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Before the U.S. Senate Committee on Energy and Natural Resources

Hearing on "Potential for Oil and Gas Exploration in the 1002 Area of the Arctic National Wildlife Refuge"

November 2, 2017

Good morning and thank you for inviting me to testify at this very important hearing on a critical Arctic land use issue. My name is Lois Epstein and I am an Alaska-licensed engineer and the Arctic Program Director for The Wilderness Society. The Wilderness Society (TWS) is a national public interest conservation organization with more than 700,000 members and supporters. TWS' mission is to protect wilderness and inspire Americans to care for our wild places. Our organization's scientists began working in the Arctic in the 1930s.

I have worked on oil and gas technical and policy issues since 1983, approximately half that time in Washington, DC and half in Alaska. I served on the U.S. Department of Transportation's advisory committee on oil pipelines for 12 years, on the Ocean Energy Safety Advisory Committee formed by Interior after the BP *Deepwater Horizon* tragedy, and I currently serve on a second National Academy of Sciences oil and gas-related committee. I have worked for three private consulting organizations which included assisting industrial clients, as well as for national and regional conservation organizations.

I have visited North Slope oil production and pipeline facilities, as well as numerous oil and gas production operations in the Cook Inlet region. I also visited the Arctic National Wildlife Refuge for two weeks on a recreational trip unrelated to work, and I have been to Kaktovik for a public meeting on Hilcorp's offshore Liberty project.

I will begin with a brief discussion about why the Arctic National Wildlife Refuge coastal plain is so important ecologically and as a key element of our country's natural heritage, touching briefly on how it sustains the Gwich'in and other subsistence users' way of life. Following this section is an extensively footnoted discussion developed by TWS' landscape ecologist, Dr. Tim Fullman, on the importance of the Arctic Refuge coastal plain to both caribou and polar bears.

After these sections on the coastal plain's unique and important characteristics, I will paint a picture of the adverse impacts oil development will have on the coastal plain year-round, and I will refute the 2000 acre myth.

Next, just as I did when I testified before this committee on May 10, 2011, I will describe the limitations of directional drilling.

I then will provide data on current and projected future increases in Trans-Alaska Pipeline System (TAPS) flow from oil production on state and federal lands available for oil production at this time.

Finally, I will address the likely revenue implications of Arctic Refuge coastal plain oil development.

Overall Importance of the Arctic National Wildlife Refuge and its Coastal Plain

The Arctic National Wildlife Refuge is a vast, wilderness landscape of tundra plains, boreal forests, dramatic mountain peaks, and coastal lagoons situated in the nation's wildest, most northern edge. It is like no other place in America. At 19.3 million acres, it is approximately the

size of South Carolina and contains approximately 7 million acres of Congressionally designated wilderness under the Alaska National Interest Lands Conservation Act.

The Arctic Refuge has no roads, marked trails or campgrounds. Wilderness opportunities abound, from wildlife watching to hiking, rafting and hunting. Its wild, unspoiled nature is central to the refuge's rugged appeal as one of the last truly pristine areas on Earth. For thousands of years the area has been the homeland to Native Gwich'in and Inupiat communities and has sustained them culturally. It provides vital habitat for more than 45 species of mammals including: one of Alaska's largest caribou herds, the Porcupine Caribou Herd, threatened polar bears, wolves, Dall sheep, grizzly bears, and over 160 species of birds. The Arctic Refuge is the crown jewel and largest refuge of our nation's National Wildlife Refuge System and an important part of our nation's heritage. The 1.4 million acre coastal plain of the Arctic Refuge is widely recognized as the biological heart of this 19.3 million-acre refuge.

In 2015, the Obama administration revised the Comprehensive Conservation Plan – the overall management plan - for the Arctic Refuge, after conducting a multi-year, full scientific and policy analysis and a robust public process. The US Fish and Wildlife Service received hundreds of thousands of comments from members of the public, the vast majority of which supported wilderness protection for the coastal plain of the refuge. The 2015 final management plan for the Arctic Refuge included a wilderness recommendation for 12.28 million acres of the refuge – virtually all of the lands not currently designated as wilderness. This decision underscores the significant values of the refuge, including the critical role the refuge plays for sustaining Native cultures, the important benefits the refuge provides to all Americans and its vital habitat for wildlife species, including for adaptation in our changing Arctic climate. The final wilderness recommendation was transmitted to Congress, emphasizing the need for legislative action to protect the refuge, and not develop it for oil and gas. The unparalleled intrinsic values of the Arctic Refuge far outweigh any short-term gains from oil and gas development within its boundary.

The Arctic Refuge's coastal plain region is, for all intents and purposes, one of the wildest and among the most beautiful landscapes in the country (Figure 1). It is as important to our nation's natural heritage as Yellowstone and the Grand Canyon.

Opening the Arctic Refuge coastal plain to oil leasing, exploration, and production unacceptably threatens the Arctic Refuge's globally significant wilderness and wildlife values. Allowing oil development in this region should not be a budget issue, but instead is a complex policy issue that should be decided by Congress through "regular order."

Oil exploration and production activities – even with directional drilling as one component – would substantially undermine the Arctic Refuge's fundamental purposes: to protect wilderness, wildlife, and subsistence, and thus these activities are unacceptable.

Figure 1
Arctic Refuge Coastal Plain

Photo by Lois Epstein, P.E.

Background on the Arctic Refuge Coastal Plain's Importance to Caribou and Polar Bears[1]

The Arctic National Wildlife Refuge is used, with varying frequency, by three of the four herds that calve on the North Slope. The most consistent use of the refuge is by the Porcupine Caribou Herd, which inhabits the refuge throughout the year, including using the coastal plain for calving, insect relief, and other summer habitat.[2] It is critical that calving grounds and other sensitive habitat be protected from anything that may disturb or disrupt caribou use.

Studies of the Central Arctic Caribou Herd provide a cautionary tale about possible effects of energy development on caribou calving and migration within the Arctic Refuge. As development expanded from Prudhoe Bay, caribou using the western calving grounds where new development

[1] Section authored by Dr. Timothy Fullman, Senior Ecologist, The Wilderness Society (Anchorage, Alaska).
[2] Caikoski, J. R. 2015. Units 25A, 25B, 25D, and 26C caribou. Chapter 15, pages 15-1 through 15-24 [In] P. Harper and L. A. McCarthy, editors. Caribou management report of survey and inventory activities 1 July 2012–30 June 2014. Alaska Department of Fish and Game, Species Management Report ADF&G/DWC/SMR-2015-4, Juneau.

occurred, shifted south,[3, 4, 5, 6] while those in the east outside of main development areas did not shift.[3] Food availability was lower for development-exposed caribou[3, 7] which exhibited lower calf body mass[8] and birth rate.[4, 9] A review by the United States Geological Survey concluded there was no clear biological explanation for the shift in concentrated calving in the west, implicating petroleum development as its likely cause.[7] In addition to changes in distribution, research has shown that industrial roads can alter caribou migratory movements[10] and that females about to give birth or with very young calves tend to avoid or are less likely to cross roads and pipelines during the calving season.[7]

It is likely that the responses to development observed in the Central Arctic Caribou Herd will similarly apply to the Porcupine Caribou Herd. In fact, the United States Geological Survey points out a number of reasons why responses may be greater in the Porcupine Caribou Herd compared to the Central Arctic Herd.[7] One major factor is that the coastal plain is narrower within the Arctic Refuge compared to the main Central Arctic Herd range, leaving less room for shifts in space use. Another is that the expansion of development and the shift in Central Arctic Herd calving occurred during a period of relatively favorable environmental conditions. Future environmental changes, due to natural fluctuations or climate change, may reduce the ability of caribou to accommodate range shifts.

Over ¾ of the Arctic Refuge's coastal plain is designated as Critical Habitat for polar bears, which are listed as "threatened" under the Endangered Species Act.[11] The Southern Beaufort Sea polar bear subpopulation, which uses the coastal plain and barrier islands of the Arctic Refuge, is currently in decline, decreasing from just over 1500 bears in 2006 to about 900 in 2010.[12, 13]

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[3] Wolfe, S.A. 2000. Habitat selection by calving caribou of the Central Arctic Herd, 1980-95. MS Thesis, University of Alaska Fairbanks, Fairbanks, Alaska, USA.

[4] Cameron, R.D., Smith, W.T., White, R.G., Griffith, B. 2005. Central Arctic caribou and petroleum development: distributional, nutritional, and reproductive implications. Arctic 58, 1-9.

[5] Joly, K., Nellemann, C., Vistnes, I. 2006. A Reevaluation of caribou distribution near an oilfield road on Alaska's North Slope. Wildlife Society Bulletin 34, 866-869.

[6] Lenart, E.A. 2015. Units 26B and 26C caribou. Chapter 18, pages 18–1 through 18–38 [In] P. Harper and L. A. McCarthy, editors. Caribou management report of survey and inventory activities 1 July 2012–30 June 2014. Alaska Department of Fish and Game, Species Management Report ADF&G/DWC/SMR-2015-4, Juneau.

[7] Griffith, B., Douglas, D.C., Walsh, N.E., Young, D.D., McCabe, T.R., Russell, D.E., White, R.G., Cameron, R.D., Whitten, K.R. 2002. The Porcupine caribou herd. Pages 8-37 [In] Douglas, D.C., Reynolds, P.E., Rhode, E.B., editors. Arctic Refuge coastal plain terrestrial wildlife research summaries. U.S. Geological Survey, Biological Resources Division, Biological Science Report USGS/BRD/BSR-2002-0001.

[8] Arthur, S.M., Del Vecchio, P.A. 2009. Effects of oil field development on calf production and survival in the Central Arctic herd. Alaska Department of Fish and Game. Federal Aid in Wildlife Restoration. Final Research Technical Report. Grants W-27-5 and W-33-1 through W-33-4. Project 3.46. Juneau, AK, USA.

[9] National Research Council. 2003. Cumulative environmental effects of oil and gas activities on Alaska's North Slope. National Academies Press, Washington D.C., USA.

[10] Wilson, R.R., Parrett, L.S., Joly, K., Dau, J.R. 2016. Effects of roads on individual caribou movements during migration. Biological Conservation 195, 2-8.

[11] United States Fish and Wildlife Service. 2017, June. Marine Mammal Management, Endangered Species Act Listing: Polar Bear, https://www.fws.gov/alaska/fisheries/mmm/polarbear/esa.htm.

[12] Regehr, E. V., S. C. Amstrup, and I. Stirling. 2006. Polar bear population status in the southern Beaufort Sea. U.S. Geological Survey Open-File Report 2006-1337.

[13] Bromaghin, J. F., T. L. McDonald, I. Stirling, A. E. Derocher, E. S. Richardson, E. V. Regehr, D. C. Douglas, G. M. Durner, T. Atwood, and S. C. Amstrup. 2015. Polar bear population dynamics in the southern Beaufort

Recent research has found that decreasing sea ice due to climate change has increased the use of terrestrial habitats by these polar bears.[14] Greater time on land reduces availability of the polar bears' main seal prey and can lead to poorer body condition and lower cub survival rates.[15]

In light of these declines and the increasing stresses of climate change on polar bears, there are great concerns about the cumulative impacts that potential development on the Arctic Refuge coastal plain would place on polar bear populations. Oil development activities have disturbed polar bears from maternity dens[16] and any development within the Arctic Refuge will increase the potential that onshore bears will be disturbed by human activities, as well as increasing the potential for human-polar bear conflict.[17]

What Oil Development Means for the Arctic Refuge Coastal Plain

Oil and gas drilling and production is an inherently complicated and messy business. Even the best and most well-financed operators cannot ensure they will not have crude oil, hazardous materials or produced water spills. Nor can operators prevent all blowouts because they may encounter unexpected or changing conditions that have not been adequately addressed. Additionally, there is always a tension for oil companies between reducing costs while still maintaining regulatory compliance, safety and environmental protection.

This year, BP had a production well blowout due to thawing permafrost on the North Slope, which could have been much more serious had the gas ignited. International well kill specialists Boots & Coots came to Alaska to shut down this well. This week, the Alaska Oil and Gas Conservation Commission (which oversees all oil and gas wells in the state) ordered a review of every North Slope well to determine if they have designs that have the potential for dangerous and environmentally damaging blowouts.[18]

During the winter of 2012, Repsol had an exploratory well blowout on the North Slope that spewed approximately 42,000 gallons of drilling muds; it took a month to plug that well because frigid temperatures slowed down or prevented work during that period.

BP's March 2006 spill of over 200,000 gallons was the largest crude oil spill to occur in the North Slope oil fields and it brought national attention to the chronic nature of such spills. Another pipeline spill in August 2006 resulted in shutdown of BP's production in Prudhoe Bay and brought to light major concerns about systemic neglect of key infrastructure. Lack of adequate preventive maintenance is not a new issue, however, as corrosion problems in Prudhoe

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[14] Atwood TC, Peacock E, McKinney MA, Lillie K, Wilson R, Douglas DC, et al. 2016. Rapid Environmental Change Drives Increased Land Use by an Arctic Marine Predator. PLoS ONE 11(6): e0155932. doi:10.1371/journal.pone.0155932

[15] Rode, K. D., S. C. Amstrup, and E. V. Regehr. 2010a. Reduced body size and cub recruitment in polar bears associated with sea ice decline. Ecological Applications 20:768-782.

[16] National Research Council. 2003. Cumulative environmental effects of oil and gas activities on Alaska's North Slope. National Academies Press, Washington D.C., USA. p. 157.

[17] Amstrup, S.C. 1993. Human Disturbances of Denning Polar Bears in Alaska. Arctic 46(3), 246-250.

[18] Demarban, A., State regulators launch wide review of North Slope oil fields following BP leak, *Alaska Dispatch News*, retrieved November 1, 2017 from https://www.adn.com/business-economy/energy/2017/10/30/state-regulators-launch-wide-review-of-north-slope-oil-fields-following-bp-leak/ (October 30, 2017).

Bay's and other oil field pipelines have been raised previously by regulators and others, including as early as 1999 by the Alaska Department of Environmental Conservation.[19]

The State of Alaska completed a report in November 2010[20] which reviewed over 6,000 North Slope spills from 1995-2009. This report showed that there were 44 loss-of-integrity spills each year[21] with 4.8 of those each year greater than 1,000 gallons,[22] meaning that there is a spill of 1,000 gallons or more nearly every two months.

In 2009, TWS issued a report on North Slope spills entitled *Broken Promises*[23] which should be used in conjunction with the state's North Slope spill report. The TWS report shows a spill frequency on the North Slope of 450 spills each year during 1996-2008, with the difference being that the state included only "production-related" spills in its analysis and excluded North Slope toxic chemical (e.g., antifreeze) and refined product (e.g., diesel) spills - many of which are related to oil development - as well as spills indirectly related to oil production infrastructure, such as those from drilling or workover operations and from vehicles.

According to the Alaska Department of Environmental Conservation's database,[24] there have been 121 reported crude oil spills on the North Slope during the five years from October 30, 2012 until October 30, 2017 or approximately two crude oil spills per month. Additionally, there have been 1,647 reported spills of all types on the North Slope during this period, which is nearly one spill per day.

In addition to spills, oil development infrastructure would sprawl over vast parts of the coastal plain and not be confined to 2000 acres as some have said. In several introduced bills, the 2,000 acre limitation has not included all infrastructure necessary for oil and gas exploration and development. For example, it has not included roads, gravel mines, and even pipelines, except for the limited places where their support posts touch the ground. Additionally, the bills do not contain meaningful requirements to consolidate operations or avoid duplicative infrastructure.

Beyond spills and the direct footprint of well pads, there would be air pollution and noise from generators, trucks, aircraft, and processing facilities; long-distance pipelines and, potentially, gravel roads that could individually and in combination deter some caribou from crossing; waste streams and wastewaters from drilling operations and living quarters that would require disposal; and the use of substantial quantities of water from fish-bearing lakes for ice roads. These sprawling industrial activities also would severely restrict access for subsistence and recreation.

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[19] Charter for the Development of the Alaskan North Slope, December 2, 1999, (BP ARCO Merger Agreement), http://www.dec.state.ak.us/spar/ipp/docs/Charter%20Agreement.pdf.

[20] Nuka Research & Planning Group, LLC, North Slope Spills Analysis: Final Report on North Slope Spills Analysis and Expert Panel Recommendations on Mitigation Measures, for the Alaska Department of Environmental Conservation, 244 pp., retrieved November 1, 2017 from http://dec.alaska.gov/spar/PPR/ara/documents/101123NSSAReportvSCREENwMAPS.pdf (November 2010) .

[21] *Ibid.*, p. 21.

[22] *Ibid.*, p. 23.

[23] The Wilderness Society, Broken Promises: The Reality of Oil Development in America's Arctic (2nd Edition), (2009).

[24] See the Alaska Department of Environmental Conservation Spills Database Search website: http://dec.alaska.gov/Applications/SPAR/PublicMVC/PERP/SpillSearch.

Realistically Assessing Directional Drilling

Directional or extended reach drilling for oil, which is not a new technology and which means drilling at an angle, has the same impacts as vertical well drilling with one exception – smaller well pads. Directional drilling requires surface occupancy for drill rigs, well pads, pipelines, roads and human infrastructure, though at locations near but not immediately above oil and gas reservoirs. Permanent gravel roads and airstrips are still needed, pipelines are still required, and pollution and toxic spills are still inevitable. Additionally, oil and gas operations on the North Slope have proven impacts to subsistence.[25]

Those familiar with directional drilling know that, for technical reasons, directional drilling only has a range of a few miles. The maximum horizontal distance drilled to date on the North Slope is approximately five miles. Even the new, costly "state-of-the-art" drilling rig Doyon is building which is expected to be operational in 2020 will only be able to drill wells 6.25 miles. Moreover, that distance would be the exception, not the rule.

Because of higher costs due to longer wells, directional drilling may or may not be used by industry for exploratory drilling. As discussed by Mr. Kevin Banks of the Alaska Department of Natural Resources during the May 10, 2011 Senate Energy and Natural Resources Committee hearing, oil companies actually prefer not to use directional drilling for exploratory wells because doing so would provide less technical information about subsurface conditions.

As a result of its short range and it not being cost-effective or technically optimal for exploratory drilling, any bill proposing to require directional drilling to access the Arctic Refuge's coastal plain:

1. Misleads decision-makers by ignoring the need for surface use across extensive areas for seismic exploration, including 3-D surveys, and exploratory and reserve delineation drilling. In the Arctic, seismic exploration typically involves heavy vehicles driving across the tundra in a grid pattern, compressing sensitive soil and plants. Tundra recovery from seismic activities can take decades.[26] and
2. Misleads decisionmakers and the public by implying that oil production would be forever limited to the distance accessible via directional drilling, and that directional drilling somehow eliminates or minimizes impacts. Should oil production proceed, there will be calls to expand drilling to reach portions of reservoirs not accessible via directional drilling.

[25] For example, in 2015 the Bureau of Land Management approved ConocoPhillips' drilling permit for the sixth development pad extending out from Alpine, at Greater Mooses Tooth 1 (GMT1). In approving the development, BLM recognized that there would potentially be significant impacts related to subsistence, sociocultural systems, environmental justice, and other values from GMT1, and that future developments in the region that could not be adequately mitigated by existing mitigation measures.

[26] Seismic trails made from the 2-D seismic surveys in the refuge in the 1980s remain visible to this day. Newer 3-D seismic surveys on the North Slope deploy even more vehicles than older 2-D seismic surveys and make a grid profile with line spacing of only a few hundred yards — ten times closer than older 2-D seismic convoys. These intrusive surface exploration activities — which are typically employed year after year throughout the life of an oil field — would cause severe and long-lasting damage to the Arctic Refuge.

Directional drilling rhetoric is a Trojan Horse for access to the entire Arctic Refuge coastal plain for oil production.

The bottom line with directional drilling is that eventually the entire 1.5 million acre coastal plain will be industrialized if there is sufficient oil to be found there. Wildlife using federally-protected areas do not recognize political boundaries and will encounter directional drilling-related well pads, roads, pipelines and spills. Moreover, wildlife movements are not always predictable from year to year, particularly with the advent of climate change. There's no question that conducting directional drilling activities immediately adjacent to federally-protected areas like the Arctic Refuge would have significant, harmful ecological impacts.

Trans-Alaska Pipeline Throughput is Increasing

Because of increased production from existing operations and recent oil discoveries on state and federal lands currently open to oil development, TAPS' throughput, or flow, has been increasing since 2015. According to the Alaska Department of Revenue, throughput this fiscal year is projected to be 533,000 barrels per day, up from 501,000 barrels a day from three years ago, an increase of over six percent. [27]

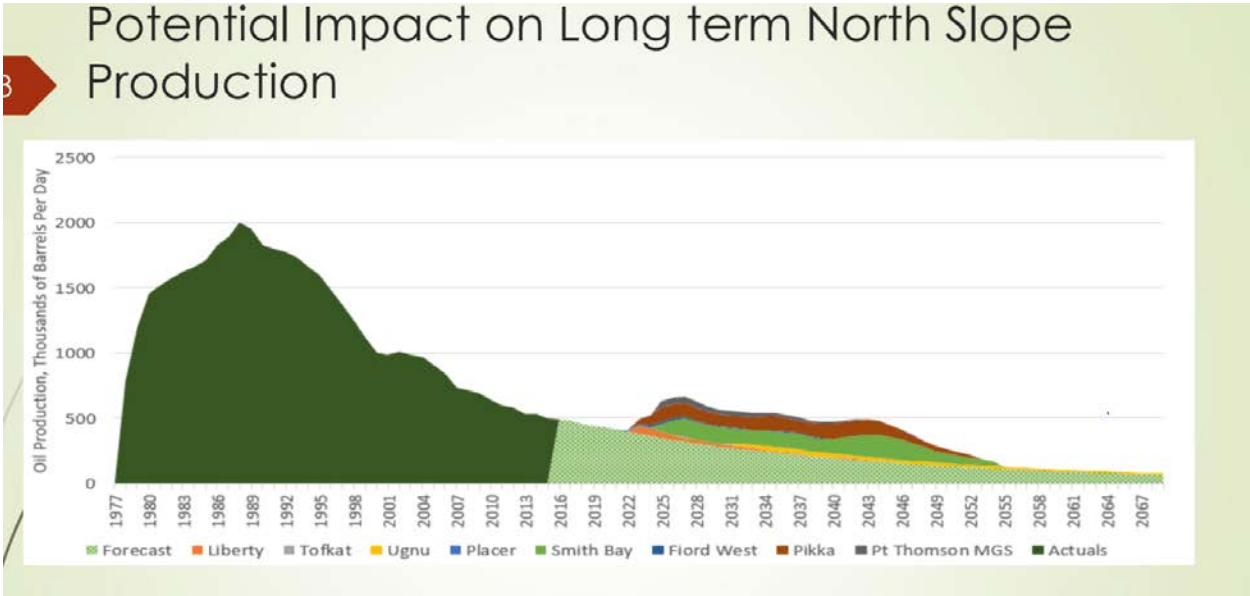
Perhaps even more importantly, the Alaska Department of Natural Resources expects TAPS throughput to continue increasing through the late 2020s due to significant new discoveries that are now in pre-operational phases (Figure 2). These discoveries, which are not on federally-protected lands, include Armstrong's Pikka Nanushuk project on state lands and the ConocoPhillips' Willow and Greater Mooses Tooth projects in parts of the National Petroleum Reserve – Alaska currently open to development.

Alaska's North Slope oil producers and, indeed, all Alaskans have a financial interest in keeping operating. There are several ways to ensure that TAPS continues to operate even if there is declining flow over the long-term including technical upgrades to the pipeline such as adding heat; TAPS' operator, Alyeska, is employing those measures. Notably, although TAPS currently is operating at less than at its peak, pipelines are always designed and operated to carry less than peak flow.

Despite in-state and DC-based rhetoric, drilling on currently protected federal lands or waters is <u>not</u> necessary to ensure that TAPS remains viable for decades to come.[28]

[27] Demarban, A., After a long decline, Alaska expects third straight year of increased oil production, *Alaska Dispatch News*, retrieved from https://www.adn.com/business-economy/energy/2017/10/25/after-a-long-decline-alaska-expects-third-straight-year-of-increased-oil-production/ (October 25, 2017).
[28] See Epstein, L., Trans-Alaska Oil Pipeline Flow: Doing Just Fine After Forty Years, 11 pp. https://wilderness.org/sites/default/files/Alaska%20Pipeline%20Report.pdf (June 2017).

Figure 2
Alaska Department of Natural Resources Projections of TAPS Throughput[29]



CBO's 2012 Estimate of Arctic Refuge Coastal Plain Revenues Does Not Reflect Current Market Conditions

The most recent Congressional Budget Office (CBO) report on Arctic Refuge coastal plain leasing was issued on February 7, 2012.[30] This five year old report – with just four pages and limited documentation – estimates there would be $5 billion in bonus bids for those leases split between the state and federal governments. Crude oil prices were far higher in 2012, however, making Arctic drilling significantly more attractive than today. According to the Energy Information Administration (EIA), "On February 2, Brent settled at $112.07 per barrel, unchanged from its closing price on January 3, and West Texas Intermediate (WTI) settled at $96.36 per barrel…There have been several developments related to the crude oil market over the last month but none have provided new direction to prices."[31] Thus, worldwide crude oil prices were over $100 per barrel at the time of the 2012 CBO report.

EIA's latest crude oil price analysis states that "North Sea Brent crude oil spot prices averaged $56 per barrel (b) in September, an increase of $4/b from the average in August. EIA forecasts Brent spot prices to average $52/b in 2017 and $54/b in 2018, which is $1/b higher in 2017 and

[29] Umekwe, P., Alaska's 10-year Oil Production Outlook And Potential Future Developments Report, Alaska Department of Natural Resources, presented to the Alaska Support Industry Alliance, retrieved October 30, 2017 from http://alaskaalliance.com/wp-content/uploads/2013/10/Pascal-Umekwe-AK-10-Year-Oil-Production-Outlook.pdf (April 27, 2017). Perhaps mistakenly, although ConocoPhillips' Willow project is far along and included in this presentation, its estimated 40,000-100,000 barrels per day of oil production is not included in this figure.
[30] Congressional Budget Office, Cost Estimate: H.R. 3407, Alaskan Energy for American Jobs Act, (February 7, 2012).
[31] Energy Information Administration, Short-Term Energy Outlook; Market Prices and Uncertainty Report, retrieved October 30, 2017 from https://www.eia.gov/outlooks/steo/uncertainty/pdf/feb12_uncertainty.pdf (February 7, 2012).

$2/b higher in 2018 compared with last month's forecast. West Texas Intermediate (WTI) average crude oil prices are forecast to be $3.50/b lower than Brent prices in 2018."[32] Thus, worldwide crude oil prices are only just over $50 per barrel today, approximately half of what they were at the time of the 2012 CBO report.

With today's crude oil prices and unlikely price increases in the near to medium term, it is highly unlikely revenue and bonus bids on Arctic Refuge coastal plain leases will come anywhere close to CBO's or others' estimates.[33, 34] Billion or more dollar estimates are out of touch with the realities of leasing on the North Slope. Since 2000, the average North Slope onshore bid has been just $34 an acre. A recent report from the Center for American Progress estimated that leasing in the Arctic Refuge coastal plain is not likely to yield more than $37.5 million for the U.S. Treasury over 10 years — nowhere close to the estimates.[35]

CBO in 2012 acknowledged its bonus bid estimates are "uncertain"[36] since "oil companies have other domestic and overseas investment options that they would evaluate and compare with a potential investment in [the Arctic National Wildlife Refuge]."[37] To include highly speculative revenues from coastal plain leasing as an offset for the current budget reconciliation process when those revenues are likely to be both minimal and extremely unlikely to reach the reconciliation bill's instructions with known market conditions is, many believe, an abuse of the legislative process.

Inclusion of the Arctic Refuge in the budget is less about meeting revenue targets and more about approving a controversial measure to open the Arctic Refuge coastal plain to oil development without the possibility of a filibuster.

Conclusion

TWS greatly appreciates the opportunity to provide the committee, the Senate, and others with this important information on a unique and important portion of our country's natural heritage, the Arctic Refuge's coastal plain.

Thank you very much for your attention to these important issues. I look forward to answering your questions.

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[32] Energy Information Administration, Short-Term Energy Outlook; Market Prices and Uncertainty Report, retrieved October 30, 2017 from https://www.eia.gov/outlooks/steo/report/prices.cfm (October 11, 2017).
[33] Dlouhy, J. and Nussbaum, A., Low Oil Prices Dim GOP Bid for Budget Bonanza in Arctic, *Bloomberg*, retrieved November 1, 2017 from https://www.bloomberg.com/news/articles/2017-10-31/arctic-refuge-oil-bonanza-more-likely-to-be-bust-for-gop-budget (October 31, 2017).
[34] Some revenue estimates assume every coastal plain acre would be leased and at an extraordinarily high rate not typically found for other onshore Alaska least tracts, making such revenue estimates highly unlikely if not impossible to realize.
[35] Center for American Progress, Arctic National Wildlife Refuge 101, https://www.americanprogress.org/issues/green/news/2017/10/10/440559/arctic-national-wildlife-refuge-101/ (Oct. 10, 2017).
[36] Congressional Budget Office, *op. cit.*, p. 2.
[37] *Ibid.*, p. 3.