



CoastalPlain_EIS, BLM_AK <blm_ak_coastalplain_eis@blm.gov>

[EXTERNAL] Comments on Coastal Plain EIS Scoping

3 messages

Hein, Jayni <heinj@mercury.law.nyu.edu>

Tue, Jun 19, 2018 at 2:41 PM

To: "blm_ak_coastalplain_EIS@blm.gov" <blm_ak_coastalplain_EIS@blm.gov>

The Institute for Policy Integrity at NYU School of Law respectfully submits the attached comments on the Arctic Coastal Plain EIS Scoping. Docket number: 18X.LLAK930100.L16100000.PN0000.

Sincerely,

Jayni Hein

Jayni Foley Hein

Policy Director, [Institute for Policy Integrity](#)
Adjunct Professor, New York University School of Law

(212)992-8182

**Policy Integrity_Comments on Arctic Coastal Plain EIS Scoping-final.pdf**

808K

Hein, Jayni <heinj@mercury.law.nyu.edu>

Wed, Jun 20, 2018 at 7:34 AM

To: "blm_ak_coastalplain_EIS@blm.gov" <blm_ak_coastalplain_EIS@blm.gov>

Hello –

Can you please confirm receipt of these comments that I emailed yesterday?

Thanks,

Jayni

Jayni Foley Hein

Policy Director, [Institute for Policy Integrity](#)
Adjunct Professor, New York University School of Law

(212) 992-8182

From: Hein, Jayni
Sent: Tuesday, June 19, 2018 5:41 PM
To: 'blm_ak_coastalplain_EIS@blm.gov' <blm_ak_coastalplain_EIS@blm.gov>
Subject: Comments on Coastal Plain EIS Scoping

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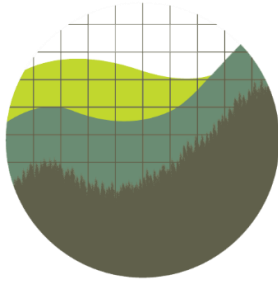
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CoastalPlain_EIS, BLM_AK <blm_ak_coastalplain_eis@blm.gov>
To: "Hein, Jayni" <heinj@mercury.law.nyu.edu>

Thu, Jun 21, 2018 at 8:45 PM

Received, thank you for your comments.

[Quoted text hidden]



Institute *for*
Policy Integrity

NEW YORK UNIVERSITY SCHOOL OF LAW

U.S Bureau of Land Management
Attn: Nicole Hayes, Project Coordinator
Coastal Plain Oil and Gas
Leasing Program EIS
222 West 7th Avenue, Stop #13
Anchorage, Alaska 99513

Submitted via email: blm_ak_coastalplain_EIS@blm.gov

Re: Comments on Arctic Coastal Plain EIS Scoping submitted by the Institute for Policy Integrity at NYU School of Law

The Institute for Policy Integrity (“Policy Integrity”) at New York University School of Law¹ respectfully submits these comments on the scoping process initiated by the Bureau of Land Management (“BLM”) to prepare an Environmental Impact Statement (“EIS”) to implement a possible oil and gas leasing program within the Arctic National Wildlife Refuge Coastal Plain (“Coastal Plain”).² Policy Integrity is a non-partisan think tank dedicated to improving the quality of government decisionmaking through advocacy and scholarship in the fields of administrative law, economics, and public policy.

These comments explain that development of oil and gas in the Arctic Coastal Plain would pose serious threats to this delicate, unspoiled ecosystem. With respect to the EIS scoping, BLM should consider the following:

- The Arctic Coastal Plain is a pristine wildlife refuge with a long history of bipartisan support, weighing strongly against any leasing or development.
- In the EIS Scoping, BLM must analyze the threat of oil spills, pollution, and infrastructure effects; threats to endangered species including polar bears; and climate change effects within and outside the Coastal Plain region of the Arctic National Wildlife Refuge (the “Refuge”).

¹ This document does not purport to present New York University School of Law’s view, if any.

² See U.S. Dep’t of Interior, Bureau of Land Mgmt., *Coastal Plain Oil and Gas Leasing Program EIS* (Apr. 20, 2018), <https://www.blm.gov/programs/planning-and-nepa/plans-in-development/alaska/coastal-plain-eis>.

- The Coastal Plain is projected to have relatively little economically-recoverable oil and gas and deliver far less revenue than some government estimates suggest, weighing against leasing in this area.
- Notwithstanding the rider inserted into the Tax Act of 2017 directing BLM to hold lease sales within the Coastal Plain,³ given the environmental sensitivities of this region and pursuant to NEPA, BLM must analyze a “no leasing alternative,” which is very likely the wisest course of action.
- If BLM nonetheless proceeds with pursuing lease sales, it must analyze delayed leasing alternatives, in addition to the no action alternative, in order to account for the option value (or informational value of delay) of irreversible drilling within Refuge.
 - The scope of the EIS must consider the alternative of delaying any lease sales as late as possible, until BLM has more information on oil and natural gas prices, environmental risks and sensitivities, drilling and emergency response infrastructure, competing land uses, and more.
 - Interior’s Bureau of Ocean Energy Management (“BOEM”) uses an option value framework in its offshore oil and gas lease planning process to help set timing and lease terms. In fact, BOEM cited option value as a key reason for scheduling certain lease sales in the Alaskan offshore region as late as possible in its five-year schedule of lease sales for 2017-2022—directly in line with the suggestion to analyze delayed lease sale alternatives in this EIS proceeding.

The comments that follow provide more detail on each of these points.

I. The Arctic Coastal Plain is a pristine wildlife refuge with a long history of bipartisan support, weighing strongly against any leasing or development.

The Refuge, including its Coastal Plain, has been off limits for oil and gas development for almost 60 years. Many of the same characteristics that made it a prime candidate for protection decades ago remain present today, if not more so, and weigh strongly against oil and gas development.

In 1953, government scientists conducted a comprehensive survey of potential conservation areas in Alaska. Their report, “The Last Great Wilderness,” identified the undisturbed northeast corner of Alaska, now home to the Refuge, as the best candidate for protection given its unspoiled terrain and biodiversity.⁴ In 1960, Republican President Eisenhower first designated nearly 19 million acres as the Arctic National Wildlife Range in

³ Tax Cuts and Jobs Act of 2017, Pub. L. No. 115-97, 131 Stat. 2054 (2017), https://eplanning.blm.gov/epl-front-office/projects/nepa/102555/141879/174233/Tax_Act.pdf.

⁴ U.S. FISH & WILDLIFE SERV., POTENTIAL IMPACTS OF PROPOSED OIL AND GAS DEVELOPMENT ON THE ARTIC REFUGE’S COASTAL PLAIN: HISTORICAL OVERVIEW AND ISSUES OF CONCERN (2000), http://arcticcircle.uconn.edu/ANWR/anwr_fws.htm.

order “to preserve unique wildlife, wilderness and recreational values.”⁵ In 1980, Congress re-designated much of the area as permanently protected wilderness under the Alaska National Interest Lands Conservation Act (“ANILCA”).⁶ ANILCA provided four purposes that guide management of the Refuge: to conserve animals and plants in their natural diversity, ensure a place for hunting and gathering activities, protect water quality and quantity, and fulfill international wildlife treaty obligations.⁷

Protecting the Arctic Refuge has been a national priority with strong bipartisan support ever since its establishment.⁸ For decades, Congress has voted against allowing oil and gas leasing within its borders.⁹ The reason for this support is simple: the Arctic National Wildlife Refuge is America’s largest pristine wildlife refuge. It is home to polar bears, grizzly bears, wolves, wolverines, muskoxen, porcupine caribou, among many other wildlife species.¹⁰ Among its grandeurs, the Refuge contains five different ecological zones, including lagoons, wetlands, forests, mountains and tundra. The Coastal Plain is often described as the heart of the Refuge: a vital area for wildlife breeding and host to nearly 200 species of migratory birds.¹¹ The Coastal Plain is also designated as critical habitat for polar bears pursuant to the Endangered Species Act.¹² The Arctic Refuge also confers important benefits as a carbon sink that offsets the current and future impacts of climate change.

Notwithstanding the Coastal Plain’s unique characteristics and long history of bipartisan support, the 2017 Tax Act directs BLM to hold two oil and gas lease sales (of no less than 400,000 acres each) in the 1.5 million acres located in the Coastal Plain area of the Refuge within 10 years of the passage of the Act, with the first lease sale to be held within four years and the second sale within seven years.¹³

⁵ Public Land Order 2214, 25 Fed. Reg. 12598 (Dec. 6, 1960); U.S. Fish & Wildlife Serv., *About the Arctic National Wildlife Refuge*, <https://www.fws.gov/refuge/Arctic/about.html> (last visited June 18, 2018).

⁶ Alaska National Interest Lands Conservation Act, Pub. L. No. 96-487, 94 Stat. 2371 (1980).

⁷ U.S. Fish & Wildlife Service, U.S. Fish & Wildlife Serv., *supra* note 4.

⁸ See Letter from Republican Congressmen, to Diane Black, Chairman, U.S. House Comm. on the Budget, and John Yarmuth, Ranking Member, U.S. House Comm. on the Budget (June 22, 2017), available at https://reichertforms.house.gov/uploadedfiles/letter_to_budget_committee_on_anwr_drilling.pdf (opposing any language that would open ANWR to leasing in the fiscal year 2018 Budget Resolution).

⁹ *Id.*

¹⁰ M. LYNNE CORN ET AL., CONG. RESEARCH SERV., RL33872, ARCTIC NATIONAL WILDLIFE REFUGE (ANWR): A PRIMER FOR THE 114TH CONGRESS 2 (2015), https://digital.library.unt.edu/ark:/67531/metadc503538/m1/1/high_res_d/RL33872_2015Mar17.pdf.

¹¹ U.S. Fish & Wildlife Serv., *Arctic National Wildlife Refuge: Climate Change and its Impacts*, <https://www.fws.gov/refuge/arctic/climatechange.html> (last visited June 18, 2018).

¹² LAURA B. COMAY ET AL., CONG. RESEARCH SERV., RL33872, ARCTIC NATIONAL WILDLIFE REFUGE: AN OVERVIEW 18-20, (2018), <https://fas.org/sgp/crs/misc/RL33872>.

¹³ Tax Cuts and Jobs Act of 2017, *supra* note 3.

II. In the EIS Scoping, BLM must analyze the threat of spills and other pollution, infrastructure effects, threats to endangered and threatened species, and climate change effects within and outside the Coastal Plain.

Drilling for oil or natural gas within the Coastal Plain would present significant risks of environmental damage, including oil and natural gas spills, leaks and pollution. In the EIS, BLM must evaluate these potential effects, as well as infrastructure effects, climate change effects, and more.

Decades of research support the conclusion that oil and gas development in Arctic Alaska has negative effects on wildlife and habitat.¹⁴ As early as 1987, Interior studied the potential effects of oil development on the Coastal Plain and concluded that there would be major impacts to the Porcupine Caribou Herd, muskox, as well as water quality and quantity.¹⁵ These conclusions were reiterated and reaffirmed in subsequent government analyses in 1995, 2002, 2003, and as recently as 2015.¹⁶ On January 25, 2015, the Obama Administration released the final Comprehensive Conservation Plan for the full Arctic Refuge, including the Coastal Plain, which recommended designating the entire region as protected wilderness under the Wilderness Act of 1964.¹⁷

Drilling could irreversibly damage the pristine landscape and ecosystem of the Coastal Plain. Risks begin with seismic testing used to locate potential oil and gas reserves, and extend to environmental damage from drilling infrastructure (well pads, trucks, pipelines, rigs, pits), as well as possible oil spills, natural gas leaks, dust, and road construction (gravel and otherwise). Drillers in nearby Alaskan oil fields outside of the

¹⁴ THE WILDERNESS SOCIETY, *Broken Promise #8, Impacts to Wildlife*, in *BROKEN PROMISES, THE REALITY OF OIL DEVELOPMENT IN AMERICA'S ARCTIC* 31 (2d ed. 2009), <https://wilderness.org/sites/default/files/legacy/Broken-Promises-8.pdf>.

¹⁵ *Id.* at 31 (citing U.S. DEP'T OF THE INTERIOR, ARCTIC NATIONAL WILDLIFE REFUGE COASTAL PLAIN RESOURCE ASSESSMENT: REPORT AND RECOMMENDATION TO THE CONGRESS OF THE UNITED STATES AND FINAL LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT, at 166 (1987)).

¹⁶ *Id.* (U.S. FISH AND WILDLIFE SERV., A PRELIMINARY REVIEW OF THE ARCTIC NATIONAL WILDLIFE REFUGE, ALASKA COASTAL PLAIN RESOURCE ASSESSMENT: REPORT AND RECOMMENDATION TO THE CONGRESS OF THE UNITED STATES AND FINAL LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT (1995); U.S. DEP'T OF THE INTERIOR, U.S. GEOLOGICAL SURVEY, BIOLOGICAL SCIENCE REPORT USGS/BRD/BSR- 2002-0001, ARCTIC REFUGE COASTAL PLAIN TERRESTRIAL WILDLIFE RESEARCH SUMMARIES (D.C. Douglas et al. eds., 2002); NATIONAL RESEARCH COUNCIL, CUMULATIVE ENVIRONMENTAL EFFECTS OF OIL AND GAS ACTIVITIES ON ALASKA'S NORTH SLOPE (2003)); *see also* U.S. FISH AND WILDLIFE SERV., ARCTIC NWR COMPREHENSIVE CONSERVATION PLAN, ch. 4: Affected Environment (2015), https://www.fws.gov/home/arctic-ccp/pdfs/04_CH4_AffectEnv.pdf.

¹⁷ On April 3, 2015 President Barack Obama sent Congress the Proposed Wilderness recommendations for the Coastal Plain and other areas of the Arctic Refuge along with the U.S. Fish and Wildlife Service's Record of Decision. Congress did not act on this recommendation. Doug Inkley & Adam Kolton, NAT'L WILDLIFE FED'N & NAT'L WILDLIFE REFUGE ASS'N, ARCTIC NATIONAL WILDLIFE REFUGE, AN AMERICAN CROWN JEWEL IN NEED OF PERMANENT PROTECTION 15 (2015), https://www.refugeassociation.org/wp-content/uploads/2015/11/NWF_Arctic_Refuge_Report_web.pdf.

Refuge have been unable to prevent inevitable and irreparable harms from drilling.¹⁸ An average of 450 oil and other toxic spills occur each year on Alaska's North Slope.¹⁹

In the Prudhoe Bay region of Alaska, roads and pipelines have caused habitat destruction and deaths to birds and wildlife.²⁰ The single experimental well drilled in the early 1980s on private native lands within the Arctic Refuge demonstrates the fragility of the tundra ecosystem present in the Coastal Plain that is rich in mosses, sedges and shrubs underlain by permafrost. Drillers took a number of measures to protect the tundra, including installing a timber pad to protect and insulate the ground. Yet the timber pad killed the underlying vegetation, which in turn led to thaw in permafrost, pools of water, and loss of snow cover. While the well existed for only two years, the damage to the fragile landscape and vegetation is persistent and apparent in images even today.²¹

BLM must also assess the impact of leases on endangered species, including polar bears. Numerous government reports reveal that oil and gas development will negatively affect wildlife and endangered species.²² The Refuge's harsh climate and short breeding seasons impair species' ability to adapt and recover, and drilling and development compound this threat. Caribou avoid wells, infrastructure and other industrial activity, forcing them to breed in areas likely to negatively affect reproduction and that impose new predator threats.²³ Polar bears, designated as endangered species, have sought out the Coastal Plains as a result of climate change-induced declining sea ice, and have established the Coastal Plain as a vital habitat and breeding ground.²⁴ Recent efforts to track polar bear den locations on the mainland coast of Alaska and Canada found that 42 percent of total tracked polar bear dens were located in the Coastal Plain within the Refuge.²⁵ Climate

¹⁸ COMAY ET AL., CONG. RESEARCH SERV., *supra* note 12, at 18-20.

¹⁹ THE WILDERNESS SOCIETY, *Broken Promise #5: The Pervasiveness of Spills*, in BROKEN PROMISES, THE REALITY OF OIL DEVELOPMENT IN AMERICA'S ARCTIC 19, 19 (2d ed. 2009), <https://wilderness.org/sites/default/files/legacy/Broken-Promises-5.pdf> (citing Alaska Department of Environmental Conservation spill database).

²⁰ See Lauren Bettino et al., *Impacts of Oil Drilling in the Arctic National Wildlife Refuge*, DEBATING SCIENCE: JUNIOR YEAR WRITING, UNIVERSITY OF MASSACHUSETTS AMHERST (OCT. 3, 2015), <https://blogs.umass.edu/natsci397a-eross/impacts-of-oil-drilling-in-the-arctic-national-wildlife-refuge/>.

²¹ Henry Fountain, *Here's What Oil Drilling Looks Like in the Arctic Refuge, 30 Years Later*, N.Y. Times (Dec. 15, 2017), <https://www.nytimes.com/2017/12/15/climate/arctic-drilling-anwr.html>.

²² U.S. FISH AND WILDLIFE SERV., *supra* note 4.

²³ CHRIS JOHNSON & DON RUSSELL, LONG-TERM DISTRIBUTION RESPONSES OF THE PORCUPINE CARIBOU HERD TO HUMAN DISTURBANCE 9 (2015), <http://www.pcmb.ca/PDF/researchers/Habitat/Porcupine%20Caribou%20Herd%20RSF%20Analysis%20-%20Johnson%20Aug%202012.pdf>.

²⁴ U.S. Fish & Wildlife Serv., *Polar Bear Denning*, <https://www.fws.gov/refuge/arctic/pbdenning.html> (last visited June 18, 2018).

²⁵ *Id.* ("The pink dots on this map show the distribution of maternal dens occupied by radio-collared polar bears between 1981 and 2000 on the mainland coast of Alaska and Canada. The collared bears are a subset of the total number of bears that use this area. Tracking of the collared bears identified 53 dens along the mainland coast, 26 (50%) of which were within the bounds of the

change is already reducing polar bear habitat,²⁶ and seismic testing, noise, drilling, and human presence would further exacerbate polar bear breeding and survival.²⁷ Federal obligations to protect polar bears and other endangered and threatened species arise from the Endangered Species Act, as well as various international treaties. In fact, many species within the Refuge are even more endangered and threatened than they were when the Refuge was first established, and Arctic ecosystems face mounting threats today from climate change. Rather than opening up this region to drilling, preserving land within the Refuge is necessary in order to comply with the Endangered Species Act and make this Arctic ecosystem more resilient to climate change. Importantly, the Tax Act does not waive existing legal obligations, including the Endangered Species Act, NEPA, the Federal Land Policy and Management Act (“FLPMA”), and more.

The EIS must also consider the impact of building oil and gas infrastructure in the Coastal Plain, which to date has no roads, established trails, or any other type of infrastructure that would support drilling. Developing the Coastal Plain would require extensive roads and pipelines to support drilling, which will have negative effects on wildlife.²⁸ Moreover, development could “require a large number of small production sites spread over a large region, and connected by an infrastructure of roads, pipelines, power plants, processing facilities, loading docks, dormitories, airstrips, gravel pits, utility lines and landfills.”²⁹ While BLM should take steps to cabin any such development as much as possible, such infrastructure threatens to fragment vast areas of wildlife habitat and ecosystems.³⁰ Among its negative effects, caribou, polar bears, birds, and numerous other wildlife and plant species would be harmed by roads, wells, and the infrastructure needed to support drilling.³¹

BLM’s EIS must also analyze greenhouse gas emissions from any oil and gas production. BLM should quantify and monetize—using the Interagency Working Group’s Social Cost of Carbon—greenhouse gas emissions from any foreseeable extraction, processing, transportation, and combustion of oil and gas.³² To quantify emissions accurately, the Bureau of Land Management should also undertake a reasonable analysis of

Arctic National Wildlife Refuge. Twenty-two of the 53 dens (42%) were within the bounds of the 1002 area.”).

²⁶ Stephen Leahy, *Polar Bears Really Are Starving Because of Global Warming, Study Shows*, NATIONAL GEOGRAPHIC (Feb. 1, 2018), <https://news.nationalgeographic.com/2018/02/polar-bears-starve-melting-sea-ice-global-warming-study-beaufort-sea-environment/>.

²⁷ See JOHNSON & RUSSEL, *supra* note 23; U.S. FISH AND WILDLIFE SERV., *supra* note 4.

²⁸ See Coffin, A. W. (2007). From roadkill to road ecology: a review of the ecological effects of roads. *Journal of transport Geography*, 15(5), 396-406; Benítez-López, A., Alkemade, R., & Verweij, P. A. (2010). The impacts of roads and other infrastructure on mammal and bird populations: a meta-analysis. *Biological conservation*, 143(6), 1307-1316; U.S. FISH AND WILDLIFE SERV., *supra* note 4.

²⁹ U.S. FISH AND WILDLIFE SERV., *supra* note 4.

³⁰ Corn et al., CONGRESSIONAL RESEARCH SERVICE, *supra* note 10.

³¹ JOHNSON & RUSSEL, *supra* note 23; THE WILDERNESS SOCIETY, *Broken Promise # 8*, *supra* note 14.

³² For more detailed comments on how BLM should quantify and monetize greenhouse gas emissions in this EIS process, see the joint comments filed by the Institute for Policy Integrity and other groups in this docket.

energy substitution effects, including how the increased supply of oil and gas under this potential leasing program may increase demand for oil and gas at the expense of energy conservation.

The EIS must also analyze the effect that climate change is having on this region, and how such effects could be exacerbated by any drilling and development. Climate change is heating up the Arctic faster than anywhere else, and sea ice is shrinking 14 percent per decade.³³ The U.S. Fish & Wildlife Service has documented some of the harms already posed by climate change in the Arctic Refuge, which include impacts on wildlife habitat, melting glaciers, thinning ice, and coastal erosion. Drilling and development would only exacerbate these impacts.³⁴

III. The Coastal Plain is projected to have little oil and gas and deliver far less revenue than Congressional Budget Office estimates suggest, weighing against leasing in this pristine region.

The Coastal Plain is projected to have relatively little oil and gas and deliver far less revenue than some government estimates predict. The EIS must base any resource and revenue projections on the best information available. Ideally, BLM should take a broad portfolio approach when considering when and where to allow fossil fuel development on public lands throughout the United States, pursuant to NEPA and BLM's "multiple use" mandate under FLPMA. There is no reason to open the pristine Coastal Plain to drilling especially when other public lands in the United States offer plentiful oil and gas resources in less remote, less biologically sensitive areas that already have drilling infrastructure in place.

Proponents of drilling in the Arctic Refuge argue that it is necessary to reduce imported oil, especially from the Middle East. However, since 2005 U.S. net petroleum imports have declined from 12.5 million barrels of oil per day (bpd) to approximately 5 million bpd.³⁵ This marked decline is a result of increases in energy conservation and fuel economy, as well as a significant increase in domestic oil production in established fields in the continental United States in states including Texas, Oklahoma, South Dakota, and North Dakota.³⁶

As noted by the Republican Congressmen who opposed inserting the Coastal Plain rider into the 2017 Tax Bill, "[t]he resources beneath the Refuge's Coastal Plain simply aren't necessary for our nation's energy independence. If proven, the estimated reserves in

³³ Leahy, *supra* note 2626

³⁴ U.S. FISH AND WILDLIFE SERV., *supra* note 11; Christophe McGlade & Paul Ekins, *The Geographical Distribution of Fossil Fuels Unused When Limiting Global Warming to 2 Degrees C*, 517 NATURE 187 (2015).

³⁵ INKLEY & KOLTON, *supra* note 17, at 16 (citing RICHARD A FINEBERG, THE REDUCED OIL IMPORTS REPORT: RECENT CONSERVATION GAINS OUTPERFORM ARCTIC REFUGE REGION OIL POTENTIAL BETWEEN 2012 AND 2030 BY A TWENTY-FIVE TO ONE (25:1) RATIO (2011), www.finebergresearch.com/reports.html).

³⁶ See Anna Perry & Carolyn Alkire, KEY-LOG ECONOMICS, ARCTIC NATIONAL WILDLIFE REFUGE: ECONOMICS OF POTENTIAL OIL DEVELOPMENT, 29 (2017), <https://wilderness.org/sites/default/files/1710%20Key%20Log%20Economics%20Arctic%20Refuge%20Report%202017Nov1%20%28003%29%20FINAL.pdf>.

the region would represent a small percentage of the amount of oil produced worldwide.”³⁷ Independent analysis on the Refuge’s oil and gas potential concluded that, “the argument that Arctic Refuge oil would displace oil imports is not well substantiated,” and further that, “unconventional oil production and advances in energy efficiency are the big reasons for reductions in U.S. oil imports in the past decade.”³⁸

In fact, pursuing stronger energy conservation policies could save far more energy than the Coastal Plain could potentially produce. A 2011 analysis projected reduction in oil imports due to energy conservation from 2012 through 2030 to be about 47 billion barrels of oil.³⁹ The energy saved would be nearly *five times greater* than the total estimated potential of 10.4 billion barrels of oil in the Coastal Plain.⁴⁰ Other estimates are even lower: one economic study from 2007 stated that the “best estimate of economically recoverable oil in the federal portion of ANWR is 7.06 billion barrels of oil, a quantity roughly equal to US consumption in 2005.”⁴¹ In 2015, the U.S. Fish and Wildlife Service stated that “[b]ased on the mean estimate of 7.7 billion barrels of technically recoverable oil in the federally-administered 1002 Area [Coastal Plain],” there are “approximately 5.6 to 7.1 billion barrels of economically recoverable oil.”⁴²

The Trump Administration claims that the proposed lease sales would generate about \$1 billion in net federal revenues.⁴³ But numerous questions have been raised as to whether Coastal Plain leases can deliver anything close to these predictions. More recent predictions expect revenues to be closer to \$37.5 or 50 million—a mere fraction of the amount touted by drilling proponents.⁴⁴

Even if all 800,000 acres of the Coastal Plain contemplated for sale under the 2017 Tax Act were leased (an unlikely and undesirable scenario), BLM would have to receive bonus bids of more than \$2,700 per acre, on average, for the Congressional Budget Office’s projection of \$2.2 billion in total bonus bid revenue (with 50 percent of that total allocated to Alaska) to be realized.⁴⁵ Recent lease sales in Alaska’s North Slope suggest that these

³⁷ Letter, *supra* note 8.

³⁸ Perry & Alkire, *supra* note 36 at 4.

³⁹ INKLEY & KOLTON, *supra* note 17, at 16.

⁴⁰ *Id.*

⁴¹ Matthew J. Kotchen & Nicholas E. Burger, *Should We Drill in the Arctic National Wildlife Refuge? An Economic Perspective*, 35 ENERGY POL’Y 4720, 4720 (2007), <https://environment.yale.edu/kotchen/pubs/anwr.pdf>.

⁴² U.S. FISH AND WILDLIFE SERV., ARCTIC NWR COMPREHENSIVE CONSERVATION PLAN, ch. 4: Affected Environment, *supra* note 15, at 4-36.

⁴³ CONGRESSIONAL BUDGET OFFICE, Cost Estimate: A Legislative Proposal Related to the Arctic National Wildlife Refuge (Nov. 8, 2017), <https://www.cbo.gov/system/files/115th-congress-2017-2018/costestimate/anwrreconciliation.pdf>.

⁴⁴ Perry & Alkire, *supra* note 36 at 29; *Arctic Refuge Leasing Revenues Don’t Add Up*, TAXPAYERS FOR COMMON SENSE (Nov. 10, 2017), <https://www.taxpayer.net/energy-natural-resources/arctic-refuge-leasing-revenues-dont-add/>.

⁴⁵ See *Arctic Refuge Leasing Revenues Don’t Add Up*, *supra* note 44; CONGRESSIONAL BUDGET OFFICE, Cost Estimate, *supra* note 43 at 3. The Congressional Budget Office also projects that the federal

estimates are highly improbable for at least two reasons: (1) even if all or significant amounts of acreage in the area were offered for lease, oil and gas companies would bid on only a fraction; and, (2) an average of \$2,700 per acre in bonus bids far surpasses anything seen in recent lease auctions in Alaska and elsewhere.

Last year's lease sale of more than 10 million acres in the National Petroleum Reserve in Alaska brought in bids on *less than one percent* of the acres offered and generated just over \$1 million in bid revenue.⁴⁶ In addition to low potential interest, bid prices are likely to be far lower than the Trump administration's generous projections. For parcels offered in four sales from 2013 to 2016 in the National Petroleum Reserve in Alaska, BLM received just \$24.25 per acre in bonus bids. In a 2016 sale for tracts in the wider North Slope area, the state of Alaska generated an average of \$28.17 per acre in bonus bids.⁴⁷ Nothing from these historical sales suggests the federal government could receive bonus bids of \$2,700 per acre.⁴⁸ To the extent that the EIS discusses the potential revenue from any lease sales, it must use accurate projections based on similar recent sales. Both resource quantity and price estimates must be based on realistic assumptions.

Moreover, the greater costs associated with harsh weather and lack of infrastructure in the Arctic Refuge mean that oil and gas development would be far more expensive in this area than drilling in the lower 48 states—31 times greater by one estimate from the American Petroleum Institute—all of which will contribute to lower bonus bids.⁴⁹ It would cost more to transport any oil or gas developed in the Coastal Plain to market, given the lack of infrastructure and long distance, increasing costs for producers. Developers would also be competing with oil and gas development in other Alaskan regions, including the National Petroleum Reserve, which already have existing drilling infrastructure, lowering expected bids relative to these other regions.

In short, low resource potential, high development costs, and low expected federal revenue counsel strongly towards no leasing in the Coastal Plain, especially where the environmental costs and uncertainties are so high. This “no action” alternative is discussed immediately below. If BLM nonetheless proceeds with leasing pursuant to the 2017 Tax

government would collect net receipts from rental payments totaling about \$2 million over the 2022-2027 period. (Lease holders make an annual rental payment until production begins.)

⁴⁶ Sally Jewell, *Sally Jewell: Let the Trump Administration Know Arctic Refuge is No Place for Oil and Gas Drilling*, SEATTLE TIMES (June 1, 2018), <https://www.seattletimes.com/opinion/sally-jewell-let-the-trump-administration-know-arctic-refuge-is-no-place-for-oil-and-gas-drilling/>.

⁴⁷ See <http://dog.dnr.alaska.gov/Documents/Leasing/SaleResults/NorthSlope/2016W/NS2016W-SaleResultsSummary.pdf/>.

⁴⁸ See *Arctic Refuge Leasing Revenues Don't Add Up*, *supra* note 44. The Congressional Budget Office also estimated that the federal government would receive royalty payments on oil produced from ANWR leases; however, it found that based on the typical amount of time necessary to drill exploratory wells, complete production plans, and build the necessary infrastructure to produce and transport any oil produced in ANWR, it expects that “no significant royalty payments would be made until after 2027. CONGRESSIONAL BUDGET OFFICE, Cost Estimate, *supra* note 43 at 3.

⁴⁹ Corn et al., CONGRESSIONAL RESEARCH SERVICE, *supra* note 10 at 15.

Act, it must at least consider delayed leasing alternatives in light of economic, environmental, and social uncertainties (explained in Part V).

IV. Given the environmental sensitivities of this region, and pursuant to NEPA, BLM must analyze a “no leasing alternative,” which is likely the wisest course of action.

NEPA requires that preparation of every EIS consider and analyze the alternative of “no action.”⁵⁰ The “no action” alternative here is holding no lease sale in the Arctic Coastal Plain. This alternative is likely to be the most environmentally- and socially-beneficial alternative given the risks attendant to drilling in the Refuge, described above in Parts I and II, and the limited expected public benefits from drilling, described in Part III.

BLM must thoroughly analyze the “no action” alternative in order to comply with NEPA notwithstanding the Tax Act’s misguided directive to hold two lease sales in this region within 10 years.⁵¹ As the White House Council on Environmental Quality has stated, “it is difficult to think of a situation where it would not be appropriate to address a ‘no action’ alternative. Accordingly, the regulations require the analysis of the no action alternative even if the agency is under a court order or legislative command to act.”⁵²

In managing federal lands and resources, BLM is also directed to follow “multiple use” and “sustained yield” principles pursuant to FLPMA, which require harmonizing energy production with conservation, and managing “public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people.”⁵³ Consistent with these mandates, ideally, BLM should manage public lands and resources in order to generate maximum net benefits to the public by considering the full spectrum of environmental, social, and economic costs and benefits of its actions, including fossil fuel leasing.⁵⁴

The questionable benefits of drilling in the Arctic Plain are likely far outweighed by the values of conservation and preservation. As discussed above, oil and gas development in the Arctic Plain is not needed for energy independence and poses numerous, grave risks

⁵⁰ 40 C.F.R. § 1502.14(d) (2018).

⁵¹ *See id.*; 40 C.F.R. § 1502.14(c) (stating that agencies shall “[i]nclude reasonable alternatives not within the jurisdiction of the lead agency.”); *see also* Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 349 (1989) (stating that NEPA provides that government agencies “will have available, and will carefully consider, detailed information concerning significant environmental impacts” and that “the relevant information will be made available to the larger [public]”); Tax Cuts and Jobs Act of 2017, Pub. L. No. 115-97, 131 Stat. 2054 (2017), https://eplanning.blm.gov/epl-front-office/projects/nepa/102555/141879/174233/Tax_Act.pdf.

⁵² COUNCIL ON ENVIRONMENTAL QUALITY, Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations, 46 Fed. Reg. 18026 (as amended Mar. 23, 1981), <https://www.energy.gov/sites/prod/files/G-CEQ-40Questions.pdf> (also stating: “[i]nclusion of such an analysis in the EIS is necessary to inform the Congress, the public, and the President as intended by NEPA. Section 1500.1(a)”).

⁵³ 43 U.S.C. §§1701(a)-(c) (2012).

⁵⁴ *See* Jayni Foley Hein, *Federal Lands and Fossil Fuels: Maximizing Social Welfare in Federal Energy Leasing*, 42 HARV. ENVTL. L. REV. 1 (2018).

to the Refuge. Because there is no development alternative that can protect the Coastal Plain, any EIS prepared in this proceeding must closely consider the no action alternative, which is likely the wisest course of action.

The EIS must also examine delayed leasing alternatives, in addition to the no action alternative. These alternatives are discussed next.

V. If BLM nonetheless proceeds with pursuing lease sales, it must analyze delayed leasing alternatives in order to account for the option value of irreversible drilling within the Refuge.

BLM is required by law to manage federal fossil fuels to earn “fair market value” for the public and to harmonize energy production with resource conservation.⁵⁵ In furtherance of these legal mandates, the Coastal Plain EIS must address the alternative of delaying any lease sale until *at least* the very end of the four-year and seven-year statutory deadlines, when BLM will have more information on oil and natural gas prices, environmental risks and sensitivities, drilling and emergency response infrastructure, climate change effects, and competing potential land uses.

In addition, BLM should analyze the alternative of holding any lease sales *later than* these arbitrarily-prescribed statutory deadlines. Analyzing an alternative that would hold both lease sales 10 years after passage of the Tax Act (in 2027) would be a reasonable alternative given the Tax Act’s general directive for the Secretary of the Interior to conduct two lease sales “not later than 10 years after the date of enactment of this Act,” notwithstanding the four-year and seven-year schedule also contained in the Act.⁵⁶ Moreover, a third delayed leasing alternative—to delay the lease sales even *beyond the statutory deadline* to 15 or 20 years in the future—is also a reasonable alternative for BLM to analyze given that such an alternative could generate more total revenue for the public from higher bids, lower production costs due to technology advances, and higher total royalties given resource price projections (with oil prices expected to rise through 2050, as explained below). NEPA requires consideration of alternatives “that are practical or feasible” and not solely “whether the proponent or applicant likes or is itself capable of carrying out a particular alternative”; in fact, “[a]n alternative that is outside the legal jurisdiction of the lead agency must still be analyzed in the EIS if it is reasonable.”⁵⁷

Congress should be interested in all of these alternatives if its goal is to maximize revenue; if BLM conducts an alternatives analysis that evaluates these alternatives, it may very well find that the deadlines it set in the Tax Act are counterproductive in terms of optimizing revenue and ignore the substantial environmental and social benefits of waiting to drill in a fragile, untested ecosystem. Analyzing delayed leasing, or strategic timing, alternatives is necessary in order to determine the optimal time to issue any leases in order

⁵⁵ 43 U.S.C. §§ 1344(a)(3)-(4); §§ 1701(a)(8)-(9).

⁵⁶ Tax Cuts and Jobs Act of 2017, Pub. L. No. 115-97, 131 Stat. 2054 (2017).

⁵⁷ COUNCIL ON ENVIRONMENTAL QUALITY, Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations, Questions 2A and 2B, available at <http://ceq.hss.doe.gov/nepa/regs/40/40p3.htm>; 40 C.F.R. §§ 1502.14, 1506.2(d).

to secure the public's right to obtain "fair market value" for its resources and to minimize the environmental risks that will be assessed throughout the EIS process.⁵⁸

A. There is option value to delaying drilling in the Refuge.

Option value is the informational value of delaying irreversible decisions, such as when and on what terms to sell non-renewable resources to private companies.⁵⁹ BLM holds, on behalf of the American public, a perpetual option to develop or lease its fossil fuel resources. When the government sells the right to develop a tract to a private lessee, it extinguishes the perpetual option that it holds on behalf of the American people, and sells a time-limited option to a private actor, valid for the duration of the lease (typically 10-15 years). Consideration of option value requires that BLM determine when and where exercising its perpetual options would be most socially opportune, including by accounting for environmental, social, and economic ramifications.⁶⁰ The value associated with the option to delay can be large, especially when there is a high degree of uncertainty about price, extraction costs, and the social and environmental costs imposed by drilling—all of which are present here with respect to the Coastal Plain.

Even if BLM does not account for option value in its timing decisions, oil and gas companies will, and they will time extraction and resource decisions in a manner that is privately optimal, rather than socially optimal. Indeed, option value explains the routine practice of companies purchasing tracts and waiting years to develop them, when conditions are optimal from their perspective.⁶¹ BLM must strategically time its own lease sales in order to maximize social welfare.

In fact, the federal government uses option value in other resource management determinations. Interior's Bureau of Ocean Energy Management ("BOEM") incorporated option value in its offshore oil and gas leasing program for 2017-2022. BOEM stated that: (i) environmental and social cost uncertainties can affect the size, timing and location of leasing; (ii) option value can be a component of the "fair market value" of a lease; and (iii) BOEM can raise minimum bids, rents and royalties for leases to account for option value.⁶² BOEM also uses a "hurdle price" analysis to ensure that any areas included in its leasing program are expected to earn positive net economic value.

Importantly, BOEM cited option value as a key reason for scheduling certain offshore lease sales in the Alaskan region as late as possible in its five-year schedule of future lease sales—directly in line with the suggestion to consider delayed lease alternatives in this proceeding.⁶³ In its Draft Proposed Program for 2017-2022, published in 2015, BOEM explained:

⁵⁸ See Hein, *Federal Lands and Fossil Fuels*, *supra* note 54.

⁵⁹ Michael Livermore, *Patience is an Economic Virtue*, 84 U. COLO. L. REV. 581 (2013).

⁶⁰ *Id.*

⁶¹ Livermore, *supra* note 59.

⁶² U.S. BUREAU OF OCEAN & ENERGY MGMT., 2017-2022 OUTER CONTINENTAL SHELF OIL AND GAS LEASING DRAFT PROPOSED PROGRAM at 5-20, 8-3-8-19 (2015), <https://perma.cc/8AU3-7MS4>.

⁶³ *Id.*

*To that extent, there may be option value in waiting to drill while the research is being performed. This was partly the rationale supporting the 2012–2017 Program decision for scheduling Alaska lease sales late in the program while environmental studies are being conducted. It is conceivable that the wait for information could extend beyond the 5-year timeframe of a given leasing program, and the pyramidal structure of the Program development process allows for more refined research and analysis at the specific lease sale stage.*⁶⁴

In addition to scheduling Arctic lease sales as late as possible given environmental and other uncertainties, BOEM flagged the potential to cancel those lease sales altogether if new information supported removing them. And in fact, the Obama Administration did ultimately cancel those Arctic offshore lease sales through other means, by invoking section 12(a) of the Outer Continental Shelf Lands Act to withdraw the areas from future offshore leasing.

The D.C. Circuit Court of Appeals has also confirmed that option value is a valid consideration in federal resource extraction decisions.⁶⁵ Recognizing the informational value of waiting for more information before drilling, the D.C. Circuit stated:

*More is learned with the passage of time: Technology improves. Drilling becomes cheaper, safer, and less environmentally damaging. Better tanker technology renders oil tanker spills less likely and less damage. The true costs of tapping OCS energy resources are better understood as more becomes known about the damaging effects of fossil fuel pollutants. Development of energy efficiencies and renewable energy sources reduces the need to rely on fossil fuels. As safer techniques and more effective technologies continue to be developed, the costs associated with drilling decline. There is therefore a tangible present economic benefit to delaying the decision to drill for fossil fuels to preserve the opportunity to see what new technologies develop and what new information comes to light.*⁶⁶

In line with past agency practice and federal case law, environmental and economic uncertainty overwhelmingly support waiting for as much time as possible to lease in the Arctic until more is known about the likely effects of drilling.

B. Given the potential for devastating, irreversible damage if BLM were to lease in the Coastal Plain, the EIS must contain delayed leasing alternatives.

The Tax Act's statutory deadlines by which BLM must hold two leases fail to account for option value and disregard BLM's federal obligations under NEPA and FLPMA. BLM must include alternatives in its EIS that would hold any such lease sales: (1) at the very end of the statutory deadline, and (2) beyond the strict statutory deadline in order to gain even

⁶⁴ *Id.* at 8-10.

⁶⁵ *Center for Sustainable Economy v. Jewell*, 799 F.3d 588, 610-11 (D.C. Cir. 2015), [https://www.cadc.uscourts.gov/internet/opinions.nsf/AFCFA76C2EEDB01385257E0000563225/\\$file/12-1431-1540911.pdf](https://www.cadc.uscourts.gov/internet/opinions.nsf/AFCFA76C2EEDB01385257E0000563225/$file/12-1431-1540911.pdf).

⁶⁶ *Id.* (emphasis added).

more option value associated with gathering better information on environmental risks, resource prices, infrastructure, and more.⁶⁷ These delayed leasing alternatives are especially relevant where, as here, BLM may make an irreversible decision that could result in drilling in the pristine environment of the Coastal Plain, and economic data also supports waiting to drill due to expected resource price increases well into the future.

Given the potential for irreversible damage, the scope of the Coastal Plain EIS must include delayed leasing alternatives that would allow BLM to collect and analyze more information on the following uncertainties before determining the scope, location, and terms for any sale:

- Current and expected resource prices in the U.S. and in global energy markets;
- Environmental conditions and risks from drilling including local pollution, habitat effects, and greenhouse gas emissions;
- Current and expected effects of climate change on the fragile ecosystem of the Coastal Plain, which affect environmental sensitivities;
- Information on the cost of drilling in the Arctic and bringing those resources to market;
- Oil spill response, safety, and drilling technologies;
- Energy efficiency, energy conservation, and fuel economy standards that affect fossil fuel demand;
- Laws and regulations governing drilling and development on public lands, air pollution, endangered species, and other environmental concerns; and
- Competing uses of the Refuge and Coastal Plain, including recreational activities, preservation, cultural and tribal use.

Moreover, BLM should also analyze an alternative that would place strict conditions on any future development of leases, such as delaying all development by any lease holders until more information on environmental, social, and economic uncertainties can be obtained, and placing stringent limitations on surface disturbance. The myriad uncertainties listed above weigh strongly towards delaying lease sales as long as possible, as well as imposing strict conditions on any leases that may be obtained in the future.

Resource price uncertainty is one of many factors that counsels towards leasing as late as possible, if ever. The U.S. Energy Information Administration projects oil prices to remain low for the next few years, with modest price increases expected all the way through 2050.⁶⁸ When resource prices are higher, the government is expected to secure higher bids for available tracts, generating more revenue per acre for the public. Given these price projections, and the difficulty of developing in the remote

⁶⁷ See COUNCIL ON ENVIRONMENTAL QUALITY, Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, Questions 2A and 2B, available at <http://ceq.hss.doe.gov/nepa/regs/40/40p3.htm>; 40 C.F.R. §§ 1502.14, 1506.2(d).

⁶⁸ U.S. ENERGY INFORMATION ADMINISTRATION, Annual Energy Outlook 2018 Table: Petroleum and Other Liquids Prices, <https://www.eia.gov/outlooks/aeo/data/browser/#/?id=12-AEO2018&cases=ref2018&sourcekey=0>.

Arctic, two recent Congressional studies, as well as independent economic analysis, call into question whether oil development in the Coastal Plain is economically viable in the near term.⁶⁹

Recent federal oil and gas lease sales also show that industry demand for Coastal Plain leases will likely be low in the near term. Last year, the oil and gas industry bid on just 7 percent of federal tracts offered for lease, indicative of a surplus of available leases and contributing to low competition for tracts that did secure bids. As just one example, an auction in the National Petroleum Reserve in Alaska generated bids for less than 1 percent of the total acreage offered, suggesting low demand for new leases in this region.⁷⁰ These recent bidding trends raise serious questions about the government's ability to conduct competitive auctions and obtain fair market value for leases, both of which are statutorily required. BLM must consider delayed leasing alternatives that would lease only when bids and other factors are likely to earn fair market value for the public. In fact, BOEM analyzes oil and gas price projections as part of its five-year planning process in order to help set timing and ensure that leasing in certain regions will be net socially beneficial.⁷¹

Further, there remains a great deal of uncertainty about the ecosystems and wildlife within the Refuge and Coastal Plain, including how susceptible they are to human disturbance, such as oil and gas exploration and production. More scientific study is needed to understand how oil and gas development in this fragile environment could affect wildlife, ecosystems, and more. Indeed, many species that call the Coastal Plain home are already threatened or endangered—polar bears have critical breeding ground in the Coastal Plain itself—and adding development and pollution may have devastating, permanent consequences including species loss. Lease sales and development must be delayed until these environmental consequences are better understood.⁷²

In addition, it is uncertain what the full impacts of climate change will be in the region, and how climate change will affect the environmental risks of drilling. The U.S. Geologic Survey notes these ecosystem and wildlife uncertainties:

Predicted warming trends for the future will continue to alter plant growth, ice thaw, and other basic landscape processes. These changes will undoubtedly result in different responses by wildlife (fish, birds, and mammals) and the food they rely upon (plants, invertebrates, and fish). However, the type of response by different wildlife populations and their habitats – either positively or negatively – remains largely unknown.⁷³

⁶⁹ CORN ET AL., *supra* note 10, at 2, 9, 11, 14-15; COMAY ET AL., *supra* note 12; Perry & Alkire, *supra* note 36.

⁷⁰ Jewell, *supra* note 46.

⁷¹ U.S. BUREAU OF OCEAN & ENERGY MGMT., *supra* note 55 at 8-12.

⁷² In addition, the government should consider estimating a quantitative value for risks to threatened and endangered species, by for example, placing a monetary value on biodiversity loss and species loss.

⁷³ US DEPT. OF INTERIOR, US GEOLOGIC SURVEY, ALASKA SCIENCE CENTER, https://alaska.usgs.gov/science/interdisciplinary_science/cae/arctic_coastal_plain.php.

Scientists also seek out the Refuge to study general impacts of climate change, including how plant and wildlife adapt to a warming climate—unknown information that will be important to overall U.S. efforts to address climate change.

Moreover, more information is needed on the potential economic benefits of preserving the Arctic Plain, rather than allowing drilling. The Fish and Wildlife Service's 2015 EIS noted a range of recreational activities in the Refuge, including opportunities "to float rivers, hike, backpack, camp, mountaineer, hunt, fish, observe and photograph wildlife."⁷⁴ A 2018 National Park Service report states that 2.786 million visitors to national parks in Alaska spent nearly \$1.3 billion in the state in 2017. That spending resulted in 18,903 jobs and had a cumulative benefit to the state economy of \$1.89 billion.⁷⁵ Alaska had the second-highest level of visitor spending among all states. In addition to these recreation and tourism-focused benefits, preserving the Coastal Plain without any drilling confers important ecosystem values, watershed protection, and species benefits—many of which are unquantified or unquantifiable but nonetheless significant, especially in the era of climate change. More information and analysis on the benefits of preservation and recreation would help BLM make better decisions about management of the Refuge and Coastal Plain.

VI. Conclusion

In conducting this EIS, BLM must address the full spectrum of potential environmental and social risks from oil and gas development. Given the serious risks and predictable negative effects on wildlife and ecosystems, the "no action" alternative is likely the wisest course of action. If BLM nonetheless proceeds with pursuing lease sales because of the 2017 Tax Act, it must analyze delayed leasing alternatives. BLM should wait until it has more information on environmental risks and sensitivities, oil and gas prices, production costs, infrastructure, and the benefits of preserving the Coastal Plain before holding any lease sale.

Sincerely,

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⁷⁴ U.S. Fish & Wildlife, *Arctic National Wildlife Revised Comprehensive Conservation Plan, Final EIS*, S-38, 2015. https://www.fws.gov/home/arctic-ccp/pdfs/Executive_Summary_Jan2015.pdf

⁷⁵ NATIONAL PARK SERVICE (2018), <https://www.nps.gov/subjects/socialscience/vse.htm>.