOE ignored the same alleged uncertainties inherent in the Project's benefits that it used to justify discounting the Project's climate harms.
- C. DOE ignored the Project's definite and certain harms.
- D. DOE overstated the degree of uncertainty about adverse impacts to the climate.
- E. DOE cannot ignore the Project's adverse climate impacts even if the Project substitutes for foreign fossil fuels.

II. DOE's Order rests on an FSEIS that does not comply with the National Environmental Policy Act (NEPA), because:

- A. The purpose and need statement does not comply with NEPA.
- B. The FSEIS lacks a true no action alternative.
- C. The FSEIS does not comply with NEPA regulations regarding missing information.
- D. The FSEIS makes unsupported assumptions about byproduct carbon dioxide (CO₂) injection.

E. The FSEIS does not adequately address impacts from proposed carbon storage on the North Slope.

F. The FSEIS does not adequately address methane leakage from the Project.

G. The FSEIS's analysis of overseas impacts is inadequate.

ARGUMENT

I. DOE'S DETERMINATION THAT THE PROJECT'S EXPORTS ARE CONSISTENT WITH THE PUBLIC INTEREST WAS ARBITRARY AND CAPRICIOUS AND VIOLATED THE NATURAL GAS ACT.

Although DOE is required to balance the Alaska LNG Project's ("the Project") costs and benefits against each other to determine whether its liquefied natural gas (LNG) exports are consistent with the public interest, here it has irrationally used the existence of some uncertainty to refuse to meaningfully consider the Project's environmental harms, while effectively giving full weight to the Project's equally-if-not-more uncertain benefits. As a result, its public interest determination is unjustifiably one-sided and amounts to an abdication of DOE's responsibility under the Natural Gas Act.

Numerous problems in DOE's analysis render its public interest determination imbalanced and arbitrary. DOE's analysis of the benefits of the Project ignores the lack of any real market need for additional LNG exports. The LNG export capacity that has already, and will likely, come online before the Project is complete far exceeds the projected global need. DOE tries to have it both ways when it comes to the impact of uncertainties in the LNG market, dismissing climate impacts as unknowable (a position belied by the record) while assuming benefits that are entirely speculative.

Likewise, DOE inappropriately ignores or discounts demonstrable environmental harms that will result from additional gas production on the North Slope—one of the two major reasons

DOE ordered the preparation of a supplemental environmental impact statement. DOE vastly overstates the uncertainties associated with estimating the potential climate impacts from the Project's greenhouse gas emissions. Even if some portion of the Project's output would simply substitute for foreign fossil fuels, DOE still has a duty to consider the greenhouse gas (GHG) impacts from this Project. In short, DOE's approach to evaluating whether the Project's exports would be inconsistent with the public interest is incomplete, incorrect, and biased, and fails entirely to satisfy DOE's legal obligations under the Natural Gas Act.

A. There Is No Demonstrated Global Market Need for the Project's Exports.

The record fails to establish that there will be any real need for the additional exports that the Project will produce if or when it comes online, because DOE already has approved a far greater volume of exports than is needed to cover the projections for international LNG demand through 2050. According to the Energy Information Administration's (EIA) latest predictions, under a high oil price scenario, LNG exports volumes are expected to remain below 15 trillion cubic feet per year by 2050.⁴ Under the low oil price scenario, that number is expected to remain closer to the current level of 4 trillion cubic feet.⁵ EIA's reference point for LNG export demand in 2050 is 10 trillion cubic feet.⁶

Even those numbers, however, may be high, as one of the big sources of current demand—Europe's need for gas in the wake of Russia's invasion of Ukraine—will likely rapidly diminish. Russia's war in Ukraine has hastened European countries' roll-out of renewables and

⁴ EIA, *Annual Energy Outlook 2023*, Fig. 17 (Mar. 16, 2023) (Annual Energy Outlook 2023), <https://www.eia.gov/outlooks/aeo/narrative/index.php#InternationalDemandfor>.

⁵ *Id.*

⁶ *Id.*

low-emitting technologies, and the overall demand for gas in Europe fell by 13 percent in 2022.⁷ Indeed, the Institute for Energy Economics and Financial Analysis (IEEFA) recently cautioned that, after 2023, “LNG demand is set to decline across Europe.”⁸ The pace of that decline is likely to only increase as the European Union aims for 45 percent renewable energy by 2030.⁹

The Project’s gas exports would likely not go to address any national security needs associated with supporting Ukraine, and are rather destined for four countries—Japan, South Korea, India, and China¹⁰—all of which have announced plans to expand their renewable energy usage. As DOE recognizes, by 2030, the earliest the Project could come online, Japan is aiming to increase its renewable share to 13 percent;¹¹ South Korea is aiming to increase its renewable share to 20 percent, with another 30-35 percent by 2040;¹² and India plans to meet 50 percent of its electricity requirements with renewables.¹³ China has even earlier goals to account for “40 [percent] of the global growth of renewable capacity between 2019 and 2024.”¹⁴ DOE further recognizes that the recommendations in the International Energy Agency’s (IEA) “Net Zero by 2050” report will likely be implemented.¹⁵ That report explains that further expansion of global

⁷ IEA, *Europe’s energy crisis: What factors drove the record fall in natural gas demand in 2022?* (Mar. 14, 2023), <https://www.iea.org/commentaries/europe-s-energy-crisis-what-factors-drove-the-record-fall-in-natural-gas-demand-in-2022>.

⁸ IEEFA, *Over half of Europe’s LNG infrastructure assets could be left unused by 2030* (Mar. 21, 2023), <https://ieefa.org/articles/over-half-europes-lng-infrastructure-assets-could-be-left-unused-2030>.

⁹ N. Ferris, *Why LNG’s current boom will only accelerate its ultimate demise*, ENERGY MONITOR (Apr. 6, 2023) (Ferris 2023), <https://www.energymonitor.ai/sectors/industry/why-lng-market-current-boom-will-only-accelerate-its-ultimate-demise/>.

¹⁰ Amended Record of Decision, Order C3643-C at 45.

¹¹ FSEIS, App. C at 13; IEA, *Japan 2021: Energy Policy Review* (2021), <https://www.iea.org/reports/japan-2021>.

¹² FSEIS, App. C at 13; IEA, *Korea 2020: Energy Policy Review* (2020), <https://www.iea.org/reports/korea-2020>.

¹³ FSEIS, App. C at 14.

¹⁴ *Id.*

¹⁵ *Id.* at 11-12.

LNG exports and construction of additional LNG export infrastructure cannot be part of the path to net-zero emissions.¹⁶

Although LNG demand is likely to decline, both globally and in the countries likely to receive exports from the Project, prior to approving the Project, DOE had already authorized more exports to non-free trade countries than the high end of EIA's predicted demand range. The 17.3 trillion cubic feet of LNG exports per year DOE previously approved, which does not include exports to free trade countries or exports from small-scale facilities,¹⁷ is approximately 2 trillion cubic feet per year more export capacity than the maximum level the EIA estimates will be in demand by 2050.¹⁸ Although there is no guarantee that all of that capacity will come online, facilities accounting for 24.19 billion cubic feet per day, or approximately 8.83 trillion cubic feet per year, are currently operating or under construction.¹⁹ That is more than twice the low end of EIA's estimated demand for LNG.²⁰ There is no evidence to suggest that all of the remaining capacity will fail to come online. If even a relatively small fraction of it does come online, the amount of export DOE will have allowed, even without counting the Project, will easily exceed EIA's reference case levels by trillions of cubic feet per year. Simply put, global realities demonstrate that DOE has authorized more LNG exports than are needed.

Tellingly, the Alaska Gasline Development Corporation's (AGDC) own analysis does not dispute any of the above. Indeed, it confirms that at least a significant portion of the exports from the Project will add to the problem of an over-saturated global market for LNG exports. AGDC's

¹⁶ IEA, *Net Zero by 2050: A Roadmap for the Global Energy Sector* at 102 (May 2021) (IEA 2021), <https://www.iea.org/reports/net-zero-by-2050>.

¹⁷ 88 Fed. Reg. 25,272, 25,274 (Apr. 26, 2023).

¹⁸ *Id.*; Annual Energy Outlook 2023, Fig. 17.

¹⁹ 88 Fed. Reg. at 25,274.

²⁰ Annual Energy Outlook 2023, Fig. 17.

modeling indicates that, if built, two-thirds of the Project's LNG would add to U.S. export capacity without displacing any other U.S. exports.²¹ And although that same modeling seeks to portray the Project's exports as having net-positive economic and other impacts, it assumes total volumes of global LNG exports that are exponentially lower than the amount that is now being produced and that will be produced by terminals that are under construction.²² Thus, AGDC's analysis does not grapple with the over-supply problem or support the conclusion that the Project's exports are needed when added to the over-supplied market that already exists and certainly will exist when the Project comes online eight years from now.

DOE maintains as a matter of policy that it does not need to find there is a market need for a project's exports to approve them, and that it will let the market, rather than DOE, decide which projects will move forward.²³ However, this is an inappropriate and unlawful abdication of DOE's role under the Natural Gas Act and causes real harm. As DOE itself has acknowledged, when export authorizations get approved but never acted on, it creates an "authorization overhang," which creates a variety of problems with the LNG market.²⁴ The "overhang obscures an accurate picture of investment-backed commitments involving U.S. LNG," and creates uncertainty that "has become increasingly disruptive to DOE's planning, economic forecasting, and market analysis of the U.S. LNG export market."²⁵ Further, the

²¹ AGDC, Application of Alaska LNG Project LLC For Long-Term Authorization to Export Liquefied Natural Gas, App. F: NERA Economic Consulting, Socio-Economic Impact Analysis of Alaska LNG Project at 42 (Jul. 18, 2014) (NFTA Application, App. F) ("As a result of Alaska developing the [North Slope] and exporting 0.93 [trillion cubic feet (Tcf)] of natural gas per year after 2025, total U.S. exports of LNG are approximately 0.6 Tcf higher than in the Baseline.").

²² *Id.* at 25, Fig. 15 (assuming 1.14 trillion cubic feet by 2048 in its "U.S. LNG Exports—Baseline" and 1.72 trillion cubic feet in its "U.S. LNG Exports—Expected" scenarios).

²³ Order 3643-C at 22 & n.106.

²⁴ 88 Fed. Reg. at 25,276-77.

²⁵ *Id.* at 25,277.

overhang causes uncertainty for U.S. trading partners receiving LNG and “may serve to discourage or delay potential new entrants to the U.S. export market—including those that seek to utilize newer technology and to adopt better environmental practices.”²⁶ Though DOE has recently adopted a policy statement to create greater clarity around the ability of approved exporters to extend the life of their DOE export authorizations,²⁷ the Department arbitrarily refuses to recognize that it should be evaluating applications at the outset to determine if there is a real market need for their export capacity. It simply makes no sense for DOE to acknowledge on the one hand that it has a role to play in preventing the creation of an overly-large export overhang by limiting the availability of extensions of authorizations but denying on the other that it has any role to play in refusing to grant unviable projects export authorizations from the start. Such an approach does not serve the public interest or address any of the market problems DOE seeks to address in its recent policy statement.

Moreover, DOE’s refusal to engage in a meaningful inquiry on whether a project’s exports are needed and for how long risks causing harms to the environment and communities that are not merely avoidable, but indeed, may be entirely unnecessary. First, while major component parts of unviable projects may never be constructed, DOE’s approval sends a powerful signal that may induce construction of supporting infrastructure that causes unnecessary harms. The sheer scope and scale of the infrastructure needed across Alaska to make the Project possible should present a cautionary tale to DOE. Even before the terminal itself is built, countless other impacts—tree felling and wetland conversion for gathering lines, for example—may occur in anticipation of a project that DOE approved, but that will never actually

²⁶ *Id.*

²⁷ *Id.* at 25,276-78.

happen. Second, an LNG terminal that is built and then sits un- or under-used, or shuts down well before the end of its useful life, causes extensive harm associated with project construction, while failing to provide any of the purported benefits. As is clear from the glut of import terminals that were built in the 2000s, only to sit idle, markets cannot be blindly trusted to ensure that projects are only actually constructed when there is a need for them.

DOE bears an important responsibility to make decisions that are consistent with the public interest, which includes the responsibility to ensure that its decision is consistent with its obligation to advance environmental justice. The President's Executive Order 14096 on Revitalizing Our Nation's Commitment to Environmental Justice for All mandates that DOE, among other things, "take steps to address disproportionate and adverse human health and environmental effects (including risks) and hazards unrelated to Federal activities, including those related to climate change and cumulative impacts of environmental and other burdens on communities with environmental justice concerns."²⁸ Although the Federal Energy Regulatory Commission (FERC) bears the primary responsibility for evaluating the effects of the terminals themselves, in deciding whether to approve export infrastructure, FERC consistently argues that need and market demand are demonstrated by DOE's approvals. While it is inappropriate for FERC to defer to decisions DOE has not actually made, DOE has culpably failed to correct FERC on this, and/or failed to actually make a need determination sufficient to inform FERC's decisionmaking on whether construction of LNG infrastructure would be in the public interest. To turn a blind eye to the potential that DOE's approval of exports from an unneeded source would spur construction of a series of massive pieces of infrastructure that will cause significant

²⁸ *Id.* at 25,253.

harm to the surrounding community and environment amounts to a dereliction of DOE's duty, including the duty to achieve environmental justice as part of its mission.

B. DOE Ignored the Same Alleged Uncertainties Inherent in the Project's Benefits that It Used to Justify Discounting the Project's Climate Harms.

DOE impermissibly employed a highly skewed approach to its public interest balancing test by ignoring that the same uncertainties that caused the Department to refuse to weigh climate impacts apply with equal force and effect to the alleged benefits of the Project's exports.²⁹ As is discussed in more detail in the following section, DOE is wrong that there is sufficient uncertainty to warrant refusing to seriously weigh the Project's climate impacts. But even if the Department is correct, it cannot arbitrarily use uncertainties about Project costs to dismiss them and then ignore the same uncertainties as they apply to the Project's benefits.

The Department irrationally concluded that, as a result of "substantial uncertainty regarding the magnitude of [the Project's] environmental impacts, particularly GHG emissions and climate impacts. . . . DOE has determined that it cannot draw a definitive conclusion about the magnitude of climate impacts associated with the Project's exports."³⁰ But DOE's basis for claiming that the climate impacts of the Project were uncertain are that the Department did not know whether the Project's exports would occur, or if they did, how much these exports would lead to increased fossil fuel consumption, rather than merely substituting for LNG exports from the Lower 48 states that would otherwise occur, or for use of foreign fossil fuels.³¹

²⁹ See Order 3643-C at 25 (finding there are "compelling public benefits associated with Alaska LNG's exports," and purporting to "weigh[] the acknowledged but highly uncertain climate impacts against the economic and international security benefits of Alaska LNG's approved exports.").

³⁰ *Id.* at 22.

³¹ *Id.* at 22-23 7 n.106.

These same uncertainties apply with equal force to the purported benefits of the Project's exports.³² In discussing purported benefits, DOE principally relies on economic benefits.³³ Yet, uncertainty about whether the Project will ever actually export LNG, and if so, whether those exports will merely displace LNG exports that would have been produced elsewhere, has just as much impact on whether the Project results in economic benefits as it does climate costs. If the Project does not actually export gas, or insofar as those exports merely substitute for Lower 48 exports that would otherwise occur, the Project provides no "national economic benefits" or increase in "gross domestic product."³⁴ There is nothing in the record that demonstrates that any economic benefit will result from a project that is never actualized, and DOE has not offered any argument or explanation as to how shifting exports from the Gulf Coast to Alaska, without any net increase in U.S. LNG exports, would benefit the national economy. Similarly, if the Project's exports substitute for Gulf Coast exports, this would provide local and regional economic stimulus in Alaska, but at the cost of comparable local and regional stimulus in the Lower 48.³⁵

Beyond economic benefits, DOE asserts that the Project will improve "energy security" for "U.S. allies and trading partners."³⁶ Again, this purported benefit will only occur if the Project increases U.S. exports, rather than substituting for other U.S. exports that would otherwise occur.

Thus, employing DOE's own logic, the purported benefits of the Project are at least as uncertain as the climate impacts. Moreover, both are correlated with the net increase in U.S.

³² See Sierra Club *et al.*, Comments on the Draft Supplemental Environmental Impact Statement for the Alaska LNG Project at 10-11 (Aug. 15, 2022) (DSEIS Comments).

³³ Order 3643-C at 25.

³⁴ *Id.* (citing Order 3643-A at 30-31).

³⁵ DSEIS Comments at 10-11.

³⁶ Order 3643-C at 25.

export volumes; benefits and climate impact will rise and fall together. If the lack of certainty around the Project's fate and the extent to which its exports might substitute exports from elsewhere in the United States was a sufficiently good reason for not being able to weigh climate costs, it is an equally good—if not arguably more compelling—reason to not be able to weigh economic and national security benefits. That DOE failed to apply the same treatment to both sides of its public interest weighing exercise was arbitrary and capricious.

C. DOE Ignored the Alaska LNG Project's Definite and Significant Harms.

Even if there is some uncertainty associated with the magnitude of the Project's climate impacts—which DOE greatly overstates—it is undeniable that the Project, if constructed, will cause significant environmental harm that DOE failed to appropriately evaluate or weigh in its public interest determination. In particular, the Order acknowledges that the FSEIS found that some upstream development impacts of the Project on the North Slope would be significant, including cumulative impacts on permafrost degradation³⁷ and cumulative impacts from the permanent loss of wetlands,³⁸ but then effectively dismisses these impacts. With little discussion or analysis, the Order assumes that mitigation conditions,, which are not incorporated into the Order and also may not be incorporated as binding conditions in the Project's other permits, will reduce the wetland and permafrost impacts to an unspecified degree.³⁹ Even if these mitigation measures were binding on the Project, the record before DOE does not provide any assurance that they will be effective, let alone effective enough to entirely eliminate the harm. Without more in the record, it is inappropriate for DOE to effectively treat the environmental harms that North Slope development will cause as non-existent.

³⁷ Order 3643-C at 14 (citing FSEIS at 4.20-10).

³⁸ *Id.* at 14-15 (citing FSEIS at 4.20-11).

³⁹ *Id.*

Even more disturbingly, the Order acknowledges that the Project will have a “disproportionately high and adverse impacts on environmental justice communities, primarily due to potential for impacts to subsistence users of the Kaktovik and Nuiqsut communities,”⁴⁰ but summarily concludes that those impacts do not matter, because subsistence users will simply move their activities elsewhere.⁴¹ As is discussed above, DOE is bound by President Biden’s Executive Order 14096, which “makes clear that the pursuit of environmental justice is a duty of all executive branch agencies.”⁴² The Executive Order specifically provides that the Federal government “must recognize, honor, and respect the different cultural practices—including subsistence practices, ways of living, Indigenous Knowledge, and traditions—in communities across America,”⁴³ a requirement that is utterly contrary to DOE’s assumption that the environmental justice community harmed by the Project simply must adapt.

In addition, despite the impacts to the North Slope being one of the two categories of impacts DOE determined required more extensive review when it ordered the FSEIS,⁴⁴ DOE does not clearly take these certain North Slope impacts into account in its final public interest determination and ignores additional harms the Department knows will occur if the Project moves forward. The Order merely states that “[i]n weighing the acknowledged but highly uncertain climate impacts against the economic and international security benefits of the Project’s approved exports, DOE concludes that the information developed on rehearing does not

⁴⁰ *Id.* (citing FSEIS at 4.20-11; *id.*, Tbl. S-4 at S-19 to S-20).

⁴¹ *Id.*

⁴² The White House, Fact Sheet: President Biden Signs Executive Order to Revitalize Our Nation’s Commitment to Environmental Justice for All (Apr. 21, 2023), <https://www.whitehouse.gov/briefing-room/statements-releases/2023/04/21/fact-sheet-president-biden-signs-executive-order-to-revitalize-our-nations-commitment-to-environmental-justice-for-all/>.

⁴³ 88 Fed. Reg. at 25,252.

⁴⁴ Order 3643-C at 3-4 (citing Order 3643-B).

present a sufficient basis to reach a different conclusion than previously reached.”⁴⁵ It says nothing about the clear North Slope impacts discussed in the FSEIS or the additional harms already acknowledged in the original EIS, including the 800-mile pipeline bisecting Alaska and adjacent to Denali National Park⁴⁶; the 10,000 acres of impacted wetlands, 8,000 of them permanently,⁴⁷ the significant adverse effects on permafrost, wetlands, forests, and caribou; and the potentially significant impacts on the air quality and visibility at several national parks, preserves, and refuges.⁴⁸ Mitigation of the impacts to permafrost and wetlands will not reduce those impacts to zero and forcing indigenous hunters to relocate is not a harm-free proposition; and yet the Order effectively treats both sets of impacts as if they did not exist.

There is no question that the definite environmental and community harms that will occur in Alaska from North Slope development will occur as a result of DOE’s approval of the exports from the Project and would not occur if LNG production occurred elsewhere in the world. The record does not support a finding that the Project’s exports could proceed without DOE’s non-free trade agreement (FTA) export approval—no large-scale export project has moved forward solely on the basis of an FTA authorization—and DOE’s own order concludes that the gas from the Project is destined for four non-FTA countries: Japan, China, South Korea, and India.⁴⁹ Further, DOE has concluded that it is unlikely that another project to export gas from the North

⁴⁵ *Id.* at 25.

⁴⁶ FSEIS at 1-2, Fig. 1.1-1.

⁴⁷ FERC, Order Granting Authorization Under Section 3 of the Natural Gas Act at 35-36, ¶84, 171 FERC ¶ 61,134 (May 21, 2020).

⁴⁸ *Id.* at 14, ¶25; *id.* at 57, ¶160; *id.* at 71-73, ¶¶206-08.

⁴⁹ Amended Record of Decision, Order 3643-C at 45.

Slope would be constructed if the proposed Project does not move forward.⁵⁰ The Department’s failure to include these impacts in its public interest determination, therefore, is without justification. Even worse, as is discussed above in Section I.A., because DOE continues to take a laissez-faire approach to its reviews by refusing to take a position “on whether there will, in fact, be market demand for the approved exports,”⁵¹ DOE’s authorization of the Project creates a real danger that the North Slope and other infrastructure will be constructed—causing significant environmental harm—but that exports and their purported benefits will never happen. That fact is nowhere acknowledged in DOE’s Order and further demonstrates that the Department’s conclusion that the exports from the Project are in the public interest is arbitrary and capricious.

D. DOE Overstated the Degree of Uncertainty About Adverse Impacts to the Climate.

DOE discounts the Project’s adverse impacts to the climate as highly uncertain but fails to justify its inability to produce any meaningful estimate of those impacts between the best and worst case scenarios, or to reconcile the claim of uncertainty with the Department’s reliance on modeled benefits that depend on DOE endorsing more concrete assumptions.

DOE’s greenhouse gas analysis purports to address two extreme scenarios: one in which *all* of the Project’s exports merely substitute for other gas (a comparison between the Project scenarios and No Action Alternative 1), and one in which *no* substitution occurs, such that the Project’s exports are entirely additive (a comparison between the Project scenarios and No

⁵⁰ *Id.* at 34 (“Concerning the No Action Alternative, DOE reevaluated this conclusion in the Final SEIS and instead determined that, if the Project were not constructed, it is unlikely that another project would be constructed to export natural gas from the North Slope as LNG.”); *see also* FSEIS at 2-23 (“The commercial prospects of an alternative project to the Alaska LNG Project are unclear. North Slope natural gas is challenged by the remote location of the gas supply and high estimated cost of bringing the gas to market. . . . [I]f the Alaska LNG Project was not constructed, DOE considers it unlikely that an alternative LNG export project would be constructed to access natural gas reserves on the North Slope in the foreseeable future.”).

⁵¹ Order 3643-C at 22, fn. 106 (citing FSEIS at S-7).

Action Alternative 2).⁵² DOE suggests that these extremes represent the Project’s least possible and greatest possible adverse impacts on the climate, respectively. If No Action Alternative 1 were accurate, DOE estimates there would be no adverse impact on or even a net benefit to the climate.⁵³ If No Action Alternative 2 were accurate, on the other hand, the climate impacts would be dramatic and adverse, adding between 1,500 and nearly 2,000 MMmt GHGs to the atmosphere.⁵⁴ DOE acknowledges that both scenarios are “unlikely,”⁵⁵ and therefore the Project’s true impacts likely fall somewhere in the middle. However, DOE maintains there is such significant uncertainty about the future of the energy market that the Department is “unable to conclude that either [scenario] . . . is more accurate.”⁵⁶ This leads DOE to characterize the Project’s climate impacts as “highly uncertain,” in contrast to the Project’s purported benefits.⁵⁷

DOE can do better than merely identify these two extremes and state that the truth is somewhere in the middle. Modeling submitted by the applicant predicts *where* in the middle impacts would likely fall. Specifically, National Economic Research Associates (NERA) predicted that roughly two thirds of Project exports would constitute a net increase in U.S. LNG export totals, and that the remaining third would displace Lower 48 exports.⁵⁸ Intervenors submitted comments on the draft supplemental environmental impact statement (DSEIS) pointing out that this modeling could be used to more accurately estimate the Project’s GHG

⁵² *Id.* at 23–24.

⁵³ *Id.* at 23.

⁵⁴ FSEIS at S-9, Tbl. S-2.

⁵⁵ Order 3643-C at 24.

⁵⁶ Amended Record of Decision, Order 3643-C at 41.

⁵⁷ Order 3643-C at 25.

⁵⁸ NFTA Application, App. F at 42 (“As a result of Alaska developing the [North Slope] and exporting 0.93 Tcf of natural gas per year after 2025, total U.S. exports of LNG are approximately 0.6 Tcf higher than in the Baseline.”).

emissions.⁵⁹ And indeed, DOE has relied on other NERA modeling, using the same tools and methodology, to analyze the macroeconomic impacts of exports from the Lower 48.⁶⁰ Yet, DOE failed to explain why this modeling could not offer a more realistic picture of the Project's impacts.

Despite claiming that it cannot conclude either no action alternative is more accurate,⁶¹ DOE states inconsistently, and without any apparent support, that “in DOE’s judgment the GHG emissions and related climate impacts associated with Alaska LNG’s exports—at the very least, those in the near to medium years of the approximately 33-year export period—are likely to be closer to the difference between No Action Alternative 1 and the Project scenarios.”⁶² In other words, despite the fact that the FSEIS provides no basis for selecting either extreme, or any point in between, DOE vaguely asserts that the Project’s impacts will be closer to the best case scenario than the worst from a climate perspective. This blindly optimistic statement further undercuts DOE’s weighing of climate impacts. It is inconsistent with the NERA modeling which predicts more than half the Project’s exports would represent a net increase in U.S. LNG exports. And, it endorses without explanation a scenario that is closer to perfect substitution, which courts have rejected as economically unsound.⁶³

E. DOE Cannot Ignore the Project’s Adverse Climate Impacts Even if the Project Substitutes for Foreign Fossil Fuels.

As the example of the NERA modeling shows, DOE has tools to estimate the extent to which the Project’s gas will substitute for other U.S. LNG; even if DOE were to conclude it is

⁵⁹ See DSEIS Comments at 7-8.

⁶⁰ See, e.g., DOE, Office of Fossil Energy, Order and Opinion, *Epsilon LNG, LLC*, DOE/FE Order No. 4629, FE Dkt. No. 20-31-LNG (Dec. 8, 2020), <https://www.energy.gov/sites/prod/files/2020/12/f81/ord4629.pdf>.

⁶¹ Amended Record of Decision, Order 3643-C at 41.

⁶² Order 3643-C at 24-25.

⁶³ DSEIS Comments at 8-10.

more likely that the Project's gas would instead substitute for foreign fossil fuels, however, the Department could not end its analysis of climate impacts there. DOE would need to account for current global energy trends that increasingly emphasize renewable energy⁶⁴ and, especially in Europe, reduce reliance on fossil fuels.⁶⁵ And, as with domestic gas, DOE could not assume perfect substitution.

Nor could DOE ignore the Project's substantial direct and upstream GHG emissions that would occur on U.S. soil. These emissions will hinder the ability of the U.S. to attain the Administration's stated emission targets and to comply with international commitments. If the Project substitutes for foreign fossil fuels, then the gas exported would come from what is, from a domestic perspective, new gas production, thereby increasing the U.S.'s domestic GHG emissions at a time when the Administration has committed to achieving a net zero emissions economy by 2050⁶⁶ and to reducing GHG emissions to 50–52 percent below 2005 levels by 2030.⁶⁷ The U.S. has also made commitments to reduce its territorial GHG emissions under the

⁶⁴ FSEIS, App. C at 10-11.

⁶⁵ Ferris 2023; K. Abnet, *EU strikes deal to curb energy use by 2030*, REUTERS (Mar. 10, 2023), <https://www.reuters.com/business/energy/eu-reaches-agreement-to-reduce-energy-consumption-eu-level-by-117-2030-2023-03-10/>; S. Petrequin, *EU climate czar: Putin's war accelerated green transition*, AP NEWS (Feb. 21, 2023), <https://apnews.com/article/russia-ukraine-putin-politics-european-union-europe-b38199c0e8410df19274be163906b36f>.

⁶⁶ The White House, *FACT SHEET: President Biden to Catalyze Global Climate Action through the Major Economies Forum on Energy and Climate* (Apr. 20, 2023), <https://www.whitehouse.gov/briefing-room/statements-releases/2023/04/20/fact-sheet-president-biden-to-catalyze-global-climate-action-through-the-major-economies-forum-on-energy-and-climate/>

⁶⁷ *Id.*; The White House, *FACT SHEET: President Biden Sets 2030 Greenhouse Gas Pollution Reduction Target Aimed at Creating Good-Paying Union Jobs and Securing U.S. Leadership on Clean Energy Technologies* (Apr. 22, 2021), <https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-president-biden-sets-2030-greenhouse-gas-pollution-reduction-target-aimed-at-creating-good-paying-union-jobs-and-securing-u-s-leadership-on-clean-energy-technologies/>.

Paris and Copenhagen agreements.⁶⁸ Additionally, exporting fossil fuels for combustion in other countries is contrary to the goal of assisting other nations in reducing their own GHG emissions. In view of those commitments and international agreements, and in the midst of an undeniable climate crisis, the U.S. should not be enabling additional fossil fuel use or assuming, contrary to basic economic principles, that only demand-side actions will influence global energy use.

II. DOE’S ORDER RESTS ON AN FSEIS THAT DOES NOT COMPLY WITH NEPA.

A. The FSEIS’s Purpose and Need Statement Does Not Comply with NEPA.

The FSEIS does not comply with NEPA because DOE adopts the Project applicant’s characterization of the purpose and need instead of independently evaluating the Project’s purpose in light of the Natural Gas Act.

The purpose and need statement in an EIS drives the selection of alternatives. It cannot be so narrow that only one alternative—the proposed action—will suffice.⁶⁹ Such a narrow purpose and need “prevent[s] an agency from considering alternatives that do not meet an applicant’s stated goals, but better meet the policies and requirements set forth in NEPA and the agency’s

⁶⁸ United Nations, Compilation of economy-wide emission reduction targets to be implemented by Parties included in Annex I to the Convention, Framework Convention on Climate Change (June 7, 2011), <https://unfccc.int/resource/docs/2011/sb/eng/inf01r01.pdf>; United Nations, Paris Agreement to the United Nations Framework Convention on Climate Change, Dec. 12, 2015, T.I.A.S. No 16-1104 (2015), https://unfccc.int/sites/default/files/english_paris_agreement.pdf.

⁶⁹ See, e.g., *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 196 (D.C. Cir. 1991) (“[A]n agency may not define the objectives of its action in terms so unreasonably narrow that only one alternative from among the environmentally benign ones in the agency’s power would accomplish the goals of the agency’s action, and the EIS would become a foreordained formality.”).

statutory authority and goals.”⁷⁰ Agencies must consider such reasonable alternatives even if those alternatives are outside their jurisdiction.⁷¹

Here, the purpose and need statement is unlawful because it merely restates the applicant’s objective and is crafted so narrowly that the only alternatives that could satisfy it are those with substantially similar components and environmental impacts.⁷² As a result, DOE failed to consider reasonable alternatives that would provide similar benefits with different, and potentially less severe, environmental impacts. This approach is “inconsistent with fully informed decision making and sound environmental analysis,”⁷³ as well as the basic purposes of an EIS.⁷⁴

In particular, the unlawfully narrow purpose and need prevented DOE from including a renewable energy alternative or seriously considering a no action alternative, either of which is far more likely to serve the public interest than the Project itself. For example, DOE rejected the no action alternatives because they did not meet the applicant’s objective “to commercialize natural gas resources on the North Slope to bring LNG from Alaska to foreign markets and provide interconnections along the pipeline to allow for in-state gas deliveries.”⁷⁵ DOE consequently did not adequately consider how authorizing a massive fossil fuel project can possibly be squared with the science that overwhelmingly shows that all Arctic fossil fuel

⁷⁰ 87 Fed. Reg. 23,453, 23,459 (Apr. 20, 2022).

⁷¹ See, e.g., *Natural Res. Def. Council v. Morton*, 458 F.2d 827, 834–36 (D.C. Cir. 1972) (holding that the agency’s environmental impact statement violated NEPA because it failed to consider alternatives outside of the Department of the Interior’s jurisdiction); *Sierra Club v. Lynn*, 502 F.2d 43, 62 (5th Cir. 1974) (“The agency must consider appropriate alternatives which may be outside its jurisdiction or control, and not limit its attention to just those it can provide...”) (citation omitted); 87 Fed. Reg. at 23,459.

⁷² FSEIS at 1-7 to 1-8.

⁷³ 87 Fed. Reg. at 23,458.

⁷⁴ 40 C.F.R. § 1502.1.

⁷⁵ Amended Record of Decision, Order 3643-C at 38.

reserves must be classified as “unburnable”⁷⁶ and that “[a]ny further delay in concerted anticipatory global action on adaptation and mitigation will miss a brief and rapidly closing window of opportunity to secure a liveable and sustainable future for all.”⁷⁷

The question of whether a project is consistent with the public interest must be informed by knowledge of what alternatives exist that could serve the same broader policy aims of the Natural Gas Act, which extend far beyond a for-profit applicant’s business purpose.⁷⁸ NEPA review does not exist in a silo from an agency’s substantive decisionmaking under another statute; its purpose in this case is to ensure that DOE’s decisionmaking under the Natural Gas Act is fully informed.⁷⁹ Unquestioningly adopting an applicant’s objective as the purpose and need improperly excludes discussion of alternatives that would help inform the substantive decision the Natural Gas Act charges DOE with making, thereby undercutting NEPA’s important informational role and turning environmental review into a formalistic check-the-box exercise.

B. The FSEIS Lacks a True No Action Alternative.

The FSEIS violates NEPA because it does not contain a true no action alternative. Instead, the FSEIS only presents as “different perspectives” the two most extreme possible no action scenarios, both of which DOE acknowledges are unlikely to actually occur.⁸⁰ This

⁷⁶ C. McGlade & P. Ekins, *The geographical distribution of fossil fuels unused when limiting global warming to 2°C*, 517 NATURE 187 (2015).

⁷⁷ *Synthesis Report of the IPCC Sixth Assessment Report* at 55, https://report.ipcc.ch/ar6syrr/pdf/IPCC_AR6_SYR_LongerReport.pdf.

⁷⁸ *See Citizens Against Burlington*, 938 F.2d at 196 (“[A]gencies must look hard at the factors relevant to the definition of purpose,” including “the views of Congress . . . in the agency’s statutory authorization to act” and then “must define goals for its action that fall somewhere within the range of reasonable choices.”); *see also League of Wilderness Defs. v. U.S. Forest Serv.*, 689 F.3d 1060, 1070 (9th Cir. 2012).

⁷⁹ *See* 87 Fed. Reg. at 23,458-59.

⁸⁰ FSEIS at S-7; Order 3643-C at 24.

precludes DOE from reaching any meaningful conclusion about the Project's impacts on the climate.

Every EIS must contain a no action alternative—an analysis of the world as it would be if the agency did not approve the proposed action.⁸¹ The no action alternative provides a critical baseline without which it is impossible to meaningfully assess a project's environmental impacts.⁸² Where an agency has discretion to disapprove a proposed action, the no action alternative also represents a possible outcome that the agency must at least consider choosing.⁸³

The FSEIS fails to identify any single no action alternative, and instead presents two admittedly implausible descriptions of what could happen if the Project is not approved. In DOE's No Action Alternative 1, other sources of LNG perfectly substitute for the Project's output.⁸⁴ In DOE's No Action Alternative 2, the Project is not built and its output is not substituted by other sources of LNG.⁸⁵ DOE admits both scenarios are unlikely; No Action Alternative 1 understates the Project's emissions, while No Action Alternative 2 overstates the Project's emissions.⁸⁶ DOE states that it cannot say which is more realistic.⁸⁷

⁸¹ 40 C.F.R. § 1502.14(c); 46 Fed. Reg. 18,026, 18,027 (Mar. 23, 1981).

⁸² See *Ctr. for Biological Diversity v. U.S. Dep't of Interior*, 623 F.3d 633, 642 (9th Cir. 2010) (quoting *Friends of Southeast's Future v. Morrison*, 153 F.3d 1059, 1065 (9th Cir. 1998)).

⁸³ Cf. *Anglers of the Au Sable v. U.S. Forest Serv.*, 565 F. Supp. 2d 812, 816, 834-36 (E.D. Mich. 2008) (holding that Forest Service arbitrarily and capriciously failed to take a hard look at no action alternative when it “mistakenly considered itself obligated by both policy and by the terms of [an existing] lease to adopt an action alternative”).

⁸⁴ See FSEIS at S-7 (explaining that No Action Alternative 1 “represents the same amount of LNG being supplied to the market”); Order 3643-C at 24.

⁸⁵ See FSEIS at S-7 (explaining that No Action Alternative 2 “intentionally excludes GHG emissions from energy production . . . to meet equivalent LNG (and crude oil) services”); Order 3643-C at 24.

⁸⁶ Order 3643-C at 23-24.

⁸⁷ Amended Record of Decision, Order 3643-C at 41 (“Given the complexity of energy markets and the uncertain substitution effects related to the Project's LNG production capacity that could occur in those markets, DOE is unable to conclude that either one of the No Action Alternatives is more accurate.”).

DOE's failure to identify any realistic no action alternative, or to adequately explain why one could not be identified, violates NEPA. DOE asserts that providing two unrealistic alternatives "provides decision makers and the public with a wider range of useful information in order to assess potential emissions."⁸⁸ However, the only information the no action discussion provides about the Project's life cycle climate impacts is that if the Project is built, its effect on global GHG emissions will fall somewhere between a marginal reduction and a huge addition representing 100 percent of the Project's direct and indirect emissions. This goes no further than identifying the best and worst imaginable scenarios; such a wide range of potential outcomes provides no basis to weigh the Project's climate impacts against its purported benefits.

DOE argues that uncertainty about the future of the energy market is too great to be more specific.⁸⁹ However, NEPA does not permit an agency to simply shrug its shoulders in the face of uncertainty.⁹⁰ Even if DOE could not reasonably predict a realistic no action scenario, the Department was required to document the reasons that information could not be obtained and make reasonable efforts to estimate the scenario based on generally accepted methods.⁹¹ Intervenors commented on the DSEIS that, at minimum, DOE could use the NERA modeling the applicant submitted as a basis for describing a more realistic no action scenario.⁹² As explained *supra* pp. 16-17, DOE relied on that modeling to identify the Project's potential economic benefits, and has a history of relying on NERA modeling in other matters. Yet, DOE did not use the NERA modeling to evaluate a no action scenario and did not provide any reason for failing to

⁸⁸ *Id.* at 42.

⁸⁹ Order 3643-C at 22, 24; FSEIS at 2-24.

⁹⁰ *See infra* pp. 25-29.

⁹¹ *Id.*

⁹² DSEIS Comments at 10.

use it or any other method to provide a more realistic no action scenario. This was arbitrary and contrary to NEPA.

As Intervenors⁹³ and U.S. Environmental Protection Agency (EPA) commented⁹⁴ on the DSEIS, No Action Alternative 1 violates NEPA because it assumes perfect substitution of the Project's gas for other fossil fuels. Courts have repeatedly, and categorically, rejected agency attempts to rely on perfect substitution to conclude that permitting fossil fuels production or transportation infrastructure will result in no or minimal GHG emissions. Perfect substitution “contradict[s] basic economic principles,”⁹⁵ is “illogical,” and “places the [agency's] thumb on the scale by inflating the benefits of the action while minimizing its impacts.”⁹⁶

To the extent that DOE is continuing to rely on No Action Alternative 1 in its decisionmaking, and is merely obscuring that reliance by also including No Action Alternative 2, its decisionmaking remains as unlawful as if DOE had only included the perfect substitution assumption. While the record of decision (ROD) states “DOE is unable to conclude that either one of the No Action Alternatives is more accurate,”⁹⁷ the Order opines without explanation that the GHG and climate impacts “are likely to be closer to the difference between No Action Alternative 1 and the Project scenarios.”⁹⁸ Aside from being unsupported and inconsistent with the analysis in the FSEIS,⁹⁹ DOE's prediction of a scenario closer to perfect substitution

⁹³ *Id.* at 8–10.

⁹⁴ FSEIS, App. D at D-86 to D-87, D-89.

⁹⁵ *WildEarth Guardians v. Bureau of Land Mgmt.*, 870 F.3d 1222, 1237–38 (10th Cir. 2017).

⁹⁶ *Montana Env't Info. Center v. U.S. Office of Surface Mining*, 274 F. Supp. 3d 1074, 1098 (D. Mont. 2017); *see also High Country Conservation Advocs. v. U.S. Forest Service*, 52 F. Supp. 3d 1174, 1197–98 (D. Colo. 2014) (noting that additional supply impacts demand, and fuels that would otherwise be left in the ground will be burned).

⁹⁷ Amended Record of Decision, Order 3643-C at 41.

⁹⁸ Order 3643-C at 24–25.

⁹⁹ *See, e.g.*, FSEIS at 4.19-6 (stating that DOE “takes no position on whether there will be a market demand for the LNG produced by the Alaska LNG Project”).

inappropriately minimizes the Project’s climate impacts. At best, it is arbitrarily optimistic. At worst, it is an unlawful attempt to circumvent case law that precludes DOE from relying on perfect substitution.

C. The FSEIS Does Not Comply with NEPA Regulations Regarding Missing Information.

The FSEIS does not comply with the requirements in CEQ’s regulations addressing how agencies must handle incomplete or unavailable information.¹⁰⁰ When “information relevant to reasonably foreseeable significant adverse impacts” is available, and not unreasonably costly to obtain, an agency preparing an EIS must include that information.¹⁰¹ If the information cannot be obtained, or is unreasonably expensive to obtain, the agency must include: “a statement that such information is incomplete or unavailable”; a statement of the relevance of that information to evaluating the project’s reasonably foreseeable impacts; a summary of existing credible scientific evidence relevant to evaluating those impacts; and the “agency’s evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community.”¹⁰² The FSEIS falls short of this requirement.

As discussed above, the FSEIS does not even attempt to make specific projections of the market demand for LNG exports from the Project which could serve as the basis for more precise GHG emissions estimates, instead providing two bookends and stating that it takes “no position” on whether one, the other, or some point in the middle represents reality.¹⁰³ DOE ignored the option of relying on the NERA modeling submitted by the applicant, which projected that two-thirds of the Project’s exports would represent an increase in overall United States LNG supply

¹⁰⁰ 40 C.F.R. § 1502.21.

¹⁰¹ *Id.* § 1502.21(b).

¹⁰² *Id.* § 1502.21(c).

¹⁰³ FSEIS at 4.19-6.

and one-third would displace other sources.¹⁰⁴ This information was obviously available to DOE, and DOE relied on it to describe the Project’s economic benefits, in addition to using NERA modeling in other proceedings.¹⁰⁵ It was arbitrary for DOE not to even consider it as an option.¹⁰⁶ DOE also failed to explain why, in the alternative, it could not complete its own modeling.

In addition, while the FSEIS discloses there is a lack of specific information about planned upstream development on the North Slope, including new pads, wells, access roads, and pipelines¹⁰⁷—the first step required by CEQ’s regulations when information is incomplete or unavailable—it does not adequately discuss the relevance of this information to the Department’s decisionmaking, nor does it provide the Department’s evaluation of these impacts based on theoretical approaches or generally accepted research methods.¹⁰⁸ The FSEIS was completed without site-specific surveys of water resources,¹⁰⁹ wetlands,¹¹⁰ or wildlife,¹¹¹ and “no floodplain mapping exists for the North Slope.”¹¹² Absent such information, the FSEIS does not adequately explain how DOE was able to evaluate the significance of upstream development impacts or rationally weigh these adverse impacts against the Project’s supposed benefits. As discussed above, *see supra* Section I.C, upstream impacts to the North Slope comprise one of the two categories of impacts DOE reviewed in the first instance in the FSEIS, yet DOE’s order

¹⁰⁴ *See supra* pp. 16-17.

¹⁰⁵ *Id.*

¹⁰⁶ 40 C.F.R. § 1502.21.

¹⁰⁷ FSEIS at 4.21-1 (discussing incomplete and unavailable information); *see also, e.g., id.* at 4.1-2 (“the exact locations of the components of the PTU Expansion Project are unknown at this time”).

¹⁰⁸ 40 C.F.R. § 1502.21.

¹⁰⁹ FSEIS at 4.3-4.

¹¹⁰ *Id.* at 4.4-2.

¹¹¹ *Id.* at 4.6-2 to 4.6-3.

¹¹² *Id.* at 4.3-5.

summarily dismisses these impacts.¹¹³ The FSEIS does not contain an adequate analysis of these impacts to support reasoned decisionmaking.

DOE's FSEIS also does not adequately disclose or analyze the climate forcing effects of the significant black carbon emissions associated with the Project, including upstream infrastructure. Although the FSEIS estimates particulate matter emissions associated with proposed alternatives, it does not disclose any information about what component of those emissions are black carbon or adequately analyze black carbon's climate forcing impacts.

Black carbon impacts the reflectiveness of ice and snow surfaces, increases melting rates, and exacerbates warming.¹¹⁴ A growing body of scientific literature identifies black carbon, a component of fine particulate matter (PM_{2.5}), as a critical climate forcing agent, and suggests that reducing these emissions may be among the most effective near-term strategies for slowing Arctic warming and the melting of sea ice, the Greenland ice sheet, and glaciers and snow pack around the world.¹¹⁵ It has been estimated that the "soot effect on snow albedo may be responsible for a quarter of observed global warming."¹¹⁶ One study indicates that the direct warming effect of black carbon on snow can be three times as strong as that due to carbon dioxide during springtime in the Arctic.¹¹⁷ And scientists have described the average global

¹¹³ Amended Record of Decision, Order 3643-C at 44-45, 50.

¹¹⁴ See DSEIS Comments at 27-28.

¹¹⁵ V. Ramanathan & G. R. Carmichael, *Global and Regional Climate Changes Due to Black Carbon*, NATURE GEOSCIENCE (April 2008).

¹¹⁶ J. Hansen, & L. Nazarenko, *Soot Climate Forcing Via Snow and Ice Albedos*, 101 PROC. OF THE NAT'L ACAD. OF SCI. 423 (Jan. 13, 2004).

¹¹⁷ M.G. Flanner *et al.*, *Present-day climate forcing and response from black carbon in snow*, 112 J. GEOPHYS. RES. D11202, doi:10.1029/2006JD008003 (2007).

warming potential of black carbon as about 500 times that of carbon dioxide over a 100-year period.¹¹⁸

The FSEIS acknowledges that black carbon is harmful to human health and the climate,¹¹⁹ but does not analyze the magnitude of its impacts in relation to this Project. Black carbon is included in the Project's estimated PM2.5 emissions, but "[b]lack carbon emissions were not separately quantified due to the lack of available emission factors specific to black carbon."¹²⁰ The FSEIS asserts "there is considerable uncertainty regarding the climate forcing effects of black carbon, and the [Intergovernmental Panel on Climate Change] and USEPA have not published global warming potential values for black carbon to allow these effects to be quantified."¹²¹ The FSEIS offers no further discussion about the potential magnitude of impacts from this Project due to black carbon.

The mere existence of uncertainty does not excuse FERC from providing information about the magnitude of reasonably foreseeable Project impacts caused by black carbon. FERC's

¹¹⁸ J. Hansen *et al.*, *Dangerous human-made interference with climate: A GISS modelE study*, 7 *ATMOS. CHEM. PHYS.* 2287-2312 (draft Oct. 13, 2008); *see also* M.S. Reddy & O. Boucher, *Climate impact of black carbon emitted from energy consumption in the world's regions*, 34 *GEOPHYS. RES. LETT.* L11802, doi:10.1029/2006GLO28904 (2007) (Reddy 2007).

¹¹⁹ FSEIS at 3.15-4 (describing potential health impacts from black carbon in general terms, but not estimating impacts from this Project); *id.* at 3.19-4 (describing the potential climate change impacts of black carbon in general terms, but not estimating impacts from this Project).

¹²⁰ *Id.* at 4.15-6.

¹²¹ *Id.* at 4.19-5.

brief discussion does not satisfy NEPA’s requirements for missing information and does not constitute the required hard look at impacts.¹²²

D. The FSEIS Makes Unsupported Assertions About Byproduct CO₂ Injection.

The FSEIS makes unsupported assertions about byproduct CO₂ injection and still contains many of the flaws that Intervenors identified in the DSEIS. These flaws conceal and understate the potential for additional emissions resulting from byproduct CO₂.

DOE’s estimates of byproduct CO₂ that would be stored continue to ignore the fact that while the same amount of CO₂ will be injected in Scenarios 2 and 3, different amounts will be actually stored.¹²³ Neither sequestration nor enhanced oil recovery (EOR) permanently stores all of the injected CO₂; in both cases, some CO₂ returns to the atmosphere. As the appendices to the FSEIS recognize, EOR is generally understood to result in a much higher amount of returned CO₂.¹²⁴ The FSEIS does not acknowledge this reality, which makes it impossible for the public to understand the true extent that either sequestration or EOR can mitigate the Project’s

¹²² See 40 C.F.R. § 1502.21; *Pub. Emps. for Env’t Resp. v. Hopper*, 827 F.3d 1077, 1082 (D.C. Cir. 2016); *Gov’t of the Province of Man. v. Salazar*, 691 F. Supp. 2d 37, 45 (D.D.C. 2010) (“An agency’s primary duty under the NEPA is to ‘take a ‘hard look’ at environmental consequences.”) (*quoting Pub. Utils. Comm’n v. FERC*, 900 F.2d 269, 282 (D.C. Cir. 1990)). In estimating operational emissions, the FSEIS also continues to rely on a resource report prepared by AGDC in 2017 that purports to analyze the “air quality impacts associated with upstream development activities at the [Point Thomson Unit (PTU)] and the [Prudhoe Bay Unit (PBU)].” FSEIS at 4.15-9, Tbl. 4.15-9 (citing AGDC. 2017. Resource Report 9, Air and Noise Quality. Accessed on April 15, 2022 at <https://alaskalng.com/regulatory-process/ferc-application-exhibits/resource-reports/>). However, that air quality impacts report looks only at emissions associated with injection of byproduct into the PBU, *see* FSEIS at 4.15-2; it does not analyze emissions from Proposed Action Scenarios 2 and 3 at all because those scenarios were not contemplated until the DSEIS was prepared. To foster transparency and informed decisionmaking, the FDSEIS must show its work and present the underlying data for the summary tables in the FDSEIS, including how DOE extrapolated from a study that did not include any equipment, emission factors, or construction timing information for two of the scenarios now under consideration.

¹²³ FSEIS at 2-21 to 2-22, Tbls. 2.2-1 & 2.2-2.

¹²⁴ *See id.*, App. C at 23-24 (Exs. 3-5, 3-6).

emissions. DOE's vague treatment of the issue also makes it unclear whether DOE consistently considered the differences between sequestration and EOR in its own ultimate evaluation.

DOE continues to rely on optimistic and unsupported figures regarding the effectiveness of sequestration and EOR. For the emission rate for EOR, the FSEIS's Appendix C relies on a 2019 publication that just provided a model that could be parameterized with different emission rates; although the model includes a default rate, it does not demonstrate the basis for, or appropriateness of, this default.¹²⁵ Appendix C's assumptions about oil produced per kg of CO₂ injected also appear more optimistic than prior work by the same author.¹²⁶ Similarly, for sequestration under Scenario 2, the FSEIS's estimate of the amount of injected CO₂ that will return to the surface (1.4 percent, or 13.9 kg per 1000 kg of CO₂ injected) appears to simply be a guess, without any empirical or actual-practice data.¹²⁷

It is also still unclear why the exhibits in Appendix C present inconsistent CO₂-EOR values in the tables for the Japan, South Korea, China, and India analyses.¹²⁸

DOE's adoption of a requirement for certification that no byproduct CO₂ is vented does not alleviate the concerns Intervenor raised about CO₂ venting in their DSEIS comments. DOE's order adopts a new condition, recommended in the FSEIS,¹²⁹ requiring that the Project regularly certify gas export "did not result in the venting of byproduct carbon dioxide (CO₂) into

¹²⁵ *Id.* at 23–24, 72 (citing Jamieson, M. & Skone, T. J., *Carbon Dioxide Enhanced Oil Recovery Life Cycle (CELiC) Model*, National Energy Technology Laboratory (2019)).

¹²⁶ Cooney *et al.*, *Evaluating the Climate Benefits of CO₂-Enhanced Oil Recovery Using Life Cycle Analysis*, 49 *Environ. Sci. Technol.* 2015, 7491-7500, DOI: 10.1021/acs.est.5b00700 (2015).

¹²⁷ FSEIS, App. C at 23, Ex. 3-5 (citing Littlefield, J. *et al.*, *Life Cycle Analysis of Natural Gas Extraction and Power Generation*, United States: National Energy Technology Laboratory (2019)).

¹²⁸ *Id.* at A-18 to A-21 (Exhibits A-17 to A-20),

¹²⁹ FSEIS at 4.19-12.

the atmosphere, unless required for emergency, maintenance, or operational exigencies and in compliance with the FERC Order.”¹³⁰ However, it is unclear that this requirement to avoid venting applies to later steps in the process—the transport, injection, and long-term geologic storage of CO₂—rather than just the steps involving separating the CO₂ from the methane and routing it to a transmission pipeline. If venting occurs at those later stages and is not subject to the certification requirement, the Project’s climate impacts could be greater than DOE assumes. In addition, the term “operational exigencies” is so vague that it is impossible to determine how broadly DOE will interpret this exception. For example, this exception might allow venting for years while sequestration or EOR equipment is offline without requiring Project proponents to make necessary repairs, again resulting in greater climate impacts than DOE’s analysis assumes and that were disclosed to the public.

E. The FSEIS Does Not Adequately Address Impacts from Proposed Carbon Storage on the North Slope.

The FSEIS treats seismic impacts from carbon storage on the North Slope in a cursory manner and does not adequately address safety issues related to carbon dioxide pipelines.

The FSEIS contains some discussion of seismic impacts, but ultimately dismisses these concerns.¹³¹ The FSEIS asserts that because CO₂ injection for EOR has been happening since 1988 and “the [Kuparuk River Unit (KRU)] and the North Slope are characterized as generally inactive in terms of seismicity” with “good reservoir seals,” the potential to induce seismic activity “is low in the KRU.”¹³² However, DOE does not adequately support that conclusion and ignores relevant information to the contrary. For example, the FSEIS dismisses as irrelevant the studies Intervenor cited in DSEIS comments showing correlation between CO₂ injection for

¹³⁰ Order 3643-C at 27; *see also id.* at 6-7, 26.

¹³¹ FSEIS at S-11, 4.1-2, 4.1-5 to 4.1-7.

¹³² *Id.* at 4.1-5 to 4.1-6.

EOR and seismic activity or earthquakes. Citing a study Intervenor discussed in their DSEIS comments, DOE states that these studies focused on CO₂ injection into “brittle rocks found within the continental interior, or the region between the Rocky Mountain and Appalachia-Ouachita fronts.”¹³³ However, DOE entirely ignores studies Intervenor pointed to that focused on induced seismicity in Japan and across the globe.¹³⁴

In addition, recent studies from the North Slope show that it is a seismically active region with the capacity for large earthquakes such as the magnitude 6.4 and 6.0 earthquakes in 2018,¹³⁵ and that “these earthquakes illustrate the potential for larger, possibly destructive events in a region earmarked for rapid resource development.”¹³⁶ These studies also note that many faults are still unmapped; for example, the magnitude 6.4 earthquake occurred on a fault whose existence was unknown prior to the event. An array of new seismic monitoring stations installed in northern Alaska in 2014–2017 provide detailed information on earthquake activity in the region. One 2020 study reported that in 2018–2019, more than 4,000 earthquakes between magnitudes 1 and 4.3 were recorded in an earthquake swarm in the Eastern Brooks Range.¹³⁷ DOE’s cursory dismissal of seismic impacts fails to account for this information and does not constitute a hard look.¹³⁸

¹³³ *Id.* at 4.1-5 (citing Zoback, M.D., & S.M. Gorelick, *Earthquake Triggering and Large-Scale Geologic Storage of Carbon Dioxide*, (2012) 109 PNAS 10164-68).

¹³⁴ DSEIS Comments at 33, n.162.

¹³⁵ Gaudreau, É. *et al.*, *The August 2018 Kaktovik Earthquakes: Active Tectonics in Northeastern Alaska Revealed With InSAR and Seismology*, 46 *Geophys. Res. Lett.* 14412-14420 (2019); Gibbons, S. *et al.*, *Resolving Northern Alaska Earthquake Sequences Using the Transportable Array and Probabilistic Location Methods*, 91 *Seismol. Res. Lett.* 3028 (2020); Xu, G. *et al.*, *The Complexity of the 2018 Kaktovik Earthquake Sequence in the Northeast of the Brooks Range, Alaska*, 47 *Geophys. Res. Lett.* e2020GL088012 (2020).

¹³⁶ Gaudreau, É. *et al.* at 14412.

¹³⁷ Gibbons, S. *et al.* at 3028.

¹³⁸ *Pub. Emps. for Env’t Resp.*, 827 F.3d at 1082.

The FSEIS also does not adequately address the safety issues related to carbon dioxide pipelines and potential leaks. While the FSEIS does mention the catastrophic CO₂ pipeline leak in Satartia, Mississippi, which sent dozens of people to the hospital and resulted in evacuation of a town in 2020,¹³⁹ it fails to fully engage with this risk and the unknowns surrounding CO₂ pipeline engineering.

Pipelines carrying supercritical liquid CO₂ are more susceptible to ductile fractures, and if a CO₂ pipeline's temperature reaches -20 degrees Fahrenheit or lower, there is a risk of catastrophic rupture as the steel becomes brittle.¹⁴⁰ CO₂ is a colorless, odorless gas, so leaks might not be detected quickly and people in the vicinity of a leak that displaces oxygen in the air may not realize they are in danger before they become disoriented. As DOE admits, “[t]he severity of potential accident consequences from CO₂ pipelines are [sic] highly dependent upon the location of a release in proximity to receptors, in addition to the size of the release... [,] atmospheric conditions..., and ultimately the potential for exposure to humans or wildlife.”¹⁴¹ Moreover, “many features of the potential pipelines that would be necessary to conduct a meaningful quantitative exposure analysis” for the Project “are unknown at time.”¹⁴² The FSEIS also acknowledges that there are relatively few existing miles of CO₂ pipeline in this country, and that there are no CO₂ pipelines recorded in the Pipelines and Hazardous Materials Safety Administration (PHMSA) 2020 annual report database for Alaska.¹⁴³

¹³⁹ FSEIS at 3.18-3.

¹⁴⁰ Pipeline Safety Trust, *CO₂ Pipelines – Dangerous and Under-Regulated*, (Mar. 30, 2022) (Pipeline Safety Trust 2022), <https://pstrust.org/wp-content/uploads/2022/03/CO2-Pipeline-Backgrounder-Final.pdf>.

¹⁴¹ FSEIS, App. D at D-39.

¹⁴² *Id.*

¹⁴³ FSEIS at 3.18-2 & Tbl. 3.18-1.

Despite these facts, DOE concludes that the risk of a pipeline rupture is low and that because of the remoteness of the area, there is also a low likelihood that humans or animals would be affected if a leak occurs.¹⁴⁴ This optimistic prediction is not adequately supported and does not constitute a hard look at the risks posed by potential CO₂ pipeline ruptures.¹⁴⁵

The FSEIS does not disclose how much CO₂ might be released under various scenarios and what that level of exposure would mean for species and the climate in addition to human health. The FSEIS should have provided this basic information, and indeed DOE has previously done so in an EIS that included a health risk assessment to analyze the potential harms associated with a much shorter, 3.36-mile CO₂ pipeline for a proposed project with an EOR component in California.¹⁴⁶

DOE also cannot satisfy its obligations under NEPA by relying on the regulations and judgments of other agencies. This is especially true in the case of CO₂ pipelines: PHMSA recently announced that it will start a new rulemaking process because its current safety requirements are inadequate to prevent and respond to emergencies related to CO₂ pipelines.¹⁴⁷ This announcement follows a report by the Pipeline Safety Trust, which concluded that existing federal regulations do not allow for the safe transportation of CO₂ via pipelines due to the unique

¹⁴⁴ *Id.*, App. D at D-39.

¹⁴⁵ *Pub. Emps. for Env't Resp.*, 827 F.3d at 1082.

¹⁴⁶ See Office of Fossil Energy & Carbon Mgmt., *Hydrogen Energy California Project draft Environmental Impact Statement* (June 30, 2013); Stantec, *Hydrogen Energy Center Application for Certification Amendment – Attachment D: Hazards Assessment of CO₂ Supply Line at 6-7* (Apr. 12, 2011).

¹⁴⁷ Pipeline & Hazardous Materials Safety Admin., PHMSA Announces New Safety Measures to Protect Americans From Carbon Dioxide Pipeline Failures After Satartia, MS Leak (May 26, 2022).

risks associated with transporting compressed CO₂ and the gaps in jurisdiction for pipelines carrying CO₂ at certain concentrations and states.¹⁴⁸

F. The FSEIS Does Not Adequately Address Methane Leakage from the Project.

DOE's analysis of methane leakage is inadequate because it relies on EPA data that undercounts methane emissions and because it does not clearly account for methane emissions from all life cycle stages. DOE's conclusion that different methane emission rates have only a modest impact on overall Project GHG emissions is based on a sensitivity analysis that does not clearly encompass the realistic range of leakage rates.

The EPA Greenhouse Gas Reporting Program data on which DOE relies has been demonstrated to consistently underestimate methane emissions. One study found national emissions from pipeline mains to be five times greater than EPA's estimate,¹⁴⁹ and another study found U.S. oil and gas supply chain emissions to be 60 percent higher than EPA's figure, likely due to EPA's failure to account for abnormal operating conditions.¹⁵⁰ Another recent study found that mean methane emissions from U.S. oil and gas production during the period from 2010 to 2019 were about 70 percent higher than EPA's emissions inventory estimates.¹⁵¹

As Intervenors noted in comments on the DSEIS, DOE does not provide information about the basis for its methane leakage analysis. The FSEIS contains neither the methane

¹⁴⁸ Pipeline Safety Trust 2022 (citing Accufacts Inc., *Accufacts' Perspectives on the State of Federal Carbon Dioxide Transmission Pipeline Safety Regulations as it Relates to Carbon Capture, Utilization, and Sequestration within the U.S.* (2022)).

¹⁴⁹ Weller, Z. D. *et al.*, *A National Estimate of Methane Leakage from Pipeline Mains in Natural Gas Local Distribution Systems*, 54 *Environ. Sci. Technol.* 8958 (2020).

¹⁵⁰ Alvarez, R. A. *et al.*, *Assessment of methane emissions from the U.S. oil and gas supply chain*, 361 *Science* 186 (June 21, 2018) (Alvarez 2018).

¹⁵¹ Lu, X. *et al.*, *Observation-derived 2010-2019 trends in methane emissions and intensities from US oil and gas fields tied to activity metrics*, *Proceedings of the National Academy of Sciences* (Apr. 17, 2023), <https://doi.org/10.1073/pnas.2217900120>.

emissions factors for each stage of the supply chain nor any other data on which the estimates are based.¹⁵² Therefore, there is no clear explanation of how the life cycle analysis reached its estimates of methane leakage rates. DOE’s analysis does not clearly account for methane emissions from each stage examined—gas extraction to pipeline transport, to liquefaction, to ocean transport, to power plant operations—because the potential for fugitive methane emissions is not discussed in each stage.¹⁵³ Methane emissions are still not listed as a key parameter in the production stage of the lifecycle analysis for the PBU,¹⁵⁴ despite the fact that roughly 85 percent of national methane emissions from the oil and gas supply chain are estimated to come from production, gathering, and processing,¹⁵⁵ while the appendix to the life cycle analysis includes emissions associated with extraction. The FSEIS therefore does not adequately disclose to the public the basis for DOE’s estimates, and it is not possible to determine whether these estimates are reasonable.

The FSEIS’s conclusion that variations in the methane leak rate have only a “modest” impact on total life cycle GHG emissions¹⁵⁶ remains unsupported because, as discussed above, it is unclear how the estimated leakage rates were reached and therefore remains unclear whether the sensitivity analysis considered a wide enough range of methane leak rates to capture the likely real-world emissions. The sensitivity analysis examined changes of ± 5 percent in methane emissions and found that “[f]or each of the countries [examined,] the total GHG emissions vary about 1.5 to 5 kg CO₂e/MWh electricity produced and 53 kg of crude-oil products consumed in either direction. This difference is representative of about 0.2 – 0.7 percent of total life cycle

¹⁵² DSEIS Comments at 35.

¹⁵³ FSEIS, App. C.

¹⁵⁴ *Id.* at 20, Ex. 3-1.

¹⁵⁵ Alvarez 2018.

¹⁵⁶ FSEIS, App. C at 68.

GHG emissions.”¹⁵⁷ DOE’s response to Intervenors’ critique of that analysis range does not actually address Intervenors’ point that actual methane emissions could likely be much more than 5 percent higher than the numbers DOE analyzed. DOE responds that the purpose of selecting the \pm 5 percent change was only to understand the effect of an arbitrary change in methane emissions on the results, and that the choice was “not intended to imply a known range of direct methane emissions uncertainty within the study.”¹⁵⁸ However, just because DOE intended the 5 percent range to be arbitrary does not mean it is a valid basis for DOE to draw conclusions about the real-world impact of variations in the methane leak rate, which might be much greater than 5 percent. If the methane leak variation rate DOE selected is arbitrarily modest, it stands to reason that its effect on total lifecycle emissions would likewise be arbitrarily modest. DOE must evaluate a realistic range of methane leak rates or explain why it would be prohibitively costly to do so.¹⁵⁹

G. The FSEIS’s Analysis of Overseas Impacts is Inadequate.

In evaluating the Project’s lifecycle emissions, DOE’s analysis of overseas impacts in is inadequate because it relies on unfounded assumptions about the identity of the destination countries, about whether those countries would use LNG with or without the Project, and about the use and efficacy of carbon capture equipment on power plants in those countries.

DOE still does not support the assumption carried over from the DSEIS that only Japan, South Korea, China, and India would receive exports from the Project. The FSEIS merely adds text noting that:

These four countries were chosen to represent geographically proximate delivery destinations from Alaska that, at the time of study initiation, were known or expected to be significant LNG

¹⁵⁷ *Id.*

¹⁵⁸ *Id.*

¹⁵⁹ *See supra* pp. 25-29; 40 C.F.R. § 1502.21.

importers. Note that the range of shipping distances to these specific countries (5,000 to 10,000 miles from Alaska) closely approximate those to other emerging LNG importers such as in Europe (about 10,000 miles away via the Panama Canal).¹⁶⁰

In 2022, the U.S. exported LNG by vessel to 38 countries, including countries in South America, the Caribbean, Europe, Asia, and the Middle East.¹⁶¹ If LNG was exported to a country farther away than the four analyzed—shipped to Pakistan instead of India, or to Bangladesh, Indonesia, or Singapore instead of Japan, South Korea, and China—emissions associated with shipping would be higher than those that were analyzed.

For purposes of No Action Alternative 1, the FSEIS also does not support DOE’s assumption that if these destination countries did not import Alaskan LNG, they would import gas from the Lower 48 or a location that is sufficiently similar in shipping distances and overall emissions that the Lower 48 is a reasonable proxy. In analyzing No Action Alternative 1, “DOE assumed the energy demand from foreign markets would remain and would be fulfilled by an alternate source of LNG from the global market. DOE modeled GHG emissions associated with the alternative source of LNG using the U.S. average production from the Lower 48 as a representative proxy.”¹⁶² This approach may inflate the overall emissions of No Action Alternative 1, making the Project’s emissions seem more favorable by comparison. Even though DOE admits No Action Alternative 1 is unlikely, DOE expects the Project’s climate impacts will likely be “closer to” the difference between No Action Alternative 1 and Project impacts.¹⁶³ Therefore, this unsupported assumption in No Action Alternative 1 may have skewed DOE’s decisionmaking.

¹⁶⁰ FSEIS at 4.19-2.

¹⁶¹ U.S. EIA, *U.S. Natural Gas Exports and Re-Exports by Country*, https://www.eia.gov/dnav/ng/NG_MOVE_EXPC_S1_A.htm (last visited May 11, 2023).

¹⁶² FSEIS at 4.19-2.

¹⁶³ Order 3643-C at 24-25.

DOE provides two scenarios relevant to end use carbon capture and sequestration (CCS)—that it either is, or is not, used on gas-fired power plants in destination countries—but its use scenario is entirely unrealistic. DOE concludes that using CCS would cut total lifecycle emissions approximately in half for each of the three Project scenarios,¹⁶⁴ an extreme underestimate of emissions that is based on unfounded assumptions about CCS capture rates, a failure to account for all the emissions associated with CCS, and wildly optimistic views about deployment of CCS in destination countries. DOE bases its emissions modeling on an idealized 90 percent carbon capture rate for gas combined cycle power plants in destination countries.¹⁶⁵

Real-world experience shows that much lower capture rates are typically achieved, however. For example, in July 2021, Chevron, operator of Australia’s only commercial-scale CCS project, admitted that its self-described “world’s biggest” CCS project failed to meet its five-year capture target rate of 80 percent CO₂, and is now seeking a deal with regulators on how to make up for millions of tons of CO₂ emitted.¹⁶⁶ Shell’s Quest project in Alberta, Canada, promised a rate of 90 percent and delivered just 48 percent.¹⁶⁷ In the United States, the Petra Nova coal-fired power plant in Texas achieved only a 65-70 percent CO₂ capture rate compared to the 90 percent promised,¹⁶⁸ before being shut down indefinitely for being uneconomic.

Additionally, a proper accounting of emissions from carbon capture would account for full lifecycle emissions—including combustion emissions from the gas or other fuel to power the

¹⁶⁴ FSEIS at 2-21, Tbl. 2.2-1.

¹⁶⁵ *Id.*, App. D at D-24.

¹⁶⁶ Mazengarb, M., Chevron admits failure of \$3 billion CCS facility in Western Australia, IEEFA (July 19, 2021).

¹⁶⁷ Meredith, S., *Shell’s massive carbon capture facility in Canada emits far more than it captures, study says*, CNBC (Jan. 24, 2022).

¹⁶⁸ Schlissel, D., *Reality of carbon capture not even close to proponents’ wishful thinking*, IEEFA (Aug. 8, 2019).

CCS equipment, and upstream emissions from producing that fuel—something DOE does not appear to have done. For example, a Stanford study of the lifecycle emissions associated with Petra Nova power plant CCS project found that “the [CCS] equipment captured the equivalent of only 10-11 percent of the emissions they produced, averaged over 20 years.”¹⁶⁹ This study also determined that when factoring in the resulting air pollution, potential health problems, economic costs, and climate change impacts, carbon capture created social costs as high or higher than a fossil fuel plant *without* carbon capture, concluding “it is always better to use the renewable electricity instead to replace coal or natural gas electricity or to do nothing.”¹⁷⁰ Capturing CO₂ is energy intensive, and power plants using carbon capture require approximately 15 to 25 percent more energy to produce the same amount of power they would without carbon capture.¹⁷¹ In addition to higher electricity costs, this additional fuel combustion can mean greater emissions of non-CO₂ air pollutants such as fine particulate matter, ammonia, hazardous volatile organic compounds, and other toxic pollutants that threaten the health of nearby communities.¹⁷² The energy required to capture, transport, and inject carbon underground for sequestration reduces the net benefit of carbon capture. Injecting captured carbon to boost oil extraction through EOR

¹⁶⁹ Kubota, T., *Stanford study casts doubt on carbon capture*, Stanford News (Oct. 25, 2019) (citing Jacobson, M. Z., *The health and climate impacts of carbon capture and direct air capture*, 12 *Energy Env't. Sci.* 3567 (2019)).

¹⁷⁰ *Id.* (also concluding “that the social cost of coal with carbon capture powered by natural gas was about 24 percent higher, over 20 years, than the coal without carbon capture,” and that “[o]nly when wind replaced coal itself did social costs decrease.”).

¹⁷¹ Climate Action Network International, Position: Carbon Capture, Storage and Utilisation at 9 (Jan. 2021); European Environment Agency, *Carbon capture and storage could also impact air pollution* (last modified Nov. 23, 2020) (European Environment Agency 2020).

¹⁷² *See, e.g.*, European Environment Agency 2020 (citing European Environment Agency, Air pollution impacts from carbon capture and storage (CCS), EEA Technical report No 14/2011 (2011)).

would further increase emissions; one modeling study estimated a coal-fired power plant using CCS with EOR would emit 3.7 to 4.7 times as much CO₂ as it removes.¹⁷³

It is also unrealistic to assume full deployment of CCS in the near term. The FSEIS itself admits that “[t]he technical viability of sequestering carbon from power generation in each destination country was also not evaluated as part of this study” and that “commercial deployment of carbon capture technology is new, with demonstration projects currently being supported by the U.S. Government.”¹⁷⁴ The FSEIS therefore concludes that “end use results without CCS are more likely to reflect existing electricity generating plants today, and the results with CCS are likely to be more representative of future electricity generation, with lower GHG emissions.”¹⁷⁵ Nonetheless, the FSEIS bases its low-end estimates for lifecycle GHGs from all three scenarios on this assumption, providing significant under-estimates of the Project’s emissions impacts.

The FSEIS briefly acknowledges that it does “not evaluate destination country geologic storage potential” for captured carbon.¹⁷⁶ It also completely fails to evaluate current or projected CCS capacity in these countries. Instead, the FSEIS vaguely states that “[t]here are movements within each of the countries to pursue the technology” and “CCS can reduce the impacts from existing infrastructure by retrofitting the existing fossil based power and industrial plants, or in the integrated design of new fossil plants, to capture the CO₂ emissions from these large point

¹⁷³ Jaramillo, P. *et al.*, *Life Cycle Inventory of CO₂ in an Enhanced Oil Recovery System*, 43 *Environ. Sci. and Technol.* 8027, 8030 (2009).

¹⁷⁴ FSEIS at 4.19-4.

¹⁷⁵ *Id.*

¹⁷⁶ *Id.*, App. C at 15.

source emitters.”¹⁷⁷ The FSEIS also briefly points to the IEA “Net Zero by 2050” report to assert that carbon capture on gas-fired power plants is expected to increase.¹⁷⁸

However, current and projected CCS deployment on power plants indicates that assuming full deployment of CCS in the near-term is unfounded. CCS industry data shows that as of 2021, there were no operational commercial gas-fired power plants with CCS anywhere in the world.¹⁷⁹ Further, three of the four destination countries—Japan, South Korea, and India—had no operating commercial CCS facilities of any type—on gas-fired power plants or otherwise. The entire country of China had only three operating commercial CCS facilities—none on a gas-fired power plant—that combined have a CO₂ capture capacity of 570,000 to 820,000 tons per year, with all captured CO₂ being used for EOR instead of geologic storage.¹⁸⁰ In addition, the IEA “Net Zero by 2050” report cited by the FSEIS projects a rapidly declining role for fossil fuels, including fossil gas, in the global power sector over the Project’s lifetime, signaling that the DOE’s assumption of a prominent, ongoing role for fossil gas, with or without CCS, is unfounded. In the power sector, the IEA projects that the share of renewables increases from 29 percent in 2020 to over 60 percent in 2030 to nearly 90 percent in 2050.¹⁸¹ As a share of total energy supply, fossil fuel use falls from 80 percent in 2020 to just over 20 percent in 2050.¹⁸² In short, based on current status and projected trends, there is no basis for the FSEIS to assume that

¹⁷⁷ *Id.*

¹⁷⁸ *Id.* at 11.

¹⁷⁹ Global CCS Institute, *Global Status of CCS 2021: CCS Accelerating to Net Zero* at 62-63 (5.1 COMMERCIAL CCS FACILITIES AND PROJECTS) (Oct. 2021), https://www.globalccsinstitute.com/wp-content/uploads/2021/10/2021-Global-Status-of-CCS-Report_Global_CCS_Institute.pdf.

¹⁸⁰ *Id.* at 62.

¹⁸¹ IEA 2021 at 114.

¹⁸² *Id.* at 57.

gas-fired power plants in the destination countries will be retrofitted with costly CCS equipment, making its lifecycle estimates using CCS unreliable.

COMMUNICATIONS

Pursuant to 10 C.F.R. § 590.107, all communications regarding this request should be addressed to and served upon the following:

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CONCLUSION

For the foregoing reasons, Intervenors respectfully request that this order be withdrawn and the underlying application denied, or in the alternative, that the order be withdrawn pending further inquiry and public process regarding the impact of the proposed exports.

Respectfully submitted this 15th day of May, 2023,

s/

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TABLE OF ATTACHMENTS

- Abnet, K., *EU strikes deal to curb energy use by 2030*, REUTERS (Mar. 10, 2023)
- Ferris, N., *Why LNG's current boom will only accelerate its ultimate demise*, ENERGY MONITOR (Apr. 6, 2023)
- Gaudreau, É. *et al.*, *The August 2018 Kaktovik earthquakes: Active tectonics in northeastern Alaska revealed with InSAR and seismology*, 46 Geophysical Research Letters (2019)
- Gibbons, S. *et al.*, *Resolving Northern Alaska earthquake sequences using the transportable array and probabilistic location methods*, 91 Seismol. Res. Lett. 3028 (2020)
- Intergovernmental Panel on Climate Change, *Synthesis Report of the IPCC Sixth Assessment Report*
- International Energy Agency (IEA), *Europe's energy crisis: What factors drove the record fall in natural gas demand in 2022?* (Mar. 14, 2023)
- Institute for Energy Economics and Financial Analysis (IEEFA), *Over half of Europe's LNG infrastructure assets could be left unused by 2030* (Mar. 21, 2023)
- Lu, X. *et al.*, *Observation-derived 2010-2019 trends in methane emissions and intensities from US oil and gas fields tied to activity metrics*, Proceedings of the National Academy of Sciences (Apr. 17, 2023)
- Petrequin, S., *EU climate czar: Putin's war accelerated green transition*, AP NEWS (Feb. 21, 2023)
- The White House, *FACT SHEET: President Biden Sets 2030 Greenhouse Gas Pollution Reduction Target Aimed at Creating Good-Paying Union Jobs and Securing U.S. Leadership on Clean Energy Technologies* (Apr. 22, 2021)
- The White House, *Fact Sheet: President Biden Signs Executive Order to Revitalize Our Nation's Commitment to Environmental Justice for All* (Apr. 21, 2023)
- The White House, *FACT SHEET: President Biden to Catalyze Global Climate Action through the Major Economies Forum on Energy and Climate* (Apr. 20, 2023)
- U.S. Energy Information Administration (EIA), *Annual Energy Outlook 2023* (Mar. 16, 2023)
- EIA, *U.S. Natural Gas Exports and Re-Exports by Country*
- Xu, G. *et al.*, *The complexity of the 2018 Kaktovik earthquake sequence in the northeast of the Brooks Range, Alaska*, 47 Geophysical Research Letters e2020GL088012 (2020)

UNITED STATES OF AMERICA

DEPARTMENT OF ENERGY

OFFICE OF FOSSIL ENERGY

IN THE MATTER OF)
)
Alaska LNG Project LLC) FE DOCKET NO. 14-96-LNG

VERIFICATION FOR CENTER FOR BIOLOGICAL DIVERSITY

Pursuant to 10 C.F.R. § 590.103(b), I, Elizabeth Jones, hereby verify under penalty of perjury that I am authorized to execute this verification, that I have read the foregoing document, and that the facts stated therein are true and correct to the best of my knowledge.

Executed on May 15, 2023,

s/

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UNITED STATES OF AMERICA

DEPARTMENT OF ENERGY

OFFICE OF FOSSIL ENERGY

IN THE MATTER OF

Alaska LNG Project LLC

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)

FE DOCKET NO. 14-96-LNG

VERIFICATION FOR COOK INLETKEEPER

Pursuant to 10 C.F.R. § 590.103(b), I, Erin Colón, as authorized representative for Cook Inletkeeper, affirm that I have read and have knowledge of the facts alleged within the foregoing REQUEST FOR REHEARING OF ORDER GRANTING AUTHORIZATION OF THE ALASKA LNG PROJECT.

Executed on May 15, 2023,

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UNITED STATES OF AMERICA

DEPARTMENT OF ENERGY

OFFICE OF FOSSIL ENERGY

IN THE MATTER OF

Alaska LNG Project LLC

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FE DOCKET NO. 14-96-LNG

VERIFICATION FOR SIERRA CLUB

Pursuant to 10 C.F.R. § 590.103(b), I, Nathan Matthews, as authorized representative for Sierra Club, affirm that I have read and have knowledge of the facts alleged within the foregoing REQUEST FOR REHEARING OF ORDER GRANTING AUTHORIZATION OF THE ALASKA LNG PROJECT.

Executed on May 15, 2023,

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UNITED STATES OF AMERICA

DEPARTMENT OF ENERGY

OFFICE OF FOSSIL ENERGY

IN THE MATTER OF

Alaska LNG Project LLC

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FE DOCKET NO. 14-96-LNG

CERTIFICATE OF SERVICE

Pursuant to 10 C.F.R. § 590.107, I hereby certify that on May 15, 2023, I caused the foregoing REQUEST FOR REHEARING OF ORDER GRANTING AUTHORIZATION OF THE ALASKA LNG PROJECT to be served on the applicant and all other parties by electronic mail.

Respectfully submitted this 15th day of May, 2023

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