CENTER for BIOLOGICAL DIVERSITY — Because life is good.

Via Electronic and Certified Mail

February 9, 2026

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RE: Notice of Intent to Sue Over the Bureau of Safety and Environmental Enforcement's Issuance of a Suspension of Production for Hilcorp Alaska LLC's Liberty Unit Leases

Dear Secretary Burgum, Principal Deputy Director Stevens, and Alaska Regional Director Miller:

The Center for Biological Diversity and Sovereign Iñupiat for a Living Arctic hereby provide notice of their intent to sue the U.S. Department of the Interior, the Bureau of Safety and Environmental Enforcement and its officers and directors (collectively, BSEE) over BSEE's issuance of a suspension of production (SOP) to Hilcorp Alaska, LLC (Hilcorp) for the oil and gas leases that constitute the Liberty Unit on the Alaska Outer Continental Shelf in the Beaufort Sea (Leases OCS-Y-1585, OCS-Y-1650, OCS-Y-1886). This letter is provided pursuant to the 60-day notice requirement of the citizen suit provision of the Outer Continental Shelf Lands Act (OCSLA), to the extent such notice is deemed necessary by a court. *See* 43 U.S.C. § 1349(a)(2)(A).

BSEE's issuance of the SOP is unlawful in numerous respects. First, the Liberty Unit leases expired in December 2024 and BSEE therefore lacked the authority to issue the SOP. Second, BSEE's issuance of the SOP violates OCSLA and its implementing regulations because the SOP fails to demonstrate that the suspension is in the national interest as required by law. Indeed, the overwhelming evidence demonstrates that extending the Liberty Unit leases is contrary to the national interest in addressing the climate crisis, recovering endangered species, and otherwise protecting the environment and coastal communities given the numerous harms inherent in offshore oil and gas drilling. Yet BSEE failed to consider any of these factors in its decision. Third, BSEE's issuance of the SOP is based on an arbitrary application of Executive Orders. Fourth, BSEE failed to explain its change in position from its

December 2024 decision rejecting Hilcorp's request for an SOP and unreasonably determined the SOP would allow Hilcorp to properly develop its lease.

Sovereign Iñupiat for a Living Arctic (SILA) submits this notice because the Liberty Unit leases and the activities they authorize directly affect the well-being, cultural continuity, and subsistence resources of the Iñupiat communities who call the Beaufort Sea region home. The decisions BSEE makes regarding offshore development shape the conditions under which our people gather food, maintain cultural practices, and sustain relationships with the land and waters that have supported us since time immemorial. SILA's interest in this matter is grounded in our responsibility to ensure that federal actions do not compromise the long-term health of our homelands or the ability of future generations to live and thrive here.

We therefore urge BSEE to revoke the SOP for the Liberty Unit leases. If BSEE fails to do so, we will file litigation in federal court to resolve the matter.

Legal Background: The Outer Continental Shelf Lands Act

Congress enacted OCSLA to govern the development of offshore oil and gas resources, "while recognizing the crucial need to balance resource development with the protection of the human, marine, and coastal environments."[1] The statute makes "clear that offshore leasing must not proceed without due regard for the communities and environments it affects."[2]

OSCLA prescribes a four-stage framework under which the Secretary of the Interior,[3] may lease areas of the outer continental shelf for purposes of exploring and developing the oil and gas deposits of those submerged lands.[4] The four stages are "(1) formulation of a five year leasing plan …; (2) lease sales; (3) exploration by the lessees; [and] (4) development and production."[5]

"Each stage" of the process "involves separate regulatory review that may, but need not, conclude in the transfer to lease purchasers of rights to conduct additional activities on the [outer continental shelf]."[6] The agency must comply with NEPA and other environmental laws at each stage of the process.[7]

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[1] *Env't Def. Ctr. v. Bureau of Ocean Energy Mgmt.*, 36 F.4th 850, 864 (9th Cir. 2022) (citing 43 U.S.C. § 1332(3)).
[2] *Healthy Gulf v. U.S. Dep't of Interior*, 152 F.4th 180, 192 (D.C. Cir. 2025).
[3] The Secretary has delegated its OCSLA responsibilities to two bureaus within the Department of the Interior. The Bureau of Ocean Energy Management (BOEM) is responsible for issuing five-year leasing programs, holding lease sales, and approving exploration and development plans. 30 C.F.R. §§ 550.101, 556.200, 550.201, 556.308. BSEE is responsible for enacting and enforcing safety and environmental standards, issuing SOPs, and approving drilling permits. *Id.* §§ 250.101, 250.180, 250.400, 250.410, 250.465.
[4] 43 U.S.C. §§ 1331–1365b, 1801–1866.
[5] *Sec'y of the Interior v. California*, 464 U.S. 312, 337 (1984).
[6] *Id.*
[7] *E.g., Village of False Pass v. Clark*, 733 F.2d 605, 609 (9th Cir. 1984).

At the end of production activities, operators are generally required to decommission and remove infrastructure and restore the seafloor.[8]

Under OCSLA, leases are valid for an initial period of five years or ten years in areas “of unusually deep water or other unusually adverse conditions,” and “as long after such initial period as oil and gas is produced from the area in paying quantities.”[9] If the lease is non-producing after its initial period, then it expires.[10]

BSEE’s regulations implementing OCSLA allow the agency to extend a non-producing lease beyond its initial term if the agency approves or directs an SOP after making certain findings.[11] For example, under 30 C.F.R. § 250.172, BSEE can grant an SOP or suspension of operations (SOO) when necessary to comply with a court order; “when activities pose a threat of serious, irreparable, or immediate harm or damage … to life (including fish and other aquatic life), property, any mineral deposit, or the marine, coastal, or human environment;” for installing “safety or environmental protection equipment;” when necessary to comply with “NEPA or to conduct an environmental analysis;” and when needed due to “inordinate delays encountered in obtaining required permits or consents, including administrative or judicial challenges or appeals.”[12] And under 30 C.F.R. § 250.173, BSEE can direct an SOP when an operator fails “to comply with an applicable law, regulation, order, or provision of a lease or permit” or when the SOP “is in the interest of National security or defense.”[13]

The regulations specify that BSEE can “terminate any suspension when [it] determines the circumstances that justified the suspension no longer exist or that other lease conditions warrant termination.”[14]

Factual Background: The Liberty Unit

The Liberty Unit project consists of three federal offshore oil and gas leases near Foggy Island Bay in the Beaufort Sea. Until the leases expired in 2024, they were the only active offshore oil and gas leases entirely in federal waters remaining in the Arctic Ocean.[15]

In 1997, BP performed the first Liberty well test and claimed to have discovered an estimated 120 million barrels of oil in the Liberty Prospect.[16] BP then began developing a production plan for the Liberty Project in 1998, based on a project model that would require the construction of an artificial gravel island in the Beaufort Sea connected to an onshore pipeline.[17] After a few years of initial

[8] *See* 30 C.F.R. Part 250 Subpart Q.
[9] 43 U.S.C. § 1337(b)(2)(A), (B).
[10] 30 C.F.R. § 250.180(a)(2).
[11] *Id.* § 250.180(d).
[12] 30 C.F.R. § 250.172(a)– (e).
[13] *Id*. § 250.173(a)– (b); *see also id.* § 250.174.
[14] *Id.* § 250.170(d).
[15] BP acquired the first Liberty lease in 1991, followed by a second lease in 1996. These two leases were approved for unitization under the Liberty Unit agreement in 2003. BP acquired the third Liberty lease in 2007, and it was approved to join the Liberty Unit in 2016.
[16] BOEM, Hilcorp Alaska LLC**,** https://www.boem.gov/regions/alaska-ocs-region/leasing-and-plans/hilcorp-alaska-llc (last accessed Dec. 31, 2025).
[17] *Id.*

environmental analysis, including consideration of project threats to bowhead whales and other marine mammals, in 2002, BP announced that it was putting the Liberty Project on hold.[18]

In 2007, BP submitted a revised development plan with a new drilling method using "ultra-extended reach" drilling to drill into the offshore Liberty Unit from existing offshore drilling pads for the nearby Endicott Project.[19] BP again put the project on hold in 2012, after receiving an SOP from BSEE.[20]

In 2014, Hilcorp bought a 50 percent stake in the Liberty Unit leases and became the project operator, and it later acquired the remaining share of the leases and became the sole owner and operator.[21] Also in 2014, Hilcorp submitted a new development plan going back to the artificial offshore gravel island concept rather than the ultra-extended reach drilling concept.[22]

In 2018, following a public comment period on a draft development and production plan and draft environmental impact statement, BOEM approved Hilcorp's development and production plan for the Liberty Project.[23] The Center and other organizations challenged BOEM's approval of the Liberty Project, alleging that the agency failed to adequately examine the project's harmful effects on climate change and polar bears, as required by the National Environmental Policy Act and Endangered Species Act, respectively.[24] The Ninth Circuit agreed and threw out the project's approval.[25]

From 2018 to 2021, Hilcorp requested and received several SOPs, largely stemming from the company's failure to prepare an adequate oil spill response plan (OSRP), which is needed before any development activity can occur.[26] Among the problems BSEE identified with Hilcorp's proposed OSRPs was their failure to comply with the National Contingency Plan or Area Contingency Plan, given Hilcorp's proposal involved "Intentional Well Ignition," which is "not an approved oil spill response tactic" under either the national or regional plan.[27]

Pursuant to the 2021 SOP, if Hilcorp did not submit a complete OSRP resulting in an approval of the OSRP by BSEE or obtain another subsequent SOP approval by December 26, 2024, the SOP would expire as of that date.[28] In August 2024, when Hilcorp had still not submitted a sufficient OSRP, Hilcorp submitted a request to BSEE for a one-year SOP.[29]

On December 26, 2024, BSEE issued a decision denying Hilcorp's SOP request. In that decision, BSEE determined that Hilcorp failed to "include a [commitment to production] that would lead to production prior to the end of the suspension."[30] BSEE also concluded that supplemental information the company

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[18] *Id.*
[19] *Id.*
[20] *Id.*
[21] *Id.*
[22] *Id.*
[23] *Id.*
[24] *Ctr. for Biological Diversity v. Bernhardt*, 982 F.3d 723, 732 (9th Cir. 2020).
[25] *Id.*
[26] *See, e.g.*, Letter from Laura Daniel-Davis, Acting Deputy Secretary, U.S. Department of the Interior, to Aaron O'Quinn Land Manager, Hilcorp (Dec. 26, 2024) at 2–3.
[27] *Id.* at 3.
[28] *Id.* at 2–3.
[29] *Id.* at 5.
[30] *Id.* at 7.

submitted in December 2024, did "not cure these deficiencies" because Hilcorp "provide[d] no specific details regarding the[] sweeping categories of action" that Hilcorp claimed it would undertake.[31] BSEE noted that such "omissions would not justify a 5-year suspension—the minimum time Hilcorp actually appears to require for production—much less the 1-year suspension Hilcorp has actually requested."[32] BSEE also pointed to Hilcorp's failure to submit a complete development and production plan four years after the Ninth Circuit's decision and "Hilcorp's inability or refusal to submit a complete OSRP application to BSEE."[33]

Following BSEE's decision, on January 21, 2025, the agency sent Hilcorp a notice stating that, given the denial of Hilcorp's SOP, the three Liberty Unit leases had expired, and the Liberty Unit had terminated.[34]

Hilcorp appealed the SOP denial and notice that the leases had expired to the Interior Board of Land Appeals (IBLA).[35] The IBLA subsequently dismissed the appeals per a stipulation from the parties following an April 2025 notice from BSEE to Hilcorp that the agency was rescinding and reconsidering its December 2024 decision denying the SOP.[36]

On November 18, 2025, BSEE purported to issue an SOP for the Liberty Unit leases. In that decision, BSEE stated that it "will not be deciding Hilcorp's August 28, 2024, request for a granted SOP. Instead, BSEE has determined that it is in the National interest to direct a suspension to allow Hilcorp to properly develop the Leases in accordance with 30 CFR 250.174(a)."[37] BSEE claimed that the SOP was in the national interest because "the recoverable oil resources at stake for these Leases are estimated to be of such a quantity as to support production of up to 20,000 barrels of oil per day with transport through the Trans-Alaska Pipeline System, which will benefit Alaskans and all Americans well into the future."[38] In so determining, BSEE relied on two Executive Orders: Executive Order (E.O.) 14156, *Declaring a National Energy Emergency*, dated January 20, 2025, and E.O. 14153, *Unleashing Alaska's Extraordinary Resource Potential*, dated January 20, 2025.[39]

The SOP contains a schedule of production that Hilcorp is expected to follow, under which Hilcorp must, *inter alia*, submit a finalized extended-reach-drilling well design to BSEE by April 2026; mobilize a drilling rig by February 2028; commence drilling operations for the first well top hole by March 2028; and complete drilling and completion, well testing, and commissioning of first well by February 2029.[40] BSEE did not consider any of the environmental harms from these activities or the other harms granting the SOP could cause.

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31 *Id.*
32 *Id.*
33 *Id.* at 9.
34 Letter from Justin T. Miller, Regional Director, BSEE.
35 *See,* Order of June 13, 2025 in IBLA 2025-0131 and IBLA 2025-0132.
36 *Id.*; *see also* Karen Budd-Falen, Associate Deputy Secretary, U.S. Department of the Interior, Notice of Recission (Apr. 24, 2025).
37 Letter from Kenneth Stevens, Acting Director, BSEE to Mr. Aaron O'Quinn, Landman, Hilcorp (Nov. 18, 2025) at 1.
38 *Id.*
39 *Id.*
40 *Id.* at Enclosure: Activity Schedule.

Legal Violations: Unlawful SOP for the Liberty Unit Leases

BSEE's issuance of the SOP violates OCSLA and its implementing regulations in numerous ways. As an initial matter, BSEE lacked the authority to issue the SOP because the Liberty Unit leases expired in December 2024, when the prior administration denied Hilcorp's August 2024 suspension request.[41]

Additionally, in issuing the SOP, BSEE failed to consider factors relevant to the national interest. For example, BSEE failed to consider that the lease extensions are contrary to addressing the climate crisis, the risks and impacts of an oil spill, harm to threatened and endangered species caused by activity under the leases, threats to coastal communities and subsistence resources, and Hilcorp's track record of spills and accidents.[42] Without considering these factors and the other harms from offshore oil and gas drilling, BSEE cannot properly determine whether granting the SOP is in "the National interest,"[43] or comply with its obligations under OCSLA to ensure offshore drilling activity is "consistent with … national needs"[44] and "balance[d]" with "protection of the human, marine, and coastal environments."[45]

Moreover, BSEE's reliance on E.O. 14156 and E.O. 14153 to issue the SOP is also unreasonable. For example, E.O. 14156 declares a national emergency under the National Emergencies Act[46] based upon the President's determination that insufficient energy production, transportation, refining, and generation by the United States constitutes an unusual and extraordinary threat to our Nation's national security and foreign policy.[47] But the E.O. did not premise its declaration of emergency on any threat to human health, loss of significant property (for example, as the result of a natural disaster), or other immediate, unforeseen economic hardship, and as thus, the declaration of emergency is invalid.[48] BSEE's reliance on that E.O. is likewise invalid where it provided no explanation, let alone a reasonable one, for why it was invoking the emergency E.O. for a project that has not moved forward in nearly three decades and at the soonest would come into production at the end of 2029. The SOP decision also fails to reasonably explain why it is a proper application of E.O. 14156.

Finally, in issuing the SOP, BSEE failed to explain its change in position from its December 2024 decision denying Hilcorp's August 2024 request for another SOP because Hilcorp has not demonstrated the requisite commitment to production. Indeed, BSEE failed to even acknowledge its December 2024 SOP decision, stating instead that BSEE "will not be deciding Hilcorp's August 28, 2024, request for a granted SOP."[49] But, as explained above, BSEE already decided that SOP request, and denied it based

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[41] *See, e.g.*, 43 U.S.C. § 1337(b)(2); 30 C.F.R. § 250.180.
[42] A summary of these harms is attached as Appendix A.
[43] 30 C.F.R. § 250.174(a).
[44] 43 U.S.C. § 1332(3).
[45] *Id*. §§ 1332(3), 1802(2).
[46] 50 U.S.C. § 1621.
[47] E.O. 14,156 § 1.
[48] The Trump Administration has provided no factual information to support its purported "energy emergency." For the past six years in a row, the United States has produced more crude oil than any nation at any time, according to 2023 International Energy Statistics. U.S. Energy Information Administration, United States produces more crude oil than any country, ever (March 11, 2024), https://www.eia.gov/todayinenergy/detail.php?id=61545#. Production rose by 2% in 2024. U.S. Energy Information Administration, U.S. crude oil production rose by 2% in 2024 (April 16, 2025), https://www.eia.gov/todayinenergy/detail.php?id=65024/.
[49] Letter from Kenneth Stevens, Acting Director, BSEE to Mr. Aaron O'Quinn, Landman, Hilcorp (Nov. 18, 2025) at 1.

on Hilcorp's failure to satisfy the regulatory requirements for issuing that SOP, including demonstrating a commitment to production during the suspension period.[50]

Conclusion

BSEE's issuance of the SOP for the Liberty Unit leases is unlawful. BSEE must immediately revoke the SOP. If it fails to do so, the Center for Biological Diversity and Sovereign Iñupiat for a Living Arctic will file a lawsuit in federal court to resolve the matter.

Sincerely,

/s/ *Kristen Monsell*
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I hereby declare under penalty of perjury that, to the best of my knowledge and belief, the foregoing is true and correct.

Dated this 9th day of February 2026.

Kristen Monsell
Center for Biological Diversity

[50] *See Ctr. for Biological Diversity v. Haaland*, 998 F.3d 1061, 1063 (9th Cir. 2021) (holding an agency decision unlawful where the agency "did not sufficiently explain why it changed its prior position").

Appendix A

Overwhelming Evidence Demonstrates that Issuing Hilcorp Another SOP for the Liberty Unit is Antithetical to the National Interest

Continued Oil and Gas Activity Is Contrary to the National Interest in Addressing the Climate Emergency

Approving Hilcorp's SOP—and thus enabling future oil and gas activity in the Alaska OCS—is against the national interest in addressing the climate crisis. Past Presidents have acknowledged that we are facing a "profound climate crisis" and we have only a little time to pursue bold actions to avoid the most catastrophic impacts of climate change.[1] Studies have demonstrated that every barrel of federal oil left undeveloped would result in nearly half a barrel reduction in net oil consumption, with associated reductions in greenhouse gas emissions.[2] Conversely, approving new oil and gas activity increases greenhouse gas emissions.

Fossil fuels are driving a global climate emergency that presents a "code red for humanity."[3] As UN Secretary-General António Guterres stated upon the release of the Intergovernmental Panel on Climate Change's (IPCC) 2022 report:

> Climate scientists warn that we are already perilously close to tipping points that could lead to cascading and irreversible climate impacts. But, high-emitting Governments and corporations are not just turning a blind eye, they are adding fuel to the flames. They are choking our planet, based on their vested interests and historic investments in fossil fuels, when cheaper, renewable solutions provide green jobs, energy security and greater price stability…. Climate activists are sometimes depicted as dangerous radicals. But, the truly dangerous radicals are the countries that

[1] President Joe Biden, Tackling the Climate Crisis at Home and Abroad, Exec. Order No. 14,008, (Jan. 27, 2021); *see also* President Obama on Climate & Energy: A Historic Commitment to Protecting the Environment and Addressing the Impacts of Climate Change, https://obamawhitehouse.archives.gov/the-record/climate (noting that "President Obama believes that no challenge poses a greater threat to our children, our planet, and future generations than climate change — and that no other country on Earth is better equipped to lead the world towards a solution").

[2] *See, e.g.*, P. Erickson and M. Lazarus, How would phasing out US federal leases for fossil fuel extraction affect CO2 emissions and 2°C goals?, Stockholm Environment Institute, Working Paper No. 2016-2 (2016); P. Erickson and M. Lazarus, Impact of the Keystone XL Pipeline on Global Oil Markets and Greenhouse Gas Emissions, 4 Nature Climate Change 778 (2016); *see also* P. Erickson, Rebuttal: Oil Subsidies—More Material for Climate Change Than You Might Think (Nov. 2, 2017); United Nations Environment Programme, Emissions Gap Report 2019, UNEP, Nairobi (2019), at 25, 26, https://wedocs.unep.org/bitstream/handle/20.500.11822/30797/EGR2019.pdf?sequence=1&isAllowed=y; United Nations Environment Programme, et al., The Production Gap: The discrepancy between countries' planned fossil fuel production and global production levels consistent with limiting warming to 1.5°C or 2°C (2019), at 4, 14, http://productiongap.org/; Jason Bordoff and Trevor Houser, Navigating the U.S. Oil Export Debate, Columbia SIPA Center on Global Energy Policy, Jan. 2015.

[3] United Nations Secretary-General, *Secretary-General's statement on the IPCC Working Group 1 Report on the Physical Science Basis of the Sixth Assessment*, Aug. 9, 2021, https://www.un.org/sg/en/content/secretary-generals-statement-the-ipcc-working-group-1-report-the-physical-science-basis-of-the-sixth-assessment.

are increasing the production of fossil fuels. Investing in new fossil fuels infrastructure is moral and economic madness…. [4]

The climate emergency is here, and it is killing people, causing ecosystem collapse, costing the U.S. economy billions in damages every year, and creating escalating suffering across the nation and around the world.[5] The climate crisis also breeds glaring injustice, with Black, Latino, Indigenous, Asian American and Pacific Islanders, and other communities of color and low-wealth communities experiencing the gravest harms.[6] Without deep and rapid reductions in fossil fuel production and emissions, global temperature rise will exceed 1.5°C and result in catastrophic damages in the U.S. and around the world.[7]

An overwhelming scientific consensus, including scientific assessments from the IPCC, International Energy Agency (IEA), and United Nations, has established that limiting temperature rise to 1.5°C requires governments to immediately halt approvals of new fossil fuel production and infrastructure projects and phase out existing extraction and infrastructure to keep most fossil fuel reserves in the ground.[8]

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[4] United Nations Secretary-General, *António Guterres (UN Secretary-General) to the press conference launch of IPCC report* (February 28, 2022) (emphasis added), https://media.un.org/en/asset/k1x/k1xcijxjhp; *see also* United Nations Secretary-General's remarks to High-Level opening of COP27 - as delivered, Sharm el-Sheikh, Egypt, Nov. 7, 2022, https://www.un.org/sg/en/content/sg/statement/2022-11-07/secretary-generals-remarks-high-level-opening-of-cop27-delivered-scroll-down-for-all-english-version (UN Secretary-General statements noting that "[g]reenhouse gas emissions keep growing, global temperatures keep rising, and our planet is fast approaching tipping points that will make climate chaos irreversible. . . We are on a highway to climate hell with our foot still on the accelerator" and the "1.5 degree goal is on life support.

[5] IPCC, Climate Change 2022, Impacts, Adaptation and Vulnerability (2022), https://www.ipcc.ch/report/ar6/wg2/; IPCC, AR6 Synthesis Report (2023), https://www.ipcc.ch/report/sixth-assessment-report-cycle/; NOAA, National Centers for Environmental Information, Billion-Dollar Weather and Climate Disasters, https://www.ncdc noaa.gov/billions/ (reporting that in 2021 alone in the U.S. , there were 20 weather and climate disaster events with losses exceeding $1 billion each and 688 deaths).

[6] Donaghy, Tim & Charlie Jiang for Greenpeace, Gulf Coast Center for Law & Policy, Red, Black & Green Movement, and Movement for Black Lives, Fossil Fuel Racism: How Phasing Out Oil, Gas, and Coal Can Protect Communities (2021), https://www.greenpeace.org/usa/wp-content/uploads/2021/04/Fossil-Fuel-Racism.pdf; U.S. Environmental Protection Agency, Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts, EPA 430-R-21-003 (2021), www.epa.gov/cira/social-vulnerability-report.

[7] IPCC, Summary for Policymakers, In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty (2018) [Masson-Delmotte, V. et al. (eds.)], https://www.ipcc.ch/sr15/; IPCC, 2022*:* Climate Change 2022: Mitigation of Climate Change, Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [P.R. Shukla et al. (eds.)].

[8] Oil Change International, The Sky's Limit: Why the Paris Climate Goals Require a Managed Decline of Fossil Fuel Production (September 2016), http://priceofoil.org/2016/09/22/the-skys-limit-report/; Oil Change International, Drilling Toward Disaster: Why U.S. Oil and Gas Expansion Is Incompatible with Climate Limits (2019), http://priceofoil.org/drilling-towards-disaster; Tong, Dan et al., Committed emissions from existing energy infrastructure jeopardize 1.5°C climate target, 572 Nature 373 (2019); SEI, IISD, ODI, E3G, and UNEP, The Production Gap: The discrepancy between countries' planned fossil fuel production and global production levels consistent with limiting warming to 1.5°C or 2°C (2020), http://productiongap.org/; International Energy Agency (IEA), Net Zero By 2050: A Roadmap for the Global Energy Sector (October 2021), https://www.iea.org/reports/net-zero-by-2050; Teske, Sven and Sarah Niklas, Fossil Fuel Exit Strategy: An orderly wind down of coal, oil and gas to meet the Paris Agreement (June 2021), https://fossilfueltreaty.org/exit-strategy; Welsby, Dan et al., Unextractable fossil fuels in a 1.5 °C world, 597 Nature 230 (2021); Calverley, Dan and Kevin Anderson, Phaseout Pathways for Fossil Fuel Production Within Paris-compliant Carbon Budgets (2022),

The scientific literature documenting these findings has been set forth in a series of authoritative reports from the IPCC, U.S. Global Change Research Program, and other institutions, which make clear that fossil-fuel driven climate change is an existential "threat to human well-being and planetary health"[9] and that every increase in fossil fuel pollution pushes us further toward a dangerous and increasingly unlivable planet.[10] And a recent scientific review described how the "vast scientific evidence showing that fossil fuels and the fossil fuel industry are the root cause of the climate crisis, harm public health, worsen environmental injustice, accelerate biodiversity extinction, and fuel the petrochemical pollution crisis" and that "[f]ossil fuels are responsible for millions of premature deaths, trillions of dollars in damages, and the escalating disruption of ecosystems, threatening people, wildlife, and a livable future."[11]

The vast majority of all CO_2 pollution—86 percent—in the U.S. and globally comes from oil, gas, and coal.[12] The science is clear that limiting global temperature rise to 1.5°C under the Paris Agreement requires governments to immediately halt approval of all new fossil fuel production and infrastructure and rapidly phase out existing fossil fuel production and infrastructure in many developed fields and mines.[13] The committed carbon emissions from *existing* fossil fuel

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https://research.manchester.ac.uk/en/publications/phaseout-pathways-for-fossil-fuel-production-within-paris-complia; Trout, Kelly et al., Existing fossil fuel extraction would warm the world beyond 1.5°C, 17 Environmental Research Letters 064010 (2022); International Institute for Sustainable Development, Navigating Energy Transitions: Mapping the road to 1.5°C (October 2022), https://www.iisd.org/publications/report/navigating-energy-transitions; IPCC, 2023: Summary for Policymakers. In: Climate Change 2023: Synthesis Report, A Report of the Intergovernmental Panel on Climate Change, Contribution of Working Groups I, II and III, https://www.ipcc.ch/report/sixth-assessment-report-cycle/; Paul, Mark and Lina Moe, An Economist's Case for Restrictive Supply Side Policies: Ten Policies to Manage the Fossil Fuel Transition, Climate and Community Project (March 2023), https://www.climateandcommunity.org/economists-case-end-fossil-fuels; International Energy Agency (IEA), Net Zero Roadmap: A Global Pathway to Keep the 1.5 °C Goal in Reach (September 2023), https://www.iea.org/reports/net-zero-roadmap-a-global-pathway-to-keep-the-15-0c-goal-in-reach.

[9] IPCC, Climate Change 2022, Impacts, Adaptation and Vulnerability (2022) at SPM-35, https://www.ipcc.ch/report/ar6/wg2/.

[10] U.S. Global Change Research Program, Climate Science Special Report: Fourth National Climate Assessment, Vol. I (2017), https://science2017.globalchange.gov/; U.S. Global Change Research Program, Impacts, Risks, and Adaptation in the United States, Fourth National Climate Assessment, Vol. II (2018), https://nca2018.globalchange.gov/; IPCC, Summary for Policymakers. In: Global Warming of 1.5°C, Masson-Delmotte, V. et al. (eds.) (2018), https://www.ipcc.ch/sr15/; IPCC, Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (2021), https://www.ipcc.ch/report/sixth-assessment-report-working-group-i; IPCC, Climate Change 2022, Impacts, Adaptation and Vulnerability (2022), https://www.ipcc.ch/report/ar6/wg2/; IPCC, 2022*:* Climate Change 2022: Mitigation of Climate Change.

[11] Wolf, Shaye, et al., Scientists' warning on fossil fuels, 5 Oxford Open Climate Change 1–26 (2025).

[12] Fourth National Climate Assessment, Vol. II at 60 (2018); IPCC, Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (2021) at 5-19, https://www.ipcc.ch/report/sixth-assessment-report-working-group-i.

[13] IPCC, Summary for Policymakers, In: Global Warming of 1.5°C, Masson-Delmotte, V. et al. (eds.) (2018), https://www.ipcc.ch/sr15/; Oil Change International, Drilling Toward Disaster: Why U.S. Oil and Gas Expansion Is Incompatible with Climate Limits (2019), http://priceofoil.org/drilling-towards-disaster; Tong, Dan et al., Committed emissions from existing energy infrastructure jeopardize 1.5°C climate target, 572 Nature 373 (2019), https://www.nature.com/articles/s41586-019-1364-3; SEI, IISD, ODI, E3G, and UNEP, The Production Gap: The discrepancy between countries' planned fossil fuel production and global production levels consistent with limiting warming to 1.5°C or 2°C (2020), http://productiongap.org/; Teske, Sven & Sarah Niklas, Fossil Fuel Exit Strategy: An orderly wind down of coal, oil and gas to meet the Paris Agreement (June 2021), https://fossilfueltreaty.org/exit-

infrastructure in the energy and industrial sectors exceed the carbon budget for limiting warming to 1.5°C, meaning that no new fossil infrastructure can be built and much existing infrastructure must be retired early to avoid catastrophic climate harms.[14] Other research shows that the fossil fuels already in development globally, in existing and under-construction oil and gas fields and coal mines, contain enough carbon to substantially exceed the 1.5°C limit, meaning that extraction in existing fields and mines must also be shut down before their reserves are fully depleted.[15]

Yet, as detailed in the landmark United Nations Production Gap Reports, fossil fuel producers are planning to extract more than double the amount of oil, gas, and coal by 2030 than is consistent with limiting warming to 1.5°C.[16] And the most recent report from the International Energy Agency found that global CO2 emissions are expected to increase by close to 300 million metric tons in 2022—to 33.8 billion metric tons—but the rise would have been even more significant were it not for record deployment of electric vehicles and renewable energy.[17] The report expects warming to increase by 2.5°C by the end of the century.[18] Rather than increasing fossil fuel production and use, the world's fossil fuel production must decrease by roughly 6 percent per year on average between 2020 and 2030.[19] Another report from the United Nations, the 2022 Emissions Gap Reported stated that there has been inadequate action to meet these goals and called "for the rapid transformation of societies" off fossil fuels.[20]

The U.S. and other wealthy, high-emitting producer nations with the greatest capacity to achieve a just transition must make more rapid cuts. A 2022 Tyndall Center study concluded that an equitable phase-out requires the U.S. to end all oil and gas production by 2031 to preserve a 67% chance of limiting temperature rise to 1.5°C.[21] For a lower 50% of 1.5°C, the U.S. must reduce oil and gas production 74% by 2030 and end production by 2034.[22] Stated succinctly, there is no room in the global carbon budget for any new fossil fuel production and infrastructure of any kind anywhere in the world, right now. All such fossil fuel project approvals are inconsistent with meeting the Paris climate targets and inconsistent with maintaining a livable planet. Conversely, scientists have documented how a "transition away from fossil fuels will provide

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strategy; Welsby, Dan et al., Unextractable fossil fuels in a 1.5 °C world, 597 Nature 230 (2021); Trout, Kelly et al., Existing fossil fuel extraction would warm the world beyond 1.5°C, 17 Environmental Research Letters 064010 (2022), https://iopscience.iop.org/article/10.1088/1748-9326/ac6228#references.

[14] Tong, Dan et al., 2019; Pfeiffer, Alexander et al., Committed emissions from existing and planned power plants and asset stranding required to meet the Paris Agreement, 13 Environmental Research Letters 054019 (2018).

[15] Oil Change International, Drilling Toward Disaster, 2019. Trout, Kelly et al. 2022.

[16] The Production Gap 2020 http://productiongap.org/; SEI, IISD, ODI, E3G, and UNEP, The Production Gap Report 2021 (2021), http://productiongap.org/2021report.

[17] IEA, World Energy Outlook 2022, https://www.iea.org/reports/world-energy-outlook-2022.

[18] *Id.*

[19] The Production Gap 2020; The Production Gap 2021.

[20] United Nations Environment Programme, The Emissions Gap Report 2022: The Closing Window — Climate crisis calls
for rapid transformation of societies (2022), https://www.unep.org/resources/emissions-gap-report-2022.

[21] Calverley and Anderson, Phaseout Pathways for Fossil Fuel Production Within Paris-compliant Carbon Budgets (2022), https://www.iisd.org/publications/report/phaseout-pathways-fossil-fuel-production-within-paris-compliant-carbon-budgets (Tyndall Report).

[22] *Id*. at 6.

innumerable societal and planetary benefits and forge a path forward to sustaining life on Earth."[23]

A National Security Strategy released in October 2022 recognized that, "[o]f all of the shared problems we face, climate change is the greatest and potentially existential for all nations," including the United States.[24] A number of other recent reports issued by the Department of Homeland Security, the Department of Defense, the National Security Council, and the National Intelligence Director all highlight the threat that climate change poses to national security. For example, the Office of the Director of National Intelligence issued the first-ever National Intelligence Estimate on Climate Change (NIE). The NIE notes that climate change will increasingly exacerbate a number of risks to U.S. national security interests through (1) increased geopolitical tension as countries argue over who should be doing more, and how quickly, and compete in the ensuing energy transition; (2) cross-border geopolitical flash points from the physical effects of climate change as countries take steps to secure their interests; and (3) climate effects straining country-level stability in select countries and regions of concern.[25] The NIE further states that "[g]iven current government policies and trends in technology development … collectively countries are unlikely to meet the Paris goals," and concludes that "[h]igh-emitting countries would have to make rapid progress toward decarbonizing their energy systems by transitioning away from fossil fuels within the next decade."[26]

In the United States, fossil fuel pollution and resulting climate harms are already causing hundreds of thousands of premature deaths each year, and this toll will escalate absent the rapid phase-out of fossil fuels. The fine particulate pollution from fossil fuel combustion alone causes an estimated one in ten deaths each year in the United States, totaling 355,000 premature deaths in 2018.[27] Compared to limiting temperature rise to 1.5°C, warming of 2°C will cause an estimated 153 million more premature deaths worldwide due to increased exposure to fine particulate matter and ozone.[28] Another recent study estimated that every 4,434 metric tons of CO_2 added to the atmosphere in 2020—equivalent to the lifetime emissions of 3.5 average Americans—will cause one excess death globally through 2100.[29] The implications of this

[23] Wolf, et al. 2025.
[24] National Security Strategy, Oct. 2022, https://www.whitehouse.gov/wp-content/uploads/2022/10/Biden-Harris-Administrations-National-Security-Strategy-10.2022.pdf.
[25] National Intelligence Council's National Intelligence Estimate on Climate Change, Oct. 2021, https://www.dni.gov/files/ODNI/documents/assessments/NIE_Climate_Change_and_National_Security.pdf.
[26] *Id.*; *see also* The White House, Report on the Impact of Climate Change on Migration, Oct. 2021, https://www.whitehouse.gov/wp-content/uploads/2021/10/Report-on-the-Impact-of-Climate-Change-on-Migration.pdf; U.S. Dept. of Defense. Climate Risk Analysis, Oct. 2021, https://media.defense.gov/2021/Oct/21/2002877353/-1/-1/0/DOD-CLIMATE-RISK-ANALYSIS-FINAL.PDF.
[27] Karn Vohra et al., Global mortality from outdoor fine particle pollution generated by fossil fuel combustion: Results from GEOS-Chem, 195 Environmental Research 110754 (2021); *see also* Vohra, Karen et al., The health burden and racial-ethnic disparities of air pollution from the major oil and gas lifecycle stages in the United States 11 Sci. Adv. eadu2241 (2025) (study estimating that oil and gas-related air pollution cause over 91,000 premature deaths in the United States every year, along with hundreds and thousands of health complications).
[28] Drew Shindell et al., Quantified, localized health benefits of accelerated carbon dioxide emissions reductions, 8 Nature Climate Change 291 (2018).
[29] R. Daniel Bressler, The mortality cost of carbon, 12 Nature Communications 4467 (2021).

finding are that failing to limit temperature rise to 1.5°C and instead allowing 2°C warming will cost 169 million additional lost lives.[30]

Climate change threatens public safety, health and well-being, with particular harms to children, older adults, communities of color, low-income communities, immigrant groups, and persons with disabilities and pre-existing medical conditions.[31] For example, in the Alaskan Arctic, the island upon which the City of Kivalina and Native Village of Kivalina rests is rapidly eroding from increasing arctic temperatures, impacting essential traditional subsistence activities.[32] Many of these same communities are also disproportionately impacted by the impacts from upstream oil and gas production.[33]

Health risks from climate change include increased exposure to heat waves, floods, droughts, and other extreme weather events; increases in infectious diseases; decreases in the quality and safety of air, food, and water; displacement; and stresses to mental health and well-being.[34] In the United States, the health costs of air pollution from fossil fuel combustion and climate change are estimated to already exceed $800 billion per year and will become much more expensive without rapid action to curb fossil fuel pollution.[35]

Moreover, the science is overwhelmingly clear that fossil fuels represent a stark threat to the future of biodiversity within the U.S. and around the world due to the dual harms of the climate crisis and the direct impacts from fossil fuel development. As recently stated by scientific experts, "[t]he scale of threats to the biosphere and all its lifeforms — including humanity — is in fact so great that it is difficult to grasp for even well-informed experts" and our planet faces a "ghastly future" unless swift action is taken to reverse the climate crisis, including "a rapid exit from fossil fuel use."[36]

The U.S. federal government in its National Climate Assessments has similarly repeatedly recognized that human-caused climate change is causing widespread and intensifying harms to life across the planet and is driving many species toward extinction. For example, the Fourth

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[30] The difference between the carbon budget needed to limit warming to 1.5°C versus 2°C is 750 Gt CO_2, based on the IPCC Sixth Assessment (see IPCC, Climate Change 2021, at Table SPM.2). With each 4,434 metric tons of CO_2 estimated to result in one death, the additional 750 Gt CO_2 emitted with 2°C versus 1.5°C of temperature rise equates to 169 million additional deaths.

[31] Fourth National Climate Assessment, Vol. II at 548; U.S. Global Change Research Program, The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment (2016).

[32] *See*, *e.g.*, *Native Village of Kivalina v. ExxonMobile Corp.*, 696 F.3d 849 (2012).

[33] *See, e.g.*, Donaghy and Jiang, 2021; Hsu et al., Disproportionate exposure to urban heat island intensity across major US cities. 12 Nature Comms. 2721 (2021); Tuholske et al., Global urban population exposure to extreme heat, PNAS, Vol. 118 No. 41 (2021); Tessum et al., PM2.5 polluters disproportionately and systemically affect people of color in the United States, 7 Science Advances 18 (2021); Goldman et al., Assessment of Air Pollution Impacts and Monitoring Data Limitations of a Spring 2019 Chemical Facility Fire, Env. Justice (2021); Johnston et al., Respiratory Health, Pulmonary Function And Local Engagement In Urban Communities Near Oil Development, Environmental Research, Vol. 197 (2021); World Health Organization, COP26 Special Report on Climate Change and Health (Oct. 2021); Michanowicz, et al., Methane and Health-Damaging Air Pollutants From the Oil and Gas Sector: Bridging 10 Years of Scientific Understanding, PSE (2021).

[34] Fourth National Climate Assessment, Vol. II at 540; USGCRP, Impacts of Climate Change on Human Health.

[35] Medical Society Consortium on Climate and Health, The Costs of Inaction: The Economic Burden of Fossil Fuels and Climate Change on Health in the United States, 5 (2021).

[36] Bradshaw, Corey J.A. et al., Understanding the Challenges of a Ghastly Future, 1 Frontiers in Conservation Science Article 615419 (2021).

National Climate Assessment warned that "climate change threatens many benefits that the natural environment provides to society," and that "extinctions and transformative impacts on some ecosystems" will occur "without significant reductions in global greenhouse gas emissions."[37]

Countless scientific studies have documented how climate change is increasing stress on species and entire ecosystems, causing disruptions of species' distributions, timing of breeding and migration, physiology, vital rates, genetics, and the ecosystem processes that support basic human needs.[38] A 2019 United Nations report concluded that one million animal and plant species are now threatened with extinction, with climate change as a primary driver.[39] Climate change-related local extinctions are already widespread and have occurred in hundreds of species,[40] and extinction risk will accelerate with continued fossil fuel pollution. A 2024 study forecast the extinction of 14% to 32% of animal and plant species—representing the devastating loss of 3 million to 6 million species—in the next 50 years, even under intermediate climate change scenarios.[41] Another study estimated that one species will go extinct for every 4.3 million metric tons of CO_2e emitted.[42] Scientists have called for a rapid transformation of our energy system away from fossil fuels to avoid a mass extinction event.[43]

Fossil fuel development also causes a wide array of harms to species and ecosystems: destroying and fragmenting wildlife habitat, reducing water supplies often in water-stressed areas, causing air, noise, and light pollution, contaminating surface and ground water, and facilitating the spread of ecologically disruptive invasive species,[44] with similar harms in the offshore marine

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[37] U.S. Global Change Research Program, Impacts, Risks, and Adaptation in the United States, Fourth National Climate Assessment, Vol. II (2018) at 51, https://nca2018.globalchange.gov.

[38] Parmesan, Camille & Gary Yohe, A globally coherent fingerprint of climate change impacts across natural systems, 421 Nature 37 (2003); Root, Terry L. et al., Fingerprints of global warming on wild animals and plants, 421 Nature 57 (2003); Parmesan, Camille, Ecological and evolutionary responses to recent climate change, 37 Annual Review of Ecology Evolution and Systematics 637 (2006); Chen, I-Ching et al., Rapid range shifts of species associated with high levels of climate warming, 333 Science 1024 (2011); Cahill, Abigail E. et al., How does climate change cause extinction?, 280 Proceedings of the Royal Society B 20121890 (2012); Scheffers, Brett R. *et al.*, The broad footprint of climate change from genes to biomes to people, 354 Science 719 (2016).

[39] Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), Global Assessment Report (May 6, 2019), https://ipbes.net/news/Media-Release-Global-Assessment.

[40] Wiens, John J., Climate-related local extinctions are already widespread among plant and animal species, 14 PLoS Biology e2001104 (2016).

[41] Wiens, John J. and Joseph Zelinka, How many species will Earth lose to climate change?, 30 Global Change Biology e17125 (2024); *see also* NMFS, Climate Change Escalates Threats to Species in the Spotlight, Aug. 29, 2024, https://www.fisheries noaa.gov/feature-story/climate-change-escalates-threats-species-spotlight.

[42] Mokany, Karel et al., Reporting the biodiversity impacts of greenhouse gas emissions, 30 Global Change Biology e17037 (2023).

[43] Barnosky, Anthony D., Transforming the global energy system is required to avoid the sixth mass extinction, 2 MRS Energy and Sustainability E10 (2015).

[44] Butt, Nathalie et al., Biodiversity risks from fossil fuel extraction, 342 Science 425 (2013); Brittingham, Margaret C. et al., Ecological risks of shale oil and gas development to wildlife, aquatic resources and their habitats, 48 Environmental Science and Technology 11034 (2014); Pickell, Paul D. *et al.*, Monitoring forest change in landscapes under-going rapid energy development: challenges and new perspectives, 3 Land 617 (2014); Souther, Sara *et al.*, Biotic impacts of energy development from shale: research priorities and knowledge gaps, 12 Frontiers in Ecology and the Environment 330 (2014); Allred, Brady W. et al., Ecosystem services lost to oil and gas in North America, 348 Science 401 (2015); Harfoot, Michael B. et al., Present and future biodiversity risks from fossil fuel exploitation, 11 Conservation Letters e12448 (2018).

environment.[45] Fossil fuel development creates the significant risk of oil spills and brine spills which can kill wildlife and cause devastating effects over large areas. For many species, the harms from the fossil fuel-based energy system have led to mortality, changes in behavior, population declines, disruptions to community composition, and loss of ecosystem function.

In short, every additional ton of CO_2 and fraction of a degree of temperature rise matters.[46]

Alaska's Arctic Is on the Frontlines of the Climate Crisis

Alaska and the Arctic are on the front lines of the climate crisis, suffering rapid rates of sea ice loss and some of the most severe and rapid temperature rise on the planet. Recent research has found that climate models are under-calculating the rate of heating and that over the past four decades the Arctic has been warming nearly four times faster than the globe.[47] Looking forward, Alaska is projected to experience more heating than any other state, with the greatest increases expected in the Alaskan Arctic.[48] Alaska's statewide average surface temperature is projected to increase by 8.1°F by the end of the century under an intermediate emissions scenario (SSP2-4.5) and 14.2°F (7.9°C) under a high scenario (SSP5-8.5), for 2081–2100 relative to 1981–2010.[49]

The Fourth National Climate Assessment, prepared by hundreds of scientific experts and reviewed by the National Academy of Sciences and 13 federal agencies including the Department of the Interior,[50] highlighted the extreme pace of climate change in Alaska and the Arctic:

> Alaska is on the front lines of climate change and is among the fastest warming regions on Earth. It is warming faster than any other state, and it faces a myriad of issues associated with a changing climate.[51]

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[45] Venegas-Li, Rubén, et al., Global assessment of marine biodiversity potentially threatened by offshore hydrocarbon activities, 25 Global Change Biology 2009 (2019).

[46] United Nations, Secretary-General's statement on the IPCC Working Group 1 Report on the Physical Science Basis of the Sixth Assessment, Aug. 2, 2021, https://www.un.org/sg/en/content/secretary-generals-statement-the-ipcc-working-group-1-report-the-physical-science-basis-of-the-sixth-assessment; *see also* Harvey, Fiona, *No new oil, gas or coal development if world is to reach net zero by 2050, says world energy body,* Guardian, May 18, 2021, https://www.theguardian.com/environment/2021/may/18/no-new-investment-in-fossil-fuels-demands-top-energy-economist ("If governments are serious about the climate crisis, there can be no new investments in oil, gas and coal, from now – from this year.").

[47] Rantanen, Mika *et al*., The Arctic has warmed nearly four times faster than the globe since 1979, 3 Communications Earth & Environment 168 (2022).

[48] Steve T. Gray et al, U.S. Glob. Change Rsch. Prog., *2018: Alaska*, *in* Impacts, Risks, and Adaptation in the United States: Fourth Nat'l Climate Assessment, Vol. II, at 1191 (Reidmiller et al. eds., 2018), https://nca2018.globalchange.gov/downloads/NCA4_Ch26_Alaska_Full.pdf.

[49] Henry P. Huntington et al., *Ch. 29: Alaska*, *in* Fifth Nat'l Climate Assessment (A.R. Crimmins et al., eds., 2023), https://nca2023.globalchange.gov/downloads/NCA5_Ch29_Alaska.pdf.

[50] Fourth National Climate Assessment, Vol. I (2017); Fourth National Climate Assessment, Vol. II (2018); USGCRP [U.S. Global Change Research Program], "Fourth National Climate Assessment: Report Development Process," https://nca2018.globalchange.gov/chapter/appendix-1/.

[51] NCA4 Vol. II at 1190.

> The rate at which Alaska's temperature has been warming is twice as fast as the global average since the middle of the 20th century.[52]
>
> Temperatures have been increasing faster in Arctic Alaska than in the temperate southern part of the state, with the Alaska North Slope warming at 2.6 times the rate of the continental U.S.[53]
>
> In Alaska, starting in the 1990s, high temperature records occurred three times as often as record lows, and in 2015, an astounding nine times as frequently.[54]

Other more recent studies have found that the Arctic is warming at four times the global rate,[55] with localized warming as high as five times the global average.[56]
The recent U.S. Global Change Research Program's Fifth National Climate Assessment (NCA5) confirmed that Alaska is on the front lines of climate change, as it is warming faster than any other state, and faces a myriad of issues associated with a changing climate:

> Since NCA4 was published in 2018, Alaska has continued to experience rapid, widespread, and extreme climate-related changes in the form of ocean warming, record low sea ice, the world's highest rates of ocean acidification, an increasing frequency of extreme events such as marine heatwaves and extreme snow and rain storms in winter. These changes have reduced biological productivity, shifted seasonal timing of productivity, altered food web dynamics, and caused steep declines in prey. In many freshwater environments, these changes result in a combination of reduced summer streamflows, increased summer water temperatures, hypoxia, and decreased prey abundance, which are lethal to many aquatic species. There is no indication that these trends will slow or reverse in the near future.[57]

Arctic summer sea ice extent and thickness have decreased by 40% during the past several decades.[58] Sea ice loss has accelerated since 2000, with Alaska's coast suffering some of the fastest losses.[59] Approximately 95% of the oldest and thickest sea ice has disappeared during the past three decades, and the remaining thinner, younger ice is more vulnerable to melting.[60] The length of the sea ice season is getting shorter as ice melts earlier in spring and forms later in autumn.[61] Along Alaska's northern and western coasts, the sea ice season has shortened by more

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[52] *Id*.
[53] *Id.* at 1191.
[54] *Id.* at 1190.
[55] P. Chylek, et al. 2022. Annual Mean Arctic Amplification 1970–2020: Observed and Simulated by CMIP6 Climate Models. Geophysical Research Letters Vol. 49, Issue 13; M. Rantanen, et al. 2022. The Arctic has warmed nearly four times faster than the globe since 1979. Communications Earth & Environment. 3:168.
[56] K. Isaksen, et al. 2022. Exceptional Warming Over the Barents Area. Scientifc Reports 12:9371.
[57] U.S. Global Change Research Program, Fifth National Climate Assessment at Section 29 (2023).
[58] NCA4 Vol. I at 29, 57, 303.
[59] *Id.* at 305.
[60] Osborne, Emily, et al. (eds.), Arctic Report Card 2018, NOAA (2018), https://www.arctic noaa.gov/Report-Card/Report-Card-2018 at 2; *see also* Moon, T.A. et al. (eds), Arctic Report Card 2021, NOAA (2021), https://www.arctic noaa.gov/Report-Card/Report-Card-2021.
[61] NCA4 Vol. I at 307.

than 90 days.[62] A study quantifying sea ice trends in all 19 polar bear subpopulation regions from 1979 to 2014 found that in all regions sea ice is retreating earlier in spring and advancing later in fall, and the number of ice-covered days declined in all regions at the loss rate of 7 to 19 days per decade.[63]

As greenhouse gas emissions continue to rise, the Arctic is projected to be virtually ice-free in summer by 2040,[64] a shocking loss given that minimum summer sea ice averaged 2.64 million square miles during 1979 to 1992.[65] As summarized by the Fourth National Climate Assessment:

> Since the early 1980s, annual average arctic sea ice has decreased in extent between 3.5% and 4.1% per decade, become thinner by between 4.3 and 7.5 feet, and began melting at least 15 more days each year. September sea ice extent has decreased between 10.7% and 15.9% per decade (*very high confidence*). Arctic-wide ice loss is expected to continue through the 21st century, *very likely* resulting in nearly sea ice-free late summers by the 2040s (*very high confidence*)."[66]

Rising temperatures are also causing Arctic permafrost to thaw at rapid rates, and coastal erosion is increasing as protective sea ice disappears and sea levels rise. According to the Fourth National Climate Assessment:

> Since the 1970s, Arctic and boreal regions in Alaska have experienced rapid rates of warming and thawing of permafrost, with spatial modeling projecting that near-surface permafrost will likely disappear on 16% to 24% of the landscape by the end of the 21st century.[67]
>
> With the late-summer sea ice edge located farther north than it used to be, storms produce larger waves and cause more coastal erosion. In addition, ice that does form is very thin and easily broken up, giving waves more access to the coastline. A significant increase in the number of coastal erosion events has been observed as the protective sea ice embankment is no longer present during the fall months.[68]

The Intergovernmental Panel on Climate Change (IPCC) similarly concluded in its *Climate Change 2021: The Physical Science Basis* report that: "[i]t is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred," and further that "[t]he scale of recent changes across the climate system as a whole and the present state of many aspects of the climate system

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62 *Id.* at 307.

63 Stern, Harry L. and Kristin L. Laidre, Sea-ice indicators of polar bear habitat, 10 The Cryosphere 2027 (2016).

64 NCA4 Vol. I at 29, 303.

65 National Oceanic and Atmospheric Administration (NOAA), Climate Change: Arctic Sea Ice Summer Minimum, Climate.gov, Sept. 8, 2020, https://www.climate.gov/news-features/understanding-climate/climate-change-minimum-arctic-sea-ice-extent.

66 NCA4, Vol. I at 29, 303.

67 NCA4 Vol. II at 1197.

68 *Id*.

are unprecedented over many centuries to many thousands of years."[69] With regard to the Arctic, the IPCC concluded that climate change is causing rapid sea ice loss, permafrost thawing, and loss of snow cover:

> In 2011–2020, annual average Arctic sea ice area reached its lowest level since at least 1850 (*high confidence*).[70]
>
> Late summer Arctic sea ice area was smaller than at any time in at least the past 1000 years (*medium confidence*).[71]
>
> It is *virtually certain* that the Arctic will continue to warm more than global surface temperature, with *high confidence* above two times the rate of global warming.[72]
>
> The Arctic is projected to experience the highest increase in the temperature of the coldest days, at about 3 times the rate of global warming (*high confidence*).[73]
>
> With additional global warming, the frequency of marine heatwaves will continue to increase (*high confidence*), particularly in the … Arctic *(medium confidence).*[74]
>
> Additional warming is projected to further amplify permafrost thawing, and loss of seasonal snow cover, of land ice and of Arctic sea ice (*high confidence*).[75]
>
> The Arctic is *likely* to be practically sea ice free in September at least once before 2050 under the five illustrative scenarios considered in this report, with more frequent occurrences for higher warming levels.[76]
>
> The Arctic is projected to be practically ice-free near mid-century under mid and high GHG emissions scenarios.[77]

Other scientific assessments have similarly documented the extreme impacts of Arctic climate change, including NOAA's Arctic Report Card[78] and the Arctic Monitoring and Assessment

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[69] Intergovernmental Panel on Climate Change (IPCC), Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (2021), https://www.ipcc.ch/report/sixth-assessment-report-working-group-i/ at SPM-5 and SPM-9.

[70] *Id.* at SPM-9.
[71] *Id.* at SPM-9.
[72] *Id.* at SPM-19.
[73] *Id.* at SPM-20.
[74] *Id*.
[75] *Id*.
[76] *Id*.
[77] *Id.* at SPM-30.
[78] Thoman, R.L. et al (eds). Arctic Report Card 2020, NOAA (2020), https://arctic noaa.gov/report-card/report-card-2020.

Programme's 2017 Snow, Water, Ice and Permafrost in the Arctic report.[79] The 2024 Arctic Report Card, for example, documents that Arctic surface air temperatures from October 2024 to September 2024 ranked the second warmest on record and that the last nine years are the nine warmest on record; that a heat-wave in August 2024 set all-time record daily temperatures in several northern Alaska communities; that September 2024 was the wettest on record; that all 18 of the lowest September minimum ice extents have occurred in the last 18 years; and that, when considering wildfire and permafrost thaw, Arctic tundra is now a carbon dioxide source rather than a sink, and continues to be a consistent source of methane emissions, among other alarming findings.[80] Other recent studies include the following:

> (1) Increased coastal erosion and storm surge: For Arctic Alaska, Fang et al. (2018) found that decreasing seasonal sea ice extent and a lengthening of the open-water season is resulting in fall storms that generate more destructive waves and cause damage later in the year, resulting in increased flooding and erosion.[81]
>
> (2) Permafrost thaw: McGuire et al. (2018) concluded that effective efforts through the remainder of this century to reduce greenhouse gas pollution would help prevent much of the loss of ecosystem carbon storage from permafrost loss, and "could attenuate the negative consequences of the permafrost carbon–climate feedback."[82] Hjort et al. (2018) evaluated infrastructure hazard areas in the Northern Hemisphere's permafrost regions under projected climatic changes through 2050, and identified 550 km of the Trans-Alaska Pipeline System that are in the area in which near-surface permafrost thaw may occur by 2050.[83]
>
> (3) Changes in snowpack: Cox et al. (2017) reported a trend toward earlier spring snowmelt and later onset of autumn snow accumulation in the North Slope.[84]
>
> (4) Extreme weather events: Walsh et al. (2017) determined that the record-setting warmth during the 2015/16 cold season in Alaska — when statewide average temperatures exceeded the mean by more than 48°C over the 7-month cold season and by more than 68°C over the 4-month late-winter period — was driven in large part by anthropogenic climate change.[85] Lader et al. (2017) examined how climate change is expected to alter the frequencies and intensities of extreme temperature and precipitation events, concluding that "the shifts in temperature and precipitation indicate

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[79] AMAP, Snow, Water, Ice and Permafrost in the Arctic (SWIPA) 2017, Arctic Monitoring and Assessment Programme (AMAP), Oslo, Norway. xiv + 269 pp (2017).
[80] Moon, T.A. et al (eds). Arctic Report Card 2024, NOAA (2024), https://arctic.noaa.gov/report-card/report-card-2024.
[81] Fang, Z. et al., Reduced sea ice protection period increases storm exposure in Kivalina, Alaska, 4 Arctic Science 525 (2018).
[82] McGuire, A.D. et al., Dependence of the evolution of carbon dynamics in the northern permafrost region on the trajectory of climate change, 115 PNAS 3882 (2018).
[83] Hjort, J. et al., Degrading permafrost puts Arctic infrastructure at risk by mid-century, 9 Nature Communications 5147 (2018).
[84] Cox, C.J. et al., Drivers and environmental responses to the changing annual snow cycle of northern Alaska, Bulletin of the American Meteorological Society 2559 (December 2017).
[85] Walsh, J.E. et al., The exceptionally warm winter of 2015/2016 in Alaska, 30 Journal of Climate 2069 (2017).

unprecedented heat and rainfall across Alaska during this century."[86] Pan et al (2018) projected that wet snow and rain-on-snow events will increase in frequency and extent in Alaska with climate warming.[87]

Importantly, the Fourth National Climate Assessment and numerous scientific studies make clear that the harms of climate change to the Arctic and other regions are long-lived, and the choices we make now to reduce greenhouse gas pollution will affect the severity of the climate change impacts that will be suffered in the future.[88] As summarized by the National Research Council, "emissions reduction choices made today matter in determining impacts experienced not just over the next few decades, but in the coming centuries and millennia."[89]

Greenhouse gas emissions have direct, predictable, and devastating effects on endangered species and habitats

The science is overwhelmingly clear that climate change represents a stark threat to the future of biodiversity within the United States and around the world. The best available science shows that anthropogenic climate change is causing widespread harm to life across the planet, disrupting species' distribution, timing of breeding and migration, physiology, vital rates, and genetics — in addition to increasing species extinction risk.[90] Climate change is already affecting 82% of key ecological processes that underpin ecosystem function and support basic human needs.[91] Climate change-related local extinctions are widespread and have occurred in hundreds of species, including almost half of the 976 species surveyed.[92] Nearly half of terrestrial non-flying threatened mammals and nearly one-quarter of threatened birds are estimated to have been negatively impacted by climate change in at least part of their range.[93] Furthermore, across the globe, populations of terrestrial birds and mammals that are experiencing greater rates of climate warming are more likely to be declining at a faster rate.[94] Genes are changing, species' physiology and physical features such as body size are changing, species are moving to try to

[86] Lader, R. et al., Projections of twenty-first-century climate extremes for Alaska via dynamical downscaling and quantile mapping, 56 Journal of Applied Meteorology and Climatology 2393 (2017).
[87] Pan, C.G. et al., Rain-on-snow events in Alaska, their frequency and distribution from satellite observations, 13 Environmental Research Letters 075004 (2018).
[88] NCA4 Vol. II, Overview at 4.
[89] National Research Council, Climate Stabilization Targets: Emissions, Concentrations, and Impacts over Decades to Millennia, Washington, DC: National Academies Press (2011) at 3.
[90] Warren, Rachel et al., Increasing impacts of climate change upon ecosystems with increasing global mean temperature rise, 106 Climatic Change 141 (2011).
[91] Scheffers, Brett R. et al., The broad footprint of climate change from genes to biomes to people*,* 354 Science 719 (2016).
[92] Wiens, John J., Climate-related local extinctions are already widespread among plant and animal species, 14 PLoS Biology e2001104 (2016).
[93] Pacifici, Michela et al., Species' traits influenced their response to recent climate change, 7 Nature Climate Change 205 (2017). The study concluded that "populations of large numbers of threatened species are likely to be already affected by climate change, and … conservation managers, planners and policy makers must take this into account in efforts to safeguard the future of biodiversity."
[94] Spooner, Fiona E.B. et al., Rapid warming is associated with population decline among terrestrial birds and mammals globally, 24 Global Change Biology 4521 (2018).

keep pace with suitable climate space, species are shifting their timing of breeding and migration, and entire ecosystems are under stress.[95]

Species extinction risk will accelerate with continued greenhouse gas pollution. One million animal and plant species are now threatened with extinction, with climate change as a primary driver.[96] At 2°C compared with 1.5°C of temperature rise, species' extinction risk will increase dramatically, leading to a doubling of the number of vertebrate and plant species losing more than half their range, and a tripling for invertebrate species.[97] Numerous studies have projected catastrophic species losses during this century if climate change continues unabated: 15 to 37% of the world's plants and animals committed to extinction by 2050 under a mid-level emissions scenario;[98] the potential extinction of 10 to 14% of species by 2100;[99] global extinction of 5% of species with 2°C of warming and 16% of species with business-as-usual warming;[100] the loss of more than half of the present climatic range for 58% of plants and 35% of animals by the 2080s under the current emissions pathway, in a sample of 48,786 species;[101] and the loss of a third or more of animals and plant species in the next 50 years.[102] As summarized by the Third National Climate Assessment, "landscapes and seascapes are changing rapidly, and species, including many iconic species, may disappear from regions where they have been prevalent or become extinct, altering some regions so much that their mix of plant and animal life will become almost unrecognizable."[103]

As one example, the loss of sea ice, and the lack of adequate regulatory mechanisms addressing greenhouse gas pollution, led the Fish and Wildlife Service to list the polar bear as a threatened species in 2008.[104] As a top Arctic predator, the polar bear relies on sea ice for all its essential

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[95] Parmesan, Camille & Gary Yohe, A globally coherent fingerprint of climate change impacts across natural systems, 421 Nature 37 (2003); Root, Terry L. et al., Fingerprints of global warming on wild animals and plants, 421 Nature 57 (2003); Parmesan, Camille, Ecological and evolutionary responses to recent climate change, 37 Annual Review of Ecology Evolution and Systematics 637 (2006); Chen, I-Ching et al., Rapid range shifts of species associated with high levels of climate warming, 333 Science 1024 (2011); Maclean, Ilya M. D. & Robert J. Wilson, Recent ecological responses to climate change support predictions of high extinction risk, 108 PNAS 12337 (2011); Warren, Rachel et al., Increasing impacts of climate change upon ecosystems with increasing global mean temperature rise, 106 Climatic Change 141 (2011); Cahill, Abigail E. et al., How does climate change cause extinction?, 280 Proceedings of the Royal Society B 20121890 (2012).
[96] Brondizio, E.S. et al. (eds.), IPBES, Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, IPBES secretariat, Bonn, Germany (2019), *available at* https://ipbes.net/global-assessment.
[97] IPCC Climate Change 2021, Summary for Policymakers.
[98] Thomas, Chris. D. et al., Extinction risk from climate change, 427 Nature 145 (2004).
[99] Maclean, Ilya M. D. & Robert J. Wilson, Recent ecological responses to climate change support predictions of high extinction risk, 108 PNAS 12337 (2011).
[100] Urban, Mark C., Accelerating extinction risk from climate change, 348 Science 571 (2015).
[101] Warren, Rachel et al., Quantifying the benefit of early climate change mitigation in avoiding biodiversity loss, 3 Nature Climate Change 678 (2013).
[102] Román-Palacios, Cristian & John J. Wiens, Recent responses to climate change reveal the drivers of species extinction and survival, 117 PNAS 4211 (2020).
[103] Melillo 2014, Third National Climate Assessment at 196.
[104] 73 Fed. Reg. 28212 at 28293: "On the basis of our thorough evaluation of the best available scientific and commercial information regarding present and future threats to the polar bear posed by the five listing factors under the Act, we have determined that the polar bear is threatened throughout its range by habitat loss (i.e., sea ice recession). We have determined that there are no known regulatory mechanisms in place at the national or international level that directly and effectively address the primary threat to polar bears—the rangewide loss of sea ice habitat."

activities, including hunting for prey, moving long distances, finding mates, and building dens to rear cubs.[105] Separately, recognizing the critical importance of sea ice for polar bear survival, the Fish and Wildlife Service designated sea ice habitat off Alaska as critical habitat for the polar bear in 2010.[106]

Federal documents acknowledge that shrinkage and premature breakup of sea ice due to climate change is the primary threat to the species, leaving bears with vastly diminished hunting grounds, less time to hunt, and a shortage of sea ice for other essential activities such as finding mates and resting.[107] As summarized in the species' 2017 five-year review, sea ice loss and a shorter sea ice season makes hunting calorie-rich seals more difficult for polar bears, leading to nutritional stress, reduced body mass, and declines of some populations.[108] As the sea ice retreats, polar bears have been forced to swim longer distances,[109] which is more energetically costly,[110] and they are spending more time on land where they have reduced access to food.[111] Females are denning more often on land than on ice, increasing the potential for conflicts with humans.[112] Because polar bears have high metabolic rates, increases in movement resulting from loss and fragmentation of sea ice result in higher energy costs and are likely to lead to reduced body condition, recruitment and survival.[113]

In the southern Beaufort Sea (SBS) of Alaska, polar bears declined by 40 percent over a recent 10-year period,[114] and this decrease has been attributed to sea ice loss that limited access to prey over multiple years.[115] For the bears in this population, research has linked sea ice loss to

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[105] *Id.*
[106] U.S. Fish and Wildlife Service, Designation of Critical Habitat for the Polar Bear (Ursus maritimus) in the United States, 75 Fed. Reg. 76086 (Dec. 7, 2010).
[107] 73 Fed. Reg. 28212 at 28303; U.S. Fish and Wildlife Service, Polar bear (Ursus maritimus) Conservation Management Plan, Final. U.S. Fish and Wildlife Service, Region 7, Anchorage, Alaska (2016); U.S. Fish and Wildlife Service, Polar Bear (Ursus maritimus) 5-Year Review: Summary and Evaluation, U.S. Fish and Wildlife Service, Marine Mammals Management, Anchorage, Alaska (Feb. 3, 2017).
[108] Polar Bear 5-Year Review 2017 at 16.
[109] Durner, George M. et al., Consequences of long-distance swimming and travel over deep-water pack ice for a female polar bear during a year of extreme sea ice retreat, 34 Polar Biology 975 (2011); Pagano, Anthony M. et al., Long-distance swimming by polar bears (Ursus maritimus) of the southern Beaufort Sea during years of extensive open water, 90 Canadian Journal of Zoology 663 (2012); Pilfold, Nicholas W. et al., Migratory response of polar bears to sea ice loss: to swim or not to swim, 40 Ecography 189 (2017); Durner, George M. et al., Increased Arctic Sea Ice Drift Alters Adult Female Polar Bear Movements and Energetics, 23 Global Change Biology 3460 (2017).
[110] Griffen, Blaine D., Modeling the metabolic costs of swimming in polar bears (Ursus maritimus), 41 Polar Biology 491 (2018).
[111] Cherry, Seth G. et al., Fasting physiology of polar bears in relation to environmental change and breeding behavior in the Beaufort Sea, 32 Polar Biology 383 (2009); Whiteman, John P. et al., Summer declines in activity and body temperature offer polar bears limited energy savings, 349 Science 295 (2015).
[112] Olson, J.W. et al., Collar temperature sensor data reveal long-term patterns in southern Beaufort Sea polar bear den distribution on pack ice and land, 564 Marine Ecology Progress Series 211 (2017); Polar Bear 5-Year Review 2017 at 20-21.
[113] Polar Bear 5-Year Review 2017 at 17; Pagano, Anthony M. et al., High-energy, high-fat lifestyle challenges an Arctic apex predator, the polar bear, 359 Science 568 (2018).
[114] Bromaghin, Jeffrey F. et al., Polar Bear Population Dynamics in the Southern Beaufort Sea during a Period of Sea Ice Decline, 25 Ecological Applications 634 (2015).
[115] Obbard, Martyn E. et al., eds, Polar Bears: Proceedings of the 15th Working Meeting of the IUCN/SSC Polar Bear Specialist Group, Copenhagen, Denmark, 29 June–3 July 2009 (2010) at 52 ("Thus, the SB subpopulation is currently considered to be declining due to sea ice loss"); Bromaghin 2015.

decreases in survival, lower success in rearing cubs, shrinking body size, and increases in fasting and nutritional stress.[116]

recent study of polar bear population dynamics in Alaska's SBS from 2001 to 2016 concluded that SBS polar bear carrying capacity has been eroding for nearly two decades and that the SBS population has been in general decline. Specifically, the study estimated that SBS polar bear abundance fluctuated around an average of 565 bears (95% Bayesian credible interval [340, 920]) from 2006 to 2015, which is lower than at any time since passage of the U.S. Marine Mammal Protection Act. The study reported that abundance moved in concert with survival throughout the study period, declining substantially from 2003 and 2006 and afterward fluctuating with lower variation. Importantly, the study concluded that "[t]he potential for recovery is likely limited by the degree of habitat degradation the subpopulation has experienced, and future reductions in carrying capacity are expected given current projections for continued climate warming."[117] The recent August 2023 Species Status Assessment for the Polar Bear prepared by U.S. Fish and Wildlife Service stated that projections for polar bears in Alaska's SBS and Chukchi/Bering Seas (CBS) subpopulations, "were the most pessimistic with populations being greatly decreased for all [Representative [GHG] Concentration Pathways] in all future time periods," including the short term (2020–2030).[118]

The loss of sea ice also jeopardizes the polar bear's sea-ice dependent prey species — the ringed seal and bearded seal — which were listed as threatened in 2012 due to sea ice loss from climate change.[119]

If current greenhouse gas emissions trends continue, scientists estimate that two-thirds of global polar bear populations will be lost by 2050, including the loss of both of Alaska's polar bear populations, while the remaining third will near extinction by the end of the century due to the

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[116] Regehr, Eric V. et al., Survival and breeding of polar bears in the southern Beaufort Sea in relation to sea ice, 79 Journal of Animal Ecology 117 (2010); Bromaghin 2015; Rode, Karyn D. et al., Reduced body size and cub recruitment in polar bears associated with sea ice decline, 20 Ecological Applications 768 (2010); Cherry 2009; Whiteman 2015; Atwood, Todd C. et al., Long-term variation in polar bear body condition and maternal investment relative to a changing environment, 32 Global Ecology and Conservation e01925 (2021); Whiteman, John P. et al, Phenotypic plasticity and climate change: can polar bears respond to longer Arctic summers with an adaptive fast? 186 Oecologia 369 (2018); Pagano, A.M. et al., High-energy, high-fat lifestyle challenges an Arctic apex predator, the polar bear, 359 Science 568 (2018); Pagano, Anthony M. et al., The seasonal energetic landscape of an apex marine carnivore, the polar bear, 10 Ecology e02959 (2020); Pagano, Anthony M. et al., Effects of sea ice decline and summer land use on polar bear home range size in the Beaufort Sea, 12 Ecosphere e03768 (2021); Pagano, A.M. et al., Polar bear energetic and behavioral strategies on land with implications for surviving the ice-free period, 15 Nature Communications 947 (2024); Stroeve, J., et al., Ice-free period too long for Southern and Western Hudson Bay polar bear populations if global warming exceeds 1.6 to 2.6 °C, 5 Communications Earth & Environment 296 (2024).

[117] Bromaghin, J.F, et al., Survival and abundance of polar bears in Alaska's Beaufort Sea, 2001-2016, 11 Ecology and Evolution 14250 (2021).

[118] U.S. Fish and Wildlife Service, Species Status Assessment for the Polar Bear (*Ursus maritimus*) 86 (Aug. 18, 2023).

[119] National Marine Fisheries Service, Threatened Status for the Arctic, Okhotsk, and Baltic Subspecies of the Ringed Seal and Endangered Status for the Ladoga Subspecies of the Ringed Seal, 77 Fed. Reg. 76706 (Dec. 28, 2012); National Marine Fisheries Service, Threatened Status for the Beringia and Okhotsk Distinct Population Segments of the *Erignathus barbatus nauticus* Subspecies of the Bearded Seal, 77 Fed. Reg. 76,740 (Dec. 28, 2012).

disappearance of sea ice.[120] However, aggressive emissions reductions will allow substantially more sea ice to persist and increase the chances that polar bears will survive in Alaska and across their range.[121]

What is more, scientists can now predict specific harms to individual species from the incremental emissions increases directly attributable to the federal agency actions, and can also assess the consequences of emissions for listed species' conservation and recovery.[122] Highlighting the importance of reducing greenhouse gas emissions to protect sea ice and sea-ice dependent species, one recent study estimated that each metric ton of CO2 emission results in a sustained loss of $3 \pm 0.3\ m^2$ of September Arctic sea ice area based on the robust linear relationship between monthly-mean September sea ice area and cumulative CO2 emissions.[123] Similar to other research,[124] the study concluded that limiting warming to 2°C is not sufficient to allow Arctic summer sea ice to survive, but that a rapid reduction in emissions to achieve a 1.5°C global warming target gives Arctic summer sea ice "a chance of long-term survival at least in some parts of the Arctic Ocean."[125]

As mentioned above, climate change is also negatively impacting, and will continue to negatively impact, ice seals, including Arctic ringed seals. Ringed seals are the most ice-dependent of all ice seals and depend on sea ice and snow cover for essential life functions.[126] Unlike other seals, the ringed seal is able to inhabit and reproduce in landfast ice during the winter and spring breeding season due to its ability to make and maintain breathing holes in thick ice and to excavate subnivian lairs in snowdrifts over breathing holes, which it uses for resting, giving birth, and nursing pups.[127] Without sufficient sea ice and snow cover, ringed seals freeze to death or are eaten by predators.[128] Studies have documented a nearly 100 percent mortality rate when snow cover was insufficient to build snow caves.[129]

Snow drifts of 45 cm or more are needed for excavation and maintenance of simple lairs, and birth lairs require depths of 50 to 65 cm or more.[130] Such drifts typically only occur where average snow depths are at least 20-30 cm on flat ice and where drifting has taken place along pressure ridges or ice hummocks; areas with less than 20 cm average snow depth in April are

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[120] Amstrup, Steven C. et al., Forecasting the Range-wide Status of Polar Bears at Selected Times in the 21st Century, U.S. Department of the Interior and U.S. Geological Survey, USGS Science Strategy to Support U.S. Fish and Wildlife Service Polar Bear Listing Decision, Reston, Virginia (2007); Amstrup, Steven C. et al., Greenhouse Gas Mitigation Can Reduce Sea Ice Loss and Increase Polar Bear Persistence, 468 Nature 955 (2010).
[121] Amstrup 2010; Atwood, Todd C. et al., Forecasting the Relative Influence of Environmental and Anthropogenic Stressors on Polar Bears, 7 Ecosphere e01370 (2016); Regehr, Eric V. et al., Conservation status of polar bears (Ursus martimus) in relation to projected sea-ice declines, 12 Biology Letters 20160556 (2016).
[122] Amstrup, Steven C. et al., Unlock the Endangered Species Act to address GHG emissions, 381 Science 949 (2023).
[123] Dirk Notz & Julienne Stroeve, Observed Arctic sea ice loss directly follows anthropogenic CO2 emission, 354 Science 747 (2016).
[124] Schleussner, Carl-Friedrich et al., Science and policy characteristics of the Paris Agreement temperature goal, 6 Nature Climate Change 827 (2016) at 830.
[125] Notz & Stroeve 2016 at 3-4.
[126] 77 Fed. Reg. 76706 (Dec. 28, 2012).
[127] *Id.* at 76709.
[128] *Id.*
[129] *Id.*
[130] *Id.* at 76710.

inadequate for the formation of ringed seal birth lairs.[131] Sea ice is essential to the formation of snow caves. The loss of sea ice as a platform to collect snow substantially reduces the amount of snow that can accumulate.[132] In addition to being necessary for the accumulation of snow, sea ice serves other important life functions — Arctic ringed seals typically do not come ashore and use sea ice for resting throughout the year, and for pupping, and molting.[133] Earlier sea ice breakup causes premature weaning of pups before they are fully developed, leading to lower pup body condition and high pup mortality, and is associated with lower pregnancy rates.[134] As such, scientists have concluded that depth of snow cover and timing of ice break-up are "the key factors" affecting reproduction and population trajectories of ringed seals.[135]

The best available science shows that the accumulation of snow on Arctic sea ice is expected to decrease by nearly 50 percent within this century, with more than half of that decline occurring before mid-century.[136] By 2100 average snow depths will fail to meet the 20-30 cm minimum needed for successful formation and maintenance of Artic ringed seals' birth lairs in a substantial portion of the subspecies' range.[137] The National Marine Fisheries Service has concluded that this will cause a precipitous decline in the Arctic ringed seal population and to such an extent that the species will no longer exist in substantial portions of its range within the foreseeable future. Accordingly, it listed the species as threatened in 2012.[138]

Bowhead whales are also suffering the impacts of climate change.[139] The bowhead whale is the northernmost of the baleen whale species occurring in the Bering, Beaufort, and Chukchi Seas. They are associated with heavy ice cover, which is an important part of their habitat. Bowhead whales feed on crustaceans such as krill that are at risk of population declines due to loss of sea ice and ocean acidification. Research indicates that ice algae in the Beaufort Sea, which is the basis of the marine food web, is already on the decline.[140] Loss of this primary productivity will have negative effects throughout the food chain.

The 2019 status review for Steller's eiders concluded that "the number of Steller's eiders present on the Arctic Coastal Plain annually is low and highly variable."[141] The agency predicted that current stressors of the population "will continue, and possibly increase."[142] It noted that the threats likely to impact this listed species were "increase[d] oil and gas development (both tundra and offshore), and "increased marine shipping activities," each of which will cause habitat loss,

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131 *Id*.
132 *Id.* at 76721; B.P. Kelly, et al. 2010. Status review of the ringed seal (*Phoca hispida*). NOAA Technical Memorandum NMFS-AFSC-212.
133 *Id*.
134 Kelly et al. 2010.
135 *Id*.
136 *Id*.
137 *Id*.
138 77 Fed. Reg. at 76706.
139 Chambault, P. et al., Sea surface temperature predicts the movements of Arctic cetacean: the bowhead whale, 8 Scientific Reports (2018); Szesciorka, A.R. et al., Sea ice directs changes in bowhead whales phenology through the Bering Strait, 11 Movement Ecology 10 (2023);
140 Hassol, S. J. 2004. Impacts of a Warming Arctic, http://amap.no/acia/.
141 U.S. Fish and Wildlife Service. 2019. 5-year status review of the Alaska-breeding population of Steller's eiders. Fairbanks Fish and Wildlife Field Office, Fairbanks, Alaska at 5.
142 *Id.* at 7.

disturbance, collisions, and spill risks.[143] The authors found climate change was also a significant factor.

Four migratory herds of caribou in Alaska have recently experienced "significant declines."[144] Recovery of these herds is affected by a changing climate.[145] Climate change-induced shifts to the timing of thawing and springtime growth are affecting caribou's migration success.[146] Indeed, caribou may have already altered their winter range based on changes to the weather.[147] The effect of interannual weather variation and climate change on the caribou migration demonstrates the importance of ensuring caribou have access to sufficient suitable habitat.

Oil and gas drilling in the Liberty Unit could affect hundreds of threatened and endangered species and their critical habitats due to the resulting increase in carbon emissions and habitat degradation.

<u>The Liberty Project Would Emit Greenhouses Gases at Every Phase of the Project</u>

The Liberty Project would emit greenhouse gases and other greenhouse pollutants at every phase of the project — construction and operation of the gravel mine, construction of the artificial offshore island, various activities related to development and production of oil, refining the oil, transporting the oil, and consuming the oil.[148] For example, black carbon would be emitted by construction and transport vessels, during drilling operations, and during gas flaring associated with oil production; methane would be emitted during gas flaring and gas venting associated with oil production; routine development and production activities would also result in the emissions of carbon dioxide and nitrous oxide. And the consumption of the 150 billion barrels of oil predicted to be produced by the project would result in approximately 64.5 million metric tons of carbon dioxide being emitted into the atmosphere.[149]

<u>The Arctic Is Also Facing Significant Threats from Ocean Acidification</u>

Greenhouse gas pollution is causing the oceans to acidify at an alarming rate, with particularly profound impacts in Arctic waters. The ocean's absorption of anthropogenic carbon dioxide is changing its chemistry, lowering its pH and causing ocean acidification.[150] Surface ocean pH has already dropped by about 0.1 pH units from 8.16 in 1800 to 8.05 today, resulting in a rise in surface ocean acidity of about thirty percent.[151] The pH of the ocean is currently changing

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[143] *Id.*
[144] Russell, D., A. Gunn, and R. White, A decision support tool for assessing cumulative effects on an Arctic migratory tundra caribou population, Ecology and Society 26(1):4 (2021).
[145] *Id.* at 1.
[146] Severson 2021 at 2.
[147] Nicholson, K.L., Arthur, S.M., Horne, J.S., Garton, E.O., and Del Vechhio, P.A., 2016, Modeling caribou movements—Seasonal ranges and migration routes of the Central Arctic herd: *PLoS One*, v. 11, p. e0150333.
[148] *See e.g.*, Hilcorp Alaska, LLC, Liberty Development and Production Plan – Rev 1: Appendix A Environmental Impact Analysis at 4-4 (Sept. 8, 2015).
[149] Carbon emissions calculated pursuant to EPA's GHG Equivalencies Calculator at https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator (updated Mar. 12, 2024).
[150] Feely, R. A., S. C. Doney, and S. R. Cooley. 2009. Ocean acidification: present conditions and future changes in a high-CO_2 world. Oceanography 22:36-47.
[151] Orr, J. C., V. J. Fabry, O. Aumont, L. Bopp, S. C. Doney, R. A. Feely, A. Gnanadesikan, N. Gruber, A. Ishida, F. Joos, R. M. Key, K. Lindsay, E. Maier-Reimer, R. Matear, P. Monfray, A. Mouchet, R. G. Najjar, G. K. Plattner, K.

rapidly at a rate 100 times anything seen in hundreds of millennia, and may drop by another 0.3 or 0.4 (resulting in a 100 – 150% increase in acidity) by the end of this century.[152] If carbon dioxide emissions continue unabated, resulting changes in ocean acidity could exceed anything experienced in the past 300 million years.[153] Even if carbon dioxide emissions stopped immediately, the ocean would continue to absorb the excess carbon dioxide in the atmosphere, resulting in further acidification until the planet's carbon budget returned to equilibrium.

A primary impact of ocean acidification is that it depletes seawater of the carbonate compounds—aragonite and calcite—that many marine creatures need to build shells and skeletons.[154] As a result, ocean acidification hinders organisms such as corals, crabs, seastars, sea urchins and plankton from building the protective armor they need to survive. Rising acidity also affects the basic functions of fish, squid, invertebrates, and other marine species, including detrimental effects on metabolism, respiration and photosynthesis, which can thwart their growth and lead to higher mortality.[155] Because of its serious impacts to so many species, ocean acidification threatens to disrupt the entire marine food web.

Rising acidification will also significantly increase ocean noise pollution. Scientists found that ocean acidification is reducing the absorption of low frequency sound important to marine mammals (~300 Hz–10 kHz), resulting in ever-increasing noise pollution in the oceans, and that significant changes in noise pollution will happen by mid-century.[156] With increasing ocean acidification, low-frequency sound travels much farther due to changes in the amounts of pH-dependent species such as dissolved borate and carbonate ions, which absorb acoustic waves. Under the pH change from a doubling of CO_2, which is expected to happen in the surface ocean by mid-century, sound at frequencies important for marine mammals will travel some 70% farther.[157] Scientists have also found that increases in ocean temperature have the effect of decreasing sound absorption in the lower frequency range even more.[158]

B. Rodgers, C. L. Sabine, J. L. Sarmiento, R. Schlitzer, R. D. Slater, I. J. Totterdell, M. F. Weirig, Y. Yamanaka, and A. Yool. 2005. Anthropogenic ocean acidification over the twenty-first century and its impact on calcifying organisms. Nature 437:681-686.

[152] Meehl, G. A., T. F. Stocker, W. D. Collins, P. Friedlingstein, A. T. Gaye, J. M. Gregory, A. Kitoh, R. Knutti, J. M. Murphy, A. Noda, S. C. B. Raper, I. G. Watterson, A. J. Weaver, and Z.-C. Zhao. 2007. 2007: Global Climate Projections. in S. Solomon, D. Qin, M. Manning, Z. Chen, M. Marquis, K. B. Averyt, M. Tignor, and G. H. Miller, editors. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge University Press, Cambridge, UK, and New York, NY, USA.

[153] Caldeira, K., and M. E. Wickett. 2003. Anthropogenic carbon and ocean pH. Nature 425:365.

[154] Fabry, V. J., B. A. Seibel, R. A. Feely, and J. C. Orr. 2008. Impacts of ocean acidification on marine fauna and ecosystem processes. ICES Journal of Marine Sciences 65:414-432.

[155] *Id*.

[156] Brewer, P. G., and K. C. Hester. 2009. Ocean acidification and the increasing transparency of the ocean to low-frequency sound. Oceanography 22:86-93.

[157] *Id*.

[158] Hester, K. C., E. T. Peltzer, W. J. Kirkwood, and P. G. Brewer. 2008. Unanticipated consequences of ocean acidification: a noisier ocean at lower pH. Geophysical Research Letters 35, L19601, doi:10.1029/2008GL034913.

Ocean acidification is affecting the Arctic most strongly.[159] Seasonal aragonite undersaturation is already occurring in many Arctic regions.[160] The Beaufort Sea shelf exhibits corrosive waters at least during some seasons. Undersaturated waters (i.e., corrosive waters) to calcium carbonate, where $\Omega_{aragonite}$ can be as low as 0.5 and $\Omega_{calcite}$ as low as 0.9, are already found seasonally in surface and bottom waters of the Chukchi Seas due to the a combination of respiration process and anthropogenic CO_2 uptake[161]. High primary productivity during summer months increases organic carbon that is remineralized back to CO_2 which increases pCO_2 and drives pH decline in subsurface waters.[162] Biological respiration during the summer months intensify these processes further lowering the pH and amplifying the impacts of ocean acidification.[163] The increasing loss of Arctic sea ice in the Beaufort Sea driven by anthropogenic climate change can facilitate upwelling process that brings CO_2 rich water to the surface during fall and winter storms.[164] As Arctic sea ice continues to form later in the winter, the Beaufort shelf is likely to be persistently undersaturated with respect to aragonite.[165]

If current emissions trends continue, scientists predict that by 2050 all Arctic surface waters will be corrosive to organisms that use aragonite to build their shells, and that most of the Arctic will be corrosive to calcite-using organisms by 2095.[166] Declines and losses of these calcifying creatures would undoubtedly be disastrous for the Arctic food web.

All of these effects of greenhouse gas emissions make Arctic species especially vulnerable to additional impacts, including those from offshore oil development. In light of the degree to which climate change is already threatening the Arctic, it is irrational to allow offshore oil development in the Beaufort Sea.

Oil and Gas Activity from The Liberty Unit Would Risk Harmful Oil Spills and Other Accidents

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[159] Feely, R. A., S. C. Doney, and S. R. Cooley. 2009. Ocean acidification: present conditions and future changes in a high-CO_2 world. Oceanography 22:36-47.

[160] Yamamoto-Kawai, M., F. McLaughlin, E. C. Carmack, S. Nishino, and K. Shimada. 2009. Aragonite undersaturation in the Arctic Ocean: effects of ocean acidification and sea ice melt. Science 326:1098-1100; Azetsu-Scott, K., A. Clark, K. Falkner, H. Hamilton, E. P. Jones, C. Lee, B. Petrie, S. Prinsenberg, M. Starr, and P. Yeats. 2010. Calcium carbonate saturation states in the waters of the Canadian Arctic Archipelago and the Labrador Sea. Journal of Geophysical Research 115:C11021, doi:11010.11029/12009JC005917.

[161] Jeremy T. Mathis and Jennifer M. Questel, "Assessing Seasonal Changes in Carbonate Parameters across Small Spatial Gradients in the Northeastern Chukchi Sea," *Continental Shelf Research* 67, Seasonal and Interannual Dynamics of the Northeastern Chukchi Sea Ecosystem (September 2013): 42–51, doi:10.1016/j.csr.2013.04.041.

[162] N. R. Bates et al., "Summertime Calcium Carbonate Undersaturation in Shelf Waters of the Western Arctic Ocean – How Biological Processes Exacerbate the Impact of Ocean Acidification," *Biogeosciences* 10, no. 8 (August 2013): 5281–5309, doi:10.5194/bg-10-5281-2013.

[163] Mathis and Questel, "Assessing Seasonal Changes in Carbonate Parameters across Small Spatial Gradients in the Northeastern Chukchi Sea."

[164] Jeremy T. Mathis et al., "Storm-Induced Upwelling of High pCO2 Waters onto the Continental Shelf of the Western Arctic Ocean and Implications for Carbonate Mineral Saturation States," *Geophysical Research Letters* 39, no. 7 (April 2012): L07606, doi:10.1029/2012GL051574.

[165] N. Bednaršek et al., "Extensive Dissolution of Live Pteropods in the Southern Ocean," Nature Geoscience 5, no. 12 (November 25, 2012): 881–885, doi:10.1038/ngeo1635.

[166] Fabry, V. J., J. B. McClintock, J. T. Mathis, and J. M. Grebmeier. 2009. Ocean acidification at high latitudes: the bellweather. Oceanography 22:160-171.

Oil spills are an inevitable consequence of oil drilling; and can occur during every phrase of offshore drilling from exploration to extraction to transportation and refinement. And while there are inherent risks in any offshore drilling, Arctic federal waters are especially susceptible to devastating disasters and oil spills that would be nearly impossible to clean up.

Large and catastrophic oil spills are particularly devastating. In 1979, an exploratory well in the Gulf of Mexico blew out and spilled 140 million gallons of oil over the course of 10 months. In 1989, the Exxon Valdese spilled more than 11 million gallons of oil into Alaska's Prince William Sound. In 2009, the Montara oil rig spilled between 29,600 and 222,000 barrels of oil into the Timor Sea over the span of ten weeks. In 2010, the BP Deepwater Horizon spilled an estimated 206 million gallons of oil into the Gulf of Mexico over the course of almost three months. These are only several of the large spills that chart recent history.

The Arctic is especially vulnerable to large oil spills because neither the technology nor the infrastructure exists to respond to an oil spill in the Arctic. In fact, the nearest U.S. Coast Guard facility is over 1,000 miles away. Moreover, the harsh conditions of the Arctic make accidents more likely. For example, in 2012, Shell claimed to have the most technologically advanced, environmentally-sensitive drilling plan ever put forth for the Arctic. Notwithstanding its preparation, Shell's attempt to drill in the Arctic was a disaster. Before it even attempted to drill, Shell failed Environmental Protection Agency (EPA) air pollution tests; failed Coast Guard certification; grounded one of its drillships. When Shell finally began drilling on September 9, 2012, it had to stop the same day because of a large ice floe; later that week its containment dome, undergoing tests in Puget Sound, failed and was crushed; weeks later one of its drillships had an engine fire; and another drillship ran aground near Kodiak, Alaska after multiple failures with towing operations. These significant set-backs, as well its failure to find sufficient oil deposits during its exploration activities, lead Shell to abandon its Arctic OCS drilling project in September 2015. Shell's attempt to drill in the Arctic OCS provides a ready example of how difficult it is to even operate in the Arctic, let alone deal with an oil spill.

A 2014 report by the National Research Council found that "[t]he lack of infrastructure in the Arctic would be a significant liability in the event of a large oil spill," that building the requisite spill response capacity "will require significant investment in physical infrastructure and human capabilities," and that "[t]here is presently no funding mechanism to provide for development, deployment, and maintenance of temporary and permanent infrastructure."[167] The risk of an oil spill exists at all phases of the Liberty Project — from drilling the well to transporting the oil in subsea and onshore pipelines.

A report funded by the Bureau of Safety and Environmental Enforcement and conducted by Nuka Research quantified the inherent difficulties of responding to an oil spill in the Arctic Ocean.[168] The report entitled "Estimating an Oil Spill Response Gap for the Arctic Ocean" shows that traditional control measures such as in situ burning and mechanical recovery will be

[167] National Research Council. 2014. Responding to Oil Spills in the U.S. Arctic Marine Environment. National Academy of Sciences, Washington, DC at 8.
[168] Nuka Research and Planning Group, LLC. 2014. Estimating an Oil Spill Response Gap for the U.S. Arctic Ocean. September 10. Seldovia, AK. Available at http://www nukaresearch. com/files/140910_Arctic_RGA_Report_FNL.pdf

rendered infeasible for a large percentage of the time by ice, wind, weather and visibility conditions.

Specifically, the Nuka Research study analyzes "how often a particular response tactic could be expected to be ineffective or impossible to deploy based on historic environmental conditions in a certain area."[169] It is important to note, however, that the analysis does not consider the complete picture but hypothesizes a spill response scenario under ideal operational and logistical conditions. The analysis also does not fully estimate the extent to which a response tactic would be effective, such as on-water recovery rate or in-situ burn efficiency. The analysis calculates the total number of hours available for a particular response. Therefore, the response window does not necessarily represent consecutive hours of favorable conditions. A consecutive period of hours will obviously be necessary to mount an effective response.

Even in such a hypothetical scenario, the analysis found that all of the traditional oil spill response tactics would be precluded by Arctic conditions for a significant portion of the time, even during the summer. Nuka found that the most feasible tactic in the summer months in the Beaufort Sea was the application of dispersants from vessels, and even that would be possible only 80% of the time. Other tactics performed even worse, including in-situ burning ignited from vessels (feasible 61% of the time), open-water mechanical recovery (55%), application of dispersants by air (45%), and in-situ burning ignited from the air (38%). The situation in the winter months was considerably worse, with only in-situ burning having any likely feasibility at all, though it would still be impossible more than half the time (38% when ignited from vessels, 23% when ignited from aircraft) and does not include the collection of burn residue. The analysis portrays the very different conditions in an Arctic summer and winter, indicating the need for very different planning and approaches based on seasonal conditions.

Other studies corroborate the existence of this "response gap." For example, a 2011 report for the National Energy Board of Canada found similar limitations in oil spill response for the Canadian Beaufort Sea and Davis Strait.[170]

An Oil Spill Would Harm Arctic Wildlife

As recently stated by the National Marine Fisheries Service, "[t]he Beaufort sea supports a diverse assemblage of marine mammals."[171] Marine mammals known to occur in the area near the Liberty Project include polar bears, walruses, beluga whale, bowhead whales, gray whales, bearded seals, ringed seals and spotted seals. An oil spill could harm or kill these animals.[172]

Polar bears are particularly vulnerable to oil spills.[173] Polar bears must maintain a pristine hair coat as insulation against the cold. When a polar bear comes into contact with spilled oil, it can soak a polar bear's pelage and persist for several weeks where it will be groomed and ingested,

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[169] *Id*. at 32
[170] S.L. Ross Environmental Research Ltd. 2011. Spill Response Gap Study for the Canadian Beaufort Sea and the Canadian Davis Strait. Calgary, Alberta: National Energy Board.
[171] 80 Fed. Reg. 39062.
[172] MMS, Liberty Development and Production Plan Final Environmental Impact Statement, OCS EIS/EA MMS 2002-019, 2002 at 17-19; III-48 (FEIS on Liberty Project).
[173] *See, e.g.*, Wilson, Ryan R., et al. Potential impacts of an autumn oil spill on polar bears summering on land in northern Alaska, 292 Biological Conservation 110558 (2024).

irritate the skin, and destroy the insulating abilities of the fur.[174] Studies show that fatalities can occur from physiological effects on lungs, kidneys, blood, gastrointestinal tract, and other organs and systems, even in the absence of the thermal effect.[175] In other words, available data suggest that if oil is spilled in leads occupied by polar bears, they will become fouled and that an oil-coated bear that is not cleaned and rehabilitated will probably die.[176] This is a significant concern given that oil spilled in sea ice habitat would likely concentrate in leads and between ice floes resulting in direct exposure of polar bears, and the lack of capacity to deal with an oil spill or rehabilitate oil-soaked polar bears. Oil spills may also impact polar bears' food supply by impacting lower benthic levels, which could have cascading affects through the food chain or by direct impacts on ringed or bearded seal populations.

Oil spills can also kill individual ice seals and have population-level impacts on ringed and bearded seals by decreasing survival and reproductive success, inhibiting their normal behaviors, and exerting deleterious effects on their health. Seals depend on scent to establish a mother-pup bond, and mothers often do not recognize their oil-coated pups.[177] Oiled pups may be prematurely abandoned, reducing the pup's chances of survival. During the nursing period, ringed, bearded, and spotted seals return to the water several times a day between nursing bouts, increasing the chances of repeated contact with oil.[178] Oil spills also impede seals' foraging activities. When oil is present in the sea seals are reluctant to enter into the water,[179] reducing their chances of getting food. Exposure to oil may also interfere with locomotion, especially in young seals. Davis and Anderson (1976, cited in St. Aubin (1990)) observed two gray seal pups drowning because their flippers were stuck to the sides of their bodies, preventing them from swimming.

Additionally, contact with oil and inhalation of hydrocarbon fumes poses a health risk to ringed and bearded seals. Petroleum hydrocarbons are extremely irritating to the mucous membranes that surround the eyes and line the oral cavity, respiratory surfaces, and anal and urogenital orifices of pinnipeds. After a few minutes of experimental exposure to crude oil covered water, ringed seals began to lacrimate profusely and eventually had difficulty keeping their eyes open.[180] Within 24 hours they developed severe conjunctivitis, swollen nictitating membranes and corneal abrasions and ulcers.[181] Inhalation of hydrocarbon vapors can be toxic for pinnipeds.

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[174] Lentfer, J.W. (Convener). 1990. *Workshop on Measures to Assess and Mitigate the Adverse Effects of Arctic Oil and Gas Activities on Polar Bears. Final Report to the U.S. Marine Mammal Commission.* U.S. Department of Commerce National Technical Information Service, Washington, D.C., USA iv + 39pp.; Stirling, I. 1998. *Polar Bears*. University of Michigan Press, Ann Arbor, Michigan, USA. 220 pp; Stirling, I. 1990. Polar bears and oil: ecological effects. Pp. 223-234. *In: Synthesis of Effects of Oil on Marine Mammals* [Geraci, J.R. and D.J. St. Aubin (eds.)] Academic Press, New York; Amstrup, S.C. 2006. Estimating Potential Effects of Hypothetical Oil Spills on Polar Bears. U.S. Geological Survey.
[175] Lentfer 1990; National Research Council of the National Academies (NRC). 2003. *Cumulative Environmental Effects of Oil and Gas Activities on Alaska's North Slope*. The National Acadamies Press, Washington, D.C., USA 288 pp.; Stirling 1998.
[176] Lentfer 1990; Stirling 1998.
[177] St. Aubin, D. J. 1990. Physiological and toxic effects on pinnipeds. Pages 235-239 in J. R. Geraci and D. J. St. Aubin, editors. Sea Mammals and Oil: Confronting the Risks. Academic Press, Inc, San Diego, CA.
[178] *Id*.
[179] *Id*.
[180] Smith, T. G. 1975. The effect of contact and oil ingestion on ringed seals of the Beaufort Sea, Beaufort Sea. Technical Reports 5: 1-67.
[181] *Id*.

In particular, free-ranging pinnipeds stressed by parasitism or other metabolic disorders may be susceptible to even brief exposure to relatively low concentrations of hydrocarbon vapors. The exposure may even be fatal if combined with other factors that could elicit a major adrenal response.[182] Parasitized lungs, a relatively common finding in pinnipeds, can exacerbate the effects of even mild irritation of respiratory tissues; some of the components of petroleum are toxic if ingested.[183] Ingested hydrocarbons irritate and destroy epithelial cells in the stomach and intestine, affecting motility, digestion, and absorption.[184] Exposure to toxic fumes from petroleum hydrocarbons during oil spills can cause mortality in other marine mammals, even years after such accidents.[185] For example, a new study in determined that the Deepwater Horizon oil spill caused adrenal and lung lesions in bottlenose dolphins which led to their deaths.[186]

Seabirds are also threatened by oil spills because they tend to aggregate around offshore hydrocarbon drilling and production platforms.[187] Seabirds aggregate around oil and gas platforms because they are attracted to light sources on the platforms, use the platforms as roost sites, or cue into higher food concentrations around platforms.[188] For example, in the Grand Banks, seabird concentrations were 19-38 times higher near offshore oil platforms than on survey transects leading to platforms.[189] An oil spill could kill nesting, broodrearing, or staging spectacled eiders.[190]

Caribou, muskoxen, grizzly bears, and arctic foxes may frequent coastlines near the Liberty Project and could be negatively impacted in the result of an oil spill. For example, caribou and muskoxen may become oiled or ingest contaminated vegetation.[191] Caribou and muskoxen that become oiled could suffer from a loss of thermoinsulation, and lead to their death in the case of young calves, and they could also absorb oil through the skin or inhale toxic hydrocarbons.[192]

Phytoplankton could also be harmed in the event of an oil spill, which could have ripple effects up the food chain. Phytoplankton provide the bulk of the primary production for the Arctic marine ecosystem and a small number of taxa funnel energy upwards from zooplankton to larger

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[182] St. Aubin. 1990.
[183] *Id*.
[184] *Id*.
[185] Venn-Watson, S. *et al.* Adrenal Gland and Lung Lesions in Gulf of Mexico Common Bottlenose Dolphins (Tursiops truncatus) Found Dead following the Deepwater Horizon Oil Spill. *PLoS ONE* 10, e0126538 (2015).
[186] *Id.*
[187] Wiese, F. K., W. A. Montevecchi, G. K. Davoren, F. Huettmann, A. W. Diamond, and J. Linke. 2001. Seabirds at risk around offshore oil platforms in the North-west Atlantic. Marine Pollution Bulletin 42:1285-1290.
[188] Weise et al. 2001; Montevecchi, W. 2006. Influences of artificial light on marine birds. Pages 94-113 *in* C. Rich and T. Longcore, editors. Ecological Consequences of Artificial Night Lighting. Island Press, Washington, D.C; Wiese, F. K., and G. J. Robertson. 2004. Assessing seabird mortality from chronic oil discharges at sea. Journal of Wildlife Management 68:627-638.
[189] Canadian Science Advisory Secretariat, Research Document 2010/026, Ecosystem Status and Trends Report for the Newfoundland and Labrador Shelf, available at http://catalog.ipbes.net/system/assessment/78/references/files/283/original/78_Templeman__N._2010._Ecosystem_status_and_trends_report_for_the_Newfoundland_and_Labrador_Shelf.pdf?1417520559.
[190] FEIS on Liberty Project, 2002 at 18.
[191] FEIS on Liberty Project, 2002 at 19.
[192] FEIS on Liberty Project, 2002 at III-57.

species such as polar bears, walruses, whales and seabirds.[193] Studies have documented reductions in grazing and reproduction in the key Arctic copepod species *C. hyperboreus* following exposure to pyrene, and they comment that a major oil spill "has the potential to cause serious damage to the function of the Arctic pelagic food web if it occurs at the crucial time of the spring bloom."[194]

And the dispersants sometimes used to try to and clean up spilled oil can be more toxic than crude oil alone to the various species of microbes, copepods, phytoplankton and zooplankton that form the base of marine ecosystems. The Bureau itself has previously recognized the linkage between dispersant use and harm to Arctic species, stating that dispersants could potentially affect productivity, survivorship, and contamination of benthic sediments and invertebrates (the primary prey for gray whales) as well as pelagic zooplankton near shore and in the Arctic marine and ice environments, and that impacts to food availability and potential bioaccumulation could occur.[195]

Hilcorp Has a Documented Track Record of Safety Violations, Spills, and other Accidents

According to the Alaska Oil and Gas Conservation Commission (Commission), Hilcorp has a documented pattern of safety violations and disregard for compliance with the law in Alaska. As documented by Commission, Hilcorp had more than two dozen violations over a 3.5-year period—so many that the agency concluded that "disregard for regulatory compliance is endemic to Hilcorp's approach to its Alaska operations."[196] Commission recently reiterated Hilcorp's "substantial history of noncompliance" in an order issued December 2021.[197]

In one instance, Commission fined Hilcorp $20,000 for failure to test crucial safety equipment—blowout prevention equipment—after using it to control a well.[198] The agency characterized Hilcorp's communications about the underlying events as "misleading and incomplete," finding that "critical factual information known to Hilcorp was not provided to Commission."[199]

Another enforcement order, finalized on March 3, 2017, is connected to Hilcorp's unapproved decision to pump nitrogen down a well to aid clean-out in September 2015.[200]88 Nitrogen is a colorless and odorless gas that replaces life-supporting oxygen when concentrated in a closed space. During this incident, nitrogen filled a trailer when a valve was left open, and the nitrogen

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[193] Nørregaard, et al. 2013. Evaluating pyrene toxicity on Arctic key copepod species Calanus hyperboreus. Ecotoxicology (2014) 23:163–174
[194] *Id.*
[195] The Bureau, Chukchi Sea Planning Area Oil and Gas Lease Sale 193 In the Chukchi Sea, OCS EA/EIS, BOEMRE 2010-034, March 2011.
[196] Commission, Decision and Order Re: Failure to Test BOPE After Use, Milne Point Unit I-03, PTD 1900920, Other Order 109, Docket No. OTH-15-029 at 3 (May 3, 2016).
[197] Commission, Defeated Well Safety Valve System PBU H-24A (PTD 2071330), Other Order 188, Docket No. OTH-21-037 at 1 (Nov. 30, 2021).
[198] Commission, Decision and Order Re: Failure to Test BOPE After Use, Milne Point Unit I-03, PTD 1900920, Other Order 109, Docket No. OTH-15-029 at 4.
[199] *Id*. at 2–3.
[200] Commission, Decision and Order Re: Failure to Notify of Changes to an Approved Permit & Failure to Maintain a Safe Work Environment, Milne Point Unit J-08A, PTD 1991170, Docket No. OTH-15-025, Other Order 116 at 2-3 (Mar. 3, 2017).

caused the crew members to lose consciousness.[201] In its enforcement action, AOGCC noted that "[t]he extent and seriousness of the consequences of the violations cannot be overstated: nothing but luck prevented the deaths of three workers during the cleanout operations."[202] It further stated that "Hilcorp has a significant history of noncompliance with Commission regulations," and that Hilcorp has a "relatively high frequency of noncompliant activities."[203]

In yet another incident, Commission fined Hilcorp $10,000 for violating state regulatory requirements while performing production operations at Prudhoe Bay after a safety valve designed to prevent oil spills was shut off.[204] Commission stated that it was assessing this specific penalty given "the critical role of the SVS device that was defeated, Hilcorp's substantial history of noncompliance, and need to deter similar behavior."[205]

In addition to these actions and violations documented by Commission, the federal Pipeline and Hazardous Materials Safety Administration has sent Hilcorp numerous warning letters for probable violations of pipeline safety regulations in Alaska since November 2015.[206] The probable violations include violations of reporting requirements, failure to institute adequate procedures to inspect its pipelines, and failure to conduct required inspections, among others.[207]

On top of these numerous safety violations, Hilcorp has had multiple leaks and spills in its current drilling operations in Alaska. For example, in February 2017, Hilcorp reported a natural gas leak in Cook Inlet.[208] The source of the leak, which was 98.67% methane, was later identified as an 8-inch transmission pipeline, and a flow analysis conducted after Hilcorp discovered the leak revealed that the pipeline began leaking in late December 2016.[209] Hilcorp was unable to investigate or repair the leak for nearly four months due to broken ice, tidal flows, and limited daylight.[210] It is estimated that the pipeline leaked 193,000 (at its lowest leakage rate) to 325,000 (at its highest leakage rate) of cubic feet of natural gas every day until the leak was finally reported repaired in April 2017.[211]

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[201] *Id*. at 4.
[202] *Id*. at 6.
[203] *Id*. at 5.
[204] Commission, Defeated Well Safety Valve System PBU H-24A (PTD 2071330), Other Order 188, Docket No. OTH-21-037 at 1 (Nov. 30, 2021).
[205] *Id.*
[206] *See* PHMSA, Operator Information, Federal Inspection and Enforcement Data: Hilcorp Alaska, LLC, Enforcement Action Details (updated July 25, 2024) (listing warning letters).
[207] *Id*.; *see also* PHMSA, Incident/Accident Report: Gas Transmission, https://portal.phmsa.dot.gov/analytics/saw.dll?Dashboard (describing a pipeline incident due to corrosion) (accessed Feb. 22, 2021).
[208] PHMSA, In the Matter of Hilcorp Alaska, LLC, CPF No. 5-2017-0004S, Notice of Proposed Safety Order (Mar. 3, 2017).
[209] *Id*. at 2–4.
[210] *Id*. at 7.
[211] S. Shankman, Natural Gas Leak in Cook Inlet Stopped, Effects on Marine Life Not Yet Known, Inside Climate News (Apr. 15, 2017); Alaska Department of Environmental Conservation, Hilcorp Natural Gas Leak from 8-inch Pipeline, Situation Report #1 (Feb. 15, 2017); Alaska Department of Environmental Conservation, Hilcorp Natural Gas Leak from 8-inch Pipeline, Situation Report #3 (Mar. 1, 2017); Alaska Department of Environmental Conservation, Hilcorp Natural Gas Leak from 8-inch Pipeline, Situation Report #5 (Apr. 14, 2017); Hilcorp Alaska, LLC, Middle Ground Shoal Gas Leak Sampling and Monitoring Plan, Mar. 2017.

Hilcorp also had multiple other incidents in Cook Inlet during 2017, including a spill of oil-based drilling mud from its Steelhead platform in the Trading Bay oil field,[212]100 an ongoing natural gas release from the Steelhead platform pipeline to shore,[213] and a crude oil spill from its Anna platform in the Upper Inlet near Granite Point.[214] And in December 2020, nearly 8,000 gallons of 'slop oil' spilled at an onshore Hilcorp facility near Cook Inlet.[215]

Hilcorp has also had numerous accidents from its operations on the North Slope. For example, "in February 2015, Hilcorp spilled nearly 10,000 gallons of crude oil and produced water onto 40,000 square feet of arctic tundra and gravel pad. The spill resulted from a leak in the bottom of a pipeline from Hilcorp's Milne Point Tract 14 production line."[216] Additionally, EPA also found Hilcorp in violation of the Resource Conversation and Recovery Act for its operations at its Prudhoe Bay facility.[217] Specifically, the company failed to meet "[s]everal regulatory requirements . . .including failure to make a hazardous waste determination, failure to send hazardous waste to a designated facility, failure to place waste in satellite accumulation containers, failure to mark or label hazardous waste and failure to train facility personnel."[218]

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[212] S. Cochran, Hilcorp Reports Another Spill in Cook Inlet, Alaska Public Media (Aug. 11, 2017).
[213] R. McChesney, Hilcorp shuts down third pipeline in Cook Inlet, Alaska Public Media (April 7, 2017).
[214] Alaska Department of Environmental Conservation, Hilcorp Anna Platform Crude Oil Line Leak, Situation Report (SITREP), 4th and Final, (May 7, 2017).
[215] Tegan Hanlon, Alaska Public Media, Nearly 8,000 gallons of 'slop oil' spilled at onshore Hilcorp facility near Cook Inlet, Dec. 16, 2020, https://www.alaskapublic.org/2020/12/16/nearly-8000-gallons-of-slop-oil-spilled-atonshore-hilcorp-facility-near-cook-inlet/.
[216] EPA, News Release, BP Exploration Alaska and Hilcorp Alaska Settle with EPA and State of Alaska for North Slope Oil Spills (July 14, 2016).
[217] EPA, Hilcorp pays $223,000 EPA penalty for hazardous waste violations, Oct. 9, 2024, https://www.epa.gov/newsreleases/hilcorp-pays-223000-epa-penalty-hazardous-waste-violations.
[218] *Id.* And the Hilcorp's violations are not limited to Alaksa. Records show that the company has also violated other public health and safety laws at its operations in other states. *See, e.g.*, U.S. Dep't of Justice, Natural Gas Producer Agrees to Settlement to Reduce Emissions in New Mexico, Oct. 17, 2024, https://www.justice.gov/archives/opa/pr/natural-gas-producer-agrees-settlement-reduce-emissions-new-mexico; John Dougherty, Hilcorp's Oil Spills Stain Louisiana Marshlands and Rivers, The Revelator, May 24, 2017, https://therevelator.org/hilcorp-oil-spills-louisiana/; EPA, Hilcorp Energy Company (Pennsylvania) Settlement Summary, Nov. 21, 2024, https://www.epa.gov/enforcement/hilcorp-energy-company-pennsylvania-settlement-summary; EPA, Hilcorp Energy Company Fined for Violating the Clean Water Act, Nov. 15, 2012, https://www.epa.gov/archive/epapages/newsroom_archive/newsreleases/54e975706d206fab85257ab70069e41e html