**Nos. 20-1503 & 23-1214**

**IN THE UNITED STATES COURT OF APPEALS**
**FOR THE DISTRICT OF COLUMBIA**

CENTER FOR BIOLOGICAL DIVERSITY and SIERRA CLUB,
*Petitioners*,

v.

UNITED STATES DEPARTMENT OF ENERGY,
*Respondent*,

ALASKA GASLINE DEVELOPMENT CORPORATION and
ALASKA LNG PROJECT, LLC,
*Respondent-Intervenors*.

Petition for Review of United States Department of Energy Decisions

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# PETITIONERS' OPENING BRIEF

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## CERTIFICATE AS TO PARTIES, RULINGS, AND RELATED CASES

**(A) Parties and Amici.**

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|---|---|
| Petitioners: | Center for Biological Diversity |
| | Sierra Club |
| Respondent: | U.S. Department of Energy |
| Respondent-Intervenors: | Alaska Gasline Development Corporation |
| | Alaska LNG Project, LLC |
| Amici: | No individuals or entities have sought leave to participate as amicus curiae. |

**(B) Rulings Under Review.** The following orders are at issue in this Court: the U.S. Department of Energy's ("the Department") final opinion and order granting long-term authorization to export liquified natural gas for the Alaska LNG Project under Section 3 of the Natural Gas Act, DOE000107 (Order 3643-A (Aug. 20, 2022)); the Department's order affirming and amending Order 3643-A, DOE000162 (Order 3643-C (Apr. 13, 2023)); and the Department's order denying Petitioners' request for rehearing and affirming Order 3643-C, DOE000175 (Order 3643-D (June 14, 2023)).

**(C) Related Cases.** *Sierra Club v. U.S. Department of Energy*, Case No. 20-1503.

## RULE 26.1 DISCLOSURE STATEMENT

Pursuant to Federal Rule of Appellate Procedure 26.1 and D.C. Circuit Rule 26.1, Petitioners Center for Biological Diversity and Sierra Club are non-profit conservation organizations. Neither of them has any parent companies, subsidiaries, or affiliates that have issued shares to the public.

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## GLOSSARY

| | |
|---|---|
| Alaska LNG | Alaska LNG Project, LLC |
| Department | U.S. Department of Energy |
| EIS | Environmental impact statement |
| EPA | U.S. Environmental Protection Agency |
| FERC | Federal Energy Regulatory Commission |
| Gas Act | Natural Gas Act |
| GHG | Greenhouse gas |
| LNG | Liquefied natural gas |
| NEPA | National Environmental Policy Act |
| NERA | National Economic Research Associates |
| Project | Alaska LNG Project |
| SEIS | Supplemental environmental impact statement |

## JURISDICTIONAL STATEMENT

This Court has jurisdiction under 15 U.S.C. § 717r(b) to review these consolidated petitions challenging Department of Energy ("the Department") orders granting approval for export of liquefied natural gas (LNG) under Section 3 of the Natural Gas Act ("Gas Act"), 15 U.S.C. § 717b.

The Department approved LNG export from the Alaska LNG Project ("Project") to non-free trade agreement countries and granted Sierra Club intervention. DOE000107 (Order 3643-A). Sierra Club timely petitioned for rehearing, DOE000109 (Request for Rehearing, (Sept. 21, 2020)), and timely petitioned this Court for review, No. 20-1503 (filed Dec. 16, 2020). The Department granted partial rehearing to prepare a supplemental environmental impact statement (SEIS), DOE000126 (Order 3643-B (Apr. 15, 2021)), and the Court stayed Sierra Club's case, No. 20-1503, Order (issued June 30, 2021).

After issuing the SEIS, the Department affirmed its export approval and granted Center for Biological Diversity intervention, DOE000162 (Order 3643-C). Sierra Club and Center for Biological Diversity timely petitioned for rehearing, DOE000171 (Request for Rehearing (May 15, 2023)), then after the Department denied rehearing, DOE000175 (Order 3643-D), timely petitioned this Court for review, *Center for Biological Diversity et al. v U.S. Department of Energy,* No. 23-1214 (filed Aug. 11, 2023).

## STATEMENT OF ISSUES

1. Whether the Department's determination that the Project is not inconsistent with the public interest under the Gas Act, 15 U.S.C. § 717b, was arbitrary and capricious because:
    a. The Department overstated the uncertainty of expected climate harms, especially in comparison to the uncertainty of expected benefits.
    b. The Department inconsistently treated uncertainties regarding the amount of gas the Project will ultimately export as undermining the likelihood of the Project's harms, but not as undermining its benefits.
    c. The Department ignored significant non-climate harms based on unsubstantiated assumptions about mitigation.
    d. Petitioners' Gas Act arguments are properly before this Court.
2. Whether the Department's environmental review of the Project violated the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321-4370m, because:
    a. The Department did not examine a realistic no action alternative.
    b. The Department did not comply with NEPA regulations regarding missing information.

## STATUTES AND REGULATIONS

Pertinent statutes and regulations appear in the appended addendum.

## STATEMENT OF THE CASE

### I. Statutory framework.

Section 3 of the Gas Act provides the Department shall authorize gas exports to nations with which the United States has not entered into a free trade agreement[1] "unless . . . it finds that the proposed exportation . . . will not be consistent with the public interest." 15 U.S.C. § 717b(a). The statute does not define "public interest" or require the Department to consider specific criteria when making authorization decisions, but the Department considers "factors includ[ing] economic impacts, international impacts, security of natural gas supply, and environmental impacts, among others" and looks to principles established in the Department's 1984 Policy Guidelines. DOE000107 at 10-11 (Order 3643-A). No U.S. LNG export facility

[1] The United States only has free trade agreements with Australia, Bahrain, Canada, Chile, Colombia, Dominican Republic, El Salvador, Guatemala, Honduras, Jordan, Mexico, Morocco, Nicaragua, Oman, Panama, Peru, Republic of Korea, and Singapore. DOE000175 at 1 n.3 (Order 3643-D).

has been constructed without authorization to export to non-free trade agreement countries.[2]

NEPA's "primary function" is "compelling federal agencies to take a hard and honest look at the environmental consequences of their decisions." *Am. Rivers v. FERC*, 895 F.3d 32, 49 (D.C. Cir. 2018). It requires that agencies prepare an environmental impact statement (EIS) before all "major Federal actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332(2)(C) (2022).[3] The EIS must discuss "the environmental impact of the proposed action," "any adverse environmental effects which cannot be avoided should the proposal be implemented," "alternatives to the proposed action," and "the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity." *Id.* The Department has adopted the Council on Environmental Quality's NEPA regulations, 10 C.F.R. § 1021.103, which require that agencies "[e]valuate reasonable alternatives to the proposed action," including a no action alternative, *id.* § 1502.14(a), (c); and

[2] *Compare* Ex. 1 at 1-2 *to* Ex. 2 at 1. The Court may take judicial notice of this data because it is posted on government websites and is not subject to dispute. *See Cannon v. District of Columbia*, 717 F.3d 200, 205 n.2 (D.C. Cir. 2013); Fed. R. Evid. 201. *See also* Dep't of Energy, Office of Fossil Energy and Carbon Mgmt. Order No. 3784 (Feb. 8, 2016) (granting export approval for sixth existing export terminal).

[3] All NEPA cites are to the 2022 version (reproduced in the statutory addendum) in effect when the Department issued the SEIS. NEPA was later amended by Pub. L. No. 118-5, 137 Stat. 38.

discuss the "reasonably foreseeable" direct, indirect, and cumulative environmental impacts of the proposed action and alternatives, *id.* §§ 1502.16(a), 1508.1(g). A no action alternative describes the world as it would be if the agency did not take the proposed action. 46 Fed. Reg. 18,026, 18,027 (Mar. 23, 1981) (Question 3).

## II. Factual and procedural background.

Intervenor Alaska LNG Project, LLC ("Alaska LNG") applied to the Department for approval to export gas from its proposed Project in 2014. DOE000107 at 1 (Order 3643-A). The proposed Project would source gas from Alaska's North Slope and would include: (1) a gas treatment plant on the North Slope; (2) an 800-mile-long pipeline to transport gas to a liquefaction facility; and (3) a liquefaction facility to be constructed by Intervenor Alaska Gasline Development Corporation on the Kenai Peninsula in southcentral Alaska. DOE00162 at 1-2 (Order 3643-C). Gas collected during oil production on the North Slope is currently re-injected for enhanced oil recovery but is not sold commercially because there is no gas pipeline infrastructure connecting the remote North Slope to any gas market. DOE000152 at 2-12 to 2-14 (SEIS); DOE000126 at 14 (Order 3643-B). The pipeline would bisect the entire state from the North Slope to the Kenai Peninsula, and run directly adjacent to Denali National Park and Preserve, as depicted in the following map.


BARROW
SEE NORTH SLOPE INSET FOR DETAIL
Point Thomson Unit Gas Transmission Line
BEAUFORT SEA
MP 0
Gas Treatment Plant
Point Thomson Unit
NATIONAL PETROLEUM RESERVE - ALASKA
MP 50
Sagwon Compressor Station
Prudhoe Bay Unit
Colville River
Dalton Hwy
MP 100
ARCTIC NATIONAL WILDLIFE REFUGE
Galbraith Lake Compressor Station
MP 150
NOATAK NATIONAL PRESERVE
MP 200
KOBUK VALLEY NATIONAL PARK
Coldfoot Compressor Station
COLDFOOT
Porcupine River
ALASKA
CANADA
MP 250
SELAWIK NATIONAL WILDLIFE REFUGE
Koyukuk River
MP 300
YUKON FLATS NATIONAL WILDLIFE REFUGE
Ray River Compressor Station
MP 350
LIVENGOOD
KOYUKUK NATIONAL WILDLIFE REFUGE
MP 400
YUKON-CHARLEY RIVERS NATIONAL PRESERVE
Minto Compressor Station
Yukon River
FAIRBANKS
Fairbanks/North Star Gas Interconnection
MP 450
TANANA VALLEY STATE FOREST
MP 500
DELTA JUNCTION
Healy Compressor Station
TOK
Parks Hwy
MP 550
Honolulu Creek Compressor Station
MP 600
DENALI NATIONAL PARK & PRESERVE
Susitna River
MP 650
WRANGELL-ST.ELIAS NATIONAL PARK & PRESERVE
Rabideux Creek Compressor Station
MP 700
Theodore River Heater Station
MP 750
VALDEZ
ANCHORAGE
Anchorage/Matansuska-Sukna Gas Interconnection
Liquefaction Facility
MP 800
Kanai Peninsula Gas Interconnection
LAKE CLARK NATIONAL PARK & PRESERVE
KENAI NATIONAL WILDLIFE REFUGE
0 50 100 Miles
N
NORTH SLOPE INSET
Kuparuk River Unit
Prudhoe Bay Unit
MP 0
MP 5
MP 10
MP 15
Proposed Alaska LNG Mainline
Proposed Gas Treatment Plant
Existing Pipeline
Unit Boundary
Satellite Field
Surface Land Ownership
Federal
State
Private
Other
Arctic Ocean
Russia
PRUDHOE BAY
Canada
FAIRBANKS
ANCHORAGE
Bering Sea
Pacific Ocean
Legend
Proposed Alaska LNG Mainline Route
Proposed Alaska LNG Mainline Milepost (MP)
Proposed Project Facility
Proposed Gas Interconnection
Existing Unit
State or Federal Conservation Land

DOE000152 at 1-2, Fig. 1.1-1 (SEIS).

The Project itself would permanently destroy over 8,000 acres of wetlands; have significant effects on permafrost, wetlands, forests, and caribou; and potentially cause significant impacts on air quality and visibility at several national parks, preserves, and refuges. DOE00097 at ¶¶25, 84, 160, 206-08 (FERC order). The Project would also increase the risk of vessel strikes on critically endangered Cook Inlet beluga whales and adversely affect their critical habitat. DOE00093 at 4-514, Tbl. 4.8.1-6 (FERC EIS). Not counting emissions from the end use of its gas exports, the Project's construction and 33 years of operation would directly emit 329-540 million metric tons of $CO_2$ equivalent. DOE00098 (FERC Order) at 74, ¶214 (providing total construction emissions and annual operation emissions). The impact of those emissions on the climate is comparable to that of operating 827 to 1,357 gas-fired power plants for one year.[4]

In a 2014 order not at issue in this case, the Department granted the required automatic approval for the Project to export to free trade agreement countries. DOE000107 at 3 (Order 3643-A). *See infra* pp. 17-19 (explaining that the Project would not proceed based on export to free trade agreement countries alone). The Federal Energy Regulatory Commission (FERC) granted approval to construct the

[4] Ex. 3 at 11, 15. Petitioners request the Court take judicial notice of this information. *See Cannon*, 717 F.3d at 205 n.2; Fed. R. Evid. 201.

Project's pipeline and liquefaction facilities in 2020,[5] after preparing an EIS for which the Department was a cooperating agency. DOE000107 at 5, 24 (Order 3643-A).

In 2020, the Department authorized the Project to export up to 929 billion cubic feet per year of gas to non-free trade agreement countries for a total of 33 years. DOE000107 at 36-37, 40 (Order 3643-A). For context, 929 billion cubic feet is nearly one fifth of all gas delivered to residential consumers in the United States in 2022,[6] and, if burned for energy, would create greenhouse gas (GHG) emissions equivalent to operating 128 gas-fired power plants for one year.[7] The authorization order reaffirmed a previous Department finding that the Project would have economic benefits, and also found energy security benefits. DOE000107 at 3-4, 31 (Order 3643-A). The Department relied on FERC's EIS to analyze the harms from the pipeline and terminal but did not prepare its own Project-specific EIS analyzing harms associated with producing and exporting the Project's LNG and did not consider those environmental harms in approving the Project's exports. *Id.* at 32.

[5] Petitioners in this case also challenged FERC's approval, and this Court upheld it. *Ctr. for Biological Diversity v. FERC*, 67 F.4th 1176 (D.C. Cir. 2023).
[6] As reported by the U.S. Energy Information Administration. Ex. 4. Petitioners request the Court take judicial notice of this data. *See Cannon*, 717 F.3d at 205 n.2; Fed. R. Evid. 201.
[7] Ex. 3 at 3; *infra* fn.4.

Sierra Club requested rehearing, DOE000109 (Request for Rehearing (Sept. 21, 2020)), and petitioned this Court for review.

The Department then granted partial rehearing. DOE000126 (Order 3643-B). In its rehearing order, the Department acknowledged executive orders that require federal agencies to assess, disclose, and mitigate climate pollution and "combat the climate crisis." *Id.* at 12-13. Increasing global atmospheric concentrations of GHGs are accelerating the warming of our climate, with far-ranging consequences such as extreme weather events, sea level rise, changes in animal abundance and distribution, and wildfires. DOE000152 at 3.19-1 to 3.19-14 (SEIS).

The Department found it was "prudent" and "necessary" to prepare a SEIS examining: (1) a lifecycle analysis of GHG emissions from Project operations and combustion of the exported LNG; and (2) upstream environmental impacts associated with gas production on the North Slope. *Id.* at 13-14. This Court stayed Sierra Club's case in the interim. No. 20-1503, Order (issued June 30, 2021).

In 2023, the Department issued a final SEIS. DOE000152 (SEIS). The SEIS did not predict the Project's impact on global energy consumption and GHG emissions. Citing "inherent uncertainty regarding the particular present or future supply and demand responses that would lead to net changes in production and consumption," the Department presented two no action alternatives as "different

perspectives" for assessing the Project's net climate impacts. *Id.* at 4.19-5. Those perspectives represented opposite extreme potentialities. In the first no action scenario, the Department posited that, absent the Project, all the LNG to be produced by the Project would be produced by other sources. *Id.* at S-7; *see also* DOE000162 at 24 (Order 3643-C) (describing this alternative as "perfect substitution of LNG"). In the second no action scenario, absent the Project, there would be no equivalent delivery of fossil fuels to the market. DOE000152 at S-7 (SEIS); *see also* DOE000162 at 24 (Order 3643-C) (describing this alternative as "no energy market substitution").

Compared to alternative sources of LNG the Department evaluated, the SEIS concluded the Project could reduce global GHG emissions by as much as 274 million metric tons of $CO_2$-equivalent. DOE000152 at S-8, Table S-1 (SEIS) ("Change in Life Cycle GHG Emissions Relative to No Action" without carbon capture and sequestration). However, compared to no additional fossil fuels, the Project would increase global GHGs by up to 1,922 million metric tons of $CO_2$-equivalent. DOE000152 at S-9, Table S-2 (SEIS) ("Change in Life Cycle GHG Emissions Relative to No Action" without carbon capture and sequestration). The Department would later clarify that both no action scenarios are "unlikely," DOE000162 at 24 (Order 3643-C), and that it cannot conclude either is "more accurate." *Id.* at 41.

The SEIS also evaluated the non-climate impacts of upstream gas development the Project would induce, but did so without any site-specific information about planned development on the North Slope, including new pads, wells, access roads, and pipelines. DOE000152 at 2-26, 4.1-2, 4.21-1 (SEIS). The Department noted "no floodplain mapping exists for the North Slope," *id.* at 4.3-5, and the SEIS was completed without the benefit of any site-specific surveys of water resources, wetlands, or wildlife, *id.* at 4.3-4, 4.4-2, 4.6-2 to 4.6-3. Nevertheless, the SEIS concluded that impacts on most North Slope resource categories would be insignificant, assuming in most cases that mitigation measures would successfully reduce the impacts. *See, e.g.*, *id.* at 4.3-9 (water resources); *id.* at 4.4-6 (wetlands); *id* at 4.5-5 (vegetation); *id.* at 4.6-7 (wildlife resources); *id.* at 4.7-6 (aquatic resources); *id.* at 4.8-8 (threatened, endangered, and special status species).

In April 2023, the Department issued an order finding that the impacts the SEIS examined did not change the Department's previous conclusion that exporting the Project's gas to non-free trade agreement countries would be consistent with the public interest. DOE000162 at 21, 25 (Order 3643-C). The order stated that due to significant uncertainty about future energy markets and energy consumption patterns, "[the Department] cannot make a definitive conclusion about the magnitude of GHG emissions and resulting climate impacts

associate with the [Project]'s exports," but the Project's true impacts will likely fall somewhere between the SEIS's two "unlikely" GHG emissions extremes, *id.* at 24. Those extremes differ by as much as 2,196 million metric tons of GHGs, *see* DOE000152 at S-9, Table S-2 (SEIS), or approximately the emissions that would be released from burning 29 million tanker trucks of gasoline or 12 million railcars of coal.[8] The order, like the SEIS, took no position on whether there will ever be market demand for the Project's LNG. DOE000162 at 22, n.106 (Order 3643-C). The Department granted Center for Biological Diversity's intervention. *Id.* at 21.

Petitioners jointly requested rehearing, arguing that the SEIS and Order 3643-C violated the Gas Act and NEPA. DOE000171 (Request for Rehearing (May 15, 2023)). The Department denied rehearing, stating that its use of these two no action alternatives was reasonable and that it complied with NEPA's requirements for how agencies must address missing or incomplete information, in part by adding the second no action alternative. DOE000175 at 17-20, 22-23 (Order 3643-D). The Department also concluded that it could not examine any alternatives to the Project's exports, other than the two no action alternatives, because other alternatives would not give the applicant what it wanted even if they serve the public interest. *Id.* at 15. The Department rejected Petitioners' Gas Act arguments, stating that it "is not required to determine market need for the

[8] Ex. 3 at 22; *infra* fn.4.

approved exports or to assess project viability," and that the remaining Gas Act arguments are "beyond the scope of this proceeding or are reframings" of Petitioners' NEPA arguments. *Id.* at 44, 53. Petitioners timely petitioned for review in this Court, which consolidated the case with Sierra Club's earlier case.

## SUMMARY OF ARGUMENT

The Department's determination under the Gas Act that the Project is not inconsistent with the public interest was arbitrary and capricious. Despite recognizing the need to evaluate the harms to the climate and the North Slope from allowing Project exports, the Department's reapproval took an impermissibly skewed approach by discounting and ignoring the Project's harms while relying on the Project's benefits that may never occur. First, the Department inflated uncertainty regarding the Project's contribution to climate-changing GHG emissions and claimed that uncertainty prevented it from drawing conclusions about the Project's climate harms. Second, the Department ignored that the exact same uncertainties should prevent it from ascertaining the Project's economic and security benefits, and yet continued to conclude that those benefits confirm the Project is in the public interest. Third, the Department dismissed, and did not even weigh in its public interest determination, the harms upstream gas production will inflict on the North Slope based on the unsupported assumption that non-mandatory, unproven mitigation measures will eradicate those harms.

The Department's attempts to deflect Petitioners' Gas Act arguments are unavailing. Petitioners' Gas Act arguments are not merely NEPA arguments under a different label, nor are they beyond the scope of the rehearing proceeding that culminated in the Department's 2023 substantive decision under the Gas Act. The Department's errors under the Gas Act all relate to what the Department charged itself with reexamining when it granted rehearing: reconsidering whether the Project should be approved under the Gas Act once the Project's full set of harms, including previously-unexamined Project-wide GHG emissions and destruction on the North Slope from gas production, are weighed against its benefits. The Department's failure to evenly consider these impacts instead of contorting its review to recognize the Project's benefits while dismissing its harms violates the Gas Act.

The Department's environmental review of the Project also violated NEPA and the Administrative Procedure Act. The Department's no action alternative analysis merely described what it admitted are unrealistic best-case and worst-case scenarios for the Project's GHG impacts and did not provide a useful baseline for analysis. The Department also did not comply with NEPA's requirements for missing information in its analysis of upstream impacts and downstream GHG impacts. These errors prevent the SEIS from fulfilling its purpose of ensuring that the Department's substantive decisionmaking is environmentally informed.

## STANDING

Petitioners have standing to bring this case on behalf of their members who would be harmed by construction and operation of the Project and otherwise have standing to sue in their own right. *See Hunt v. Washington State Apple Advert. Comm'n*, 432 U.S. 333, 343 (1977). This lawsuit is germane to Petitioners' organizational missions, Ex. 5, ¶¶4-6, 10-11, 17-23, 25-28; Ex. 10, ¶¶5, 7-8, 11, and neither the claims asserted nor the relief requested require individual members to participate in this lawsuit.

Petitioners' members include individuals who recreate around Cook Inlet and enjoy watching birds and endangered Cook Inlet beluga whales there. Ex. 5, ¶24; Ex. 6, ¶¶5-8; Ex. 7 ¶¶4-8; Ex. 8, ¶¶20-21; Ex. 9, ¶¶5-6. Increased vessel traffic caused by the Project's export terminal will increase underwater noise, which may drive away whales, will permanently affect whale habitat, will increase the risk of vessel strikes to whales, DOE00093 at 4-514, Tbl. 4.8.1-6 (FERC EIS), and will increase the risk of a spill that could damage the marine environment, DOE00097 at 46, ¶119 (FERC Order). These impacts negatively affect Petitioners' members' ability to view wildlife in Cook Inlet. Ex. 6, ¶¶9-10; Ex.7, ¶¶9-11; Ex. 8, ¶22; Ex. 9, ¶6. Increased ship traffic may also affect a member's interest in protecting marine mammals such as killer whales and endangered North Pacific

right whales that live and migrate along the Pacific shipping route by putting these animals at greater risk of ship strikes, vessel noise, and spills. Ex. 8, ¶24.

Sierra Club member Dan Ritzman has regularly visited America's Arctic, and plans to return to this area to view wildlife and enjoy the wild character of the land. Ex. 10, ¶¶12-14, 16. The Project may disturb the Central Arctic caribou herd's habitat and create a barrier to its migration, DOE00093 at 4-310, Tbl. 4.6.1-6 (FERC EIS), increasing the likelihood that Mr. Ritzman may no longer be able to view caribou on future trips to the Arctic. Ex. 10, ¶14. The Project may also negatively impact air quality and visibility around the Arctic National Wildlife Refuge, DOE00093 at 4-943 (FERC EIS), detracting from Mr. Ritzman's aesthetic enjoyment of the area. Ex. 10, ¶17.

Mr. Ritzman and Center for Biological Diversity member Richard Steiner also enjoy recreating in Denali National Park and Preserve and intend to visit the Park in the future. Ex. 10, ¶15; Ex. 8, ¶¶15-17. The Project will negatively impact their enjoyment of the Park by increasing traffic, closing roads on the Parks Highway, closing the pedestrian bridge across the Nenana River at the Park headquarters and visitor center, creating an eyesore visible from the Park, disrupting the Park's tranquility, and decreasing opportunities to view wildlife such as Denali wolves. DOE00093 at 3-24 to 3-27 (FERC EIS); Ex. 10, ¶15; Ex. 8, ¶¶16, 18-19.

The Court can redress these injuries by vacating the Department's orders because the Project will not be built absent DOE's approval of export to non-free trade agreement countries. The Department was required to automatically approve export from the Project to free trade agreement countries. *See supra* p. 7. However, if that automatic approval was sufficient to ensure the Project's construction, the Department's SEIS would be superfluous. *See Dep't of Transp. v. Pub. Citizen*, 541 U.S. 752, 770 (2004) (holding that "where an agency has no ability to prevent a certain effect" it need not consider that effect in a NEPA analysis). It is not. Indeed, the Department's no action scenario "represent[s] the Project not moving forward because the Department did not authorize exports to non-[free trade agreement countries] or for other reasons." DOE000152, App. D at D-9 (SEIS).

At minimum, the Department's approval of exports to non-free trade agreement countries increases the amount of LNG likely to be exported, increasing Petitioners' harms that flow from shipping traffic and induced production. *See Sierra Club v. FERC*, 827 F.3d 59, 65-67 (D.C. Cir. 2016) (finding standing to challenge order increasing authorized LNG export volume because additional exports would increase shipping traffic). The entire 419.9 billion cubic feet volume of 2022 U.S. exports by vessel to free trade agreement countries—roughly 11

percent of the United States' total 2022 LNG exports[9]—pales in comparison to the 929 billion cubic feet/year of exports the Department approved for the Project, DOE000107 at 40 (Order 3643-A). The Project will target Asian markets. DOE000162 at 45 (Order 3643-C). In 2022, the United States exported 315.7 billion cubic feet to Asian free trade agreement countries (Singapore and South Korea)—about 8 percent of 2022 U.S. LNG exports.[10] There is no evidence that the free trade agreement export market, in Asia or elsewhere, could absorb the "significant addition to global LNG supply," *id.* at 23, that the Project seeks to export. The Department's approval of non-free trade agreement exports therefore vastly expands the potential market for the Project's gas.

Basic economic principles also hold that increasing the potential customer base, and thus demand, for exports increases the Project's likelihood of finding profitable customers. *Competitive Enter. Inst. v. Fed. Commc'ns Comm'n*, 970 F.3d 372, 386-87 (D.C. Cir. 2020) (appellants proved causation by providing "assessments [that] are 'firmly rooted in the basic laws of economics'" (quoting *United Transp. Union v. Interstate Com. Comm'n*, 891 F2d 908, 912 n.7 (D.C. Cir.

[9] United States 2022 free trade agreement exports of 419.9 billion cubic feet/year (30.1 to Chile, 5.7 to Columbia, 50.8 to the Dominican Republic, 3.8 to Mexico, 13.8 to Panama, 23 to Singapore, and 292.7 to South Korea) were roughly 11 percent of the total 3,866 billion cubic feet/year exported. Ex. 11. Petitioners request the Court take judicial notice of this data. *See Cannon*, 717 F.3d at 205 n.2; Fed. R. Evid. 201.

[10] *See* Ex. 11 (23 to Singapore and 292.7 to South Korea).

1989))). Indeed, Alaska Gasline Development Corporation argued below that "any delay it encounters in 'obtaining final approvals' creates the potential for 'real and substantial' harm, as such delay will adversely affect [the corporation]'s ability to obtain needed customer and financing commitments for the . . . Project." DOE000162 at 12 (Order 3643-C) (quoting DOE000146 at 8 (Alaska Gasline Development Corporation, Opposition to Center for Biological Diversity Motion for Late Intervention); *see also id.* at 21.

In sum, Petitioners have standing because there is a "substantial probability" that the Department's non-free trade agreement export authorization will enable the Project's economic operation, or at least increase the Project's export volume, and thereby harm Petitioners' members. *In re Idaho Conservation League*, 811 F.3d 502, 508 (D.C. Cir. 2016).

## ARGUMENT

### I. Standard of review

This Court reviews the Department's compliance with NEPA and the Gas Act under the arbitrary and capricious standard, *Sierra Club v. U.S. Dep't of Energy*, 867 F.3d 189, 196, 202 (D.C. Cir. 2017), and determines, in accordance with the Administrative Procedure Act, whether the Department has "examine[d] the relevant data" and made "a rational connection between the facts found and the

choices made." *Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (internal quotation marks omitted).

## II. The Department's approval of the Project under the Gas Act was arbitrary and capricious.

The SEIS identified the potential for Project exports to cause tremendous increases in GHG emissions and associated climate harms, but in weighing those harms in its public interest analysis, the Department discounted them as "highly uncertain" and concluded that the Project's environmental harms were insufficient to outweigh evidence of its purported benefits. DOE000162 at 25 (Order 3643-C). The Department's conclusion rests on an irrationally inflated view of the uncertainty as to the Project's climate harms and an inconsistent, arbitrary treatment of the Project's harms and benefits. The Department ignored the fact that the purported benefits are just as uncertain as the climate harms, and that the two are linked. That is, to the extent that "uncertainties inherent in predicting future energy market behavior and energy consumption patterns around the world" prevented the Department from reaching more definitive conclusions about the Project's climate harms, *id.* at 24, those same uncertainties apply to whether and to what extent the Project's exports produce any benefits. For example, insofar as Project exports displace other U.S. exports, and, thus, would arguably not generate any GHG emissions that would not otherwise exist, they also would not provide any new nationwide economic or security benefits. On the other hand, for the

Project to create the economic and security benefits the Department relies upon to conclude that these exports are in the public interest, the Project's LNG must increase net exports and necessarily emit GHGs that would not otherwise exist. The Department's analysis, however, treats the Project's climate harms as too uncertain to consider and the Project's benefits as a given.

In addition, while the Department used uncertainty as a basis to downplay the Project's climate harms, it assumed that the many certain environmental harms that will result from gas development on the North Slope would be mitigated without any evidence that mitigation measures will be mandatory, feasible, or effective. *Id.* at 14-15.

The Department's decision to approve the Project's exports is arbitrary and capricious because it is skewed irrationally in favor of approval. While this Court has held that the Department may "find that the public interest weighs in favor of allowing the exports" despite significant environmental harms, *Sierra Club*, 867 F.3d at 203, the Department must still reach such a determination through a rational decisionmaking process—something it failed to do here.

### A. The Department's treatment of the Project's climate harms was arbitrary and capricious.

The Department's public interest determination was arbitrary because the Department overstated the degree of uncertainty regarding the Project's GHG emissions and relied on that inflated uncertainty to downplay and effectively

ignore the Project's climate harms, without acknowledging that the same uncertainty plagues the Project's asserted benefits. The Department claims that the lack of certainty as to the Project's GHG emissions is due to its inability to predict future international LNG market conditions, including future supply and demand responses. DOE000162 at 22 (Order 3643-C). This argument, however, fails for at least two reasons. First, the lack of clarity as to the Project's climate impacts is largely of the Department's own making. The Department insisted on comparing Project emissions to two extreme and unrealistic no action emissions scenarios—producing a uselessly expansive range of Project emissions from the lowest to highest possible—while ignoring available modeling that could drastically reduce the uncertainty. Second, the uncertainty the Department cites as a hurdle here—the difficulty in predicting future LNG market conditions—presents just as much of an obstacle to determining the extent of the Project's security and economic benefits. The Project cannot produce additional economic and security benefits to the United States if there is no demand for its gas or if it just substitutes for other sources of LNG. Yet, if the Project is serving a new demand and increasing net LNG exports, it will certainly produce GHG emissions that will count against United States totals. The Department states that it cannot evaluate the Project's climate harms, but that it can conclude that the Project will create substantial benefits. Because uncertainty about the global LNG market and substitution effects impacts both the

harms and benefits, this conclusion rests on the Department inconsistently treating that uncertainty as a factor that diminishes the importance of the Project's climate harms but does not undermine any of the Project's benefits. *See infra*, Section II.B.

The Department chose to frame its analysis of the Project's possible adverse climate impacts by comparing the Project's GHG emissions to two extreme scenarios. *See supra* pp. 9-10. In comparison to No Action Alternative 1, the Department concluded the Project might avoid up to $37.5 billion in climate harms, DOE000152 at 4.19-13 Tbl. 4.19-5 (SEIS) (Results comparison for Project Scenario 3 without carbon capture and sequestration, "3%, 95th Perc" column, for South Korea and China destinations), by substituting for LNG from other sources that produce marginally higher associated emissions and that the Department assumed would export in the Project's absence, DOE000162 at 23 (Order 3643-C). In comparison to No Action Alternative 2, the Department assumed that the Project's exports would be entirely additive, and the Project would add between 1.5 billion and almost 2 billion metric tons of GHGs into the atmosphere, DOE000152 at S-9, Tbl. S-2 (SEIS) ("Change in Life Cycle GHG Emissions Relative to No Action" for "End Use Power Generation without [Carbon Capture and Sequestration]"), causing up to $249 billion in climate harms, *id.* at 4.19-14, Tbl. 4.19-6 (Results comparison for Project Scenario 3 without carbon capture and sequestration, "3%, 95th Perc" column, for India destination). The Department

states that due to significant uncertainty about future energy markets, it is "unable to conclude that either [scenario] . . . is more accurate," DOE000162 at 41 (Order 3643-C), but that the Project's true impacts fall somewhere between these two "unlikely" extremes, *id.* at 24. On this basis, the Department characterized the Project's climate impacts as "highly uncertain." *Id.* at 25.

The Department's insistence on using only these two extremes exacerbated the uncertainty it claims prevented it from assessing the Project's climate harms, as is clear from how "absolutely useless" the two figures are to the Department's public interest decision. *See National Ass'n of Regulatory Utility Comm'rs v. U.S. Dep't of Energy*, 736 F.3d 517, 519 (D.C. Cir. 2013) (rejecting the Department's attempts to avoid its statutory responsibility by claiming that the range of relevant data was too great). The $279 billion gap between the two scenarios is equivalent to shutting down 73 coal-fired power plants for a year, compared to running 514 new coal plants for a year.[11] The Department's refusal to narrow down such a monstrous range thwarted any rational determination that the requested export approval is not inconsistent with the public interest. *See id.*

[11] *See supra* pp. 9-10 (the range of emissions the Department projected is between -274 million metric tons and +1,922 million metric tons of $CO_2$-equivalent.); Ex. 3 at 7, 19 (power plant equivalencies for 274 million metric tons of $CO_2$-equivalent and 1,922 million metric tons of $CO_2$-equivalent); *supra* fn. 4.

As a result, not surprisingly, there is no statement in the SEIS or challenged orders that describes how the Department weighed the Project's climate harms against its benefits, nor could there be. Instead, the Department simultaneously claims that it cannot conclude that either no action alternative is more accurate, DOE000162 at 41 (Order 3643-C), and, without any apparent support, that "in [the Department]'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." *Id.* at 24-25. In other words, despite the SEIS providing no basis for selecting either extreme, or any point in between, and despite the Department asserting that it "cannot draw a definitive conclusion about the magnitude of climate impacts associated with Alaska LNG's exports," *id.* at 22, the Department vaguely asserts that the Project's climate impacts will be closer to the best-case scenario than the worst. However, it is not clear whether or to what extent the Department even used this closer-to-best-case guess in its ultimate approval of the Project as its final conclusion emphasizes the uncertainty of the Project's GHG emissions and does not reflect any view as to the significance of those emissions. *See id.* at 25. In fact, there is no way to tell from the Department's decision documents whether any amount of damage to the climate would have tipped the scales.

Moreover, the Department's use of these extremes was unnecessary. The Department could have significantly reduced the extent of the uncertainty it claims exists simply by making use of the information provided to it. The Department arbitrarily refused to use the data in the record—including information submitted by the applicants—that would have enabled it to better estimate the GHG emissions by establishing a realistic range for the Project's exports based on a reality-based estimate of how much the Project's exports would substitute for LNG produced elsewhere. Rather than meaningfully engage with this data, the Department attempted to dismiss the National Economic Research Associates (NERA) modeling submitted by applicants in support of the export application, DOE00028, App. F at 42 (AGDC, Export Application), and highlighted by Petitioners, *see, e.g.*, DOE000171 at 16-17 (Request for Rehearing (May 15, 2023) (citing DOE000463 at 7-8 (Sierra Club *et al.* Draft SEIS Comments)), claiming it is too old or too speculative to be useful. DOE000175 at 51 (Order 3643-D). That same NERA modeling, which shows that roughly two-thirds of the Project's exports would be not be offset by LNG export from other United States sources, however, is modeling the Department has relied on to analyze the economics of LNG exports in past proceedings.[12] In fact, the Department relied on *the same*

[12] *See, e.g.,* DOE000116 (*Epcilon LNG, LLC*, Dep't of Energy, Office of Fossil Energy and Carbon Mgmt. Order 4629).

nine-year old NERA modeling it now claims is outdated to find that this Project would create economic benefits. DOE000107 at 18-19, 30-31 (Order 3643-A). The Department, therefore, provided no rational basis for rejecting data that could substantially reduce the uncertainty it claims prevents it from meaningfully considering the Project's GHG emissions. The Department also did not explain why it could not use any other available forecasts if it did not want to rely on the NERA modeling. The Department's refusal to rely on the modeling, or to provide a rational explanation for why it could not, constitutes an arbitrary "fail[ure] to consider an important aspect of the problem." *See State Farm*, 463 U.S. at 43.

In addition to manufacturing greater uncertainty around climate harms, the Department also arbitrarily relied on that uncertainty to downplay and dismiss the climate harms in a manner that is completely inconsistent with its treatment of uncertainty in factors favoring approval of the Project. "[A]n internally inconsistent analysis is arbitrary and capricious." *Nat'l Parks Conservation Ass'n v. EPA*, 788 F.3d 1134, 1141 (9th Cir. 2015) (citing *Gen. Chem. Corp. v. U.S.*, 817 F.2d 844, 857 (D.C.Cir.1987) (per curiam)). The Department cannot use uncertainty to discount only one side of the ledger when that same uncertainty exists on the other side. *Cf. Assn. of Oil Pipe Lines v. FERC*, 281 F.3d 239, 247 (D.C. Cir. 2002) (finding it arbitrary that, "having previously used changes in net plant for one purpose despite its imperfections, FERC turned around and relied on

those very imperfections to reject its use"); *LePage's 2000, Inc. v. Postal Regul. Comm'n*, 642 F.3d 225, 232 (D.C. Cir. 2011) ("The Commission does not explain how it can read the same evidence differently when applied to different aspects of the same program."). As is discussed in more detail in Section II.B, the Department downplayed and ignored the same uncertainties when weighing the Project's benefits—the unpredictable nature of international LNG markets—that it inflated and claimed stymied the analysis of climate harms. If the Department is unsure about the scale of the Project's climate harms because of uncertainties as to whether the Project will ever export LNG and the extent to which that LNG substitutes for LNG that would have been produced elsewhere, the Department should also be unsure about the scope of the Project's benefits. In reassessing whether the Project's exports were consistent with the public interest, the Department was obligated to treat each factor it was balancing in the same way when presented with the same uncertainty. The Department's failure to evenly treat the uncertainties on both sides of the balancing test is itself arbitrary and capricious.

Thus, by insisting on utilizing two extreme, unrealistic, and unhelpful market scenarios and ignoring data and tools that would have allowed it to shrink the range of likely outcomes, the Department manufactured unnecessary uncertainty in its evaluation of GHG emissions, and its arbitrary treatment of that

uncertainty allowed it to effectively ignore a huge portion of the Project's harms. "The mere fact that the magnitude of [an effect] is *uncertain* is no justification for *disregarding* the effect entirely." *Pub. Citizen v. Fed. Motor Carrier Safety Admin.*, 374 F.3d 1209, 1219 (D.C. Cir. 2004) (emphasis in original)*; see also Mid States Coal. for Progress v. Surface Transp. Bd.*, 345 F.3d 520, 549 (8th Cir. 2003) ("when the *nature* of the effect is reasonably foreseeable but its *extent* is not, we think that the agency may not simply ignore the effect") (emphasis original). While the Department claims that it "did not 'weight' [] climate impacts with any less consideration in terms of the broader public interest analysis," DOE000175 at 55 (Order 3643-D), it is clear from the sheer number of times that the Department emphasized the "uncertain" nature of the Project's climate impacts, DOE000162 at 13, 22-24, 25, 35, 38, 41 (Order 3643-C), that the Department's claimed inability to more definitively determine the extent of the Project's climate harms significantly impacted its ultimate decision to approve the Project under the Gas Act. The Department's order clearly provides that its decision rests on having weighed "the acknowledged but *highly uncertain* climate impacts against the economic and international security benefits of Alaska LNG's approved exports." *Id.* at 25 (emphasis added).

Moreover, the failure of the challenged orders to meaningfully grapple with any of the Project's GHG emissions demonstrates how little the emissions factored

into the Department's consideration of whether to approve the Project's exports. For example, even if the Project's exports would substitute for use of foreign fossil fuels, the Project would cause a substantial increase in upstream emissions from new United States gas production. In one scenario, the SEIS's lifecycle analysis estimates that emissions from "natural gas production, transport, and liquefaction," through 2061 could total 454 million metric tons of $CO_2$ equivalent. DOE000152, App. C, Ex. 4-21 at 60-61 (SEIS) (scenario 2). Those emissions would count against the United States' commitments to reduce its territorial GHG emissions under the Paris and Copenhagen agreements.[13] Increasing domestic emissions is also at cross purposes with the Administration's commitment to achieving a net zero economy by 2050 and reducing GHG emissions to 50-52 percent below 2005 levels by 2030.[14] The Department's orders lack any acknowledgement of these basic realities, further illustrating that the Department did not, in fact, consider the Project's climate harms in its decision.

[13] DOE00018 (United Nations, *Framework Convention on Climate Change*); DOE00075 (United Nations, Paris Agreement to the United Nations Framework Convention on Climate Change).

[14] DOE000165 (The White House, *FACT SHEET: President Biden to Catalyze Global Climate Action*); DOE000127 (The White House, *FACT SHEET: President Biden Sets 2030 Greenhouse Gas Pollution Reduction Target*).

### B. The Department ignored uncertainties regarding the Project's benefits.

Uncertainty regarding international LNG markets and whether, and in what amount, the Project will ultimately export LNG affects the ability to estimate the extent of both the Project's benefits and harms. The Department, however, arbitrarily discounted only the harms on the basis of this uncertainty. Then, in reaffirming its determination that the Project would be consistent with the public interest, the Department relied almost exclusively on the wholly uncertain proposition that the Project would create economic and security benefits. *See* DOE000162 at 25 (Order 3643-C). These benefits will only manifest if the Project is ultimately constructed and commences operation and does not displace U.S.-produced LNG that would otherwise have come online. The Department has admitted that it takes no position on the likelihood that demand sufficient to prompt construction and operation will occur, *id.* at 22 n.106 (citing DOE000152 at S-7 (SEIS)), and thus has failed to address, let alone eliminate, the huge range of possibilities as to the Project's benefits. The Department's weighing of the Project's benefits arbitrarily ignored uncertainties that undermine those benefits—the same uncertainties the Department claimed rendered the Project's climate harms too speculative to outweigh the benefits.

It was arbitrary for the Department to rest a decision on a finding of benefits without also considering the likelihood that those benefits would materialize,

particularly while discounting the Project's harms for the exact same deficiencies. This Court recently held that the Surface Transportation Board could not ignore whether there would be market support for a railway intended to carry crude oil in its decisionmaking regarding the railway. *Eagle Cnty., Colo. v. Surface Transp. Bd.*, 82 F.4th 1152, 1193-94 (D.C. Cir. 2023). This Court noted that "a project that is in doubt of ever materializing or continuing to operate cannot accomplish any of the transportation merits identified by the Board." *Id.* at 1193. Similarly, here, a Project that never exports gas cannot achieve any of the economic or security benefits that the Department found render the Project in the public interest, and the Project would provide no "national economic benefits" or increase in "gross domestic product," DOE000162 at 25 (Order 3643-C) (citing DOE000107 at 30-31 (Order 3643-A)), if its exports merely substitute for exports from the lower 48 states that would otherwise occur.

The Department fails to excuse its arbitrariness by arguing that no statute, regulation, or other legal authority requires it to find market need in order to approve gas exports and that inquiring into market need would be "at odds with principles established in [the Department]'s 1984 Policy Guidelines that [it] continues to apply." DOE000175 at 50 (Order 3643-D). The Department misses the point: the problem with the Department's analysis is its inconsistent treatment of market need. It is arbitrary to, on the one hand, rely on inflated uncertainty as to

market need as a reason to dismiss harms while, on the other, downplay and ignore uncertainty as to market need when evaluating benefits. The Guidelines' directive that the Department should not "determine the price and other contract terms" for exported gas, DOE000107 at 11 (Order 3643-A) (quoting DOE001 (Department, *Imported Natural Gas Policy Guidelines and Order*), does not render any more rational the Department's choice to ignore market uncertainties that undermine the Project's benefits, but then contradictorily cite those same uncertainties as reasons to dismiss the Project's climate harms. Further, examining the extent of the evidence supporting market demand does not entail the Department determining the price or contract terms of gas exports in violation of the Policy Guidelines. Likewise, the Department would hardly create "regulatory impediments to a freely operating market," *id.*, by acknowledging the reality that the market cannot sustain an unlimited amount of U.S. LNG exports and that a project's benefits may, therefore, not materialize.

The Department's failure to give equal treatment to the uncertainties underlying the Project's benefits and the Project's climate harms is all the more arbitrary because it caused the Department to ignore the potential for the Project to sit unutilized or underutilized, causing extensive environmental harm without providing any of the purported benefits. Although FERC is the agency that evaluates the environmental impacts of LNG terminals themselves, the

Department's approval will induce construction of supporting infrastructure—tree felling and wetland conversion for gathering lines or access roads, for example, *see, e.g.*, DOE000152 at 4.4-2, 4.5-1 (SEIS)—in anticipation of a project that may never be fully constructed. Approving exports without any market need inquiry could result in harms to the environment, communities, and the public interest that are not counterbalanced by any public benefits. The Department asserts that Petitioners' arguments "concerning the practical impact" of its export authorization are "beyond the scope" of the rehearing proceeding, DOE000175 at 51 (Order 3643-D), but these arguments, along with Petitioners' other arguments raised on rehearing, relate directly to the Department's unequal weighing of the Project's supposed benefits against the full set of its harms—analyzed for the first time in the SEIS—to determine if approving the exports is consistent with the public interest. *See infra* Section II.D.

Compounding its arbitrary treatment of evidence on LNG market dynamics, the Department ignored evidence that highlighted the irrationality of its refusal to grapple with the uncertainties that infect its finding of Project benefits. Petitioners pointed to data sources the Department could use to assess market demand, including U.S. Energy Information Administration data on global LNG demand, and the NERA modeling submitted by applicants. DOE000463 at 7-8 (Sierra Club *et al.* Draft SEIS Comments); DOE000171 at 4-7, 16-17, 23 (Request for

Rehearing (May 15, 2023)). The Department refused to rely on any of this available information, arguing that the NERA modeling is too old to be useful and that the Energy Information Administration data is "new" and beyond the scope of its rehearing proceeding. DOE000175 at 49-51 (Order 3643-D). As discussed above, the Department cannot arbitrarily use the NERA modeling in some circumstances and not others. The Energy Information Administration data also is not beyond the scope because it is relevant to the new weighing of harms and benefits that the Department undertook as part of this proceeding.

The Department also ignored its own findings in its recent Policy Statement that it has already approved more LNG exports than the market can sustain. DOE000168 (Department, *Non-Free Trade Agreement Countries Export Commencement Deadlines Policy Statement*). The Department is incorrect that the Policy Statement, establishing that the Department will generally not grant extensions when approved exports do not begin by the deadline, is irrelevant here. DOE000175 at 50-51 (Order 3643-D). LNG is a fungible commodity: the same facts established in the Policy Statement that demonstrate weak market need for already-approved LNG exports also demonstrate weak market need for *any* further LNG exports from any project. The Department's finding in the Policy Statement, therefore, casts serious doubts on the likelihood that there is demand for the Project and that the Project's benefits will, therefore, ever materialize. The Department

cannot reasonably ignore those facts in asserting that the Project will produce benefits while using similar uncertainties to dismiss its harms.

As with the Department's unsupported assertion that it weighed the Project's climate harms, this Court should not accept the Department's conclusory assertion that it "acknowledges that there are uncertainties associated with Alaska LNG's exports on both sides of the public interest 'scale'" and that it "did not tip the scale towards economic benefits." *Id.* at 57. Regardless of what the Department now asserts, treating both sides of the scale equally would have resulted in one of two outcomes. Either the harms *and* the benefits are too uncertain to be determined, undermining substantial portions of the Department's conclusion that the Project is consistent with the public interest. Or, if the Department assumes that the Project will, in fact, export gas and produce economic and security benefits, it must also accept that the Project will cause substantial climate harms. The Department's attempts to use uncertainty to dismiss the Project's harms—while ignoring that the same uncertainty undermines its findings of the Project's benefits—are what impermissibly tipped the scale and undermined the Department's public interest finding.

### C. The Department relied on unsupported assumptions about mitigation to ignore the Project's environmental harms.

The Department put a further thumb on the scale in its review of the Project when it dismissed upstream development impacts on the North Slope that the SEIS

found would be significant—including cumulative impacts on permafrost degradation, cumulative impacts from the permanent loss of wetlands, and impacts on subsistence users of Kaktovik and Nuiqsut, DOE000162 at 14-15 (Order 3643-C); DOE000152 at 4.20-10 to 4.20-11, 4.14--2 to 4.14-6 (SEIS)—by assuming that those impacts will be reduced to an unspecified degree by mitigation and ignoring the high levels of uncertainty about whether those mitigation measures will be effective or even employed. These impacts would not occur without construction of the Project, which cannot occur without the Department's export approval. *See supra* pp. 17-19. The Department concluded 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." DOE000162 at 34 (Order 3643-C)*; see also* DOE000152 at 2-23 (SEIS). However, the Department recognized that none of the mitigation conditions it is assuming will be successful are incorporated into its orders and there is no guarantee that those conditions will be incorporated as binding conditions in the Project's other permits. DOE000162 at 14-15 (Order 3643-C). In addition, even if these mitigation measures were binding, the record provides no assurance they would be effective, let alone eliminate the harms caused by a massive increase in North Slope gas production. Mitigation will not eliminate permafrost and wetlands impacts, and forcing indigenous hunters to relocate is not a harm-free proposition. Nevertheless, the Department chose to

ignore the uncertainty as to the imposition or effectiveness of these mitigation measures and simply assumed the best-case scenario, in stark contrast to how it treated uncertainty when evaluating the Project's potential climate harms.

Despite the fact that those significant North Slope impacts constitute one of the two impact categories the Department reviewed for the first time in the SEIS, the Department's reaffirmed public interest finding did not take them into account. *See* DOE000162 at 3-4 (Order 3643-C) (citing DOE000126 at 15-18 (Order 3643-B)). Order 3643-C focused on "weighing the acknowledged but highly uncertain climate impacts against the economic and international security benefits of the Project's approved exports." DOE000162 at 25. It said nothing about weighing, as part of its public interest determination, the North Slope impacts that the SEIS found would be significant, effectively treating these impacts as if they will not happen. Without any basis in the record to demonstrate that mitigation measures will be mandated, let alone effective to the point of reducing severe harms from a huge increase in gas production on the North Slope to insignificant levels, it was arbitrary and capricious for the Department to ignore these uncertainties and ignore impacts to the North Slope in its public interest determination.

**D. Petitioners' Gas Act arguments are properly before this Court.**

All the Gas Act arguments Petitioners raise are properly before this Court. The Gas Act requires that this Court hear only arguments that have been raised to

an agency in a rehearing request. *See* 15 U.S.C. § 717r(a), (b). Petitioners properly raise arguments that could not have been raised in Sierra Club's 2020 request for rehearing of Order 3643-A, DOE000109, but were raised in Petitioners' 2023 rehearing request challenging how the Department weighed, in Order 3643-C, the newly examined impacts against the Project's benefits to find that the Project is consistent with the public interest. DOE000171; *see Columbia Gas Transmission Corp. v. FERC*, 477 F.3d 739, 741-42 (D.C. Cir. 2007) ("when a party filing a petition for rehearing was not on notice of the rationale that FERC would adopt in the rehearing order, the party has a 'reasonable ground' for not having addressed that rationale in its petition"). When a subsequent order on rehearing "substantively 'modifies the result reached in the original order,'" rather than just marshaling new explanations for reaching the same decision, it is a "new order" for which petitioners may seek judicial review after petitioning the agency for rehearing. *See Fore River Residents Against the Compressor Station v. FERC*, 77 F.4th 882, 891-92 (D.C. Cir. 2023) (citing *S. Nat. Gas. Co. v. FERC*, 877 F.2d 1066, 1072-73 (D.C. Cir. 1989)). Order 3643-C makes a new substantive public interest determination and includes an amended record of decision made upon an expanded administrative record documenting a broader set of harms, DOE000162. Therefore, it constitutes a "new" order for which Petitioners properly sought rehearing in 2023. The Department's contention that many of Petitioners'

arguments are "beyond the scope" of the rehearing proceeding, DOE000175 at 53 (Order 3643-D), fails for two reasons. First, the Department cannot, by claiming that it granted rehearing for a limited purpose, limit Petitioners to a narrower set of issues than those allowed by the Gas Act's judicial review provision. Second, even if the Department could narrow the reviewable issues, it could not exclude the issues Petitioners' arguments address because the Department explicitly stated it was examining those issues when it granted rehearing.

Sierra Club's 2020 rehearing request focused on the Department's complete failure to evaluate upstream and downstream environmental impacts. Now that the Department *has* evaluated those impacts, Petitioners may properly raise for the first time arguments regarding the arbitrary manner in which the Department evaluated those harms and weighed them against the Project's claimed benefits to conclude that the Project is not inconsistent with the public interest. *See* DOE000162 at 25 (Order 3643-C) (describing the Department's decisionmaking as "weighing" harms and benefits); DOE000175 at 57 (Order 3643-D) (referring to benefits and harms as two "sides of the public interest 'scale'"). Petitioners' arguments regarding the Department's inconsistent treatment of harms and benefits and inadequate consideration of newly evaluated harms go to the heart of the rehearing proceeding, *i.e.*, DOE's review of whether the Project's newly evaluated environmental harms, when weighed against its supposed benefits, undermine the

Department's prior finding of the Project's consistency with the public interest. Because the Department had not previously evaluated these environmental harms at all, Petitioners were previously unable to raise arguments about the Department's inconsistent treatment of these harms as compared to the Project's supposed benefits. *See Columbia Gas Transmission Corp.*, 477 F.3d at 744 ("Because FERC first advanced the market power argument in the Rehearing Order, Columbia is not jurisdictionally barred from urging an objection here.").

Petitioners also could not have raised any earlier than their SEIS comments and 2023 rehearing request their arguments that the Department exaggerated the extent to which uncertainties in LNG markets made the Project's climate harms difficult to predict while ignoring how those same uncertainties undermine claims that the Project will produce benefits. The SEIS is the first place where the Department used lack of certainty in LNG markets as a basis for selecting its two extreme and unhelpful no action alternatives, and Order 3643-C was the first order in which the Department expressed its rationale that the "highly uncertain climate impacts" did not outweigh the Project's purported benefits. DOE000162 at 25. Similarly, Order 3643-C was the first order in which the Department stated that it "takes no position on whether there will . . . be market demand" for the LNG produced by the Alaska LNG Project, *id.* at 22 n.106 (citing DOE000152 at S-7

(SEIS)), while simultaneously assuming the existence of benefits that will occur only if that market demand occurs.

The Department's stated purpose for the rehearing proceeding was to make a new decision, either reaffirming or rescinding its initial finding of consistency with the public interest, based on a new weighing of the Project's benefits against the newly examined full set of harms. DOE000175 at 48-49 (Order 3643-D) ("for [the Department] to evaluate the environmental impacts presented in the Final SEIS to determine if they were 'sufficient to alter [the Department]'s determination under [Gas Act] section 3(a) that exports of LNG from the proposed Alaska LNG Project to non-[free trade agreement] countries are not inconsistent with the public interest, as set forth in [Order 3643-A].'") (quoting DOE000126 at 6 (Order 3643-B)); *see also* DOE000162 at 20 (Order 3643-C) (granting Center for Biological Diversity's intervention and finding that arguments in any rehearing request must "pertain[] to the environmental analysis presented in [the Department]'s Final SEIS and the related environmental findings in this Order and Amended Record of Decision."). Petitioners' arguments regarding the Department's arbitrary balancing of harms and benefits—simultaneously accepting uncertain benefits and dismissing equally uncertain harms—to reach that reaffirmed public interest determination fall squarely within that stated purpose. The Department's environmental findings in Order 3643-C included its determination that the Project's "uncertain" harms do

not render the Project inconsistent with the public interest, DOE000162 at 25 (Order 3643-C), and Petitioners properly argue that the Department reached this finding by arbitrarily dismissing environmental harms that are no more "uncertain" than the Project's supposed benefits.

In attempting to set aside the arguments Petitioners raised on rehearing under the Gas Act, the Department also entirely misconstrues the relationship of NEPA review to agencies' substantive decisionmaking by dismissing many of Petitioners' Gas Act arguments as "reframings" of NEPA arguments, DOE000175 at 53 (Order 3643-D). The Department's failure to appropriately analyze and consider the Project's adverse environmental impacts, including its climate change impacts, is not only a procedural violation of NEPA but also undermines the Department's substantive decisionmaking under Section 3 of the Gas Act regarding whether exports are consistent with the public interest. *See Vecinos para el Bienestar de la Comunidad Costera v. FERC*, 6 F.4th 1321, 1331 (D.C. Cir. 2021) (finding that the fact that FERC's "NEPA analyses of the projects' impacts on climate change and environmental justice communities were deficient under the [Administrative Procedure Act]" meant that "[t]he Commission's determinations of public interest and convenience under the [Gas Act] were therefore deficient to the extent that they relied on its NEPA analyses of the projects' impacts on climate change and environmental justice communities."); *see also Eagle Cnty., Colo.*, 82

F.4th at 1194 (finding that "errors" in an EIS "infect[ed] the final determination as well" and noting that "[t]he Board was required not only to identify [environmental] effects under NEPA . . . , but also to weigh them in its [substantive] analysis."). The Council on Environmental Quality has confirmed the importance of NEPA review to agencies' substantive decisionmaking in the preamble to its recent proposal to amend its NEPA regulations: "Congress established the NEPA process to provide for better informed Federal decision making and improve environmental outcomes, and those goals are not fulfilled if the NEPA analysis is treated merely as a check-the-box exercise." 88 Fed. Reg. 49,924, 49,930 (July 31, 2023). Petitioners' arguments that the SEIS's deficiencies infect the Department's substantive decisionmaking in Order 3643-C are therefore firmly within the scope of the rehearing proceeding which the Department initiated in order to further analyze environmental impacts and determine if that analysis changed its substantive Gas Act decisionmaking.

## III. The Department's environmental review of the Project violated NEPA.

The Department's review of the Project's environmental impacts, through adoption of FERC's EIS and preparation of the SEIS, fell short of NEPA's requirements because: (1) the Department did not examine a realistic no action alternative, leaving it without a baseline against which to rationally compare the Project's impacts; and (2) the SEIS's discussion of downstream GHG emissions

and North Slope impacts did not comply with regulations regarding the treatment of missing information in NEPA reviews.

### A. The Department failed to identify even a remotely realistic no action alternative, rendering its analysis of climate impacts meaningless.

The Department failed to evaluate any realistic no action alternative. *See supra* pp. 9-10. Instead, the agency merely identified the extreme outer bounds of possible outcomes, from a seriously harmful climate impact on the one hand to a slightly positive impact on the other. The Department's use of these two unrealistic, best- and worst-case scenarios violated NEPA because it failed to produce information capable of meaningfully informing the agency's substantive decisionmaking and ignored the existence of modeling that could have allowed the Department to identify a narrower, realistic range of no action alternatives. *See Marsh v. Or. Nat. Res. Council*, 490 U.S. 360, 371 (1989) (explaining that NEPA is intended to produce information that will meaningfully inform agency's substantive decisionmaking); *Balt. Gas & Elec. Co. v. Natural Res. Defense Council*, 462 U.S. 87, 97 (1983) (identifying the facilitation of informed agency decisionmaking and public involvement as NEPA's "twin aims"). Additionally, the Department acted arbitrarily because, of the two bookend scenarios on which the Department relies, the scenario the Department views as more likely assumes perfect substitution of the Project's LNG for other sources of LNG—an

assumption courts have repeatedly rejected as inconsistent with basic economic principles.

An EIS must analyze a no action alternative—the world as it would be if the agency did not take the proposed action. 40 C.F.R. § 1502.14(c); 46 Fed. Reg. at 18,027 (Question 3). The no action alternative provides a critical baseline without which agencies cannot meaningfully assess a project's environmental impacts. *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)). Furthermore, if an agency has discretion to deny a proposed project, it must at least consider the no action alternative as a possible outcome. *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").

Here, because the trajectory of the energy market determines the resulting climate impacts and the Department claims to be wholly unable to predict that trajectory, the Department's no action alternatives do not provide the critical baseline against which to measure the Project's impacts. The SEIS merely identifies two theoretical opposite extremes and states that a realistic no action

scenario would likely fall somewhere between the two. However, the two scenarios are so different that the agency cannot even discern whether the project would increase or decrease harmful GHG emissions, rendering it useless in the Department's decisionmaking. *See Nat'l Ass'n of Regulatory Utility Comm'rs*, 736 F.3d at 519 (rejecting DOE's similar invocation of a range of possibilities "so large as to be absolutely useless" in fulfilling its obligations under the Nuclear Waste Policy Act).

Despite admitting both alternatives are unlikely, *see supra* p. 10, the Department asserts that its two no action alternatives "together more fully informed [the Department]'s decision by capturing and disclosing for decisionmakers and the public the full breadth of potential impacts that could result from the denial of an authorization for exports from the Alaska LNG Project." DOE000175 at 20 (Order 3643-D). But the Department does not, and cannot, explain how noting the full breadth of theoretically possible climate impacts is more informative than attempting to predict the Project's likely impacts. To the contrary, as the U.S. Environmental Protection Agency (EPA) noted with concern, the Department's use of two no action alternatives only "adds complexity for decision makers and the public in understanding the analysis presented in the Final SEIS, as well as the NEPA decision-making process." DOE000162 at 41 (Order 3643-C) (paraphrasing EPA comments on final SEIS).

NEPA does not require the Department to do the impossible, but the Department cannot simply claim that it is unable to narrow the range of possible outcomes while failing to either use, or rationally explain its failure to use, available data that it could have relied on to do so. *See supra* pp. 26-27. NEPA regulations spell out agencies' obligations when information necessary to evaluate a project's impacts is missing or unavailable, 40 C.F.R. § 1502.21, and the Department failed to comply with those regulations. *See infra* pp. 52-56. Moreover, as discussed above, *supra* Section II.A, the Department ignored data that could have helped it narrow the range of outcomes and provided no rational basis for failing to use modeling submitted by the applicant, which the Department relied upon to establish the Project's benefits, to estimate a narrower range of alternatives. The Department's refusal to rely on the modeling to evaluate a no action alternative while asserting that it could not possibly narrow the range of no action alternatives to better inform its decisionmaking and the public violates NEPA, as well as the Administrative Procedure Act.

Contrary to the Department's suggestion in its rehearing order, DOE000175 (Order 3643-D) at 19 & n.111, the Court did not hold in *Ctr. for Biological Diversity v. FERC*, 67 F.4th at 1182, that an agency may reasonably decline to evaluate a realistic no action alternative. Unlike the Department, the Commission in that case analyzed what it viewed as the likely no action alternative. *Id*. The

Court upheld that analysis. *Id.; see also id.* (holding that FERC reasonably "consider[ed] the reality of economic and development opportunities" in concluding that something like this project will likely be built even if this project is not approved). Incidentally, the Department does not share FERC's view that the no action alternative FERC used to evaluate the terminal's environmental harms reflects reality. DOE000162 at 34 (Order 3643-C) (explaining that the Department rejects FERC's conclusion due to the project's remote location and high costs). Nothing in the Court's holding in *Center for Biological Diversity* justifies the Department's refusal to use a realistic no action alternative.

Additionally, the Department's use of No Action Alternative 1 violates NEPA by assuming that other LNG would perfectly substitute for the Project's gas exports in the absence of the Department's approval. DOE000152 at 2-23 to 2-24 (SEIS); *id.* at 4.19-2. Courts have repeatedly, and categorically, rejected agency reliance on perfect substitution to conclude that permitting a project will result in no or minimal GHG emissions. Perfect substitution "contradict[s] basic economic principles," *WildEarth Guardians v. Bureau of Land Mgmt.*, 870 F.3d 1222, 1237-38 (10th Cir. 2017), is "illogical," and "places the [agency's] thumb on the scale by inflating the benefits of the action while minimizing its impacts," *Mont. Env't Info. Ctr. v. U.S. Office of Surface Mining*, 274 F. Supp. 3d 1074, 1098 (D. Mont. 2017), *amended in part on other grounds*, 2017 WL 5047901, No. CV 15-106-M-DWM

(D. Mont. Nov. 3, 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, meaning fuels that would otherwise not be extracted will be burned).

The Department's addition of No Action Alternative 2 in the final SEIS in response to Petitioners' and EPA's comments that the Department's draft SEIS improperly assumed perfect substitution, does not cure its use of No Action Alternative 1. *See* DOE000463 at 8-10 (Sierra Club *et al.* Draft SEIS Comments); DOE000152, App. D at D-86 to D-87, D-89 (SEIS). Even after it added No Action Alternative 2, the Department continued to rely on No Action Alternative 1, acknowledging that both scenarios informed its decision. DOE000175 at 20 (Order 3643-D). Despite the Department's statements that it did not select one of the scenarios as more likely than the other, it stated without explanation that the Project's GHG impacts would be "closer" to the difference between the Project scenarios and No Action Alternative 1 (which assumes perfect substitution), than that between the Project and No Action Alternative 2 (which assumes no substitution). DOE000162 at 24-25 (Order 3643-C). There is no indication that the Department would have reached the same public interest determination if it believed that Alternative 2 was the more realistic no action alternative. Thus, the Department accorded No Action Alternative 1 significant weight, tainting its

decisionmaking with the irrational perfect substitution assumption underlying that alternative.

The Department also does not cure this error by stating that "[t]he actual market substitution effects are unknown and could be met by non-LNG sources," DOE000175 at 20, (Order 3643-D) (quoting DOE000152, App. C at 2 (SEIS)). Whether the Department wrongly assumed perfect substitution was realistic or merely posited it for analytical purposes, the practical effect was the same: the Department gave undue weight to an alternative that reflects perfect substitution, which courts have roundly denounced as an inappropriate means of downplaying emissions.

The Department argues that assuming equivalent energy use in both Project and no action scenarios is consistent with the International Standards Organization's guidelines for preparing lifecycle analyses, *id*. at 19-20, but that is not relevant. The question here is not what constitutes a proper lifecycle analysis; the question is what analyses and inputs are necessary to inform a rational, NEPA-compliant analysis of the Project in comparison to a no action alternative. EPA suggested that that the Department could permissibly rely on Alternative 1 to form the basis of the lifecycle analysis's substitution analysis that allows for comparison amongst various project scenarios, but that the Department should rely on Alternative 2 for NEPA's required comparison of project scenarios to a no action

alternative. DOE000162 at 41 (Order 3643-C). Instead, the Department continued to rely significantly No Action Alternative 1, impermissibly downplaying the Project's emissions.

In sum, the Department both arbitrarily failed to identify any realistic no action alternative and relied significantly upon an arbitrary no action alternative, violating NEPA and the Administrative Procedure Act and providing no baseline against which to assess the Project's emissions.

### B. The SEIS does not comply with NEPA regulations regarding missing information.

The Department violated NEPA regulations on missing information by: (1) refusing either to use available modeling to identify a narrower, realistic range of no action alternatives, or to rationally explain why it could not do so; and (2) failing to adequately examine North Slope impacts. The SEIS fell short of the requirement that when "information relevant to reasonably foreseeable significant adverse impacts" cannot be obtained, an EIS 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." 40 C.F.R. § 1502.21.

In maintaining that the trajectory of the energy market is so uncertain that the Department cannot even determine if the Project would benefit or harm the climate, the Department did not even consider the option of using the NERA modeling submitted by the applicant to formulate a more realistic no action alternative between the two unlikely bookend alternatives. As is discussed above, the Department has provided no rational justification for its failure to use the NERA modeling when it specifically relied on that modeling in finding that the Project has economic benefits, DOE000107 at 18-19, 30-31 (Order 3643-A), and to analyze the economic benefits of exports in other proceedings, *see, e.g.*, DOE000116 (*Epcilon LNG, LLC*, Dep't of Energy, Office of Fossil Energy and Carbon Mgmt. Order 4629). In light of its past and present reliance on NERA modeling, the Department cannot plausibly claim NERA modeling is not credible, relevant evidence or a "theoretical approach[] or research method[] generally accepted in the scientific community." 40 C.F.R. § 1502.21(c)(4).

The Department's argument in the rehearing order that it need not even consider the relevance of the NERA modeling unless Petitioners can prove that modeling "would mitigate this uncertainty and provide a more realistic no action scenario," DOE000175 at 19 (Order 3643-D), misconstrues its NEPA obligations. The record shows that the Department considers the NERA modeling credible and reliable enough to rely on in related contexts, and it is directly relevant to the

uncertainty that the Department asserts here. On these facts, the Department had an affirmative obligation to summarize what evidence the NERA modeling provides and at least explain why the Department chose to discount that evidence in favor of what it admits are unrealistic hypotheticals. 40 C.F.R. § 1502.21; *State Farm*, 463 U.S. at 43 (holding that in order for court to uphold agency action under arbitrary and capricious standard, "the agency must examine the relevant data and articulate a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'" (quoting *Burlington Truck Lines v. United States*, 371 U.S. 156, 168 (1962)). Instead, the Department arbitrarily ignored both the applicant's NERA modeling and the option of using similar, but more updated, modeling to project market demand for the purposes of analyzing the Project's realistic GHG emissions. For example, EPA noted in its comments on the SEIS that "[a]vailable models include the Bureau of Ocean Energy Management's Revised Market Simulation Model, the U.S. Energy Information Administration's National Energy Modeling System, and ICF International's Integrated Planning Model." DOE000496 at 4 n.5 (EPA SEIS comments). The Department never even attempted to use these resources or explain why it did not.

The Department also failed to comply with the missing information regulation in its analysis of North Slope impacts. The SEIS takes the first step regulations require when information is incomplete or unavailable—disclosing the

lack of specific information about planned North Slope upstream development, including new pads, wells, access roads, and pipelines. DOE000152 at 4.21-1 (SEIS); *see also, e.g., id.* at 4.1-2, 4.3-4. However, it does not adequately discuss this information's relevance 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. *See* 40 C.F.R. § 1502.21(c)(4). The SEIS does not adequately explain how the Department was able, absent floodplain maps for the North Slope, DOE000152 at 4.3-5 (SEIS), or site-specific surveys of water resources, wetlands, or wildlife, *id.* at 4.3-4, 4.4-2, 4.6-2 to 4.6-3, to evaluate the significance of upstream development impacts or to rationally weigh these adverse impacts against the Project's supposed benefits. Upstream impacts to the North Slope comprise one of the two categories of impacts the Department reviewed for the first time in the SEIS, *see supra* p. 9, yet the SEIS does not contain adequate analysis of these impacts to support reasoned decisionmaking, and the Department's order reaffirming its public interest determination summarily dismisses those impacts. DOE000162 at 14-15, 50 (Order 3643-C).

Together, the Department's failure to adequately address missing information about the realistic no action alternative from a climate perspective and about environmental impacts to the North Slope prevented the Department from

meaningfully fulfilling either of its aims in granting Petitioner Sierra Club's request for rehearing. *See supra* p. 9 (describing the Department's goals). The Department's SEIS leaves the agency largely uninformed about both categories of impact, thwarting NEPA's goal of informed decisionmaking and undermining the Department's public interest analysis under the Gas Act.

## IV. This Court should vacate and remand the Department's orders granting export approval.

Vacatur is the ordinary remedy when agency action is found to be arbitrary and capricious. *United Steel v. Mine Safety & Health Admin.*, 925 F.3d 1279, 1287 (D.C. Cir. 2019) (citing 5 U.S.C. § 706(2)). This case does not present any reason to depart from that standard practice.

"The decision whether to vacate depends on 'the seriousness of the order's deficiencies (and thus the extent of doubt whether the agency chose correctly) and the disruptive consequences of an interim change that may itself be changed.'" *Allied-Signal, Inc. v. U.S. Nuclear Regul. Comm'n*, 988 F.2d 146, 150-51 (D.C. Cir. 1993) (quoting *Int'l Union, United Mine Workers of Am. v. Fed. Mine Safety & Health Admin.*, 920 F.2d 960, 967 (D.C. Cir. 1990)). As discussed above, both the Department's NEPA analysis and its Gas Act decisionmaking are pervaded by flaws serious enough to cause doubt that the Department would reach the same outcome if it were to perform a lawful decisionmaking process. "[W]here an agency's NEPA review suffers from 'a significant deficiency,' refusing to vacate

the corresponding agency action would 'vitiate' the statute." *Standing Rock Sioux Tribe v. U.S. Army Corps of Eng'rs*, 985 F.3d 1032, 1052 (D.C. Cir. 2021), *cert. denied sub nom. Dakota Access, LLC v. Standing Rock Sioux Tribe*, 142 S. Ct. 1187, 212 L. Ed. 2d 54 (2022) (quoting *Oglala Sioux Tribe v. U.S. Nuclear Regul. Comm'n*, 896 F.3d 520, 536 (D.C. Cir. 2018)). Analyzing the second factor "requires consideration of 'both the disruptive consequences to the [relevant] industry, as well as the potential environmental damage that might continue unabated while [the agency] revisits its determinations." *Diné Citizens Against Ruining Our Env't v. Haaland*, 59 F.4th 1016, 1049 (10th Cir. 2023) (quoting *Black Warrior Riverkeeper, Inc. v. U.S. Army Corps of Eng'rs*, 781 F.3d 1271, 1290 (11th Cir. 2015)). Although export of LNG to non-free trade agreement countries from the Alaska LNG terminal cannot occur without the Department's authorization, there is no evidence that it would be unduly disruptive for the Department's approval to be vacated if, with proper NEPA analysis and after further consideration under the Gas Act, it is later reissued. Construction has not begun and will take years to complete before any exports can occur. While the Project proponent may argue that vacatur might stall its ability to secure customers and financing, that temporary disruption is more than offset by the improvements to the Department's review on remand. *See Standing Rock*, 985 F.3d at 1053; *Realty Income Tr. v. Eckerd*, 564 F.2d 447, 456 (D.C. Cir. 1977) ("'The substantial

additional costs which would be caused by court-ordered delay' may well be justified by the compelling public interest in the enforcement of NEPA." (quoting *Steubing v. Brinegar*, 511 F.2d 489, 497 (2nd Cir. 1975).

## CONCLUSION

For the reasons stated above, Petitioners respectfully request that this Court vacate and remand the Department's orders granting approval for the Alaska LNG Project to export to non-free trade agreement countries.

Respectfully submitted this 15th day of December, 2023,

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## CERTIFICATE OF COMPLIANCE

This document complies with the type-volume limit of Fed. R. App. P. 32(a)(7)(B) because it contains 12,928 words, excluding the parts of the document exempted by Fed. R. App. P. 32(f).

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Respectfully submitted this 15th day of December, 2023.

*s/ Erin Colón*
Erin Colón
EARTHJUSTICE

**CERTIFICATE OF SERVICE**

I hereby certify that on September 20, 2023, I electronically filed the foregoing PETITIONERS' OPENING BRIEF, with exhibits, with the Clerk of the Court for the United States Court of Appeals for the District of Columbia Circuit using the appellate CM/ECF system.

Participants in the case who are registered CM/ECF users will be served by the appellate CM/ECF system.

Respectfully submitted this 15th day of December, 2023.

*s/ Erin Colón*
Erin Colón
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# TABLE OF EXHIBITS

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# ADDENDUM

5 U.S.C.A. § 706

§ 706. Scope of review

To the extent necessary to decision and when presented, the reviewing court shall decide all relevant questions of law, interpret constitutional and statutory provisions, and determine the meaning or applicability of the terms of an agency action. The reviewing court shall--

. . .

(2) hold unlawful and set aside agency action, findings, and conclusions found to be--

(A) arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law;

(B) contrary to constitutional right, power, privilege, or immunity;

(C) in excess of statutory jurisdiction, authority, or limitations, or short of statutory right;

(D) without observance of procedure required by law;

(E) unsupported by substantial evidence in a case subject to sections 556 and 557 of this title or otherwise reviewed on the record of an agency hearing provided by statute; or

(F) unwarranted by the facts to the extent that the facts are subject to trial de novo by the reviewing court.

In making the foregoing determinations, the court shall review the whole record or those parts of it cited by a party, and due account shall be taken of the rule of prejudicial error.

15 U.S.C.A. § 717b

§ 717b. Exportation or importation of natural gas; LNG terminals

Effective: August 8, 2005

(a) Mandatory authorization order

After six months from June 21, 1938, no person shall export any natural gas from the United States to a foreign country or import any natural gas from a foreign country without first having secured an order of the Commission authorizing it to do so. The Commission shall issue such order upon application, unless, after opportunity for hearing, it finds that the proposed exportation or importation will not be consistent with the public interest. The Commission may by its order grant such application, in whole or in part, with such modification and upon such terms and conditions as the Commission may find necessary or appropriate, and may from time to time, after opportunity for hearing, and for good cause shown, make such supplemental order in the premises as it may find necessary or appropriate.

(b) Free trade agreements

With respect to natural gas which is imported into the United States from a nation with which there is in effect a free trade agreement requiring national treatment for trade in natural gas, and with respect to liquefied natural gas--

(1) the importation of such natural gas shall be treated as a "first sale" within the meaning of section 3301(21) of this title; and

(2) the Commission shall not, on the basis of national origin, treat any such imported natural gas on an unjust, unreasonable, unduly discriminatory, or preferential basis.

(c) Expedited application and approval process

For purposes of subsection (a), the importation of the natural gas referred to in subsection (b), or the exportation of natural gas to a nation with which there is in effect a free trade agreement requiring national treatment for trade in natural gas, shall be deemed to be consistent with the public interest, and applications for such importation or exportation shall be granted without modification or delay.

(d) Construction with other laws

Except as specifically provided in this chapter, nothing in this chapter affects the rights of States under--

(1) the Coastal Zone Management Act of 1972 (16 U.S.C. 1451 et seq.);

(2) the Clean Air Act (42 U.S.C. 7401 et seq.); or

(3) the Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.).

(e) LNG terminals

(1) The Commission shall have the exclusive authority to approve or deny an application for the siting, construction, expansion, or operation of an LNG terminal. Except as specifically provided in this chapter, nothing in this chapter is intended to affect otherwise applicable law related to any Federal agency's authorities or responsibilities related to LNG terminals.

(2) Upon the filing of any application to site, construct, expand, or operate an LNG terminal, the Commission shall--

(A) set the matter for hearing;

(B) give reasonable notice of the hearing to all interested persons, including the State commission of the State in which the LNG terminal is located and, if not the same, the Governor-appointed State agency described in section 717b-1 of this title;

(C) decide the matter in accordance with this subsection; and

(D) issue or deny the appropriate order accordingly.

(3)(A) Except as provided in subparagraph (B), the Commission may approve an application described in paragraph (2), in whole or part, with such modifications and upon such terms and conditions as the Commission find[1] necessary or appropriate.

(B) Before January 1, 2015, the Commission shall not--

(i) deny an application solely on the basis that the applicant proposes to use the LNG terminal exclusively or partially for gas that the applicant or an affiliate of the applicant will supply to the facility; or

(ii) condition an order on--

(I) a requirement that the LNG terminal offer service to customers other than the applicant, or any affiliate of the applicant, securing the order;

(II) any regulation of the rates, charges, terms, or conditions of service of the LNG terminal; or

(III) a requirement to file with the Commission schedules or contracts related to the rates, charges, terms, or conditions of service of the LNG terminal.

(C) Subparagraph (B) shall cease to have effect on January 1, 2030.

(4) An order issued for an LNG terminal that also offers service to customers on an open access basis shall not result in subsidization of expansion capacity by existing customers, degradation of service to existing customers, or undue discrimination against existing customers as to their terms or conditions of service at the facility, as all of those terms are defined by the Commission.

(f) Military installations

(1) In this subsection, the term "military installation"--

(A) means a base, camp, post, range, station, yard, center, or homeport facility for any ship or other activity under the jurisdiction of the Department of Defense, including any leased facility, that is located within a State, the District of Columbia, or any territory of the United States; and

(B) does not include any facility used primarily for civil works, rivers and harbors projects, or flood control projects, as determined by the Secretary of Defense.

(2) The Commission shall enter into a memorandum of understanding with the Secretary of Defense for the purpose of ensuring that the Commission coordinate and consult[2] with the Secretary of Defense on the siting, construction, expansion, or operation of liquefied natural gas facilities that may affect an active military installation.

(3) The Commission shall obtain the concurrence of the Secretary of Defense before authorizing the siting, construction, expansion, or operation of liquefied natural gas facilities affecting the training or activities of an active military installation.

Footnotes

[1] So in original. Probably should be “finds”.

[2] So in original. Probably should be “coordinates and consults”.

15 U.S.C.A. § 717r

§ 717r. Rehearing and review

Effective: August 8, 2005

(a) Application for rehearing; time

Any person, State, municipality, or State commission aggrieved by an order issued by the Commission in a proceeding under this chapter to which such person, State, municipality, or State commission is a party may apply for a rehearing within thirty days after the issuance of such order. The application for rehearing shall set forth specifically the ground or grounds upon which such application is based. Upon such application the Commission shall have power to grant or deny rehearing or to abrogate or modify its order without further hearing. Unless the Commission acts upon the application for rehearing within thirty days after it is filed, such application may be deemed to have been denied. No proceeding to review any order of the Commission shall be brought by any person unless such person shall have made application to the Commission for a rehearing thereon. Until the record in a proceeding shall have been filed in a court of appeals, as provided in subsection (b), the Commission may at any time, upon reasonable notice and in such manner as it shall deem proper, modify or set aside, in whole or in part, any finding or order made or issued by it under the provisions of this chapter.

(b) Review of Commission order

Any party to a proceeding under this chapter aggrieved by an order issued by the Commission in such proceeding may obtain a review of such order in the court of appeals of the United States for any circuit wherein the natural-gas company to which the order relates is located or has its principal place of business, or in the United States Court of Appeals for the District of Columbia, by filing in such court, within sixty days after the order of the Commission upon the application for rehearing, a written petition praying that the order of the Commission be modified or set aside in whole or in part. A copy of such petition shall forthwith be transmitted by the clerk of the court to any member of the Commission and thereupon the Commission shall file with the court the record upon which the order complained of was entered, as provided in section 2112 of Title 28. Upon the filing of such petition such court shall have jurisdiction, which upon the filing of the record with it shall be exclusive, to affirm, modify, or set aside such order in whole or in part. No objection to the order of the Commission shall be considered by the court unless such objection

shall have been urged before the Commission in the application for rehearing unless there is reasonable ground for failure so to do. The finding of the Commission as to the facts, if supported by substantial evidence, shall be conclusive. If any party shall apply to the court for leave to adduce additional evidence, and shall show to the satisfaction of the court that such additional evidence is material and that there were reasonable grounds for failure to adduce such evidence in the proceedings before the Commission, the court may order such additional evidence to be taken before the Commission and to be adduced upon the hearing in such manner and upon such terms and conditions as to the court may seem proper. The Commission may modify its findings as to the facts by reason of the additional evidence so taken, and it shall file with the court such modified or new findings, which is supported by substantial evidence, shall be conclusive, and its recommendation, if any, for the modification or setting aside of the original order. The judgment and decree of the court, affirming, modifying, or setting aside, in whole or in part, any such order of the Commission, shall be final, subject to review by the Supreme Court of the United States upon certiorari or certification as provided in section 1254 of Title 28.

. . . .

United States Code Annotated – 2022

42 U.S.C.A. § 4332

§ 4332. Cooperation of agencies; reports; availability of information; recommendations; international and national coordination of efforts

The Congress authorizes and directs that, to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this chapter, and (2) all agencies of the Federal Government shall--

. . .

(C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on--

(i) the environmental impact of the proposed action,

(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,

(iii) alternatives to the proposed action,

(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and

(v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate Federal, State, and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the President, the Council on Environmental Quality and to the public as provided by section 552 of Title 5, and shall accompany the proposal through the existing agency review processes;

. . . .

10 C.F.R. § 1021.103

§ 1021.103 Adoption of CEQ NEPA regulations.

DOE adopts the regulations for implementing NEPA published by CEQ at 40 CFR parts 1500 through 1508.

40 C.F.R. § 1502.14

§ 1502.14 Alternatives including the proposed action.

Effective: September 14, 2020

The alternatives section should present the environmental impacts of the proposed action and the alternatives in comparative form based on the information and analysis presented in the sections on the affected environment (§ 1502.15) and the environmental consequences (§ 1502.16). In this section, agencies shall:

(a) Evaluate reasonable alternatives to the proposed action, and, for alternatives that the agency eliminated from detailed study, briefly discuss the reasons for their elimination.

. . .

(c) Include the no action alternative.

. . . .

40 C.F.R. § 1502.16

§ 1502.16 Environmental consequences.

Effective: September 14, 2020

(a) The environmental consequences section forms the scientific and analytic basis for the comparisons under § 1502.14. It shall consolidate the discussions of those elements required by sections 102(2)(C)(i), (ii), (iv), and (v) of NEPA that are within the scope of the statement and as much of section 102(2)(C)(iii) of NEPA as is necessary to support the comparisons. This section should not duplicate discussions in § 1502.14. The discussion shall include:

(1) The environmental impacts of the proposed action and reasonable alternatives to the proposed action and the significance of those impacts. The comparison of the proposed action and reasonable alternatives shall be based on this discussion of the impacts.

(2) Any adverse environmental effects that cannot be avoided should the proposal be implemented.

(3) The relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity.

(4) Any irreversible or irretrievable commitments of resources that would be involved in the proposal should it be implemented.

(5) Possible conflicts between the proposed action and the objectives of Federal, regional, State, Tribal, and local land use plans, policies and controls for the area concerned. (§ 1506.2(d) of this chapter)

(6) Energy requirements and conservation potential of various alternatives and mitigation measures.

(7) Natural or depletable resource requirements and conservation potential of various alternatives and mitigation measures.

(8) Urban quality, historic and cultural resources, and the design of the built environment, including the reuse and conservation potential of various alternatives and mitigation measures.

(9) Means to mitigate adverse environmental impacts (if not fully covered under § 1502.14(e)).

(10) Where applicable, economic and technical considerations, including the economic benefits of the proposed action.

. . . .

# 40 C.F.R. § 1502.21

## § 1502.21 Incomplete or unavailable information.

Effective: September 14, 2020

(a) When an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement, and there is incomplete or unavailable information, the agency shall make clear that such information is lacking.

(b) If the incomplete but available information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives, and the overall costs of obtaining it are not unreasonable, the agency shall include the information in the environmental impact statement.

(c) If the information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are unreasonable or the means to obtain it are not known, the agency shall include within the environmental impact statement:

(1) A statement that such information is incomplete or unavailable;

(2) A statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment;

(3) A summary of existing credible scientific evidence that is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment; and

(4) The agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community.

(d) For the purposes of this section, “reasonably foreseeable” includes impacts that have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason.

40 C.F.R. § 1508.1

§ 1508.1 Definitions.

Effective: May 20, 2022

The following definitions apply to the regulations in this subchapter. Federal agencies shall use these terms uniformly throughout the Federal Government.

. . .
(g) Effects or impacts means changes to the human environment from the proposed action or alternatives that are reasonably foreseeable and include the following:

(1) Direct effects, which are caused by the action and occur at the same time and place.

(2) Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

(3) Cumulative effects, which are effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non–Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

(4) Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effects will be beneficial.

. . . .

Federal Rules of Evidence Rule 201, 28 U.S.C.A.

Rule 201. Judicial Notice of Adjudicative Facts

(a) Scope. This rule governs judicial notice of an adjudicative fact only, not a legislative fact.

(b) Kinds of Facts That May Be Judicially Noticed. The court may judicially notice a fact that is not subject to reasonable dispute because it:

(1) is generally known within the trial court's territorial jurisdiction; or

(2) can be accurately and readily determined from sources whose accuracy cannot reasonably be questioned.

(c) Taking Notice. The court:

(1) may take judicial notice on its own; or

(2) must take judicial notice if a party requests it and the court is supplied with the necessary information.

(d) Timing. The court may take judicial notice at any stage of the proceeding.

(e) Opportunity to Be Heard. On timely request, a party is entitled to be heard on the propriety of taking judicial notice and the nature of the fact to be noticed. If the court takes judicial notice before notifying a party, the party, on request, is still entitled to be heard.

(f) Instructing the Jury. In a civil case, the court must instruct the jury to accept the noticed fact as conclusive. In a criminal case, the court must instruct the jury that it may or may not accept the noticed fact as conclusive.

**Long Term Applications Received by DOE to Export**

**Domestically Produced LNG, CNG, CGL from the Lower-48 States (as of October 11, 2023)**

***All Changes Since Last Issuance on September 15, 2023 Are in Red***

| Company | Quantity [a] | FTA Applications [b] (Docket Number) | Non-FTA Applications [c] (Docket Number) |
|---|---|---|---|
| Sabine Pass Liquefaction, LLC | 2.2 billion cubic feet per day (Bcf/d) [d] | Approved (10-85-LNG) | Approved (F) (10-111-LNG) |
| Freeport LNG Expansion, L.P. and FLNG Liquefaction, LLC | 1.4 Bcf/d [d] | Approved (10-160-LNG) | Approved (F) (10-161-LNG) |
| Lake Charles Exports, LLC | 2.0 Bcf/d** | Approved (11-59-LNG) | Approved (F) (11-59-LNG) |
| Carib Energy (USA) LLC | 0.03 Bcf/d: FTA[e]<br>0.04 Bcf/d: non-FTA [l] | Approved (11-71-LNG) | Vacated (F) (11-141-LNG) |
| Cove Point LNG, LP (Formerly Dominion Energy Cove Point LNG, LP)[bb] [oo] | 1.0 Bcf/d: FTA<br>0.77 Bcf/d: non-FTA | Approved (11-115-LNG) | Approved (F) (11-128-LNG) |
| Jordan Cove Energy Project, L.P.[fff] | 1.08 Bcf/d: FTA[dd]<br>1.08 Bcf/d: non-FTA [f] [dd] | Vacated (11-127-LNG) | Vacated (F) (12-32-LNG) |
| Cameron LNG, LLC | 1.7 Bcf/d [d] | Approved (11-145-LNG) | Approved (F) (11-162-LNG) |
| Freeport LNG Expansion, L.P. and FLNG Liquefaction, LLC [g] | 1.4 Bcf/d: FTA<br>0.4 Bcf/d: non-FTA [i] | Approved (12-06-LNG) | Approved (F) (11-161-LNG) |
| Gulf Coast LNG Export, LLC [h] [w] | 2.8 Bcf/d[d] | Vacated (12-05-LNG) | Withdrawn (12-05-LNG) |
| Gulf LNG Liquefaction Company, LLC | 1.50 Bcf/d: FTA<br>1.53 Bcf/d: non-FTA[jj] | Approved (12-47-LNG) | Approved (F) (12-101-LNG) |
| LNG Development Company, LLC (d/b/a Oregon LNG) [v] | 1.25 Bcf/d[d] | Vacated (12-48-LNG) | Withdrawn (12-77-LNG) |
| SB Power Solutions Inc. | 0.07 Bcf/d | Approved (12-50-LNG) | n/a |
| Southern LNG Company, L.L.C. | 0.5 Bcf/d: FTA<br>0.36 Bcf/d: non-FTA | Approved (12-54-LNG) | Approved (F) (12-100-LNG) |
| Excelerate Liquefaction Solutions I, LLC[s] | 1.38 Bcf/d[d] | Vacated (12-61-LNG) | Withdrawn (12-146-LNG) |

**Long Term Applications Received by DOE to Export**

**Domestically Produced LNG, CNG, CGL from the Lower-48 States (as of October 11, 2023)**

***All Changes Since Last Issuance on September 15, 2023 Are in Red***

| Company | Quantity [a] | FTA Applications [b] (Docket Number) | Non-FTA Applications [c] (Docket Number) |
|---|---|---|---|
| Golden Pass LNG Terminal LLC[pp] | 2.03 Bcf/d: FTA***<br>2.21 Bcf/d: non-FTA***<br>0.54 Bcf/d: FTA (Design Increase)***<br>0.35 Bcf/d: non-FTA (Design Increase)*** | Approved (12-88 -LNG)<br><br>Approved (Design Increase) | Approved (F) (12-156-LNG)<br><br>Approved (Design Increase) |
| Cheniere Marketing, LLC and Corpus Christi Liquefaction, LLC | 2.1 Bcf/d[d] | Approved (12-99-LNG) | Approved (F) (12-97-LNG) |
| Main Pass Energy Hub, LLC[t] | 3.22 Bcf/d | Vacated (12-114-LNG) | n/a |
| CE FLNG, LLC | 1.07 Bcf/d[d] | Approved (12-123-LNG) | Under DOE Review (12-123-LNG) * |
| Commonwealth LNG, LLC[u] [ll]<br>(Formerly Waller LNG Services, LLC) | 0.16 Bcf/d: FTA<br>0.19 Bcf/d: non-FTA | Vacated (12-152-LNG) | Withdrawn (13-153-LNG) |
| Next Decade Partners, LLC[n] (Formerly Pangea LNG (North America) Holdings, LLC) | 1.09 Bcf/d[d] | Vacated (12-174-LNG) | Withdrawn (12-184-LNG) |
| Magnolia LNG, LLC | 0.54 Bcf/d[i] | Approved (12-183-LNG) | n/a |
| Lake Charles LNG Export Company, LLC (Formerly Trunkline LNG Export, LLC) [q] | 2.0 Bcf/d** | Approved (13-04-LNG) | Approved (F) (13-04-LNG) |
| Gasfin Development USA, LLC[y] | 0.2 Bcf/d[d] | Vacated (13-06-LNG) | Withdrawn (13-161-LNG) |
| MPEH LLC[aa] | 3.22 Bcf/d | Approved (13-26-LNG) | Under DOE Review (13-26-LNG) * |
| Sabine Pass Liquefaction, LLC | 0.28 Bcf/d[d] | Approved (13-30-LNG) | Approved (F) (13-30-LNG) |
| Sabine Pass Liquefaction, LLC | 0.24 Bcf/d[d] | Approved (13-42-LNG) | Approved (F) (13-42-LNG) |
| Venture Global Calcasieu Pass, LLC[o] (Formerly Venture Global LNG, LLC) | 0.67 Bcf/d[d] | Approved (13-69-LNG) | Approved (F) (13-69-LNG) |
| Advanced Energy Solutions, L.L.C. | 0.02 Bcf/d[uu] | Vacated (13-104-LNG) | n/a |
| Argent Marine Management, Inc. | 0.003 Bcf/d | Approved (13-105-LNG) | n/a |
| Eos LNG LLC | 1.6 Bcf/d[d] | Approved (13-115-LNG) | Under DOE Review (13-116-LNG) * |
| Barca LNG LLC | 1.6 Bcf/d[d] | Approved (13-117-LNG) | Under DOE Review (13-118-LNG) * |
| Sabine Pass Liquefaction, LLC | 0.86 Bcf/d[d] | Approved (13-121-LNG) | Approved (F) (13-121-LNG) |

**Long Term Applications Received by DOE to Export**

**Domestically Produced LNG, CNG, CGL from the Lower-48 States (as of October 11, 2023)**

***All Changes Since Last Issuance on September 15, 2023 Are in Red***

| Company | Quantity [a] | FTA Applications [b] (Docket Number) | Non-FTA Applications [c] (Docket Number) |
|---|---|---|---|
| Delfin LNG LLC | 1.8 Bcf/d[d] | Approved (13-129-LNG) | Approved (F) (13-147-LNG) |
| Magnolia LNG, LLC | 0.54 Bcf/d: FTA[i]<br>1.08 Bcf/d: Non-FTA[i]<br>0.15 Bcf/d (Design Increase) [i] | Approved (13-131-LNG)<br><br>Approved (Design Increase) | Approved (F) (13-132-LNG)<br>Approved (Design Increase) |
| Annova LNG Common Infrastructure, LLC[p] [ss] (Formerly Annova LNG LLC) | 0.99 Bcf/d[d] [gg] | Vacated (13-140-LNG) | Vacated (F) (19-34-LNG) |
| Emera CNG, LLC | 0.03 Bcf/d: FTA [vv]<br>0.008 Bcf/d: non-FTA [vv] | Vacated (13-157-CNG) | Vacated (13-157-CNG) |
| Texas LNG LLC[r] | 0.27 Bcf/d[d] | Vacated (13-160-LNG) | Withdrawn (13-160-LNG) |
| Louisiana LNG Energy LLC | 0.27 Bcf/d: FTA<br>0.28 Bcf/d: Non-FTA | Vacated (14-19-LNG) | Dismissed (14-29-LNG) |
| Alturas LLC | 0.2 Bcf/d[vv] | Dismissed (14-55-LNG) | n/a |
| Strom Inc. | 0.08 Bcf/d: FTA [m] [xx]<br>0.15 Bcf/d: Non-FTA | Vacated (14-56-LNG) | Withdrawn (15-78-LNG) |
| Pentagon Energy, LLC | 0.16 Bcf/d[tt] | Vacated (14-63-CNG) | n/a |
| SeaOne Gulfport, LLC | 1.5 Bcf/d | Approved (14-83-CGL) | n/a |
| SCT&E LNG, LLC | 1.6 Bcf/d***[d] | Approved (14-89-LNG) | Under DOE Review (14-98-LNG) * |
| Venture Global Calcasieu Pass, LLC[o] (Formerly Venture Global LNG, LLC) | 0.67 Bcf/d[d] | Approved (14-88-LNG) | Approved (F) (14-88-LNG) |
| Sabine Pass Liquefaction, LLC[k] | 0.56 Bcf/d[d] | Approved (14-92-LNG) | Approved (F) (15-63-LNG) |
| Downeast LNG, Inc. [z] | 0.46 Bcf/d[d] | Vacated (14-172-LNG) | Withdrawn (14-173-LNG) |
| Cameron LNG, LLC | 0.42 Bcf/d[d] | Approved (14-204-LNG) | Approved (F) (15-67-LNG) |
| Air Flow North America Corp. | 0.002 Bcf/d[zz] | n/a | Vacated (14-206-LNG) |
| American LNG Marketing LLC | 0.008 Bcf/d[d] | Approved (14-209-LNG) | Approved (F) (14-209-LNG) |
| Venture Global Calcasieu Pass, LLC | 0.36 Bcf/d[d]<br>0.057 Bcf/d[d] Design Increase [ww] | Approved (15-25-LNG)<br>Approved (Design Increase) | Approved (F) (15-25-LNG)<br>Under DOE Review (Design Increase) |

**Long Term Applications Received by DOE to Export**

**Domestically Produced LNG, CNG, CGL from the Lower-48 States (as of October 11, 2023)**

***All Changes Since Last Issuance on September 15, 2023 Are in Red***

| Company | Quantity [a] | FTA Applications [b] (Docket Number) | Non-FTA Applications [c] (Docket Number) |
|---|---|---|---|
| American LNG Marketing LLC | 0.08 Bcf/d | Approved (15-19-LNG) | n/a |
| Cameron LNG, LLC | 1.41 Bcf/d[d] | Approved (15-36-LNG) | Approved (F) (15-90-LNG) |
| Floridian Natural Gas Storage Company | 0.04 Bcf/d[d] [mm] | Vacated (15-38-LNG) | Vacated (F) (15-38-LNG) |
| G2 Net-Zero LNG LLC[qq] | 1.84 Bcf/d[d] [iii] | Vacated (15-44-LNG) | Withdrawn (15-45-LNG) |
| Port Arthur LNG, LLC | 1.91 Bcf/d[d] [ff] | Approved (15-53-LNG)<br>Approved (18-162-LNG) | Approved (F) (15-96-LNG) |
| Texas LNG Brownsville LLC[s] | 0.56 Bcf/d[d] | Approved (15-62-LNG) | Approved (F) (15-62-LNG) |
| Corpus Christi Liquefaction, LLC[cc] | 1.41 Bcf/d[d] | Vacated (15-97-LNG) | Withdrawn (15-97-LNG) |
| Flint Hills Resources, LP | 0.01 Bcf/d[d] [ii] | Vacated (15-168-LNG) | Vacated (F) (15-168-LNG) |
| Rio Grande LNG, LLC | 3.61 Bcf/d[d] | Approved (15-190-LNG) | Approved (F) (15-190-LNG) |
| Eagle LNG Partners Jacksonville LLC | 0.14 Bcf/d[d] | Approved (16-15-LNG) | Approved (F) (16-15-LNG) |
| SeaOne Gulfport, LLC[aaa] | 1.0 Bcf/d | n/a | Under DOE Review (16-22-CGL) |
| Venture Global Plaquemines LNG, LLC | 3.40 Bcf/d[d]<br>0.45 Bcf/d[d] Design Increase [ddd] | Approved (16-28-LNG)<br>Approved (Design Increase) | Approved (F) (16-28-LNG)<br>Under DOE Review (Design Increase)* |
| Carib Energy (USA) LLC | 0.004 Bcf/d | n/a | Approved (F) (16-98-LNG) |
| Freeport LNG Expansion, L.P., FLNG Liquefaction, LLC, FLNG Liquefaction 2, LLC, & FLNG Liquefaction 3, LLC[x] | 0.34 Bcf/d | n/a | Approved (F) (16-108-LNG) |
| Lake Charles LNG Export Company, LLC** | 0.33 Bcf/d[d] | Approved (16-109-LNG) | Approved (F) (16-109-LNG) |
| Lake Charles Exports, LLC** | 0.33 Bcf/d[d] | Approved (16-110-LNG) | Approved (F) (16-110-LNG) |
| Driftwood LNG LLC | 3.88 Bcf/d[d] [ee] | Approved (16-144-LNG) | Approved (F) (16-144-LNG) |
| Lloyds Energy Group | 1.25 Bcf/d | Withdrawn (17-04-LNG) | n/a |
| Eagle LNG Partners Jacksonville II LLC | 0.008 Bcf/d[d] [ggg] | Vacated (17-79-LNG) | Vacated (F) (17-79-LNG) |
| Fourchon LNG LLC | 0.71 Bcf/d[d] | Approved (17-105-LNG) | Under DOE Review (17-105-LNG) * |
| Galveston Bay LNG, LLC[rr] | 2.15 Bcf/d[d] | Vacated (17-167-LNG) | Withdrawn (17-167-LNG) |

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| Company | Quantity [a] | FTA Applications [b] (Docket Number) | Non-FTA Applications [c] (Docket Number) |
|---|---|---|---|
| Freeport LNG Expansion, L.P. and FLNG Liquefaction 4, LLC | 0.72 Bcf/d | n/a | Approved (F) (18-26-LNG) |
| Corpus Christi Liquefaction Stage III, LLC | 1.59 Bcf/d[d] | Approved (18-78-LNG) | Approved (F) (18-78-LNG) |
| Cheniere Marketing, LLC & Corpus Christi Liquefaction , LLC | 0.3 Bcf/d[d] | Approved (19-124-LNG) | Approved (19-124-LNG) |
| Sabine Pass Liquefaction, LLC | 0.42 Bcf/d[d] | Approved (19-125-LNG) | Approved (19-125-LNG) |
| Commonwealth LNG, LLC | 1.21 Bcf/d[d] [ll] | Approved (19-134-LNG) | Under DOE Review (19-134-LNG) |
| SeaOne Corpus Christi, LLC | 1.50 Bcf/d | Approved (19-147-CGL) | n/a |
| Port Arthur LNG Phase II, LLC | 1.91 Bcf/d[d] | Approved (20-23-LNG) | Under DOE Review (20-23-LNG) |
| Andalusian Energy, LLC | 0.14 Bcf/d | Approved (20-73-CNG) | n/a |
| Bradford County LNG Marketing LLC | 0.35 Bcf/d | Approved (20-131-LNG) | n/a |
| Freeport LNG Expansion, L.P., FLNG Liquefaction, LLC, FLNG Liquefaction 2, LLC, & FLNG Liquefaction 3, LLC[x] | 0.24 Bcf/d (Design Increase) | n/a | Approved (21-98-LNG) (Design Increase) |
| Venture Global CP2 LNG, LLC | 3.96 Bcf/d[d] | Approved (21-131-LNG) | Under DOE Review (21-131-LNG) * |
| CNG Holding 1 LLC | 0.14 Bcf/d | Approved (22-13-CNG) | n/a |
| New Fortress Energy Louisiana FLNG LLC [eee] | 0.40 Bcf/d[d] | Approved (22-39-LNG) | Under DOE Review (22-39-LNG) * |
| SeaOne Corpus Christi II, LLC | 1.50 Bcf/d | Approved (22-62-CGL) | n/a |
| Power LNG LLC | 0.0193 Bcf/d | Approved (23-11-LNG) | n/a |
| Gulfstream LNG Development, LLC | 0.65 Bcf/d | Approved (23-34-LNG) | Under DOE Review (23-34-LNG)* |
| Corpus Christi Liquefaction, LLC; CCL Midscale 8–9, LLC; and Cheniere Marketing, LLC | 0.47 Bcf/d | Approved (23-46-LNG) | Under DOE Review (23-46-LNG) * |
| Lake Charles Exports, LLC | 2.33 Bcf/d | | Under DOE Review (23-87-LNG) |
| Southern LNG Company, L.L.C. | 0.08 Bcf/d | | Under DOE Review (23-109-LNG) * |
| **Total of all Applications Received** | | **67.81 Bcf/d (**)(***)** | **62.14 Bcf/d (**)(***)** |

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* These applications are not ready for DOE review until their relevant environmental review under National Environmental Policy Act (NEPA) is completed.

** In Docket Nos. 11-59-LNG and 13-04-LNG, Lake Charles Exports, LLC (LCE) and Lake Charles LNG Export Company, LLC (LCLNG), the owner of the Lake Charles Terminal, have both filed an application to export up to 2.0 Bcf/d of LNG from the Lake Charles Terminal; the total quantity of combined exports requested between LCE and LCLNG does not exceed 2.0 Bcf/d (i.e., both requests are not additive and only 2 Bcf/d is included in the bottom-line total of applications received). In Docket Nos. 16-109-LNG and 16-110-LNG, LCE and LCLNG have both filed an application to export up to 0.33 Bcf/d from the Lake Charles Terminal; this total quantity of combined exports requested between LCE and LCLNG does not exceed 0.33 Bcf/d (i.e., both requests are not additive and only 0.33 Bcf/d is included in the bottom-line total of applications received)

*** On July 9, 2014, the volume for Golden Pass Products LLC was changed to 2.0 Bcf/d to reflect the average daily amount, instead of the 2.6 Bcf/d peak daily amount included in the application. On April 25, 2017, DOE/FE approved the non-FTA authorization for Golden Pass Products LLC for 2.2 Bcf/d, which the facility is limited to (the FTA and non-FTA volumes are not additive). On August 14, 2020, Golden Pass LNG Terminal LLC applied for a facility design increase of 0.57 Bcf/d to their approved short-term authorization, 12-88-LNG; it also applied for a facility design increase of 0.37 Bcf/d to their approved long-term authorization, 12-156-LNG. Also the FTA volume for SCT&E LNG, LLC was changed to 1.6 Bcf/d to reflect a new application and withdrawal of the previous application to export 0.6 Bcf/d.

**(a)** Actual applications were in the equivalent annual quantities.

**(b)** FTA – Applications to export to free trade agreement (FTA) countries. The Natural Gas Act, as amended, has deemed FTA exports to be in the public interest and applications shall be authorized without modification or delay.

**(c)** Non-FTA applications require DOE to post a notice of application in the Federal Register for comments, protests and motions to intervene, and to evaluate the application to make a public interest consistency determination. (F) is a Final Authorization and (C) is a Conditional Authorization.

**(d)** Requested approval of this quantity in both the FTA and non-FTA export applications. Total facility is limited to this quantity (i.e., FTA and non-FTA volumes are not additive at a facility).

**(e)** Carib Energy (USA) LLC requested authority to export the equivalent of 11.53 Bcf per year of natural gas to FTA countries and 3.44 Bcf per year to non-FTA countries. Carib's requested amendment to its application on 12/12/2012, included a revised volume equivalent to 0.06 Bcf/d from 0.01 Bcf/d of natural gas.

**(f)** Jordan Cove Energy Project, L.P. requested authority to export the equivalent of 1.2 Bcf/d of natural gas to FTA countries and 0.8 Bcf/d to non-FTA countries.

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**(g)** DOE/FE received a new application (11-161-LNG) by FLEX to export an additional 1.4 Bcf/d of LNG from new trains to be located at the Freeport LNG Terminal, to non-FTA countries, and a separate application (12-06-LNG) to export this same 1.4 Bcf/d of LNG to FTA countries (received January 12, 2012). This 1.4 Bcf/d is in addition to the 1.4 Bcf/d FLEX requested in dockets (10-160-LNG and 10-161-LNG).

**(h)** An application was submitted by Gulf Coast on January 10, 2012, seeking one authorization to export LNG to any country not prohibited by U.S. law or policy. On September 11, 2012, Gulf Coast revised their application by seeking separate authorizations for LNG exports to FTA countries and Non-FTA countries.

**(i)** On December 31, 2018, Magnolia applied to increase its approved export amount across Docket Nos. 12-183-LNG, 13-131-LNG, and 13-132-LNG from 1.08 Bcf/d to 1.23 Bcf/d. FTA and Non-FTA volumes are not additive.

**(j)** FLEX applied for a second authorization to export 1.4 Bcf/d to FTA and Non-FTA countries. DOE/FE authorized 1.4 Bcf/d to FTA countries before FLEX filed with FERC. DOE authorized 0.4 Bcf/d to Non-FTA countries, which authorizes a total volume of 1.8 Bcf/d to Non-FTA countries in the two FLEX Non-FTA orders. The FLEX application with FERC is for a total facility capacity of 1.8 Bcf/d.

**(k)** The authorization sought by Sabine Pass Liquefaction, LLC (SPL) for 0.56 Bcf/d is for additional exports from the Sabine Pass Liquefaction project, and is additional to other SPL FTA LNG export applications.

**(l)** Carib is authorized to export 0.04 Bcf/d to non-FTA countries, which is the capacity of the FERC certificated Floridian Facility maximum truck send-out capacity. On November 17, 2020, in Docket No. 11-141-LNG, at the request of Carib Energy (USA), LLC, DOE/FE vacated the non-FTA authorization in Order No. 3487. The total non-FTA volumes no longer include these volumes.

**(m)** Strom FTA volumes increased to 0.08 Bcf/d from 0.02 Bcf/d in the October 15th report consistent with the application.

**(n)** On December 3, 2014, DOE/FE approved a Notice of Corporate Reorganization or Change in Control for Docket No. 12-184-LNG, which granted a name change from Pangea LNG (North America) Holdings, LLC to Next Decade Partners, LLC. On April 8, 2015, DOE/FE issued order 3327-A, vacating Pangea LNG (North America) Holdings, LLC's FTA LNG export authorization in Docket No. 12-174-LNG, and withdrawing Pangea LNG (North America) Holdings, LLC's Non-FTA export application in Docket No. 12-184-LNG. DOE/FE's notice of corporate reorganization or other changes in control in Docket No. 12-184-LNG and related dockets is vacated. Pangea LNG (North America) Holdings, LLC'S requested volume of 1.09 Bcf/d is not included in the "Total of all Applications Received".

**(o)** On December 3, 2014, DOE/FE approved a Notice of Corporate Reorganization or Change in Control, which granted a name change from Venture Global LNG, LLC to Venture Global Calcasieu Pass, LLC.

**(p)** On July 17, 2014, DOE/FE approved a Change in Control, which granted a name change from Annova LNG, LLC to Annova LNG Common Infrastructure, LLC.

**Long Term Applications Received by DOE to Export**

**Domestically Produced LNG, CNG, CGL from the Lower-48 States (as of October 11, 2023)**

***All Changes Since Last Issuance on September 15, 2023 Are in Red***

**(q)** On March 18, 2015, DOE/FE approved a Corporate Name Change for Docket No. 13-04-LNG, which granted a name change from Trunkline LNG Export, LLC to Lake Charles LNG Export Company, LLC.

**(r)** On September 24, 2015, in Docket No. 13-160-LNG, at the request of Texas LNG, LLC, DOE/FE vacated the FTA authorization in Order No. 3443 and withdrew the non-FTA application pending in that same docket. Texas LNG Brownsville, LLC's application in Docket No. 15-62-LNG replaces the application in Docket 13-160-LNG. The total FTA and non-FTA volumes no longer include these volumes.

**(s)** On October 13, 2015, in Docket No. 12-61-LNG, at the request of Excelerate Liquefaction Solutions I, LLC, DOE/FE vacated the FTA authorization in Order No. 3128, and withdrew the non-FTA application pending in DOE/FE Docket No. 12-146-LNG. The total FTA and non-FTA volumes no longer include these volumes.

**(t)** On September 18, 2014, in Docket No. 12-114-LNG, at the request of Main Pass Energy Hub, LLC, DOE/FE vacated the FTA authorization in Order No. 3220. The total FTA volume no longer include these volumes.

**(u)** On February 17, 2016, DOE/FE approved a Notice of Corporate Reorganization or Change in Control, which granted a name change from Waller LNG Services, LLC d/b/a Waller Point LNG to Commonwealth LNG, LLC.

**(v)** On June 2, 2016, in Docket No. 12-48-LNG, at the request of LNG Development Company (d/b/a/ Oregon LNG), DOE/FE vacated the FTA authorization in Order No. 3100 and withdrew the non-FTA application pending in Docket No. 12-77-LNG. The total FTA and non-FTA volumes no longer include these volumes.

**(w)** On June 27, 2016, in Docket No. 12-05-LNG, at the request of Gulf Coast LNG Export, LLC, DOE/FE vacated the FTA authorization in Order No. 3163 and withdrew the non-FTA application pending in DOE/FE Docket No. 12-05-LNG. The total FTA and non-FTA volumes no longer include these volumes.

**(x)** On August 3, 2016, Freeport LNG Expansion, L.P., FLNG Liquefaction, LLC, FLNG Liquefaction 2, LLC, and FLNG Liquefaction 3, LLC filed an application with DOE/FE to amend their authorization received in Docket No. 11-161-LNG, for up to an additional 0.34 Bcf/d. On September 10, 2021, Freeport LNG Expansion, L.P., FLNG Liquefaction, LLC, FLNG Liquefaction 2, LLC, and FLNG Liquefaction 3, LLC filed an application with DOE/FE in docket number 21-98-LNG for a design increase for up to an additional 0.24 Bcf/d.

**(y)** On January 5, 2017, in Docket No. 13-06-LNG, at the request of Gasfin Development USA, LLC, DOE/FE vacated the FTA authorization in Order No. 3253, and withdrew the non-FTA application pending in DOE/FE Docket No. 13-161-LNG. The total FTA and non-FTA volumes no longer include these volumes.

**(z)** On April 21, 2017, in Docket No. 14-172-LNG, at the request of Downeast LNG, Inc., DOE/FE vacated the FTA authorization in Order No. 3600 and withdrew the non-FTA application pending in Docket No. 14-173-LNG. The total FTA and non-FTA volumes no longer include these volumes.

**Long Term Applications Received by DOE to Export**

**Domestically Produced LNG, CNG, CGL from the Lower-48 States (as of October 11, 2023)**

***All Changes Since Last Issuance on September 15, 2023 Are in Red***

**(aa)** On November 30, 2017, DOE/FE approved a Change in Control, which granted a name change from Freeport-McMoRan Energy LLC to MPEH LLC.

**(bb)** On August 4, 2017, DOE/FE granted a corporate name change from Dominion Cove Point LNG, LP to Dominion Energy Cove Point LNG, LP.

**(cc)** On July 24, 2018, in Docket No. 15-97-LNG, at the request of Corpus Christi Liquefaction, LLC, DOE/FE vacated the FTA authorization in Order No. 3699, and withdrew the non-FTA application pending in DOE/FE Docket No. 15-97-LNG. The total FTA and non-FTA volumes no longer include these volumes.

**(dd)** On July 20, 2018, in Docket No. 11-27-LNG, at the request of Jordan Cove Energy Project L.P. (Jordan Cove), DOE/FE approved a reduction in the approved export volume from 1.2 Bcf/d to 1.08 Bcf/d. The total FTA volumes include this change. Also, on July 6, 2020, in Docket No. 12-32-LNG, at the request of Jordan Cove, DOE/FE approved an increase in the approved export volume from 0.8 Bcf/d to 1.08 Bcf/d. The total Non-FTA volumes include this change.

**(ee)** On December 6, 2018, in Docket No. 16-144-LNG, at the request of Driftwood LNG LLC (Driftwood), DOE/FE approved a reduction in the approved export volume from 4.1 Bcf/d to 3.88 Bcf/d. The total FTA volumes include this change. Driftwood has also requested a reduction in the approved Non-FTA export volume that is currently under review by DOE/FE.

**(ff)** On November 20, 2018, in Docket Nos. 15-53-LNG and 18-162-LNG, at the request of Port Arthur LNG, LLC (Port Arthur), DOE/FE approved an increase in the approved export volume from 1.42 Bcf/d to 1.92 Bcf/d. The total FTA and non-FTA volumes include this change.

**(gg)** On June 4, 2019, Annova LNG Common Infrastructure, LLC filed an application with DOE/FE to amend their authorization received in Docket No. 13-140-LNG, for up to an additional 0.05 Bcf/d.

**(hh)** On May 3, 2019 in Docket No. 17-04-LNG, Lloyds Energy Group LLC requested to withdraw their FTA application. The total FTA volumes no longer include this volume.

**(ii)** On February 5, 2019, in Docket No. 15-168-LNG, at the request of Flint Hills Resources, LP, DOE/FE vacated the FTA and Non-FTA authorizations in Order Nos. 3809 and 3829. The total FTA and non-FTA volumes no longer include these volumes.

**(jj)** On July 31, 2019, DOE/FE approved Docket No. 12-101-LNG for Gulf LNG Liquefaction Company, LLC, which changed the approved volume from 1.5 Bcf/d to 1.53 Bcf/d.

**(kk)** On October 31, 2019, DOE/FE amended Order Number 4202, Docket No. 18-27-LNG for Blue Water Fuels, LLC, which changed the approved volume from 0.007 Bcf/d to 0.009 Bcf/d.

**(ll)** On December 19, 2019, in Docket No. 12-152-LNG, at the request of Commonwealth LNG, LLC, DOE/FE vacated the FTA authorization in Order No. 3211, and withdrew the non-FTA application pending in DOE/FE Docket No. 13-153-LNG. The total FTA and non-FTA volumes

no longer include these volumes. On October 16, 2019 in a new proceeding, Commonwealth LNG, LLC re-applied for FTA and non-FTA authorizations to export LNG.

**(mm)** On October 22, 2020, in Docket No. 15-38-LNG, at the request of Floridian Natural Gas Storage Company, LLC, DOE/FE vacated the FTA authorization in Order No. 3691 and vacated the non-FTA authorization in Order No. 3744 in that same docket. The total FTA and non-FTA volumes no longer include these volumes.

**(nn)** On November 4, 2020, in Docket No. 20-124-LNG, at the request of Big Stone Petroleum, Inc., DOE/FE withdrew the FTA and non-FTA application. The total FTA and non-FTA volumes no longer include these volumes.

**(oo)** On December 2, 2020, DOE/FE approved a Notification of Name Change, which granted a name change from Dominion Energy Cove Point LNG, LP to Cove Point LNG, LP.

**(pp)** On March 4, 2020, DOE/FE approved a Notification of Name Change, which granted a name change from Golden Pass Products LLC to Golden Pass LNG Terminal LLC.

**(qq)** On February 5, 2021, DOE/FE approved a Corporate Name Change for Docket Nos. 15-44-LNG and 15-45-LNG, which granted a name change from G2 LNG LLC to G2 Net-Zero LNG LLC.

**(rr)** On March 17, 2021, in Docket No. 17-167-LNG, at the request of Galveston Bay LNG, LLC, DOE/FE vacated the FTA authorization in Order No. 4200 and withdrew the non-FTA application pending in that same docket. The total FTA and non-FTA volumes no longer include these volumes.

**(ss)** On April 23, 2021, in Docket Nos. 13-140-LNG and 19-34-LNG, at the request of Annova LNG Common Infrastructure, LLC, DOE/FE vacated the FTA authorization in Order No. 3394 and vacated the non-FTA authorization in Order No. 4491. The total FTA and non-FTA volumes no longer include these volumes.

**(tt)** On July 26, 2021, in Docket No. 14-63-CNG, at the request of Pentagon Energy, L.L.C., DOE/FE vacated the FTA authorization in Order No. 3515. The total FTA volumes no longer include these volumes.

**(uu)** On September 22, 2021, in Docket No. 13-104-LNG, at the request of Advanced Energy Solutions, LLC, DOE/FE vacated the FTA authorization in Order No. 3360. The total FTA volumes no longer include these volumes.

**(vv)** On October 20, 2021, in Docket No. 13-157-CNG, at the request of Emera CNG, LLC, DOE/FE vacated the FTA authorization in Order No. 3447 and vacated the Non-FTA authorization in Order No. 3727. The total FTA and Non-FTA volumes no longer include these volumes.

**(ww)** On December 3, 2021, Venture Global Calcasieu Pass, LLC filed an application with DOE/FE to amend their authorization received in Docket No. 15-25-LNG, for up to an additional 0.057 Bcf/d design increase, which will reflect the peak liquefaction capacity of the authorized Project facilities under optimal conditions.

**Long Term Applications Received by DOE to Export**

**Domestically Produced LNG, CNG, CGL from the Lower-48 States (as of October 11, 2023)**

***All Changes Since Last Issuance on September 15, 2023 Are in Red***

**(xx)** On December 21, 2021, in Docket No. 14-56-LNG, at the request of Strom, Inc., DOE vacated the FTA authorization in Order No. 3537 and withdrew the non-FTA application pending in Docket No. 15-78-LNG. The total FTA and non-FTA volumes no longer include these volumes.

**(yy)** On December 16, 2021, DOE dismissed Alturas's pending FTA application in Docket No. 14-55-LNG. The total FTA volumes no longer include these volumes.

**(zz)** On December 30, 2021, DOE vacated the non-FTA authorization granted to Air Flow North America Corp. in Docket No. 14-206-LNG, Order No. 3753. The total non-FTA volumes no longer include these volumes.

**(aaa)** On December 9, 2019, DOE granted SeaOne Gulfport's request to place their non-FTA application in Docket No. 16-22-CGL in abeyance until further notice.

**(bbb)** On January 13, 2022, DOE vacated the small-scale authorization granted to Blue Water Fuels, LLC in Docket No. 19-99-LNG, Order No. 4460. The total small-scale volumes no longer include these volumes.

**(ccc)** On March 28, 2022, DOE vacated the small-scale authorization granted to SpotX Energy, LLC in Docket No. 19-104-LNG, Order No. 4461. The total small-scale volumes no longer include these volumes.

**(ddd)** On March 11, 2022, Venture Global Plaquemines LNG, LLC filed an application with DOE to amend their authorization received in Docket No. 16-28-LNG, for up to an additional 0.45 Bcf/d design increase, which will reflect the peak liquefaction capacity of the authorized Project facilities under optimal conditions.

**(eee)** On March 30, 2022, New Fortress Energy Louisiana FLNG, LLC filed an application with DOE seeking authorization to export LNG from its proposed deepwater port in the Gulf of Mexico to any nation with which the U.S. has entered into a FTA and any other nation with which trade is not prohibited by U.S. law or policy.

**(fff)** On April 22, 2022, at the request of Jordan Cove Energy Project, L.P., DOE vacated the FTA authorization in Order No. 3041 and vacated the Non-FTA authorization in Order No. 3413. The total FTA and Non-FTA volumes no longer include these volumes.

**(ggg)** On December 29, 2022, in Docket No. 17-79-LNG, at the request of Eagle LNG Partners Jacksonville II LLC, DOE vacated the FTA and Non-FTA authorizations in Order No. 4078, as amended by Order No. 4078-A. The total FTA and non-FTA volumes no longer include these volumes.

**(hhh)** On January 20, 2023, at the request of Bear Head LNG Corp. and Bear Head LNG (USA), LLC, DOE vacated the FTA authorization in Order No. 3681 and the non-FTA authorization in Order No. 3770 granted in Docket No. 15-33-LNG. The total FTA and non-FTA volumes no longer include these volumes.

**Long Term Applications Received by DOE to Export**

**Domestically Produced LNG, CNG, CGL from the Lower-48 States (as of October 11, 2023)**

***All Changes Since Last Issuance on September 15, 2023 Are in Red***

**(iii)** On April 18, 2023, in Docket No. 15-44-LNG, at the request of G2-Net Zero LLC, DOE vacated the FTA authorization in Order No. 3862 and withdrew the non-FTA application pending in Docket No. 15-45-LNG. The total FTA and non-FTA volumes no longer include these volumes.

**Long Term Applications Received by DOE to Export**

**Domestically Produced LNG, CNG, CGL from the Lower-48 States (as of October 11, 2023)**

***All Changes Since Last Issuance on September 15, 2023 Are in Red***

## CANADA and MEXICO APPLICATIONS

| Company | Quantity [a] | FTA Applications [b] (Docket Number) | Non-FTA Applications [c] (Docket Number) |
|---|---|---|---|
| Pieridae Energy (USA) Ltd. | 0.80[d] | Approved (14-179-LNG) | Approved (14-179-LNG) |
| Bear Head LNG Corp. and Bear Head LNG (USA), LLC [hhh] | 1.20 Bcf/d: FTA<br>0.81 Bcf/d: non-FTA | Vacated (15-33-LNG) | Vacated (15-33-LNG) |
| Mexico Pacific Limited LLC | 1.7[d] | Approved (18-70-LNG) | Approved (18-70-LNG) |
| ECA Liquefaction, S. de R.L. de C.V. (mid-scale project) | 0.50 Bcf/d: FTA<br>0.44 Bcf/d: non-FTA | Approved (18-144-LNG) | Approved (18-144-LNG) |
| Energia Costa Azul, S. de R.L. de C.V. (Large-Scale Project) | 1.99 Bcf/d: FTA<br>1.74 Bcf/d: non-FTA | Approved (18-145-LNG) | Approved (18-145-LNG) |
| Epcilon LNG LLC | 1.083[d] | Approved (20-31-LNG) | Approved (20-31-LNG) |
| Vista Pacifico LNG S.A.P. I de C.V. | 0.66 Bcf/d: FTA<br>0.55 Bcf/d: non-FTA | Approved (20-153-LNG) | Approved (20-153-LNG) |
| NFE Altamira FLNG S. de R.L. de C.V. | 0.43 Bcf/d: FTA<br>0.40 Bcf/d: non-FTA | Approved (22-110-LNG) | Under DOE Review (22-110-LNG) |
| Mexico Pacific Limited Phase 1 Expansion | 1.17 Bcf/d: FTA<br>0.80 Bcf/d: non-FTA | Approved (22-167-LNG) | Under DOE Review (22-167-LNG) |
| **Total of all Canada and Mexico Applications Received** | | **8.33 Bcf/d** | **7.51 Bcf/d** |

**Long Term Applications Received by DOE to Export**

**Domestically Produced LNG, CNG, CGL from the Lower-48 States (as of October 11, 2023)**

***All Changes Since Last Issuance on September 15, 2023 Are in Red***

**SMALL-SCALE APPLICATIONS (Includes Short-Term & Long-Term)**

| Company | Quantity [a] | FTA Applications [b] (Docket Number) | Non-FTA Applications [c] (Docket Number) |
|---|---|---|---|
| Blue Water Fuels, LLC (Long-Term) | 0.009 Bcf/d[d] [kk] | Approved (18-27-LNG) | n/a |
| Blue Water Fuels, LLC (Long-Term) | 0.009 Bcf/d[d] [bbb] | n/a | Vacated (F) (19-99-LNG) |
| SpotX Energy, LLC (Long-Term) | 0.14 Bcf/d[d] [ccc] | Approved (19-104-LNG) | Vacated (F) (19-104-LNG) |
| SpotX Energy, LLC (Short-Term) | 0.14 Bcf/d[d] | Approved (19-105-LNG) | n/a |
| Spectrum LNG, LLC (Short-Term) | 0.006 Bcf/d | n/a | Approved (F) (20-33-LNG) |
| Big Stone Petroleum, Inc. (Long-Term & Short-Term) | 0.007[nn] | Withdrawn (20-124-LNG) | Withdrawn (20-124-LNG) |
| Nopetro LNG, LLC | 0.14[d] | Approved (20-167-LNG) | Expired (20-167-LNG) |
| Stabilis GDS, Inc. | 0.14[d] | Approved (22-61-LNG) | Approved (22-61-LNG) |
| Cryopeak LNG Solutions Corporation | 0.14[d] | Approved (22-63-LNG) | Approved (22-63-LNG) |
| MKVH Advisors, Inc. | 0.14[d] | Approved (22-69-LNG) | Approved (22-69-LNG) |
| Otter Industries, LLC | 0.14[d] | Approved (22-123-LNG) | Approved (22-123-LNG) |
| Manifest Shipping & Trading Corp. | 0.14[d] | Approved (22-124-LNG) | Approved (22-124-LNG) |
| STXM LLC | 0.14[d] | Approved (22-125-LNG) | Approved (22-125-LNG) |
| Eagle LNG Partners Jacksonville II LLC | 0.14[d] | Approved (22-168-LNG) | Approved (22-168-LNG) |
| **Total of all Small-Scale Applications Received** | | **1.41 Bcf/d** | **0.99 Bcf/d** |

# United States LNG Export Terminals

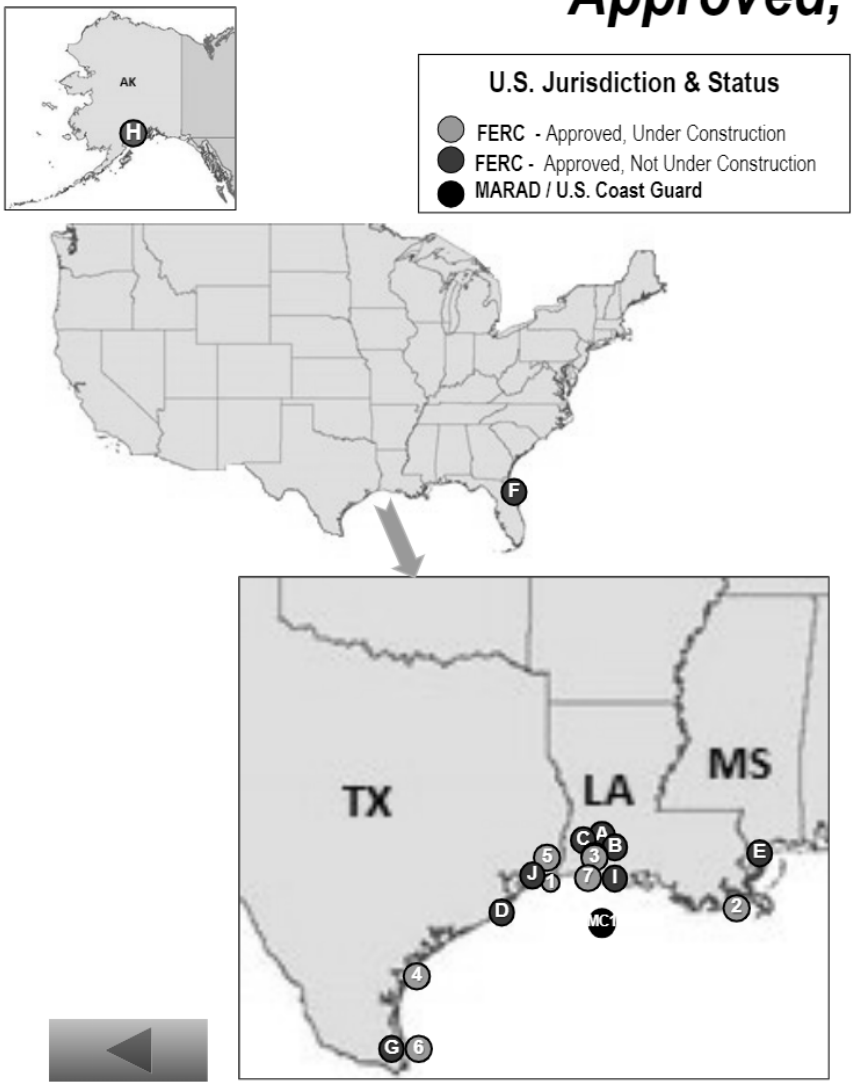
## *Existing*


1. **Kenai, AK:** 0.2 Bcfd (Trans-Foreland)
2. **Sabine, LA:** 4.55 Bcfd (Cheniere/Sabine Pass LNG – Trains 1-6)
3. **Cove Point, MD:** 0.79 Bcfd (Dominion–Cove Point LNG)
4. **Corpus Christi, TX:** 2.40 Bcfd (Cheniere – Corpus Christi LNG Trains 1-3)
5. **Hackberry, LA:** 2.06 Bcfd (Sempra–Cameron LNG, Trains 1-3)
6. **Elba Island, GA:** 0.35 Bcd (Southern LNG Company Units 1-10)
7. **Freeport, TX:** 2.38 Bcfd (Freeport LNG Dev/Freeport LNG Expansion/FLNG Liquefaction Trains 1-3)
8. **Cameron Parish, LA:** 1.70 Bcfd (Venture Global Calcasieu Pass Units 1-9)

**As of December 12, 2023**
**No updates since previous issuance**

**Exhibit 2, page 1 of 3**

# United States LNG Export Terminals
## *Approved, Not Yet Built*




**FERC – APPROVED, UNDER CONSTRUCTION**

1. **Sabine Pass, TX:** 2.57 Bcfd (ExxonMobil – Golden Pass) (CP14-517, CP20-459)
2. **Plaquemines Parish, LA:** 3.32 Bcfd (Venture Global Plaquemines) (CP17-66)
3. **Calcasieu Parish, LA:** 3.81 Bcfd (Driftwood LNG) (CP17-117)
4. **Corpus Christi, TX:** 1.58 Bcfd (Cheniere Corpus Christi Stage III) (CP18-512)
5. **Port Arthur, TX:** 1.86 Bcfd (Sempra - Port Arthur LNG Trains 1 & 2) (CP17-20)
6. **Brownsville, TX:** 3.73 Bcfd (Rio Grande LNG – NextDecade) (CP16-454)
7. **Cameron Parish, LA:** 0.06 Bcfd (Venture Global Calcasieu Pass) (CP15-550)

**FERC – APPROVED, NOT UNDER CONSTRUCTION**

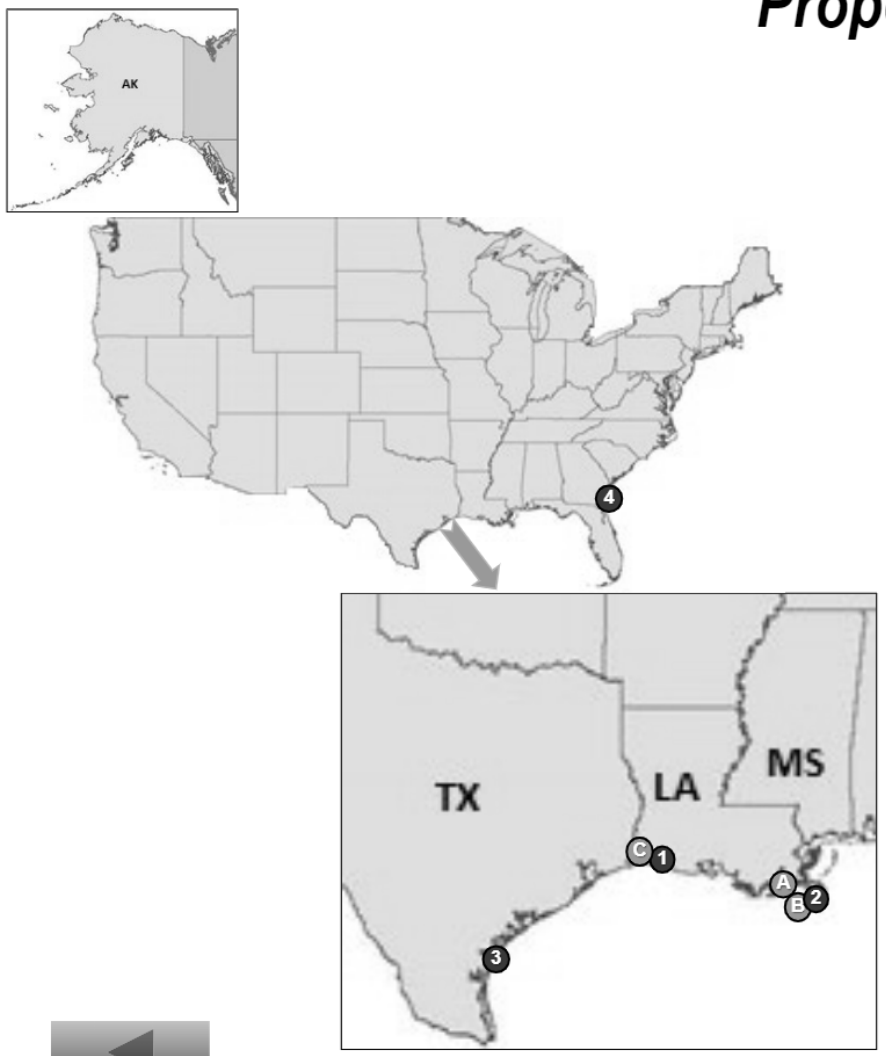
A. **Lake Charles, LA:** 2.27 Bcfd (Lake Charles LNG) (CP14-120)
B. **Lake Charles, LA:** 1.22 Bcfd (Magnolia LNG) (CP14-347)
C. **Hackberry, LA:** 0.93 Bcfd (Sempra - Cameron LNG Train 4) (CP15-560, CP22-41)
D. **Freeport, TX:** 0.74 Bcfd (Freeport LNG Dev Train 4) (CP17-470)
E. **Pascagoula, MS:** 1.50 Bcfd (Gulf LNG Liquefaction) (CP15-521)
F. **Jacksonville, FL:** 0.13 Bcf/d (Eagle LNG Partners) (CP17-41)
G. **Brownsville, TX:** 0.62 Bcfd (Texas LNG Brownsville) (CP16-116)
H. **Nikiski, AK:** 2.76 Bcfd (Alaska Gasline) (CP17-178)
I. **Cameron Parish, LA:** 1.21 Bcfd (Commonwealth LNG) (CP19-502)
J. **Port Arthur, TX:** 1.86 Bcfd (Sempra - Port Arthur LNG Trains 3 & 4) (CP20-55)

**MARAD/USCG – APPROVED, NOT UNDER CONSTRUCTION**

MC1. **Gulf of Mexico:** 1.8 Bcfd (Delfin LNG)

**As of December 12, 2023**
**No updates since previous issuance**

# United States LNG Export Terminals
## *Proposed*




PROPOSED TO FERC

**Pending Applications:**

1. **Cameron Parish, LA:** 3.96 Bcfd (Venture Global CP2 Blocks 1-9) (CP22-21)
2. **Plaquemines Parish, LA:** 0.45 Bcfd (Venture Global Plaquemines) (CP22-92)
3. **Corpus Christi, TX:** 0.45 Bcfd (Cheniere Corpus Christi Midscale Trains 8-9) (CP23-129)
4. **Elba Island, GA:** 0.06 Bcd (Elba Liquefaction Optimization Project) (CP23-375)

**Projects in Pre-filing:**

A. **LaFourche Parish, LA:** 0.69 Bcfd (Port Fourchon LNG) (PF17-9)
B. **Plaquemines Parish, LA:** 2.76 Bcfd (Delta LNG - Venture Global) (PF19-4)
C. **Sabine, LA:** 0.9 Bcfd (Cheniere/Sabine Pass – Stage 5 Expansion) (PF23-2)

**U.S. Jurisdiction & Status**

- FERC - Pending Applications
- FERC - Projects in Pre-filing

**As of December 12, 2023**
**No updates since previous issuance**

**51,072,240** Metric Tons **of Carbon Dioxide ($CO_2$) equivalent**

## This is equivalent to greenhouse gas emissions from:

**11,365,120 gasoline-powered passenger vehicles driven for one year**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#vehicles>

**130,926,180,153 miles driven by an average gasoline-powered passenger vehicle**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#miles>

## This is equivalent to $CO_2$ emissions from:

**5,746,848,210 gallons of gasoline consumed**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#gasoline>

**5,016,919,454 gallons of diesel consumed**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#diesel>

**57,208,745,223 pounds of coal burned**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#lbscoal>

**676,100** **tanker trucks' worth of gasoline**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculat calculations-and-references#tankers>

**6,436,819** **homes' energy use for one year**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#houseenergy>

**9,937,359** **homes' electricity use for one year**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#houseelec>

**281,572** **railcars' worth of coal burned**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#railcars>

**118,126,709** **barrels of oil consumed**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#oil>

**2,346,211,417** **propane cylinders used for home barbeques** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#propane>

**Exhibit 3, page 2 of 24**

**13.7** **coal-fired power plants in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#coalplant>

**128** **natural gas-fired power plants in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#gasplant>

**6,212,562,430,580** **number of smartphones charged** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#smartphones>

## This is equivalent to greenhouse gas emissions avoided by:

**17,672,055** **tons of waste recycled instead of landfilled** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#recycle>

**2,524,579** **garbage trucks of waste recycled instead of landfilled** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#gtrucks>

**2,210,694,524** **trash bags of waste recycled instead of landfilled** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#trash>

**14,201** **wind turbines running for a year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#wind>

**1,935,689,610** **incandescent lamps switched to LEDs** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#lights>

## This is equivalent to carbon sequestered by:

**844,483,880** **tree seedlings grown for 10 years** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#seedlings>

**60,904,549** **acres of U.S. forests in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#pineforests>

**338,687** **acres of U.S. forests preserved from conversion to cropland in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#deforestation>

**Exhibit 3, page 4 of 24**

**274,000,000** Metric Tons **of Carbon Dioxide ($CO_2$) equivalent**

## This is equivalent to greenhouse gas emissions from:

**60,973,296 gasoline-powered passenger vehicles driven for one year**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#vehicles>

**702,412,373,819 miles driven by an average gasoline-powered passenger vehicle**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#miles>

## This is equivalent to $CO_2$ emissions from:

**30,831,551,705 gallons of gasoline consumed**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#gasoline>

**26,915,520,629 gallons of diesel consumed**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#diesel>

**306,922,041,784 pounds of coal burned**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#lbscoal>

**Exhibit 3, page 5 of 24**

**3,627,241** **tanker trucks' worth of gasoline**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculat calculations-and-references#tankers>

**34,533,212** **homes' energy use for one year**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#houseenergy>

**53,313,430** **homes' electricity use for one year**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#houseelec>

**1,510,619** **railcars' worth of coal burned**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#railcars>

**633,743,853** **barrels of oil consumed**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#oil>

**12,587,306,291** **propane cylinders used for home barbeques** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#propane>

**Exhibit 3, page 6 of 24**

**73.3** **coal-fired power plants in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#coalplant>

**689** **natural gas-fired power plants in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#gasplant>

**33,330,085,085,068** **number of smartphones charged** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#smartphones>

**This is equivalent to greenhouse gas emissions avoided by:**

**94,809,689** **tons of waste recycled instead of landfilled** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#recycle>

**13,544,241** **garbage trucks of waste recycled instead of landfilled** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#gtrucks>

**Exhibit 3, page 7 of 24**

**11,860,264,971 trash bags of waste recycled instead of landfilled** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#trash>

**76,190 wind turbines running for a year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#wind>

**10,384,877,437 incandescent lamps switched to LEDs** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#lights>

**This is equivalent to carbon sequestered by:**

**4,530,613,558 tree seedlings grown for 10 years** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#seedlings>

**326,749,845 acres of U.S. forests in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#pineforests>

**1,817,038 acres of U.S. forests preserved from conversion to cropland in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#deforestation>

**Exhibit 3, page 8 of 24**

**329,000,000** Metric Tons **of Carbon Dioxide ($CO_2$) equivalent**

## This is equivalent to greenhouse gas emissions from:

**73,212,462 gasoline-powered passenger vehicles driven for one year**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#vehicles>

**843,407,558,345 miles driven by an average gasoline-powered passenger vehicle**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#miles>

## This is equivalent to $CO_2$ emissions from:

**37,020,366,828 gallons of gasoline consumed**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#gasoline>

**32,318,271,120 gallons of diesel consumed**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#diesel>

**368,530,480,829 pounds of coal burned**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#lbscoal>

**4,355,337** **tanker trucks' worth of gasoline**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculat calculations-and-references#tankers>

**41,465,061** **homes' energy use for one year**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#houseenergy>

**64,015,031** **homes' electricity use for one year**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#houseelec>

**1,813,845** **railcars' worth of coal burned**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#railcars>

**760,955,211** **barrels of oil consumed**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#oil>

**15,113,955,365** **propane cylinders used for home barbeques** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#propane>

**Exhibit 3, page 10 of 24**

**88.1** **coal-fired power plants in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#coalplant>

**827** **natural gas-fired power plants in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#gasplant>

**40,020,430,631,341** **number of smartphones charged** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#smartphones>

**This is equivalent to greenhouse gas emissions avoided by:**

**113,840,830** **tons of waste recycled instead of landfilled** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#recycle>

**16,262,976** **garbage trucks of waste recycled instead of landfilled** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#gtrucks>

**Exhibit 3, page 11 of 24**

**14,240,975,093 trash bags of waste recycled instead of landfilled** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#trash>

**91,484 wind turbines running for a year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#wind>

**12,469,433,127 incandescent lamps switched to LEDs** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#lights>

**This is equivalent to carbon sequestered by:**

**5,440,043,287 tree seedlings grown for 10 years** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#seedlings>

**392,338,317 acres of U.S. forests in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#pineforests>

**2,181,772 acres of U.S. forests preserved from conversion to cropland in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#deforestation>

**540,000,000** Metric Tons **of Carbon Dioxide ($CO_2$) equivalent**

## This is equivalent to greenhouse gas emissions from:

**120,166,350 gasoline-powered passenger vehicles driven for one year**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#vehicles>

**1,384,316,357,161 miles driven by an average gasoline-powered passenger vehicle**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#miles>

## This is equivalent to $CO_2$ emissions from:

**60,762,912,119 gallons of gasoline consumed**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#gasoline>

**53,045,186,640 gallons of diesel consumed**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#diesel>

**604,882,856,072 pounds of coal burned**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#lbscoal>

**7,148,578** **tanker trucks' worth of gasoline**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculat calculations-and-references#tankers>

**68,058,154** **homes' energy use for one year**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#houseenergy>

**105,070,264** **homes' electricity use for one year**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#houseelec>

**2,977,132** **railcars' worth of coal burned**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#railcars>

**1,248,984,237** **barrels of oil consumed**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#oil>

**24,807,099,990** **propane cylinders used for home barbeques** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#propane>

**Exhibit 3, page 14 of 24**

**145** **coal-fired power plants in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#coalplant>

**1,357** **natural gas-fired power plants in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#gasplant>

**65,687,028,999,769** **number of smartphones charged** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#smartphones>

**This is equivalent to greenhouse gas emissions avoided by:**

**186,851,211** **tons of waste recycled instead of landfilled** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#recycle>

**26,693,030** **garbage trucks of waste recycled instead of landfilled** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#gtrucks>

**23,374,244,833 trash bags of waste recycled instead of landfilled** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#trash>

**150,155 wind turbines running for a year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#wind>

**20,466,546,774 incandescent lamps switched to LEDs** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#lights>

**This is equivalent to carbon sequestered by:**

**8,928,946,429 tree seedlings grown for 10 years** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#seedlings>

**643,959,548 acres of U.S. forests in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#pineforests>

**3,581,024 acres of U.S. forests preserved from conversion to cropland in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#deforestation>

**1,922,000,000** Metric Tons **of Carbon Dioxide ($CO_2$) equivalent**

## This is equivalent to greenhouse gas emissions from:

**427,703,195 gasoline-powered passenger vehicles driven for one year**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#vehicles>

**4,927,140,811,970 miles driven by an average gasoline-powered passenger vehicle**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#miles>

## This is equivalent to $CO_2$ emissions from:

**216,270,957,578 gallons of gasoline consumed**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#gasoline>

**188,801,571,709 gallons of diesel consumed**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#diesel>

**2,152,934,906,240 pounds of coal burned**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#lbscoal>

**25,443,642** **tanker trucks' worth of gasoline**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculat calculations-and-references#tankers>

**242,236,616** **homes' energy use for one year**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#houseenergy>

**373,972,311** **homes' electricity use for one year**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#houseelec>

**10,596,384** **railcars' worth of coal burned**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#railcars>

**4,445,458,709** **barrels of oil consumed**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#oil>

**88,294,900,336** **propane cylinders used for home barbeques** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#propane>

**Exhibit 3, page 18 of 24**

**514** **coal-fired power plants in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#coalplant>

**4,830** **natural gas-fired power plants in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#gasplant>

**233,797,166,180,66** **number of smartphones charged** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#smartphones>

**This is equivalent to greenhouse gas emissions avoided by:**

**665,051,903** **tons of waste recycled instead of landfilled** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#recycle>

**95,007,415** **garbage trucks of waste recycled instead of landfilled** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#gtrucks>

**83,194,997,350 trash bags of waste recycled instead of landfilled** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#trash>

**534,442 wind turbines running for a year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#wind>

**72,845,746,111 incandescent lamps switched to LEDs** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#lights>

**This is equivalent to carbon sequestered by:**

**31,780,435,252 tree seedlings grown for 10 years** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#seedlings>

**2,292,018,983 acres of U.S. forests in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#pineforests>

**12,745,791 acres of U.S. forests preserved from conversion to cropland in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#deforestation>

**2,196,000,000** Metric Tons **of Carbon Dioxide ($CO_2$) equivalent**

## This is equivalent to greenhouse gas emissions from:

**488,676,492 gasoline-powered passenger vehicles driven for one year**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#vehicles>

**5,629,553,185,789 miles driven by an average gasoline-powered passenger vehicle**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#miles>

## This is equivalent to $CO_2$ emissions from:

**247,102,509,283 gallons of gasoline consumed**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#gasoline>

**215,717,092,338 gallons of diesel consumed**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#diesel>

**2,459,856,948,025 pounds of coal burned**
<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#lbscoal>

**29,070,883** **tanker trucks' worth of gasoline**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculat calculations-and-references#tankers>

**276,769,827** **homes' energy use for one year**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#houseenergy>

**427,285,741** **homes' electricity use for one year**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#houseelec>

**12,107,002** **railcars' worth of coal burned**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#railcars>

**5,079,202,562** **barrels of oil consumed**

<https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#oil>

**100,882,206,628** **propane cylinders used for home barbeques** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#propane>

**Exhibit 3, page 22 of 24**

**588** **coal-fired power plants in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#coalplant>

**5,518** **natural gas-fired power plants in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#gasplant>

**267,127,251,265,72** **number of smartphones charged** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#smartphones>

**This is equivalent to greenhouse gas emissions avoided by:**

**759,861,592** **tons of waste recycled instead of landfilled** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#recycle>

**108,551,656** **garbage trucks of waste recycled instead of landfilled** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#gtrucks>

**95,055,262,321 trash bags of waste recycled instead of landfilled** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#trash>

**610,632 wind turbines running for a year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#wind>

**83,230,623,548 incandesconcent lamps switched to LEDs** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#lights>

**This is equivalent to carbon sequestered by:**

**36,311,048,810 tree seedlings grown for 10 years** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#seedlings>

**2,618,768,828 acres of U.S. forests in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#pineforests>

**14,562,829 acres of U.S. forests preserved from conversion to cropland in one year** <https://epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#deforestation>

**Exhibit 3, page 24 of 24**

# Overview

## Table 1. Summary statistics for natural gas in the United States, 2018-2022

| | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|
| **Production (million cubic feet)** | | | | | |
| Gross withdrawals | | | | | |
| Natural gas wells | 7,864,063 | 7,433,288 | R6,643,356 | R6,144,863 | 5,979,447 |
| Oil wells | 4,503,499 | 4,603,548 | R4,362,940 | R4,408,663 | 4,576,217 |
| Coalbed wells | 980,730 | 902,544 | R823,593 | R762,875 | 734,314 |
| Shale gas wells | 23,977,248 | 27,840,830 | R28,900,038 | R30,360,342 | 32,512,291 |
| **Total gross withdrawals** | **37,325,539** | **40,780,210** | **R40,729,927** | **R41,676,743** | **43,802,269** |
| Non-marketed disposition | | | | | |
| Repressuring | 3,587,368 | 3,521,924 | R3,580,429 | R3,721,344 | 3,782,438 |
| Vented and flared | 470,601 | 539,480 | R339,272 | R287,775 | 270,883 |
| Nonhydrocarbon gases removed | 258,703 | 271,889 | R289,399 | R329,764 | 320,599 |
| **Total non-marketed disposition** | **4,316,672** | **4,333,293** | **R4,209,101** | **R4,338,883** | **4,373,920** |
| Dry production | | | | | |
| Marketed production | 33,008,867 | 36,446,918 | R36,520,826 | R37,337,860 | 39,428,350 |
| NGPL production, gaseous equivalent | 2,234,593 | 2,547,897 | 2,709,697 | R2,808,584 | 3,075,327 |
| **Total dry production** | **30,774,274** | **33,899,021** | **R33,811,129** | **R34,529,276** | **36,353,023** |
| **Supply (million cubic feet)** | | | | | |
| Dry production | 30,774,274 | 33,899,021 | R33,811,129 | R34,529,276 | 36,353,023 |
| Receipts at U.S. borders | | | | | |
| Imports | 2,888,847 | 2,741,717 | 2,551,175 | 2,807,961 | 3,024,160 |
| Intransit receipts | 13,141 | 207,514 | R384,210 | R372,538 | 242,927 |
| Withdrawals from storage | | | | | |
| Underground storage | 3,999,424 | 3,652,802 | 3,411,906 | 3,761,119 | 4,174,634 |
| LNG storage | 50,454 | 47,769 | R34,286 | R42,408 | 60,734 |
| Supplemental gas supplies | 69,343 | 60,766 | 63,146 | 66,044 | 73,109 |
| Balancing item | -288,232 | -400,445 | R-565,745 | R-372,435 | -629,333 |
| **Total supply** | **37,507,249** | **40,209,143** | **R39,690,106** | **R41,206,910** | **43,299,254** |
| **Disposition (million cubic feet)** | | | | | |
| Consumption | 30,138,930 | 31,132,041 | R30,602,565 | R30,645,707 | 32,288,230 |
| Deliveries at U.S. borders | | | | | |
| Exports | 3,607,841 | 4,657,657 | 5,284,678 | 6,652,609 | 6,903,902 |
| Intransit deliveries | 24,863 | 215,440 | R177,068 | R188,096 | 152,285 |
| Additions to storage | | | | | |
| Underground storage | 3,675,913 | 4,152,521 | 3,589,791 | 3,677,933 | 3,897,816 |
| LNG storage | 59,702 | 51,483 | R36,003 | R42,565 | 57,020 |
| **Total disposition** | **37,507,249** | **40,209,143** | **R39,690,106** | **R41,206,910** | **43,299,254** |
| **Consumption (million cubic feet)** | | | | | |
| Lease fuel | 1,248,046 | 1,332,506 | R1,332,331 | R1,370,084 | 1,395,613 |
| Pipeline and distribution use | 876,535 | 1,018,095 | R1,020,360 | R1,131,472 | 1,212,338 |
| Plant fuel | 446,192 | 490,434 | 518,913 | R480,658 | 487,189 |
| Delivered to consumers | | | | | |
| Residential | 4,997,554 | 5,018,519 | R4,674,456 | R4,716,658 | 4,964,165 |
| Commercial | 3,513,954 | 3,514,566 | R3,162,664 | R3,289,076 | 3,509,075 |
| Industrial | 8,417,300 | 8,416,660 | R8,212,977 | R8,374,672 | 8,536,882 |
| Vehicle fuel | 50,413 | 53,166 | 49,141 | R54,500 | 64,994 |
| Electric power | 10,588,937 | 11,288,096 | 11,631,723 | R11,228,587 | 12,117,975 |
| **Total delivered to consumers** | **27,568,157** | **28,291,006** | **R27,730,961** | **R27,663,493** | **29,193,090** |
| **Total consumption** | **30,138,930** | **31,132,041** | **R30,602,565** | **R30,645,707** | **32,288,230** |
| **Delivered for other companies (million cubic feet)** | | | | | |
| Residential | 691,808 | 656,745 | 607,816 | 597,685 | 612,387 |
| Commercial | 1,616,830 | 1,615,853 | R1,478,290 | R1,516,058 | 1,585,024 |
| Industrial | 7,194,582 | 7,325,264 | R7,140,003 | R7,257,024 | 7,391,238 |

*See footnotes at end of table.*

**Exhibit 4, page 1 of 2**

| | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|
| **Number of consumers** | | | | | |
| Residential | 69,737,549 | 70,431,299 | R71,540,659 | R71,951,957 | 72,518,520 |
| Commercial | 5,518,358 | 5,551,599 | R5,627,762 | R5,613,615 | 5,619,484 |
| Industrial | 185,009 | 183,507 | R184,466 | R182,207 | 181,947 |
| **Average annual consumption per consumer (thousand cubic feet)** | | | | | |
| Commercial | 637 | 633 | R562 | R586 | 624 |
| Industrial | 45,497 | 45,866 | R44,523 | R45,962 | 46,920 |
| **Average price for natural gas (dollars per thousand cubic feet)** | | | | | |
| Imports | 2.69 | 2.55 | 2.07 | 3.78 | 6.33 |
| Exports | 3.89 | 3.64 | 3.70 | 6.38 | 9.64 |
| NGPL composite spot price | 8.20 | 5.49 | 4.47 | 9.02 | 10.71 |
| Natural gas spot price | 3.15 | 2.56 | 2.03 | 3.89 | 6.45 |
| Citygate | 4.23 | 3.81 | 3.43 | 6.02 | 6.89 |
| Delivered to consumers | | | | | |
| Residential | 10.50 | 10.51 | 10.78 | 12.18 | 14.75 |
| Commercial | 7.79 | 7.61 | R7.48 | 8.79 | 11.32 |
| Industrial | 4.19 | 3.90 | 3.32 | R5.44 | 7.66 |
| Electric power | 3.68 | 2.99 | 2.49 | R5.43 | 7.51 |

R Revised data.

[a] *Pipeline and distribution use* volumes include line loss, defined as known volumes of lost natural gas that were the result of leaks, damage, accidents, migration, and/or blowdown (defined as the release of natural gas from a pipeline in order to perform maintenance or testing).

[b] The natural gas plant liquid (NGPL) composite spot price, shown in dollars per million British thermal units ($/MMBtu), is derived from daily Bloomberg spot price data for NGPLs at Mont Belvieu, Texas, weighted by natural gas processing plant production volumes of each product as reported on Form EIA-816, *Monthly Natural Gas Liquids Report* (Appendix A, Explanatory Note 9, of the *Natural Gas Monthly*).

[c] The natural gas spot price, shown in $/MMBtu, represents the average of the daily closing spot prices for natural gas at the Henry Hub in Louisiana, taken from Refinitiv, an LSEG business. See Appendix A, Explanatory Note 9, of the *Natural Gas Monthly* for full discussion.

**Source:** U.S. Energy Information Administration (EIA), Form EIA-176, *Annual Report of Natural and Supplemental Gas Supply and Disposition*; Form EIA-857, *Monthly Report of Natural Gas Purchases and Deliveries to Consumers*; Form EIA-910, *Monthly Natural Gas Marketer Survey*; Form EIA-914, *Monthly Crude Oil and Lease Condensate, and Natural Gas Production Report*; Form EIA-816, *Monthly Natural Gas Liquids Report*; Form EIA-64A, *Annual Report of the Origin of Natural Gas Liquids Production*; Form EIA-191, *Monthly Underground Gas Storage Report*; Office of Fossil Energy and Carbon Management, U.S. Department of Energy, *Natural Gas Imports and Exports*; Form EIA-923, *Power Plant Operations Report*; the Bureau of Safety and Environmental Enforcement (BSEE); state and federal agencies; state-sponsored public record databases; Form EIA-23, *Annual Survey of Domestic Oil and Gas Reserves*; PointLogic Energy; Enverus; and EIA estimates based on historical data.

**Note:** The United States refers to the 50 states and District of Columbia. *Marketed production* volumes are equal to *total gross withdrawals* minus *repressuring*, *vented and flared*, and *nonhydrocarbon gases removed*. *Total dry production* volumes are equal to *marketed production* minus *NGPL production*. Liquefied natural gas (LNG) marine terminals do not report volumes of LNG injected or withdrawn during the course of routine operations. *Vehicle fuel* estimates include volumes sent directly to fueling stations and end-users, as well as company fleets owned or fueled by natural gas distributors. In instances where industrial or commercial end-users fuel their own natural-gas-powered fleets, those volumes are most likely categorized as industrial or commercial, respectively. Totals may not equal sum of components because of independent rounding and/or withheld data. Prices are in nominal dollars. U.S. prices represent the weighted average of the states in each sector.

**Exhibit 4, page 2 of 2**

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

| | | |
|---|---|---|
| SIERRA CLUB and CENTER FOR BIOLOGICAL DIVERSITY,<br><br>*Petitioners*,<br><br>v.<br><br>UNITED STATES DEPARTMENT OF ENERGY,<br><br>*Respondent,*<br><br>ALASKA GASLINE DEVELOPMENT CORPORATION and ALASKA LNG PROJECT, LLC,<br><br>*Respondent-Intervenors.* | ) | Case Nos. 20-1503 & 23-1214 |

**DECLARATION OF BRENDAN CUMMINGS**

I, Brendan Cummings, declare as follows:

1. I have personal knowledge of the following, and I could and would competently testify to these matters if called as a witness.

2. I have been on staff at the Center for Biological Diversity (the Center) for more than 20 years and currently serve as its Conservation Director. I am also a long-standing member of the organization. The Center's members and staff, including myself, rely on the Center to represent our interests in the preservation of imperiled species and habitats such as those in Alaska.

3. I work with our legal and scientific staff and other organizations to advance the Center's goals of wildlife and habitat protection, using administrative actions, scientific research, and the judicial process to this end. In my capacity at the Center, I am familiar with the Center's activities and organizational interests related to Alaska and the many places and species at risk there.

4. The Center is a nonprofit group and incorporated in the State of California. The Center works through science and environmental law to advocate for the protection of endangered, threatened, and rare species and their habitats throughout the United States and abroad.

5. The Center has more than 89,000 active members. Center members reside throughout the United States, including Alaska, as well as other countries. The Center works to ensure the long-term health of animal and plant communities

across the United States and elsewhere, and to protect the habitats these species need to survive. The Center believes the health and vigor of human societies and the integrity and wildness of the natural environment are closely linked.

6. As part of our mission, the Center provides oversight of governmental programs, policies, and activities that affect wildlife and endangered species. The Center has been at the forefront of efforts to hold the government accountable for its obligations under the National Environmental Policy Act (NEPA) and other conservation laws. The Center regularly engages in efforts and campaigns to ensure our nation's environmental laws are enforced.

7. The Center produces a wide array of educational and informational materials concerning the status of and threats to wildlife species, including threatened and endangered species and their habitats in Alaska. These materials are disseminated to the Center's members; policymakers; local, state, federal and international governmental officials; nonprofit organizations; and interested members of the public. The Center has invested substantial organizational resources into ongoing research and public education regarding the plight of species that reside in Alaska. For example, the Center maintains an active website and quarterly newsletter, and we have highlighted threats to Alaska, to our members, and the public numerous times.

8. The Center has been actively involved in protecting Alaska's wildlife since the early 1990s. Our involvement includes submitting Endangered Species Act (ESA) listing petitions for the Cook Inlet beluga whale; Queen Charlotte goshawk; Alexander Archipelago wolf; Northern sea otter; yellow-billed loon; Kittlitz's murrelet; polar bear; Pacific walruses; cold water corals; and bearded, ringed, ribbon, spotted seals, and Lake Iliamna seals. We have also submitted ESA petitions seeking critical habitat designations for bowhead whales and North Pacific right whales. Additionally, we have submitted petitions seeking special protections under the Marine Mammal Protection Act (MMPA) for Alaskan sea otters and the AT1 population of killer whales.

9. Besides our administrative petitions, the Center has engaged in numerous other actions related to the protection of biodiversity and habitat in Alaska, such as submitting comments, appeals, and/or litigation on forest plans, timber sales, oil and gas leasing and projects, fisheries management, and other environmentally damaging activities. In sum, the Center has a significant history of advocacy and involvement in environmental issues affecting Alaska species. Our current involvement on issues affecting Alaska falls squarely within our organizational interests and mission.

10. The Alaska LNG project at issue here would adversely affect a long list of imperiled animals the Center has worked to protect for many years,

including Cook Inlet beluga whales. We filed an ESA petition to protect Cook Inlet belugas as endangered in 1999 and fought to obtain full protection under both the ESA and MMPA. Our efforts include filing two separate lawsuits and a second petition for ESA protection, which culminated with the National Marine Fisheries Service's (NMFS) 2008 decision to list Cook Inlet belugas as an endangered species. When NMFS failed to designate critical habitat under the ESA, the Center again filed a notice of intent to sue, and NMFS subsequently designated more than 3,000 square miles of Cook Inlet as critical habitat for the endangered whale in 2011. In doing so, NMFS recognized just how important the use of the sound is to this population's communication, feeding, navigation, and breeding, especially in the highly turbid waters of Cook Inlet. It designated as one of five critical features to the population's conservation the existence of noise levels in the water below those resulting in abandonment of critical habitat. In 2010 the Center intervened in the State of Alaska's lawsuit challenging the beluga's ESA listing; in 2011 a federal court upheld that listing. The Center has also engaged in longstanding efforts to protect Cook Inlet beluga whales from water and noise pollution; vessel strikes; risks of offshore oil drilling activities and spills; and other threats to protect these interests in Cook Inlet.

11. The Alaska LNG project would also adversely affect species the Center has sought to protect under the ESA because they are threatened by climate

change. For example, the Center filed an ESA petition to protect polar bears in 2005, and after our advocacy and litigation, the polar bear was listed as a threatened species in 2008, with Center advocacy subsequently leading to the designation of about 187,000 square miles as critical habitat in 2010. The Center intervened in several lawsuits to help defend protections for polar bears, and we continue to fight for greater protections for the polar bear in the U.S. and abroad.

12. The Center also filed an ESA petition in 2009 for two Alaska seals affected by climate change—the ringed seal and bearded seal—securing their protection as threatened species after bringing a successful lawsuit challenging NMFS's inaction on our petition. The Center subsequently intervened in lawsuits to successfully defend ESA protections for both seals.

13. Besides our administrative petitions, the Center has also engaged in numerous other actions related to the protection of biodiversity and habitat in Alaska, such as submitting comments, appeals, and/or litigation on forest plans, timber sales, oil and gas leasing, fisheries management, vessel noise, and other environmentally damaging activities. Such actions involved species and habitats negatively impacted by the AK LNG project.

14. The Center has devoted a great deal of resources to prevent harmful oil and gas development projects that would increase climate change, noise and water pollution, vessel strikes, risks of oil or gas spills, and other impacts that harm

Alaska species. For example, the Center successfully challenged the Liberty Project in the Arctic, an offshore drilling project planned for the Beaufort Sea that would have impacted numerous marine mammals, including polar bears, bowhead whales, ringed seals, and bearded seals. In December 2020, the Ninth Circuit Court of Appeals vacated approval of the Liberty Project and remanded the decision to the Bureau of Ocean Energy Management. In doing so, the Ninth Circuit concluded the agency violated NEPA and the ESA by (1) improperly ignoring emissions from foreign oil consumption in its analysis of climate change impacts, and (2) failing to adequately examine impacts to polar bears, particularly impacts from noise pollution and to critical habitat.

15. In September 2019, the Center and another allied organization challenged a rule allowing oil and gas activities in Cook Inlet based on its impacts to Cook Inlet beluga whales and other marine mammals. A federal court in Alaska agreed with the Center in March 2021, specifically finding NMFS unlawfully ignored impacts from noise pollution in issuing a permit to harass belugas, violating numerous laws, including the ESA and NEPA in the process.

16. In December 2020, the Center challenged the Trump administration's approval of a massive oil and gas project in Alaska's Western Arctic called the Willow Master Development Plan, which would result in nearly 280 million tons of greenhouse gas emissions if the oil is drilled and consumed, as well as hundreds

of miles of new ice and gravel roads, more than 300 miles of pipelines, seven bridges, and an airstrip. Following the Ninth Circuit's decision in Liberty, a federal district court in Alaska vacated approval of the project because the Bureau of Land Management failed to properly consider impacts to polar bears, violating the ESA. After the Biden administration greenlighted the project in March 2023, the Center sued again, but on November 9, 2023, the district court ruled the project can proceed. The Center and its partners are appealing that ruling.

17. The Center has brought numerous other administrative and legal actions to protect the places and species the Alaska LNG project would directly or indirectly affect. For example, we filed a lawsuit in 1999 to challenge the Fish and Wildlife Service's failure to designate critical habitat under the ESA for the Steller's eider and spectacled eider, which led to more than 40,000 square miles being designated for both seabirds in 2001. We filed ESA petitions to designate critical habitat for the North Pacific right whale in 2000 and to recognize it as a distinct species in 2005, with successful lawsuits following both petitions to force NMFS to act. The Center filed an ESA petition to protect the Northern sea otter in southwest Alaska in 2000, and after we filed two related lawsuits, the Northern sea otter was ultimately listed as a threatened species in 2005 with nearly 6,000 square miles of critical habitat designated in 2009. The Center also challenged rules allowing hunters to use bait to kill bears, shoot wolves during the denning season,

and use other methods to increase the overall take of predators within Alaska's national preserves, including Denali National Park and Preserve.

18. At a time when scientists and policy makers around the world are calling for a phaseout of fossil fuel use and development to address climate change, the proposed Alaska LNG project could produce and export 20 million metric tons of gas per year, potentially releasing 50 million metric tons of greenhouse gas pollution annually and 297 million metric tons over the project's expected 30-year lifespan.

19. In 2020, the Center and partners challenged the Federal Energy Regulatory Commission's (FERC) approval of the project. After the Sierra Club separately sought rehearing on the Department of Energy's (DOE) approval of Alaska LNG's non-free trade agreement exports, DOE agreed to complete a supplemental environmental impact statement (SEIS) for the project. The SEIS was intended to consider climate change impacts related to the eventual burning of the extracted gas as well as impacts to the North Slope from the extraction that the project would induce. The Center filed detailed comments on the Draft SEIS in August 2022.

20. Earlier this year, the DOE approved the Final SEIS for the Alaska LNG project, but the document does not adequately address greenhouse gas emissions. To the contrary, DOE's lifecycle analysis is based on assumptions so

flawed that it fails to offer meaningful insights into the project's contributions to climate change. By improperly focusing on direct transport emissions, and assuming perfect substitution—i.e. that all the gas would be developed and exported by other means if the project isn't built—the SEIS effectively ignores the project's total impacts, which should include upstream and downstream emissions attributable to the project. In reality, the Alaska LNG project is another carbon and methane bomb that will harm the Center's and our members' interests in protecting climate sensitive species and ecosystems.

21. In addition to increasing carbon dioxide emissions, the Alaska LNG project and related export impacts threatens to destroy critical habitat for dozens of imperiled animals, disrupt their essential behaviors, and hasten their population declines. This undermines the Center's efforts to secure legal protections for these imperiled animals and reverse the effects of climate change, and consequently threatens our organizational interests and our members' interests in ensuring these wild animals and wild places can thrive.

22. DOE's approval of exports for the Alaska LNG project sets in motion a cascade of harms, sparking development that would impact areas stretching from the Beaufort Sea to Cook Inlet, causing long-term impacts to places like Denali National Park and Preserve, permanently destroying more than 8,000 acres of wetlands, and generating greenhouse gas emissions that would be the equivalent of

building about 20 coal-fired power plants. These impacts threaten numerous animals the Center has worked and continues to work to protect—including Cook Inlet beluga whales, bowhead whales, North Pacific right whales, bearded seals, ringed seals, Northern sea otters, Steller's eiders, spectacled eiders, and gray wolves. Construction activities alone would cause serious impacts both onshore and offshore, blocking migration routes for land-based mammals like caribou and displacing seabirds like Steller's and spectacled eiders. Noise, lights, and industrial facilities from construction and continuing operations would dramatically alter the landscape for human and non-human animals and permanently destroy wetland habitat for species like the spectacled eider. Without DOE's approval of exports there would be no rational economic basis for completing the project.

23. DOE's approval of exports advances the likelihood that the Alaska LNG project will be developed. This would create a serious visual blight in such beloved places as Denali National Park and Preserve. Many Center members visit Denali for recreational, aesthetic, and educational purposes due to its incredible beauty and diversity of wildlife. With the chance to see animals like grizzly and black bears, wolves, caribou, and Dall's sheep, Denali provides our members with unique opportunities to hike, explore, photograph, study, and otherwise enjoy its wildness and wildlife. The traffic, lights, roads, pipeline right-of-way, and noise

from the project would seriously impair the Center and our member's interests—ruining the aesthetics, opportunities, and experiences one could have at Denali.

24. Center members also enjoy visiting Cook Inlet and its shoreline to hike, sail, kayak, fish, take photographs, and view wildlife. Our members have educational, moral, spiritual, scientific, professional, ecological, aesthetic, and/or recreational interests in Cook Inlet marine animals and their habitats.

25. DOE's approval of exports naturally requires that the gas from the Alaska LNG project would be transported by ship across Alaskan waters to Asia. This would involve hundreds or even thousands of new vessel trips in Cook Inlet each year, and according to FERC's estimate, would increase large ship traffic by as much as 74 percent. Up to five tugboats would be used for each LNG tanker, which would travel through Cook Inlet year-round between 204 and 360 times every year. This would generate a huge amount of noise pollution and dramatically increase the risk of ship strikes—not only in Cook Inlet but all along the trans-Pacific routes that would be used to transport the gas to Asia.

26. DOE's approval of exports, and its concomitant increase in ship traffic, will also lead to additional noise pollution, which is a major problem for Cook Inlet beluga whales. There are only an estimated 331 belugas surviving today, and the species is declining by more than two percent a year—putting it at imminent risk of extinction. NMFS believes reducing noise pollution is the highest

priority to reverse its population decline, and it names tugboats and tanker vessels as the top two concerns for noise. By making it more likely that the Alaska LNG project will be developed and the gas exported, DOE's approval will threaten the survival and recovery of Cook Inlet beluga whales, impeding the Center's efforts to ensure belugas receive the protections they need and deserve.

27. The Center has strong organizational interests in the species and habitats of the Beaufort Sea, Denali National Park and Preserve, Cook Inlet and the many other places the Alaska LNG project would damage or destroy. Center members have visited and will continue to visit the places this project would impact. Our members have educational, moral, spiritual, scientific, professional, ecological, aesthetic, and/or recreational interests in these places and the wildlife that live there. The Center and our members also have strong organizational interests in the proper and lawful management of these public trust resources. Center members, including myself, rely on the Center to represent our interests and advocate on behalf of these species and habitats. The Center represents itself and its members in advocating for these interests.

28. The Alaska LNG project and associated exports would irreversibly harm the Center's and our members' use and enjoyment of countless areas—including the Beaufort Sea, Cook Inlet, and Denali—harming our ability to view wildlife and experience untrammeled landscapes. It would also harm our interests

in many species that rely on these areas, including polar bears, gray wolves, Cook Inlet beluga whales, North Pacific right whales, killer whales, bowhead whales, ringed seals, bearded seals, Northern sea otters, Steller's eiders, spectacled eiders, chinook salmon, and steelhead trout, to give a partial list. The Alaska LNG project would harm species that are already imperiled by vessel noise, habitat destruction, climate change, and other impacts. The Center's long-running efforts to protect Alaska species could be diminished or undone due to this project, by, for example, the added, cumulative effects of construction and operation of the facilities. DOE's approval of exports is contrary to the Center's and the public's interest in these species and their habitat.

29. The harm to the Center and our members is directly traceable to the agency actions at issue in this case. DOE's approval of exports without adequately considering whether the project is in the public interest, including its failure to properly assess the impacts of its greenhouse gas emissions on climate change puts numerous imperiled species like Cook Inlet beluga whales and polar bears at great risk; and it increases harmful impacts to habitats like Denali National Park. And without this approval, the species and places at risk would have remained undisturbed from these activities and the Center and our members' interests would not be harmed by the project. Unfortunately, such activities were approved, and

only a ruling setting aside this illegal and unwise approval will prevent such harm and protect the Center and our members' interests.

30. The Center and its members not only have an interest in the physical and biological resources of Alaska, but also in the rule of law—the expectation that federal agencies such as DOE will comply with the mandates of NEPA that guarantee informed decision-making and an informed public. The deficiencies in DOE's documents, and the failure to provide for their proper public review, harm these procedural interests of the Center and its members. Again, only a ruling setting aside DOE's illegal and inadequate decision will prevent such harm and protect the Center and our members' interests.

I declare under penalty of perjury that, to the best of my knowledge, the foregoing is true and correct.

Dated: December 3, 2023.

Brendan Cummings

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

| | | |
|---|---|---|
| SIERRA CLUB and CENTER FOR BIOLOGICAL DIVERSITY,<br><br>*Petitioners*,<br><br>v.<br><br>UNITED STATES DEPARTMENT OF ENERGY,<br><br>*Respondent,*<br><br>ALASKA GASLINE DEVELOPMENT CORPORATION and ALASKA LNG PROJECT, LLC,<br><br>*Respondent-Intervenors.* | ) | Case Nos. 20-1503 & 23-1214 |

**DECLARATION OF COOPER FREEMAN**

I, Cooper Freeman, declare as follows:

1. I have personal knowledge of the following, and I could and would competently testify to these matters if called as a witness.

2. I live in Homer, Alaska and have lived and worked in Alaska since 2021. I have lived in the Cook Inlet region since moving to Alaska, first living in Homer, then Palmer, then back to Homer.

3. I have been on staff at the Center for Biological Diversity (the Center) since July 2023 and currently serve as its Alaska Representative and Senior Advocate. The Center's members and staff, including myself, rely on the Center to represent our interests in the preservation of imperiled species and habitats such as those in Alaska.

4. I work with our legal and scientific staff and other organizations to advance the Center's goals of wildlife and habitat protection, using administrative actions, scientific research, and the judicial process to this end. In my capacity at the Center, I am involved in all the Center's activities and organizational interests related to Alaska and the many places and species at risk in the state.

5. It does not take long to fall in love with Cook Inlet, and I am incredibly grateful to call this special place home. Its scenic beauty and rich wildlife and abundant recreational opportunities are central to my everyday life and provide me with irreplicable joy, peace, and gratitude. From our home, we look out

at the beautiful Kachemak Bay in lower Cook Inlet. We take frequent beach walks up and down the northern side of the Bay. My family owns a small boat and during the summer, we take multiple trips a week across the Kachemak Bay to walk along the Bay's numerous beaches or hike Kachemak State Park's rugged trails. On the Bay, we are treated to regular wildlife sightings, including birds, whales, dolphins, seals, and more. From the many scenic viewpoints on the State Park trails, we can see clear across Cook Inlet. In the winter, ski trails in Homer similarly provide stunning vistas of Cook Inlet. We have family that live in Anchorage and friends in the Mat-Su Valley, and when we visit our friends and family, we go on walks along the shoreline or up on trails in the mountains that provide views of the Inlet.

6. I have a special interest in the critically endangered Cook Inlet beluga whale. I am the Center's representative in the Cook Inlet Beluga Advocacy Group and work on multiple projects to protect and support the recovery of the whale. Moreover, on every drive or flight from Anchorage to Homer, safety permitting, my eyes are glued to Cook Inlet and Turnagain Arm for a chance to sight a beluga whale. I make a point to pull over at the turnouts along Turnagain Arm and get my binoculars out to try and see the whales. These whales are incredibly special to me as a symbol of the uniqueness of Cook Inlet and the wildness that still exists in the beautiful yet ever more industrialized area. The Cook Inlet beluga whale population is distinct in multiple ways from other beluga whale populations and

scientists believe that if lost, beluga whales would be highly unlikely to repopulate Cook Inlet. These whales are truly irreplicable.

7. I am also an avid birder and find great pleasure and enjoyment in the remarkable bird life in Cook Inlet. Enjoying the tens of thousands of migratory birds that visit Kachemak Bay and Cook Inlet each year and rely on its habitat for breeding and rearing their young has become a core part of my experience living in Homer. In addition, the Bay is filled with marvelous birds, including myriad sea ducks, puffins, sandhill cranes, raptors, and many more. I take my binoculars wherever I go, whether on our boat in the Bay, on drives around the Inlet, or on walks or hikes.

8. I have a strong personal and professional interest in a healthy Cook Inlet, including its scenic beauty and abundant wildlife, and the Department of Energy's (DOE) approval of exports for the Alaska LNG project puts these interests at risk. These interests are put at risk by the Alaska LNG project in numerous ways, especially the increase in shipping and other vessel traffic for exporting the gas.

9. Beluga whales are renowned for their distinctive clicks, whistles and songs, even more essential in the muddy waters of Cook Inlet, where echolocation is critical for them to communicate and survive. There is already a large amount of anthropogenic, background noise affecting Cook Inlet belugas, and vessels used to

support the LNG project and export gas to other countries through their critical habitat area would increase this underwater noise dramatically—to the point it may drive belugas away from critical feeding areas and other essential habitat. My interests in Cook Inlet beluga whales and their habitat, including my ability to see them, are harmed by the Alaska LNG project.

10. My interests in Cook Inlet and the habitat it provides for wildlife is also harmed by the dangers of a potential spill from tankers that will be used for the LNG project. My wife's aunt and our next-door neighbor in Homer is a humpback whale scientist who has studied humpback whales in the Prince William Sound for over 40 years. She began her research before the Exxon Valdez oil spill in 1989 in the Prince William Sound, nearby to Cook Inlet, experiencing the marine ecosystem prior to the spill. She was a responder to the spill, working to clean up the massive amounts of oil leaked into the pristine Prince William Sound. Oil from that spill reached well into Cook Inlet. The impacts she saw on the marine ecosystem from the spill in the ensuing decades were and continue to be profound. This makes me very worried the LNG project and the vessels needed to export gas abroad could cause incidents in the future that would prove disastrous for Cook Inlet and its wildlife, including Cook Inlet beluga whales, birds, and many other species.

11. My interests are also harmed by the climate change impacts from the Alaska LNG project. Climate change is dramatically affecting belugas, migratory birds, other marine species, and the fragile ecosystem of Cook Inlet. Alaska is warming faster than any U.S. state, warming two to four times as quickly as the global average since the middle of the 20th century. The LNG project could produce and export 20 million metric tons of gas per year, potentially releasing 50 million metric tons of greenhouse gas pollution annually and 297 million metric tons over the project's expected 30-year lifespan. These impacts would continue to exacerbate the negative impacts of a warming climate on Cook Inlet and Alaska, including wildlife and the habitat they rely on. As such, DOE's approval of the Alaska LNG project harms the places and wildlife that I have a direct interest in.

12. For all these reasons, DOE's decision to approve exports for the LNG project harms me directly. Without DOE's authorization of exports, the project is not possible, so all the harms of the project must be considered in the authorization decision. Each and every day brings a new encounter with wildlife in Cook Inlet and I gain daily inspiration, peace, and joy from the scenic beauty of Cook Inlet. Professionally, this project would compromise my efforts to protect imperiled wildlife and their habitat and to address climate change. Meanwhile, the impacts of a project like the AK LNG project threaten all of this, through impacts such as increased noise and harm to marine mammals, including the critically endangered

Cook Inlet beluga whale, the threat of disastrous ship accidents, and climate change.

I declare under penalty of perjury that the foregoing declaration is true and correct.

Dated this 5th day of December, 2023.

Cooper Freeman

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

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| SIERRA CLUB and CENTER FOR BIOLOGICAL DIVERSITY,<br><br>*Petitioners*,<br><br>v.<br><br>UNITED STATES DEPARTMENT OF ENERGY,<br><br>*Respondent,*<br><br>ALASKA GASLINE DEVELOPMENT CORPORATION and ALASKA LNG PROJECT, LLC,<br><br>*Respondent-Intervenors.* | ) | Case Nos. 20-1503 & 23-1214 |

**DECLARATION OF TERRI PAULS**

I, TERRI PAULS, declare that:

1. I have personal knowledge of the following and could competently testify to its contents if called as a witness.

2. My name is Terri Pauls, and I live in Anchorage, Alaska, where I have lived since 1991.

3. I have been a member of the Center for Biological Diversity since 2009. I am a member because I care about biodiversity, and I rely on the Center to represent my interests in the natural world. Biodiversity is one of the three indicators of ecosystem health, and I realize that human health is inextricably related to the health of the planet.

4. I enjoy the beauty of Cook Inlet, and I look for wildlife there. I am interested in the conservation of the Inlet that provides habitat for wildlife. I go there to observe Cook Inlet beluga whales, as well as Sand Hill cranes that nest on the beach, bald eagles, and other birds.

5. I frequently go to the Coastal Trail, which is right along the coast of Cook Inlet near downtown Anchorage. I look for wildlife there when I'm walking, running, or skiing. I ski on the Coastal Trail in the winter, and in the summer, I walk or bike along it. I used to go skijoring, skiing behind a dog or two, a couple times a week for several years. It is just a riot, and I had a friend that had dogs so we would meet twice a week and go skijoring. Part of the pleasure was enjoying

the beautiful area and the Inlet. I still go to the Coastal trail regularly, and I plan to continue to go there for running, walking, and skiing. I enjoy getting out on the Coastal trail and taking out-of-town friends there, and I look forward to seeing the Inlet itself and all the creatures that inhabit it. I have looked for Cook Inlet beluga whales from the trail since I've heard that people have seen them there, but I have yet to spot one since they are so rare these days. In the prior decades when there were more belugas, people would report that they could see belugas from their work offices downtown, and they had phone trees set up to tell one another.

6. The place where I have seen Cook Inlet belugas, and where I would like to look for them again, is Turnagain Arm. I periodically stop to look for belugas when I drive the highway along Turnagain Arm—a drive that I frequently do to access places to hike and ski. I pull over safely and bring out my binoculars to look for belugas. Sometimes I have seen whole pods, and sometimes I see just a few. I used to see a lot more in the 1990s, and there has been a gradual decrease.

7. The first time that I saw belugas I was in a van coming back from Seward. The driver noted the belugas. They were so close to the road that we could simply look out the window and enjoy watching them from the moving van. There are times that I have pulled over to watch them for as long as I could see them in the distance; once out of view then I would drive further down the Inlet, whichever direction they were headed, and stop again to watch them. I could bounce along

and follow them. One time they came in very close to some rock outcroppings, allowing me to get a really good view of them.

8. One of my most memorable times seeing belugas was about nine years ago when I saw mothers with their calves. I could tell because the mothers are white and the young are gray. It is really wonderful to see a mother and calf of any species, so that was a highlight. That time there were a number of belugas out there, probably about ten. It was a good day for seeing them close in Turnagain Arm. I had a feeling of awe, appreciation, and excitement because they are no longer that common to see, and I love wildlife. I have a connection with the natural world, and it feels special and makes me happy when I get to see wildlife.

9. Because I have strong interests in Cook Inlet's ecosystem and in beluga whales, my interests are harmed by Alaska LNG Project and the Department of Energy's (DOE) decision to authorize exports from the project. Our federal agencies have a duty to safeguard marine mammals, and DOE's failure to do so in approving exports from the Project will increase threats to beluga whales and other marine mammals and harms my interests in beluga whales. As a taxpayer, I am disappointed that DOE is not doing its job and is failing to protect the public interest. DOE's approval of exports will significantly increase risks to beluga whales and Cook Inlet marine life by increasing ship traffic, vessel noise, and risks of ship strikes and oil and gas spills. DOE's actions will also further

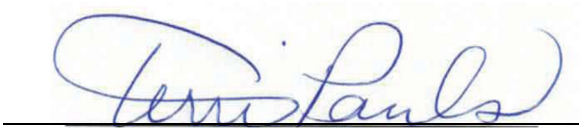
exacerbate the climate crisis, which is dramatically changing the environment in Alaska and making it harder for marine and other wildlife to persist. If DOE had properly considered these and other issues protected Cook Inlet and beluga whales, I would be more likely to continue to be able to enjoy them in the future.

10. Specifically, the Project harms my interest in beluga whales because the noise it will cause will disturb the whales, interfering with their feeding and communication. I know that belugas use sound to hunt for food, and they use clicks to communicate. I once was close enough to dolphins that I could hear and feel their subtle clicks, and I imagine that a beluga whale would be highly sensitive to noise interfering with their clicks. Without better protections, I am concerned that the noise from vessels, pile driving, and other activities will interfere with them communicating with each other—about food sources, where the young went, and mating signals. This is especially true of the huge increase in vessel traffic the Project and its related exports of gas to nations abroad will cause. This export project will include hundreds and possibly thousands of new vessel trips each year, increasing harmful noise pollution from tankers and tugs. This massive influx of ship traffic also increases the risk the whales will get run over and killed. The Project could be detrimental to their daily lives and make it more difficult for them to survive and recover.

11. DOE's approval of the Project's exports supports activities and noise that threaten beluga whales. In addition to the direct impacts of the project itself, DOE's decision to allow exports significantly increases the likelihood of harms to Cook Inlet and the wildlife that call it home. Therefore, it will be even more difficult for me to find Cook Inlet beluga whales when I go there, and it bothers me even knowing that they are being harassed by this fossil fuel project. I read in the newspaper that scientists are looking for the causes of the decline of Cook Inlet belugas, and they were not able to pinpoint hunting or contaminants. It seems likely to me that ship traffic, noise from oil and gas activities, untreated sewage, and the combined effects of these things are harming the beluga population. My interests are injured by the LNG Project and DOE's decision to allow exports that is challenged in this lawsuit because I want to see beluga whales and want them to recover, but the LNG Project and export infrastructure will do more harm to them. I care about Cook Inlet ecosystem as a whole, and if the belugas go downhill, it has a cascade effect on all of the other species in the ecosystem. This, in turn, not only affects my interests and spiritual connection to critters, but it also affects all people.

I declare under penalty of perjury that the foregoing is true and correct.

Dated this 4th day of December, 2023.



Terri Pauls

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

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| SIERRA CLUB and CENTER FOR BIOLOGICAL DIVERSITY,<br><br>*Petitioners*,<br><br>v.<br><br>UNITED STATES DEPARTMENT OF ENERGY,<br><br>*Respondent,*<br><br>ALASKA GASLINE DEVELOPMENT CORPORATION and ALASKA LNG PROJECT, LLC,<br><br>*Respondent-Intervenors.* | ) | Case Nos. 20-1503 & 23-1214 |

**DECLARATION OF RICHARD G. STEINER**

I, Richard G. Steiner, hereby declare as follows:

1. I live in Anchorage, Alaska and have lived and worked in Alaska since the mid-1970s. I first lived in Kodiak, then Kotzebue (on the Chukchi Sea), then Cordova (Prince William Sound), and I have lived in Anchorage since 1996.

2. I am a current member of the Center for Biological Diversity and have been since 2011. I rely on the Center to help represent my interests in protecting the environment through advocacy and the enforcement of our environmental laws.

3. I was a professor at the University of Alaska from 1980–2010, in the School of Fisheries and Ocean Sciences. I currently work as a conservation science consultant through an organization I founded, Oasis Earth, where I consult on oil and gas impacts and issues in the United States and around the world.

4. I authored many publications on Alaska wildlife and oceans over the years, with a particular focus on the detrimental effects of oil and gas development, shipping, and climate change. I have also taught classes and workshops on the natural resources, fisheries, and marine mammals of Alaska, as well as climate change and endangered species, among other topics.

5. I have extensive experience assessing oil and gas issues in Alaska and around the world, including pipeline integrity and problems related to leaks and spills. For example, I served on the emergency response command team for the

1989 Exxon Valdez Oil Spill in Prince William Sound, contributed to the development of the Oil Pollution Act of 1990, and advised the media and non-profit organizations on the 2010 Deepwater Horizon oil spill in the Gulf of Mexico. I served as an expert witness in oil spill cases in the Niger Delta, Nigeria, and consulted on oil and gas issues for many governments, the United Nations, industry, and non-governmental organizations around the world.

6. I was a co-principal investigator on a Sakhalin Island, Russia, spill prevention and response assessment in 1999; and from 2005–2006, I was a member of the IUCN Independent Scientific Review Panel to advise Shell (Sakhalin Energy) on how best to mitigate impacts from the Sakhalin II offshore drilling project in the Sea of Okhotsk on the critically endangered western gray whale population.

7. I frequently speak publicly about oil and gas drilling issues, spill risks, and climate change impacts, and have written related opinion pieces that were published in the *Los Angeles Times, USA Today,* and *Huffington Post*. I also produced a public presentation called the *Imperiled Arctic*, which highlights the beauty of the Arctic, its ecological values, and the risks of drilling there. I presented *Imperiled Arctic* as a keynote address at the Georgetown University

Earth Day event in Washington, D.C., and other venues in Alaska in 2015, and for Earth Day in Seldovia and Homer, Alaska, in 2019.

8. From my research, work, and experiences, I know how harmful oil and gas development projects can be—especially in places like the Arctic and other areas the Alaska LNG project and related exports will affect. It will generate a significant amount of additional atmospheric carbon, continue our energy path towards uncontrolled climate change, and delay our necessary transition to low-carbon energy, which is absolutely necessary for climate stability in Alaska and the number one priority to sustain the Arctic's future. DOE's approval of exports for the Alaska LNG project furthers the development of the project, as well as the extraction and combustion of fossil fuels. DOE's action thus contravenes my efforts to help stem the effects of climate change, which I have invested decades into, and it will adversely impact the wildlife I appreciate and enjoy on both a professional and personal level.

9. In addition to my professional interests, I have deep personal interests in places and wildlife the Alaska LNG project will negatively impact. Being able to experience the incredible beauty and wildness of these places gives me solace and cherished memories, deepening my connection with the natural world and strengthening my resolve to protect them from industrial development.

10. I have long-standing interests in many places that will be harmed if the Alaska LNG project moves forward—from the Beaufort Sea to Denali National Park and Preserve, and from Cook Inlet to the North Pacific shipping routes that would be used for export. I also have deep interests in many animals that will be adversely impacted, including polar bears, ringed seals, caribou, wolves, and Cook Inlet beluga whales, other whales, seabirds, salmon, and other marine species.

11. From 1980–1982, I was the first University of Alaska science faculty stationed full-time in the Arctic (based in Kotzebue), with responsibility to travel to Arctic coastal villages and conduct a marine education/extension program.

12. Since then, I visited the Arctic and Beaufort Sea many times for professional and personal purposes. This includes trips in 2008 and 2009, when I organized Arctic offshore over-flights with the U.S. Coast Guard. We flew scientists and media observers over several hundred miles, from Kodiak Island to the Beaufort Sea, to observe ice conditions during the sea ice minimum (September), as well as the behavior and distribution of marine mammals. We saw numerous marine mammals in and along the coast of the Beaufort Sea on these flights, including polar bears, Pacific walruses, bearded seals, and ringed seals.

13. I have also viewed and experienced polar bears from land, including when I traveled to Barter Island on the Beaufort Sea with my wife and stepson—an

experience I will always cherish. We were able to watch polar bears several times a day, seeing up to 50 bears at a time. Viewing polar bears in the wild is an exceptional experience. Unfortunately, these bears on Barter Island in autumn were stranded on land, with no sea ice offshore. They were hungry, and thus feeding on bowhead whale carcasses pulled ashore from the fall village whale hunt. These bears are some of the most remarkable animals on earth—highly adapted to the harsh Arctic world, but they are struggling to survive. It gives me profound solace to see there are still wild polar bears, living as they have for millennia. My stepson was as enthralled by the bears as I was, and it was incredible to share that experience with him.

14. It saddens me that the LNG project will harm polar bears and further stress their populations, depriving me of opportunities to have these kinds of experiences again. But most importantly, the bears have an inherent right to exist, and the LNG project will further limit this inalienable right. Increased noise pollution from the LNG project will scare and disturb polar bears, driving them away from preferred habitats, making it less likely I will be able to see them. It will also increase human-bear interactions, which could lead to the death of polar bears. The LNG project will increase harm to polar bears and their essential habitat on the North Slope, particularly because the Beaufort Sea population of polar bears

utilizes the coastal plain both for feeding and supportive habitat during the ice-free season and for denning during the winter months, and this population is at significant risk of extinction. These concerns are compounded by the effects that this massive fossil fuel project will have on climate change, accelerating the loss of sea ice and otherwise exacerbating the effects we are seeing now. My recent travel to the North Slope and Beaufort Sea was restricted due to the pandemic, but I intend to continue studying and visiting this incredible region of Alaska whenever I can, long into the future.

15. I also enjoy going to Denali National Park and Preserve, another place that will be affected by the LNG project. I first went to Denali in 1975 when I was a crewman on a NOAA hydrographic ship working off Alaska. While the ship docked in Anchorage, I went to Denali (then called McKinley Park) for a wilderness hike with some shipmates. I still go every chance I get, but have put plans on hold due to the slope-slump that closed the park road. The landslide has existed for years, but it is now accelerating from climate change and resulting permafrost melt, something the LNG project will only accelerate.

16. Though my Denali trips have been canceled by the road closure, I will go to Denali when possible in the future. Unfortunately, the Alaska LNG project will make it more inconvenient for me to get to Denali—with or without the road

closure. Not only will the LNG project dramatically increase traffic in the area, but construction will also cause lane closures on the Parks Highway, including full closures when blasting and other activities occur for at least four years—restricting access to the park. Pipeline construction is also projected to close the pedestrian bridge across the Nenana River, right outside the entrance to the park headquarters and visitor center—the main access point to the entire park. Sighting a pipeline through this important tourism area would have significant and permanent negative impacts on accessibility and the visitor experience—my own included. If the LNG project is built, I expect to see lights from the Healy Compressor station from the historic Stampede Trail on the northeast edge of the park. The pipeline, lights, and infrastructure associated with the LNG project will create a visual eyesore and forever diminish the integrity of Denali, marring a true global treasure and my ability to enjoy it.

17. I go to Denali because it is an easily accessible, relatively pristine sub-Arctic terrestrial ecosystem. There are precious few wilderness areas like it that remain, making it a rare and unique place to experience nature. Denali is a place many people want to experience, or at least know still exists in protected condition. It certainly is important to me. I find a sense of connection when I am there, with the chance to see bears, wolves, caribou, sheep, moose, marmots, coyotes, lynx,

and other wildlife that are such an integral part of the Alaska landscape. It gives me a deeper appreciation of life, and my place in the world. Experiencing the wildlife and wild nature of Denali is essential to my physical and mental health.

18. DOE's approval of exports for the Alaska LNG project puts these interests at risk. Without DOE's authorization, this project is unlikely to be economically viable. The approval of exports is a key action that makes it possible for the project to be developed. If the project goes forward, I will see and think about its impacts whenever I visit Denali in the future, instead of being able to relax and enjoy the tranquility and many benefits it now provides. The LNG project will create a completely different experience—no longer a pristine environment where I can find solitude, and offering fewer chances to see wildlife. Lights, heavy equipment, road construction, and industrial noise will severely degrade my recreational, aesthetic and ethical interests in and around the park. My interests would be degraded knowing the ecosystem and wildlife have been compromised, and seeing those effects.

19. I particularly have interests in Denali wolves and have taken many actions to protect them over the years, including petitioning to reestablish a buffer on the park boundary to close hunting and trapping, writing opinion pieces for Alaska newspapers, and submitting comments to the Alaska Department of Fish

and Game and Board of Game regarding hunting/trapping concerns in and around the park. Wolf viewing opportunities substantially declined since hunting began again in and along the boundary of Denali in 2010—dropping from a 45 percent success rate for visitors to view wolves to just one percent in 2019, after hunting and trapping increased. The LNG project will make this situation even worse and impact my interests in protecting and helping to restore Denali's predator-prey ecosystem. Construction activities, noise, lights, and continuing operations will disturb wolves during sensitive times like the breeding and denning seasons, and may permanently destroy important wolf habitat. Unless this Court overturns DOE's decision authorizing exports, the LNG project will advance and for all the reasons described above may cause a decline in the wolf population in eastern Denali, harming my interests in viewing them in the wild and restoring their populations, and degrading the visitor experience in the park.

20. I also have interests in Cook Inlet and marine animals that live there, including the critically endangered Cook Inlet beluga whale, which would be placed at significant risk by the LNG project and by the related increase in shipping and other vessel traffic for exporting the gas to Asia. I first got to know Cook Inlet when I commercially fished out of Kodiak and the north Gulf of Alaska on and off from the 1970s through the 1990s, and I also conducted marine

education and workshops in Homer and other communities around the Inlet when I was a professor with the University of Alaska. During those years and since, I have viewed marine mammals in Cook Inlet by land, sea, and air, which gives me a deep appreciation and affinity for this special place.

21. I am currently an avid mountain runner and enjoy running and hiking on the Turnagain Arm trail in Chugach State Park near my home in Anchorage, which offers incredible views of Cook Inlet. I go there at least once a week (weather permitting) and will continue to regularly run and hike there. I have seen beluga whales from the trail several times over the years and always look for them when I am there. In fact, looking for belugas is always on my mind along the Turnagain Arm trail. I look for the white arches of their backs, and when I am lucky enough, I may also see little gray beluga calves. It is remarkable to watch belugas moving in and out with the tide, feeding on smelt and salmon smolt. It is even more remarkable to see a mother with her calf, knowing another generation continues. It is always magical and captivating to see them, reminding me of what a wild and wonderful place this is. But while it gives me joy when I see belugas, it also gives me trepidation because they are so critically endangered, especially now that the LNG project is approved and would be allowed to export gas through this sensitive area. Since I moved to Anchorage from Cordova in 1996, the Cook Inlet

beluga whale population has dropped from over 1,000 individuals to a little over 300 today. If we are going to prevent them from going extinct, everything we do from here forward must keep the needs of Cook Inlet belugas in mind, particularly when it comes to coastal development and shipping risks and noise.

22. Belugas are known as "canaries of the sea" due to their distinctive clicks, whistles, and songs. Science shows that belugas' calls are even more attuned in the murky waters of Cook Inlet, where echolocation is critical for them to communicate and survive. There is already a large amount of anthropogenic, background noise affecting Cook Inlet belugas, and vessels used to support the LNG project and export gas to other countries would increase this underwater noise dramatically—to the point it may drive belugas away from critical feeding areas and other essential habitat.

23. My interests in Cook Inlet are also harmed by the dangers of a potential spill from tankers that will be used for the LNG project. I witnessed the effects of such a spill firsthand in 1987, when the tanker "Glacier Bay" struck a rock in Cook Inlet and spilled a significant amount of oil. I traveled there from Cordova at the request of an Alaskan state senator to advise the cleanup, and the effects I saw make me extremely worried the LNG project and the vessels needed to export gas abroad will cause far worse future incidents.

24. The vessels used for the LNG project will not only affect my interests in Cook Inlet itself, but also my interests in the marine mammals that live and migrate along the Pacific shipping route. In 2004, I cofounded and facilitated the Shipping Safety Partnership, after the Selendang Ayu disaster in the Aleutians. I have worked to make this important trans-Pacific ship transit route safer ever since, trying to protect marine mammals all along this route, including killer whales and the endangered North Pacific right whales, and approval of exports for the LNG project puts these animals at even greater risk of ship strikes, vessel noise, and spills.

25. I am gravely concerned that DOE ignored these important issues when it found that exports from the LNG project was in the public interest, even though the project will significantly increase coastal development, ship traffic, shipping noise, risk of ship-strikes of whales, and the risk of spills, all while exacerbating climate change which is dramatically affecting belugas, other marine species, and this fragile ecosystem. For all these reasons, DOE's decision to approve exports from the LNG project will harm my chance to view, study, and appreciate these unique animals in the wild.

26. The LNG project and the export of gas from the project will have unavoidable harmful impacts on the Alaska ecosystem as a whole and the wildlife

that depend on all the places it affects. I believe preserving these wild places and wildlife—both onshore and offshore—is a global conservation priority. I believe it is still possible for our Alaska ecosystem to recover from climate change, but only if we urgently reduce global carbon emissions and the human ecological footprint—perhaps not within our lifetimes, but hopefully by the end of the century. I view it as a moral and ethical duty to try.

27. For all these reasons, DOE's decision to approve exports for the LNG project harms me directly. DOE's authorization of exports is the lynchpin that makes this project viable, and so all the harms of the project must be considered. In addition, the authorization of exports has its own significant risks to marine mammals and our coastal ecosystem, which I have discussed above. It threatens to harm wildlife such as polar bears, caribou, wolves, seals, and whales, including Cook Inlet belugas, along with my interests in these important and iconic animals, and iconic places like Denali. I value each and every encounter I have had, and will continue to have, with wildlife in Cook Inlet, the Arctic and Denali.

28. DOE's decision to approve exports for the LNG project also compromises my professional efforts to protect Cook Inlet, the Aleutians, and the Arctic from the type of devastating oil spills and other accidents we saw with the

Exxon Valdez and Deepwater Horizon, as well as my efforts to address climate change and additional unsustainable fossil fuel development.

I declare under penalty of perjury that the foregoing declaration is true and correct.

Dated: December 3, 2023

By: 

Richard G. Steiner

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

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| SIERRA CLUB and CENTER FOR BIOLOGICAL DIVERSITY,<br><br>*Petitioners*,<br><br>v.<br><br>UNITED STATES DEPARTMENT OF ENERGY,<br><br>*Respondent,*<br><br>ALASKA GASLINE DEVELOPMENT CORPORATION and ALASKA LNG PROJECT, LLC,<br><br>*Respondent-Intervenors.* | ) | Case Nos. 20-1503 & 23-1214 |

**DECLARATION OF ANDREA FENIGER**

I, Andrea Feniger, hereby state as follows:

1. I am of legal age and am competent to give this declaration. All information herein is based on my own personal knowledge unless otherwise indicated. I give this declaration for use in the Sierra Club's legal challenge to the proposed Alaska Liquid Natural Gas Project approved by the Federal Energy Regulatory Commission (FERC) and Department of Energy (DOE).

2. I have been a full-time employee of the Sierra Club as the Director of the Alaska Chapter for over three years. My job lets me celebrate wild spaces and keep public lands public. As an avid hiker, the ability to turn protecting the environment into a career is something I feel lucky to do.

3. After taking a backpacking trip in Wrangell St. Elias National Park and Preserve in Alaska, I fell in love with the wild places here. I moved up to Anchorage in August of 2020.

4. I've been to Talkeetna roughly four times in the year I've lived in Alaska both for work and for personal enjoyment. It's my understanding that Talkeetna is within 10 miles of where the proposed Rabideux Creek Compressor Station is. I've hiked on some of the trails in their parks, paddle boarded, and enjoyed the quaint small town. I like going in the fall after tourist season is over, and spending time at the local businesses and restaurants. The town's charm for me relies on how quaint it is. If the compressor station is built

so close to the town, it's likely that there will be more people in the area, and the town will get more crowded. This would ruin the small-town feel, increase traffic, and create a lot of noise and light pollution. I would be less likely to visit Talkeetna if it were more densely populated due to more folks being in the area because of the compressor station. The light hiking I do in the area would also lose its appeal if there was a loud facility close by.

5. Almost every time anyone from out of town visits me, I take them sightseeing on the Seward highway. Getting around Alaska can take a lot of time and I can easily find myself driving several hours. What makes that doable are the incredible views you get to see from the car. The Seward Highway has a spectacular view of the Cook Inlet and the surrounding mountains. I love that the drive is such an accessible way to show my family and friends a peek of what Alaska has to offer. Not everyone who visits me is equipped or willing to go backpacking through the wilderness. I value that the highway gives me an opportunity to share my love for the landscape with everyone. I understand that the Alaska LNG project would like to build a pipeline across the Cook Inlet with compressor stations and liquefaction facilities along the inlet. I am concerned that project infrastructure, or associated plumes, ships, and other activity, will be visible and detract from the enjoyment I get from taking the Seward, and I would be less likely to take visitors or even myself along the drive.

6. After moving to Alaska, the only way I could get my dear friend to visit me from Florida was by promising her I would take her to see whales. Luckily, the Seward Highway makes it easy to both whale watch and to get to the peninsula and take a proper whale watching tour. We had fun taking the Seward Highway and pulling off the road at designated whale watching spots. We also got the opportunity to take a whale tour and see beluga whales in the Kenai Fjords National Park. My friend said this was the highlight of her trip. I get a lot of enjoyment from knowing that the whales are in the Cook Inlet when I'm driving on the Seward and admiring the view. Not only would the proposed pipeline across the Cook Inlet be an eyesore on such a magnificent drive, but the pipeline, terminal, and associated ship and vessel traffic would disrupt the whales that call the Inlet home. If there were fewer whales in the Inlet, I would get less enjoyment from viewing the waterways of my home.

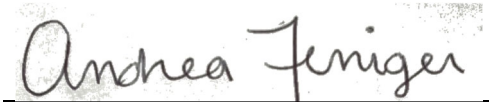
7. The Seward Highway is also the only way to get from Anchorage to Nikiski, where the Alaska LNG project wants to build a liquefaction facility. I use the Seward to get to Hope and anywhere else south of Anchorage. I've used the highway to get to Girdwood roughly 20 times since moving here, and one time to get to Hope for a camping trip. If the Seward Highway were to have increased traffic due to the liquefaction facility, I would likely visit Hope and Girdwood substantially less. Alaska already has a short construction season in

the summer that increases traffic and deters travel at times. Adding even more road closures in the summer or extending that traffic year-round would take away the ability for spontaneous trips for fear of major delays.

8. The Sierra Club's lawsuit against the Department of Energy's approval of exports from the Alaska LNG project represents my interests because if the project does not have customers to export gas to, the pipeline and compressor stations will not be built, and I can continue to enjoy driving along the Seward with unobstructed views, whale watch at my leisure, and visit Talkeetna for peace and quiet.

I declare under the penalty of perjury under the laws of the United States that, to the best of my knowledge, the foregoing is true and correct.

Dated December 12, 2023



Andrea Feniger

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

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| SIERRA CLUB and CENTER FOR BIOLOGICAL DIVERSITY,<br><br>*Petitioners*,<br><br>v.<br><br>UNITED STATES DEPARTMENT OF ENERGY,<br><br>*Respondent,*<br><br>ALASKA GASLINE DEVELOPMENT CORPORATION and ALASKA LNG PROJECT, LLC,<br><br>*Respondent-Intervenors.* | ) | Case Nos. 20-1503 & 23-1214 |

**DECLARATION OF DAN RITZMAN**

I, Daniel Ritzman, hereby declare as follows:

1. I am of legal age and am competent to give this declaration. All information herein is based on my own personal knowledge unless otherwise indicated. I give this declaration for use in the Sierra Club's legal challenge to the proposed Alaska Liquid Natural Gas Project approved by the Federal Energy Regulatory Commission (FERC) and to the Department of Energy's approval of exports from this facility.

2. I live in Rio Rancho, New Mexico.

3. I have an undergraduate degree in environmental policy from the University of California, Davis, and a Masters in Science in Wildland Recreation Management from the Idaho College of Forestry. I have worked in the conservation community on Alaska and Arctic issues since 1993.

4. I am the Director of the Lands, Water, and Wildlife Campaign for the Sierra Club. I have been with the Sierra Club for over sixteen years. In my current role with the Sierra Club, I direct seven campaign staff and I serve as the primary Sierra Club policy and advocacy contact for issues related to defending our public lands, water, and wildlife. A significant, daily portion of my duties are related to our programs in Alaska. I am also a member of Sierra Club.

5. Sierra Club is a national non-profit organization headquartered in

Oakland, California. We have offices in a number of other states. Our staff in Washington, D.C. and Anchorage, Alaska, are engaged in defending areas in Alaska. Protecting Alaska's public lands is consistent with our mission to protect the lands, waters, and wildlife for future generations.

6. The Sierra Club has millions of members and supporters, including approximately 733,600 members, who are dedicated to exploring, enjoying and protecting the wild places of the earth; practicing and promoting the responsible use of the earth's ecosystems and resources; educating and enlisting humanity to protect and restore the quality of the natural and human environment; and using all lawful means to carry out these objectives. The Alaska Chapter of the Sierra Club has approximately 1,400 members. The Alaska Chapter includes three all-volunteer groups, whose members work to preserve and protect Alaska's resources, including the unique wilderness and wildlife resources across the state.

7. Sierra Club's interests encompass a wide range of environmental issues, including wildlife conservation, wilderness, public lands and waters protection, and the protection of clean air and water resources. Sierra Club members use Alaska's public lands for quiet recreation, aesthetic pursuits, and spiritual renewal, and seek out wilderness for its scenery, wildlife, and solitude.

8. Sierra Club has been actively involved in the protection of the

unique wilderness and wildlife values in Alaska. Sierra Club has invested significant organizational resources in public outreach, earned media, research, publications, and advocacy focusing on the threats to Alaska's ecosystems from natural gas development.

9. Sierra Club educates its members on issues related to the development of natural gas resources in Alaska through our National Sierra Club website, the Sierra Club magazine, and in other Sierra Club publications. In addition, we send email alerts to our membership through our activist lists, which reach tens of thousands of households across the country, including Alaska. Sierra Club members rely on the Sierra Club to provide information on the potential impacts from natural gas development. The Sierra Club has regularly alerted our members to potential industrial activities and government actions that could potentially harm Alaska ecosystems and the wildlife that rely upon them and has provided opportunities for our members to become engaged and voice their concerns.

10. Sierra Club members have visited and will continue to visit various parts of Alaska for recreation in natural and wilderness settings, and to view and experience wildlife, and they rely on the Sierra Club to protect their interests. Natural gas development threaten these uses. Sierra Club is concerned that natural gas development activities, including the construction

and operation of gas treatment plants, LNG export facilities, and a massive pipeline, will reduce the amount of undisturbed public lands and wildlife habitat, and this will in turn cause direct and irreparable harm to Sierra Club members whose opportunities to experience undisturbed land, wilderness, wilderness travel, recreation in a natural landscape, and too view and enjoy wildlife will be reduced.

11. Sierra Club has a strong organizational interest in Alaska, and its wildlife. The Sierra Club and our members have a long history of advocating for the protection of landscapes that are critical to the conservation of Alaska wildlife including the Cook Inlet beluga whale. In advocating its interests in Alaska, Sierra Club represents itself and its members, who use and enjoy the Alaska, its resources and other values, and whose interests would be harmed by natural gas development activities that disturb Alaska's ecosystems and its wildlife.

12. I have traveled to the Arctic both professionally and recreationally. I have been to America's Arctic, the area north of the Brooks Range, at least once each summer for the last approximately 28 years. Some of the summers I have been more than twice, and I estimate my total number of trips to the Arctic region to be 45. During these trips I spent countless hours exploring the tundra, campaign in the mountains and out on the coastal plain. I

value the opportunity to witness the birds and wildlife and to experience the flora of the region.

13. In 1997, I backpacked from the Dalton highway, into the Gates of the Arctic National Park and Preserve, to Anaktuvuk Pass. The highway runs 2-3 miles from both spaces, and is therefore a convenient access point. The trip was one of my first experiences with the marvels of the Brooks Range country. I was in awe of the wild character of the land and how I felt so remote. On this trip I saw grizzly bears and caribou signs of wolves. The existing pipeline in the area is already negatively impactful. The Alaskan landscape's beauty lies in its wild character. It's completely immersive. The proposed Alaska LNG pipeline plans to put a compressor station (Galbraith Lake Compressor) along Dalton highway, between the Gates of the Arctic and Arctic National Wildlife Refuge ("Refuge"). This is a point that I have set off for backpacking trips from before, and how I plan to access the Refuge in an upcoming trip I am planning for 2023. Seeing the bright lights of the compressor station, hearing the operational noises, and experiencing increased traffic from the facilities all take away from the beauty of being in a completely wild space. After traveling hours to access the untouched Alaskan wilderness, the presence of a loud, bright compressor station would significantly lower my spirits, and take away from my enjoyment of my upcoming trip and other ones I will take in the future.

14. I consider the Refuge to be one of the wildest, most beautiful places I've ever been. I have the privilege of guiding 2-3 trips a year up there and spending 20-30 days of the calendar year showing people the landscape and the wildlife. I am keenly aware that these trips are a once in a lifetime experience for most people. Folks save for these trips, and they're not cheap. We see caribou, wolves, bears, wolverines, and other animals. The wildlife are an inextricable part of the experience for me and the people I get to lead. It is my understanding that FERC has admitted that the caribou herds will be impacted by the proposed project. In the Refuge, the caribou are amazing to witness. If we were able to see fewer caribou or other wildlife due to the disruption of the pipeline directly to the west of the Refuge, it would significantly detract from my trips, and from the trips of the people I guide.

15. In 1997 and again in 2008, I floated the Chulitna River from just south of Cantwell down to Talkeetna, in the eastern part of Denali National Park. I understand that the Alaska LNG project would build a pipeline down that stretch, as it is between the proposed Honolulu and Rabideux Compressor Stations. The river is beautiful and wild. Building and operating a pipeline in that area would hurt the integrity of the wilderness. I have also gone hiking with my family in Denali State Park twice, in 2010 and 2014, along the K'esugi Ridge trail. We plan to do the

hike again in the next 3 or 4 years. From the trail you get amazing views of Denali and the Chulitna River. From what I can tell, the trail gets within 10 miles of the proposed Honolulu Compressor Station. This compressor station would ruin the views of the hike, not to mention the pipeline that appears to run right through the trail. This would significantly detract from my experience on the trail.

16. I have visited Prudhoe Bay a dozen times. Around 2003 and 2004, I flew above the oil fields to show media teams and donors how the oil industry was ravaging the landscape. After fighting to preserve Arctic Alaska for 25 years, the impacts of industrial oil development firsthand in Prudhoe Bay are deeply distressing. Seeing the black smoke leak into the sky, the web of pipelines sprawl across fragile habitat, and booming operating noises scare away wildlife is a sobering reminder of what the proposed project could do to more of wild Alaska. I visit Alaska as often as I do because I value the land the way it is, and has been, for centuries.

17. The air quality in Alaska is remarkable. You're able to see mountain ranges further away than seems possible. On the trips that I lead in the Refuge, you have a view all the way from the Brooks Range mountains, to the Arctic Ocean. An increase in haze due to the air pollution of compressor stations would be detrimental. If haze became a regular occurrence through compressor station

and pipeline activity, it would significantly detract from the trips I lead folks on, and would make it less desirable for me to take the trips in the first place. I can say this with certainty because the oil activity in Point Thompson has personally made a big difference to the character of the northwest Refuge. On our hike, the air is so clear that you can see Point Thompson for the last two days of our travel. When they were building there, you could hear blasting and industrial noise on the hike, and see the flaring. Creating more sites like the one at Point Thompson would further impact the beauty of the Refuge, and create a haze that would significantly detract from the remarkable visibility we get to experience.

18. The Sierra Club's lawsuit against the Department of Energy's approval of exports from the Alaska LNG project represents my interests because if the project does not have customers to export gas to, the pipeline and compressor stations will not be built, and I will be able to continue to enjoy the wildlife, landscape, and experiences I've fought on behalf of for 25 years.

I declare under the penalty of perjury under the laws of the United States that, to the best of my knowledge, the foregoing is true and correct.

Dated December 12, 2023

Daniel Ritzman

U.S. Energy Information Administration

# NATURAL GAS

OVERVIEW | DATA | ANALYSIS & PROJECTIONS | GLOSSARY › | FAQS ›

## U.S. Natural Gas Exports and Re-Exports by Country

(Volumes in Million Cubic Feet, Prices in Dollars per Thousand Cubic Feet)

**Period:** Annual

| Type - Area | Graph / Clear | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | View History |
|---|---|---|---|---|---|---|---|---|
| **Export Volumes** | | | | | | | | |
| **Total** | | 3,153,804 | 3,607,841 | 4,657,657 | 5,284,678 | 6,652,609 | 6,903,902 | 1973-2022 |
| **Pipeline** | | 2,446,091 | 2,524,501 | 2,837,848 | 2,894,329 | 3,091,580 | 3,038,257 | 1985-2022 |
| Canada | | 916,380 | 835,982 | 972,519 | 903,520 | 937,124 | 959,630 | 1973-2022 |
| Mexico | | 1,529,711 | 1,688,519 | 1,865,329 | 1,990,809 | 2,154,457 | 2,078,627 | 1973-2022 |
| **LNG** | | 707,542 | 1,083,118 | 1,819,547 | 2,389,963 | 3,560,818 | 3,865,643 | 1985-2022 |
| **Exports** | | 707,120 | 1,083,118 | 1,819,399 | 2,386,944 | 3,560,818 | 3,865,643 | 2012-2022 |
| **By Vessel** | | 706,424 | 1,082,511 | 1,817,890 | 2,386,112 | 3,559,440 | 3,864,016 | 2012-2022 |
| Antigua and Barbuda | | | | | 0 | 8 | 22 | 2020-2022 |
| Argentina | | 16,276 | 27,560 | 39,293 | 15,068 | 83,449 | 66,939 | 2015-2022 |
| Bahamas | | 2 | 137 | 156 | 257 | 486 | 489 | 2016-2022 |
| Bangladesh | | 0 | 0 | 3,419 | 10,660 | 37,734 | 12,663 | 2017-2022 |
| Barbados | | 200 | 174 | 211 | 241 | 297 | 93 | 2015-2022 |
| Belgium | | 0 | 0 | 23,897 | 31,946 | 5,584 | 80,245 | 2017-2022 |
| Brazil | | 17,648 | 35,645 | 54,298 | 111,826 | 307,714 | 71,998 | 2015-2022 |
| Chile | | 25,746 | 41,186 | 90,357 | 80,615 | 121,881 | 30,131 | 2015-2022 |
| China | | 103,410 | 90,473 | 6,851 | 214,401 | 453,304 | 96,659 | 2015-2022 |
| Colombia | | 0 | 5,101 | 6,518 | 4,626 | 2,247 | 5,703 | 2017-2022 |
| Croatia | | | | 0 | 3,275 | 36,133 | 77,286 | 2019-2022 |
| Dominican Republic | | 8,691 | 5,835 | 10,334 | 26,050 | 53,095 | 50,824 | 2016-2022 |
| Egypt | | 6,781 | 6,554 | 0 | 0 | 0 | 0 | 2016-2022 |
| Finland | | | | | 0 | 0 | 329 | 2020-2022 |
| France | | 0 | 18,291 | 117,791 | 90,237 | 170,780 | 571,399 | 2017-2022 |
| Germany | | | | | 0 | 0 | 7,113 | 2020-2022 |
| Greece | | 0 | 3,722 | 14,643 | 48,403 | 39,708 | 69,031 | 2017-2022 |
| Haiti | | 0 | 0 | 42 | 118 | 137 | 115 | 2017-2022 |
| India | | 20,919 | 57,634 | 91,481 | 124,402 | 196,218 | 122,518 | 2015-2022 |
| Indonesia | | | | | 0 | 3,269 | 6,579 | 2020-2022 |
| Israel | | 0 | 3,270 | 0 | 15,834 | 8,906 | 0 | 2017-2022 |
| Italy | | 6,493 | 17,390 | 68,655 | 68,453 | 34,210 | 116,034 | 2016-2022 |
| Jamaica | | 0 | 1,303 | 13,892 | 17,052 | 25,276 | 1,516 | 2017-2022 |
| Japan | | 53,218 | 125,534 | 200,864 | 287,672 | 354,948 | 209,220 | 1973-2022 |
| Jordan | | 36,321 | 38,794 | 32,332 | 6,872 | 0 | 0 | 2016-2022 |
| Kuwait | | 20,213 | 9,981 | 10,308 | 17,293 | 34,476 | 57,018 | 2016-2022 |
| Lithuania | | 6,844 | 0 | 3,455 | 28,879 | 30,919 | 77,212 | 2016-2022 |
| Malaysia | | 0 | 0 | 3,698 | 0 | 0 | 0 | 2017-2022 |
| Malta | | 867 | 2,927 | 413 | 2,648 | 5,427 | 5,273 | 2016-2022 |
| Mexico | | 140,743 | 182,246 | 143,371 | 34,408 | 15,200 | 3,832 | 2016-2022 |



**Exhibit 11, page 1 of 4**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Netherlands | 3,042 | 12,188 | 81,361 | 85,573 | 174,339 | 378,329 | 2016-2022 |
| Nicaragua | | | | 0 | 1 | 0 | 2020-2022 |
| Pakistan | 3,166 | 12,956 | 26,935 | 36,934 | 45,818 | 3,074 | 2016-2022 |
| Panama | 0 | 6,786 | 10,221 | 12,764 | 8,436 | 13,759 | 2017-2022 |
| Poland | 3,440 | 3,231 | 38,042 | 36,900 | 56,320 | 127,404 | 2016-2022 |
| Portugal | 19,523 | 12,512 | 53,342 | 36,922 | 65,865 | 69,583 | 2015-2022 |
| Russia | 0 | 0 | 0 | 0 | 0 | 0 | 2016-2022 |
| Singapore | 0 | 3,679 | 31,440 | 28,341 | 20,918 | 22,980 | 2017-2022 |
| South Korea | 130,185 | 252,223 | 270,025 | 316,227 | 453,483 | 292,732 | 2016-2022 |
| Spain | 29,329 | 10,310 | 166,684 | 199,966 | 215,062 | 426,657 | 2016-2022 |
| Taiwan | 9,004 | 16,731 | 27,397 | 64,363 | 99,350 | 106,738 | 2015-2022 |
| Thailand | 3,113 | 0 | 6,635 | 32,622 | 14,548 | 25,988 | 2016-2022 |
| Turkiye | 24,855 | 23,205 | 30,611 | 123,957 | 188,849 | 192,067 | 2016-2022 |
| United Arab Emirates | 13,408 | 3,638 | 20,561 | 10,110 | 0 | 0 | 2015-2022 |
| United Kingdom | 3,410 | 51,297 | 118,357 | 160,199 | 195,046 | 464,462 | 2016-2022 |
| **By Truck** | 696 | 607 | 1,131 | 832 | 1,378 | 1,628 | 2012-2022 |
| Canada | 5 | 19 | 25 | 10 | 128 | 76 | 2007-2022 |
| Mexico | 691 | 587 | 1,105 | 822 | 1,250 | 1,552 | 1997-2022 |
| **Re-Exports** | 422 | 0 | 526 | 3,019 | 0 | 0 | 2012-2022 |
| Argentina | 0 | 0 | 0 | 2,164 | 0 | 0 | 2016-2022 |
| Brazil | 0 | 0 | 0 | 82 | 0 | 0 | 2007-2022 |
| Chile | | | | | | | 2007-2016 |
| China | 0 | 0 | 0 | 0 | 0 | 0 | 2007-2022 |
| Egypt | 0 | 0 | 0 | 0 | 0 | 0 | 2015-2022 |
| India | 0 | 0 | 0 | 0 | 0 | 0 | 2007-2022 |
| Japan | 0 | 0 | 221 | 387 | 0 | 0 | 2010-2022 |
| Mexico | 0 | 0 | 0 | 0 | 0 | 0 | 2012-2022 |
| Portugal | | | | | | | 2011-2016 |
| South Korea | 0 | 0 | 0 | 387 | 0 | 0 | 2007-2022 |
| Spain | 0 | 0 | 0 | 0 | 0 | 0 | 2007-2022 |
| Turkiye | 0 | 0 | 0 | 0 | 0 | 0 | 2015-2022 |
| United Kingdom | 0 | 0 | 305 | 0 | 0 | 0 | 2007-2022 |
| **CNG** | 171 | 223 | 263 | 386 | 211 | 2 | 2012-2022 |
| Canada | 171 | 223 | 263 | 386 | 211 | 2 | 2011-2022 |
| **Export Prices** | | | | | | | |
| **Average** | 3.54 | 3.89 | 3.64 | 3.70 | 6.38 | 9.64 | 1985-2022 |
| **Pipeline** | 3.20 | 3.34 | 2.64 | 2.10 | 4.94 | 6.34 | 1985-2022 |
| Canada | 3.12 | 3.41 | 2.78 | 2.06 | 3.87 | 6.49 | 1985-2022 |
| Mexico | 3.26 | 3.30 | 2.57 | 2.12 | 5.41 | 6.26 | 1985-2022 |
| **LNG** | 4.69 | 5.20 | 5.21 | 5.64 | 7.62 | 12.24 | 1985-2022 |
| **Exports** | 4.69 | 5.20 | 5.20 | 5.64 | 7.62 | 12.24 | 2012-2022 |
| **By Vessel** | 4.69 | 5.20 | 5.19 | 5.64 | 7.62 | 12.24 | 2012-2022 |
| Antigua and Barbuda | | | | -- | 10.80 | 10.80 | 2020-2022 |
| Argentina | 4.64 | 6.01 | 5.14 | 5.04 | 6.83 | 13.89 | 2015-2022 |
| Bahamas | 10.40 | 10.39 | 10.39 | 10.39 | 10.39 | 10.39 | 2016-2022 |
| Bangladesh | -- | -- | W | 5.17 | 6.05 | 10.05 | 2017-2022 |
| Barbados | 10.40 | 10.39 | 10.39 | 10.39 | 10.39 | 10.48 | 2015-2022 |
| Belgium | -- | -- | 4.97 | 4.27 | 5.67 | 12.59 | 2017-2022 |
| Brazil | 4.15 | 6.05 | 5.18 | 6.28 | 7.90 | 11.64 | 2015-2022 |
| Chile | 5.43 | 4.33 | 4.68 | 5.49 | 7.03 | 10.53 | 2015-2022 |
| China | 4.32 | 4.41 | W | 5.82 | 7.49 | 11.74 | 2011-2022 |
| Colombia | -- | 4.86 | 4.06 | 5.83 | 7.38 | 12.72 | 2017-2022 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Croatia | | | | | 6.75 | 7.91 | 11.75 | 2020-2022 |
| Dominican Republic | 4.15 | 3.91 | 4.51 | 5.78 | 7.75 | 12.56 | 2016-2022 |
| Egypt | 4.93 | 3.27 | -- | -- | -- | -- | 2016-2022 |
| Finland | | | | -- | -- | 10.68 | 2020-2022 |
| France | -- | 7.03 | 5.33 | 5.17 | 7.34 | 12.48 | 2017-2022 |
| Germany | | | | -- | -- | 20.02 | 2020-2022 |
| Greece | -- | 7.62 | 5.90 | 5.86 | 7.61 | 14.52 | 2017-2022 |
| Haiti | -- | -- | 10.39 | 10.39 | 10.39 | 10.39 | 2017-2022 |
| India | 4.84 | 5.02 | 4.97 | 5.39 | 7.26 | 10.86 | 2015-2022 |
| Indonesia | | | | -- | 8.84 | 11.40 | 2020-2022 |
| Israel | -- | 6.48 | -- | 5.17 | 6.59 | -- | 2017-2022 |
| Italy | 3.95 | 6.46 | 4.99 | 5.27 | 6.64 | 11.46 | 2016-2022 |
| Jamaica | -- | 6.92 | 5.29 | 4.92 | 7.23 | 10.74 | 2017-2022 |
| Japan | 6.13 | 6.86 | 6.55 | 6.38 | 7.80 | 10.73 | 1973-2022 |
| Jordan | 4.40 | 4.10 | 3.99 | 5.28 | -- | -- | 2016-2022 |
| Kuwait | 4.38 | 6.67 | 4.92 | 5.61 | 7.91 | 13.33 | 2016-2022 |
| Lithuania | 3.84 | -- | W | 5.17 | 6.98 | 11.14 | 2016-2022 |
| Malaysia | -- | -- | W | -- | -- | -- | 2017-2022 |
| Malta | 4.70 | 6.70 | W | 5.33 | 7.09 | 8.87 | 2016-2022 |
| Mexico | 4.93 | 4.70 | 4.53 | 5.02 | 6.08 | 13.43 | 2015-2022 |
| Netherlands | 6.35 | 6.61 | 4.78 | 5.51 | 7.24 | 12.50 | 2016-2022 |
| Nicaragua | | | | -- | 10.39 | -- | 2020-2022 |
| Pakistan | 3.14 | 5.60 | 6.26 | 4.70 | 7.23 | 9.53 | 2016-2022 |
| Panama | -- | 5.46 | 7.62 | 6.98 | 7.11 | 10.90 | 2017-2022 |
| Poland | 4.26 | 7.12 | 5.72 | 5.13 | 8.10 | 19.74 | 2016-2022 |
| Portugal | 5.65 | 5.45 | 5.16 | 5.24 | 8.58 | 10.35 | 2015-2022 |
| Russia | -- | -- | -- | -- | -- | -- | 2016-2022 |
| Singapore | -- | 5.63 | 5.25 | 5.30 | 6.49 | 14.95 | 2017-2022 |
| South Korea | 4.18 | 4.56 | 4.76 | 5.66 | 7.46 | 12.45 | 2016-2022 |
| Spain | 4.94 | 4.59 | 5.39 | 5.60 | 8.27 | 11.46 | 2015-2022 |
| Taiwan | 4.77 | 6.51 | 5.17 | 5.34 | 7.66 | 10.90 | 2015-2022 |
| Thailand | 3.14 | -- | W | 4.80 | 5.69 | 15.94 | 2016-2022 |
| Turkiye | 4.84 | 5.38 | 5.13 | 5.48 | 8.98 | 11.09 | 2016-2022 |
| United Arab Emirates | 3.87 | 3.46 | 3.99 | 5.91 | -- | -- | 2015-2022 |
| United Kingdom | 3.87 | 5.77 | 5.32 | 5.78 | 7.79 | 12.06 | 2016-2022 |
| **By Truck** | 8.74 | 8.65 | 9.13 | 8.22 | 11.52 | 13.44 | 2012-2022 |
| Canada | 8.05 | 12.71 | 9.35 | 9.45 | 12.47 | 16.95 | 2007-2022 |
| Mexico | 8.74 | 8.52 | 9.13 | 8.20 | 11.42 | 13.27 | 1992-2022 |
| **Re-Exports** | 5.00 | -- | -- | 3.90 | -- | -- | 2012-2022 |
| Argentina | -- | -- | -- | 1.86 | -- | -- | 2015-2022 |
| Brazil | -- | -- | -- | 9.07 | -- | -- | 2007-2022 |
| Chile | | | | | | | 2007-2016 |
| China | -- | -- | -- | -- | -- | -- | 2007-2022 |
| Egypt | -- | -- | -- | -- | -- | -- | 2015-2022 |
| India | -- | -- | -- | -- | -- | -- | 2007-2022 |
| Japan | -- | -- | 4.44 | 9.07 | -- | -- | 2010-2022 |
| Mexico | 5.00 | -- | -- | -- | -- | -- | 2012-2022 |
| Portugal | | | | | | | 2011-2016 |
| South Korea | -- | -- | -- | 9.07 | -- | -- | 2007-2022 |
| Spain | -- | -- | -- | -- | -- | -- | 2007-2022 |
| Turkiye | -- | -- | -- | -- | -- | -- | 2015-2022 |
| United Kingdom | -- | -- | 9.07 | -- | -- | -- | 2007-2022 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **CNG** | | 4.76 | 4.69 | 3.98 | 2.55 | 4.13 | 3.09 | 2011-2022 |
| Canada | | 4.76 | 4.69 | 3.98 | 2.55 | 4.13 | 3.09 | 2011-2022 |

Click on the source key icon to learn how to download series into Excel, or to embed a chart or map on your website.

**-** = No Data Reported; **--** = Not Applicable; **NA** = Not Available; **W** = Withheld to avoid disclosure of individual company data.

**Notes:** The price of LNG exports to Japan is the "landed" price, defined as received at the terminal in Japan. CNG = Compressed Natural Gas: Natural gas compressed to a pressure at or above 200-248 bar (i.e., 2900-3600 pounds per square inch) and stored in high?pressure containers. LNG re-exports are shipments of LNG to foreign countries that were previously imported, offloaded. See Definitions, Sources, and Notes link above for more information on this table.

Release Date: 11/30/2023
Next Release Date: 12/29/2023