Order Code RS22428
April 21, 2006

CRS Report for Congress
Received through the CRS Web

ANWR Leasing Revenue Estimates

Bernard A. Gelb
Specialist in Industry Economics
Resources, Science, and Industry Division

Summary

Congress is again faced with deciding whether to allow the coastal plain of the Arctic National Wildlife Refuge (ANWR) to be explored for oil and gas — with good prospects of finding economically recoverable amounts. Should permission be granted, companies would bid to lease parcels of land in the Refuge, and the revenues from the winning bids would be shared by the federal government and the state of Alaska. A federal budget issue is what would be the total of the winning bids — the leasing revenue. This report will not be updated.

Context

Congress is again faced with deciding whether to allow the coastal plain of ANWR to be explored for oil and gas — with good prospects of finding economically recoverable amounts. ANWR's 1.5-million-acre coastal plain is viewed as one of the most promising U.S. onshore oil and gas prospects. The U.S. Geological Survey's (USGS) mean estimate of *technically* recoverable oil from the fields on this federal land is 7.7 billion or more barrels, and, reflecting recent technological advances and price trends, USGS estimates that there is a 5% chance there are 10.7 billion or more barrels of *economically* recoverable oil (at $55 per barrel in 2003 dollars).[1]

Despite attempts by the Administration and Congressional leaders, the first session of the 109th Congress did not open the so-called 1002 area of the Refuge to oil and gas drilling.[2] However, the Administration has again assumed leasing of ANWR by including estimated lease revenues in its Fiscal Year 2007 budget proposal,[3] and the budget

[1] U.S. Geological Survey (USGS). *The Oil and Gas Potential of the Arctic National Wildlife Refuge 1002 Area, Alaska, 1999*, Chapter EA, Table EA-3; and USGS., *Economics of 1998 U.S. Geological Survey's 1002 Area Regional Assessment: An Economic Update*, Open-File Report 2005-1539, by E. D. Attanasi, 2005, Table 4.

[2] See CRS Report RL32838, *Arctic National Wildlife Refuge (ANWR) Legislative Actions Through the 109th Congress, First Session.*

[3] Executive Office of the President. *Budget of the United States Government, Fiscal Year 2007*, "Analytical Perspectives," p. 284.

resolution passed by the Senate on March 16, 2006, contains a reconciliation instruction that directs the Committee on Energy and Natural Resources to reduce budget authority by an amount equal to predicted revenues from ANWR. It was reported that Senators hoped that such a reconciliation bill might attract enough bipartisan House support to offset opposition by the 24 Members who opposed its inclusion in a larger reconciliation measure in the first session.[4] The House Budget Committee did not include such an instruction in its budget resolution on March 29, 2006.

Leasing Procedure

A variety of statutes and agency regulations govern leasing and permitting for oil and gas development on federal lands.[5] This summary focuses on those parts of the procedures that are most relevant to the estimation of lease revenues.

The leasing of federal lands usually is carried out under the Mineral Leasing Act of 1920 (MLA) by the Department of the Interior's Bureau of Land Management (BLM). For MLA leasing, BLM determines, based on data from federal agencies and oil company submissions, how much and what specific lands will be offered, and normally offers leases on a competitive basis. BLM solicits bids on the tracts and selects the winning companies. If not set in the legislation, BLM may use nominations submitted by companies and other information to determine what and how much land to offer, and in what tract sizes.

BLM usually leases in stages, rather than offering the entire area for bidding at once. Discoveries and newly acquired geologic information determine the tracts for subsequent offerings. As exploration and development progress, smaller fields may become attractive if and when infrastructure is in place. BLM or Congress also may specify terms or conditions applying to particular tracts. These conditions might include, in the case of ANWR, limits on surface occupancy, size of footprints, seasonal availability to exploration, wildlife protection measures, reclamation standards, and the like. (Such terms and conditions might not necessarily apply to Native lands.) Sometimes the legislation that authorizes leasing specifies terms and conditions, including conditions applying to final approval to lease. Such provisions could affect the cost of operating the lease, and therefore the amount a company might be willing to bid.[6]

Once the sale tracts have been named, further exploration might occur. Congress might specify whether additional exploration could occur before nominations were due. Given the seasonality of arctic exploration, this choice could lengthen the time required to make a first lease offering. A leasing phase may overlap with an exploration phase. Both of these phases might be shortened by reducing environmental review requirements and seasonal restrictions, there is a limit to how much the process could be truncated.

---

[4] For more ANWR information, analysis, and legislative developments, see CRS Issue Brief IB10136, *Arctic National Wildlife Refuge (ANWR): Controversies for the 109th Congress*.

[5] For greater detail on such leasing and permitting rules, see CRS Report RL33014, *Leasing and Permitting for Oil and Gas Development on Federal Public Domain Lands.*

[6] Normally, leasing would also have to be "compatible" with the major purposes of the National Wildlife Refuge System and with the purposes of the particular System unit. Congress could override the compatibility test if it wished development to occur as expeditiously as possible.

Moreover, current technology limits arctic exploration to the winter season. Since BLM would wish to consider industry's views in selecting the tracts to be offered — views that take time and more exploration to develop — this, too, could lengthen the leasing process.

Leases under the MLA normally are for 10 years and continue as long afterwards as oil and gas is produced commercially. Congress could choose any length for the ANWR leases, however. Competition for leases among companies is based on the size of their up-front offer, or the *bonus* bid, which is required to be at least $2 per acre, but can total many millions of dollars for some tracts. Payment of the bid occurs before the winning bidder can be certain that oil is present.[7] In a typical MLA lease, a successful bidder must pay $1.50 per acre in rent for its tract(s) in the first five years, and $2.00/acre thereafter. The first year's rental payment, plus the minimum bonus bid and a $75 administrative fee is due on the date of the sale. The remainder of the bonus bid must be received within 10 work days. Subsequent rental payments are due on the anniversary date of the lease. Once production starts, companies pay a standard 12.5% royalty on the sale of the oil they produce. Lessees may voluntarily surrender the lease, subject to requirements concerning abandonment of wells, clean up, and any payments that may be owed.

While the language in the Alaska Statehood Act (P.L. 85-508) means that Alaska is to be treated like other states for federal leasing conducted under the MLA, which indicates a 90%- 10% split, Congress, arguably, has flexibility to legislate oil and gas leasing in the Refuge, including a different disposition of revenues from such leasing. It is expected that Alaska would receive 50% of ANWR leasing revenues.[8]

How Lease Revenues Are Estimated

Estimates of bonus bid revenues essentially stem from the process that oil companies go through when evaluating the prospects of lands that are anticipated to be leased. For ANWR, only very limited and indirect geologic data are available in addition to the overall USGS assessment cited in footnote 1. Ordinarily, each company has data obtained from exploration, and then bids on the most promising areas based upon its own resource assessment, expectations of future price trends, operating costs projections, financial return criteria, and assessments of alternative prospects elsewhere in the world. Companies essentially estimate their likely return on capital invested over as much as a 30-40-year period. In submitting nominations to BLM on what tracts to offer, a company normally nominates more land than the areas it believes most promising, in order to conceal its intentions and avoid excessive attention by possible competitors on what it believes are the best prospects.

In turn, estimates of revenues from bonus bids constitute an attempt by interested government agencies to gauge the value of the leases to the winning bidders. Such estimates unavoidably are uncertain because estimators not employed by the companies do not have access to the firms' information and analytical paradigms, and because firms can greatly differ in their assessment of the geologic prospects, future market conditions,

---

[7] As a result, if ANWR turns out to have no commercial oil deposits, it might still earn the federal government millions of dollars.

[8] See CRS Report RL31115, *Legal Issues Related to Proposed Drilling for Oil and Gas in the Arctic National Wildlife Refuge (ANWR).*

and the financial and strategic value of the prospects. Non-company estimators therefore use generic information such as resource assessments by the U.S. Geological Survey, published and self-generated oil price projections, bids on past lease sales in nearby or comparable geographic areas, and indications of the extent of industry interest in the area as may be obtained through intelligence and/or observed from industry investment trends.

For budgeting purposes, government agencies also estimate the revenues they expect to receive from rental payments by the companies that win the leases and, ultimately, the revenues from royalty payments if commercial quantities of oil and/or gas are produced and sold. Aggregate rental payments usually are much smaller than lease bonuses.

Published Lease Revenue Estimates

Estimates of leasing revenues have been published by the Executive Office of the President (EOP) and the Congressional Budget Office (CBO) over the past several years in connection with the Administration's proposed budgets or with proposed legislation that would permit drilling for oil and gas in the Refuge. Thus, given that the Administration has proposed ANWR leasing for budgeting purposes for Fiscal Year 2007, both the EOP budget document and CBO's analysis of the President's budgetary proposals for Fiscal Year 2007 contain estimates of revenues.

Table 1. FY2007 Budget Estimates of Revenues From Proposed ANWR Leasing

Fiscal Year	Gross Bonus Bids		Rental Payments	
	Administration	Congressional Budget Office	Administration	Congressional Budget Office
2008	$7 billion	- 0 -	$4 million	- 0 -
2009	- 0 -	$5 billion	$4 million	- 0 -
2010	$1 billion	- 0 -	$6 million	$4 million
2011	- 0 -	$1 billion	$6 million	$6 million
2012	- 0 -	- 0 -	n.a.	$6 million
2013	- 0 -	- 0 -	n.a.	$6 million
2014	- 0 -	- 0 -	n.a.	$6 million
2015	- 0 -	- 0 -	n.a.	$6 million
2016	- 0 -	- 0 -	n.a.	$6 million

n.a. - Not available.

Source: Congressional Budget Office. *An Analysis of the President's Budgetary Proposals for Fiscal Year 2007*. March 2006, p. 15; CBO annual rental payment data obtained by telephone, March 10, 2006. Executive Office of the President. *Budget of the United States Government, Fiscal Year 2007*, "Analytical Perspectives," p. 284.

BLM prepared the lease sale revenue estimates for the Administration. It assumed that there will be lease sales in Fiscal Years 2008 and 2010 that will yield winning gross bonus bids of $7 billion and $1 billion, respectively, in those years (**Table 1**). Annual rentals of those leases would yield $4 million in FY2008 and FY2009, and $6 million in FY2010 and FY2011.[9] BLM's estimate of aggregate winning bonus bids was obtained by "running an economic analysis ......under projected market conditions" of its analysis of USGS's geological and geophysical information and its "engineering analysis of the exploration, development, production, and reclamation phases for the potential range of sources." BLM "model[ed] the impact on bidding using comparable sales from NPRA [National Petroleum Reserve - Alaska] and price expectations from the Department of Energy's Energy Information Administration's Annual Energy Outlook.... Final adjustments were made based on bidding patterns in nearby north slope oil and gas lease sales." No assumptions regarding infrastructure or transportation were made.[10]

In its analysis of the Administration's budgetary proposals for FY2007, the Congressional Budget Office anticipates that ANWR lease sales will occur in FY2009 and FY2011, and estimates that those sales will yield aggregate gross bonus bids of $5 billion and $1 billion, respectively in those years. CBO estimates that annual lease rentals would yield $4 million in FY2010 and $6 million in FY2011 through FY2016.[11] (**Table 1**). CBO's estimate of aggregate winning bonus bids is based on USGS projections of the mean volume of economically recoverable oil that could be produced from Federal land in ANWR,[12] and on "information from other Federal agencies, the state of Alaska, and private sources about oil and gas companies' perceptions of key factors that affect the expected profitability of ANWR leases — in particular, companies' probable assumptions about long-term oil prices and required rates of return on such investments."[13] "CBO projected potential cash flows based on alternative assumptions regarding oil prices, production patterns, costs, and rates of return for developing those reserves." It included infrastructure in capital costs, and a projection of transportation costs[14]

Both BLM's and CBO's lease revenue estimates reflect the increase in crude oil prices through 2005; and both BLM and CBO assume that ANWR production would not begin until after 2016, and that lease revenues would be split 50-50 with Alaska.

---

[9] *Budget of the United States Government, Fiscal Year 2007*, "Analytical Perspectives," p. 284. The budget document has figures only through FY2011.

[10] Bureau of Land Management's response to questions for the record (reply to #17) requested by the Senate Committee on Energy and Natural Resources following its February 9, 2006, hearing on the FY2007 budget.

[11] Congressional Budget Office. *An Analysis of the President's Budgetary Proposals for Fiscal Year 2007*. March 2006, p. 15. CBO's analysis has figures through FY2016.

[12] The *Analysis of the President's Budgetary Proposals* states that the estimate of lease bonus bid revenue is based on USGS's mean *value* of economically recoverable oil that could be produced from ANWR. It appears that, in contrast, the reference probably was to the mean *volume*.

[13] CBO. *Analysis of the President's Budgetary Proposals*, p. 15.

[14] Douglas Holtz-Eakin, Director, CBO. Letter of March 14, 2005, to Senator Russell D. Feingold (and 10 other Senators), p.2.

CRS has not located any ANWR lease revenue estimates by other government agencies or by any private entity; however, one analyst has sounded a cautionary note about estimating procedures.[15]

Probing the Lease Revenue Estimates

Thus, with somewhat different estimating procedures, the estimates of lease and rental revenues by the two government agencies differ. In at least two respects, the difference in results conforms to what might be expected from the differences in estimating procedure. For example, CBO included infrastructure and transportation in its cost estimates whereas BLM did not, and BLM's bonus bid revenue estimate is one third greater than CBO's. It would be expected that higher projected costs would diminish projected rates of return and reduce bid amounts, other things being equal.

Second, BLM's assumption that the lease sales would occur a year earlier than CBO's assumption also may explain part of BLM's higher revenue estimate. Bids may be lower in FY2009 than in FY2008 reflecting a projected decline in oil prices from present levels. CBO's later start of the rental income stream stems from the later date of its assumed lease sales.

Reflecting the belief that winning bid amounts in past lease sales of lands in Alaska's North Slope should be considered, BLM used the levels of winning bonus bids in comparable sales from NPRA as a factor that would affect the amounts bid on ANWR tracts. In contrast, CBO, assuming it has not changed a previously stated approach, "does not consider average amounts paid per acre as a useful metric for predicting bonus bids" and it related lease bid amounts more directly to inferred long term oil prices and USGS's quantitative assessment of oil resources in the Refuge.[16] Inasmuch as recent NPRA lease sales have generated only relatively modest revenues, this methodological difference, by itself, would be expected to result in BLM's's bonus bid estimate being lower rather than higher than CBO's. Thus, the counterintuitive results of the difference in BLM's and CBO's estimating procedure apparently was more than offset by the effects of other elements of the agencies' respective estimating methods. Some of those elements in the estimating procedures of both BLM and CBO entail non-quantitative human judgement.

Reference to past lease bidding levels is a key consideration of Richard A. Fineberg of Research Associates who has commented on the latest and several recent BLM and CBO lease revenue estimates. According to Fineberg, both BLM's and CBO's bid revenue estimates are much too high. He argues that prospects for large discoveries in ANWR have diminished, and analyzed recent winning bonus bid levels in other areas of Alaska which show such trends. The implied bid per acre underlying BLM's and CBO's estimates is many times the average winning bid per acre in those sales, he says, even when converting the revenues from past lease sales to 2006 dollars.[17]

---

[15] Richard A. Fineberg. *Updated Economic Estimates of Effects of Leasing on the Arctic National Wildlife Refuge Coastal Plain,* February 9, 2006, (rev. 2/19/06); Richard A. Fineberg. "Response to CBO March 14, 2005 Letter (Arctic Refuge Lease Bonus Numbers)."

[16] March 14, 2005, letter to Senator Feingold, p. 3.

[17] Richard A. Fineberg. Documents previously cited.