

## **Addendum to The Effects of the Alaska Oil and Natural Gas Provisions of H.R. 4 and S. 1766 on U.S. Energy Markets**

This addendum responds to a March 21, 2002, request from Senator Frank H. Murkowski for more information from the Energy Information Administration's Service Report, "The Effects of the Alaska Oil and Natural Gas Provisions of H.R. 4 and S. 1766 on U.S. Energy Markets." This addendum provides projections on the increase in U.S. oil production, the decrease in net petroleum imports, and the change in net petroleum expenditures across a range of cases.

All of the increase in U.S. oil production from opening the Arctic National Wildlife Refuge (ANWR) to oil development comes from increased Alaska production, rather than lower 48 production, regardless of the size of the oil resource assumed to be contained in ANWR. In 2020, the increase in total domestic production ranges from 500,000 barrels per day in the low resource ANWR case to 1.43 million barrels per day in the high resource ANWR case (Table 1A). In 2020, ANWR is projected to increase U.S. oil production by 8.9 percent in the low resource case, compared to 25.4 percent in the high resource case, compared to the Annual Energy Outlook 2002 (AEO2002 ) reference case.

The size of the resource assumed to be in ANWR also has an effect on petroleum import reductions. The larger the ANWR resource base, the greater is the reduction in petroleum imports. In 2020, the reduction in net imports of crude oil and petroleum products is projected to range from 450,000 barrels per day in the low ANWR resource case to 1.39 million barrels per day in the high ANWR resource case, compared to the AEO2002 reference case. More than 80 percent of the import reduction is from lower imports of crude oil, as opposed to product imports.

When combined with a high world oil price path, the opening of ANWR has a similar impact on oil import reductions to the opening of ANWR in a reference case (Table 2A). In the high world oil price cases with mean and high ANWR resources, import reductions in 2020 range from 780,000 to 1.32 million barrels per day more than the high world oil price case without ANWR. In the high ANWR resource case with high world oil prices, oil consumption is reduced by half a million barrels per day and about 70 percent of the import reduction is from lower imports of crude oil.

Reductions in expenditures on imported crude oil and petroleum products range from \$5.7 to \$16.0 billion compared to the reference case in 2020, depending on the amount of resource in ANWR (in 2000 dollars). Like the volume changes, more than 80 percent of the reduction comes from lower crude oil imports. In the cases which assume the opening of ANWR and high world oil prices, expenditures on oil imports are \$11.2 billion to \$18.3 billion lower than the high world oil price case without ANWR. The impact on expenditures is greater in the high world oil price cases, because of higher oil prices.

**Table 1A. Impact of Opening ANWR to Development  
Relative to the AEO2002 Reference Case**

	2015					
	Change In Magnitude			Percent Change		
	Low ANWR	Mean ANWR	High ANWR	Low ANWR	Mean ANWR	High ANWR
<b>Domestic Oil Production (Million Barrels per Day)</b>	0.58	0.68	0.77	10.4%	12.2%	13.8%
<b>Crude Oil Imports (Million Barrels per Day)</b>	-0.57	-0.65	-0.72	-5.2%	-5.9%	-6.5%
<b>Crude Oil Import Expenditures (Billion 2000 Dollars per Year)</b>	-5.45	-6.45	-7.32	-5.7%	-6.7%	-7.6%
<b>Net Product Imports (Million Barrels per Day)</b>	0.01	0.00	0.02	0.1%	0.0%	0.6%
<b>Net Product Import Expenditures (Billion 2000 Dollars per Year)</b>	-0.10	-0.35	-0.28	-0.2%	-0.8%	-0.6%
<b>Total Crude Oil &amp; Oil Product Imports (Million Barrels per Day)</b>	-0.56	-0.65	-0.70	-3.7%	-4.3%	-4.5%
<b>Total Crude Oil &amp; Oil Product Import Expenditures (Billion 2000 Dollars per Year)</b>	-5.55	-6.80	-7.60	-3.9%	-4.8%	-5.4%
	2020					
	Change In Magnitude			Percent Change		
	Low ANWR	Mean ANWR	High ANWR	Low ANWR	Mean ANWR	High ANWR
<b>Domestic Oil Production (Million Barrels per Day)</b>	0.50	0.78	1.43	8.9%	13.9%	25.4%
<b>Crude Oil Imports (Million Barrels per Day)</b>	-0.40	-0.64	-1.16	-3.6%	-5.7%	-10.4%
<b>Crude Oil Import Expenditures (Billion 2000 Dollars per Year)</b>	-4.55	-7.23	-12.50	-4.5%	-7.2%	-12.4%
<b>Net Product Imports (Million Barrels per Day)</b>	-0.05	-0.08	-0.23	-1.0%	-1.5%	-4.3%
<b>Net Product Import Expenditures (Billion 2000 Dollars per Year)</b>	-1.11	-1.63	-3.46	-1.9%	-2.8%	-5.9%
<b>Total Crude Oil &amp; Oil Product Imports (Million Barrels per Day)</b>	-0.45	-0.72	-1.39	-2.7%	-4.3%	-8.4%
<b>Total Crude Oil &amp; Oil Product Import Expenditures (Billion 2000 Dollars per Year)</b>	-5.66	-8.86	-15.97	-3.5%	-5.5%	-10.0%

Source: aeo2002.d102001b, anwr lo.d012202a, anwr bs.d012202a, and anwr hi.d012202a.

**Table 2A. Impact of Opening ANWR to Development  
Relative to AEO2002 High World Oil Price Case**

	2015			
	Change In Magnitude		Percent Change	
	High World Price, Mean ANWR Resources	High World Price, High ANWR Resources	High World Price, Mean ANWR Resources	High World Price, High ANWR Resources
<b>Domestic Oil Production (Million Barrels per Day)</b>	0.69	0.78	11.3%	12.8%
<b>Crude Oil Imports (Million Barrels per Day)</b>	-0.71	-0.80	-7.0%	-7.9%
<b>Crude Oil Import Expenditures (Billion 2000 Dollars per Year)</b>	-9.20	-10.46	-8.1%	-9.3%
<b>Net Product Imports (Million Barrels per Day)</b>	-0.07	-0.04	-1.6%	-1.0%
<b>Net Product Import Expenditures (Billion 2000 Dollars per Year)</b>	-0.99	-0.74	-2.0%	-1.5%
<b>Total Crude Oil &amp; Oil Product Imports (Million Barrels per Day)</b>	-0.78	-0.84	-5.5%	-5.9%
<b>Total Crude Oil &amp; Oil Product Import Expenditures (Billion 2000 Dollars per Year)</b>	-10.19	-11.20	-6.3%	-6.9%
	2020			
	Change In Magnitude		Percent Change	
	High World Price, Mean ANWR Resources	High World Price, High ANWR Resources	High World Price, Mean ANWR Resources	High World Price, High ANWR Resources
<b>Domestic Oil Production (Million Barrels per Day)</b>	0.78	1.43	12.1%	22.2%
<b>Crude Oil Imports (Million Barrels per Day)</b>	-0.73	-0.94	-7.2%	-9.3%
<b>Crude Oil Import Expenditures (Billion 2000 Dollars per Year)</b>	-9.82	-12.96	-8.7%	-11.5%
<b>Net Product Imports (Million Barrels per Day)</b>	-0.05	-0.38	-1.1%	-7.7%
<b>Net Product Import Expenditures (Billion 2000 Dollars per Year)</b>	-1.38	-5.36	-2.2%	-8.7%
<b>Total Crude Oil &amp; Oil Product Imports (Million Barrels per Day)</b>	-0.78	-1.32	-5.2%	-8.8%
<b>Total Crude Oil &amp; Oil Product Import Expenditures (Billion 2000 Dollars per Year)</b>	-11.21	-18.32	-6.4%	-10.5%

Source: hw2002.d102001b, hwanwrfd.d012802a, and hanwrhwop.d020502a.

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## United States Senate

COMMITTEE ON  
 ENERGY AND NATURAL RESOURCES

WASHINGTON, DC 20510-6150

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March 21, 2002

Dr. Mary Hutzler  
 Acting Administrator  
 Energy Information Administration  
 1000 Independence Avenue, SW  
 Washington, DC, 20585

Dear Acting Administrator Hutzler:

Thank you for your prompt attention to my letter of December 20, 2001 in reference to analysis of comprehensive energy legislation now before the Senate. As a result of your initial analysis about the impact of H.R. 4's provision to open the Coastal Plain of the Arctic National Wildlife Refuge to gas and oil leasing, please find below additional questions for which I would appreciate your timely response.

From your previous analysis of the ANWR provision in H.R. 4, please provide the answers to the following additional information:

1. the increase in U.S. domestic crude oil production, in millions of barrels per day and in percentage terms relative to your Annual Energy Outlook 2002 Reference Case;
2. the decrease in U.S. net imports of crude oil, in millions of barrels per day and in percentage terms (defined as net crude oil imports divided by total crude oil demand) relative to your Annual Energy Outlook 2002 Reference Case; and
3. the change in net expenditures, in billions of dollars, for imports of crude oil.

Please provide answers to the above questions for all of the Low, Mean, and High ANWR Resources cases analyzed in your report to me on February 11, 2002; as well as for the same Resources cases considered under a High World Oil Price (\$30/bbl) scenario, as described in your February 11, 2002 report. It is my understanding that no new model runs will be required, since you already have the data available to answer these questions from your previous work. Thus, I hope you can provide me with a reply at your earliest opportunity.

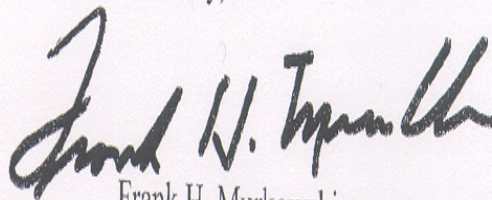
Murkowski: Hutzler

March 21, 2002

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If you have any further questions regarding this request, or desire further clarification, please contact Bryan Hannegan with my Senate Energy and Natural Resources Committee staff at 224-7932. Thank you for your continued timely attention to this request, and for your efforts to ensure that our Nation's energy policy decisions are informed with the best available analysis.

Sincerely,



Frank H. Murkowski

Ranking Member