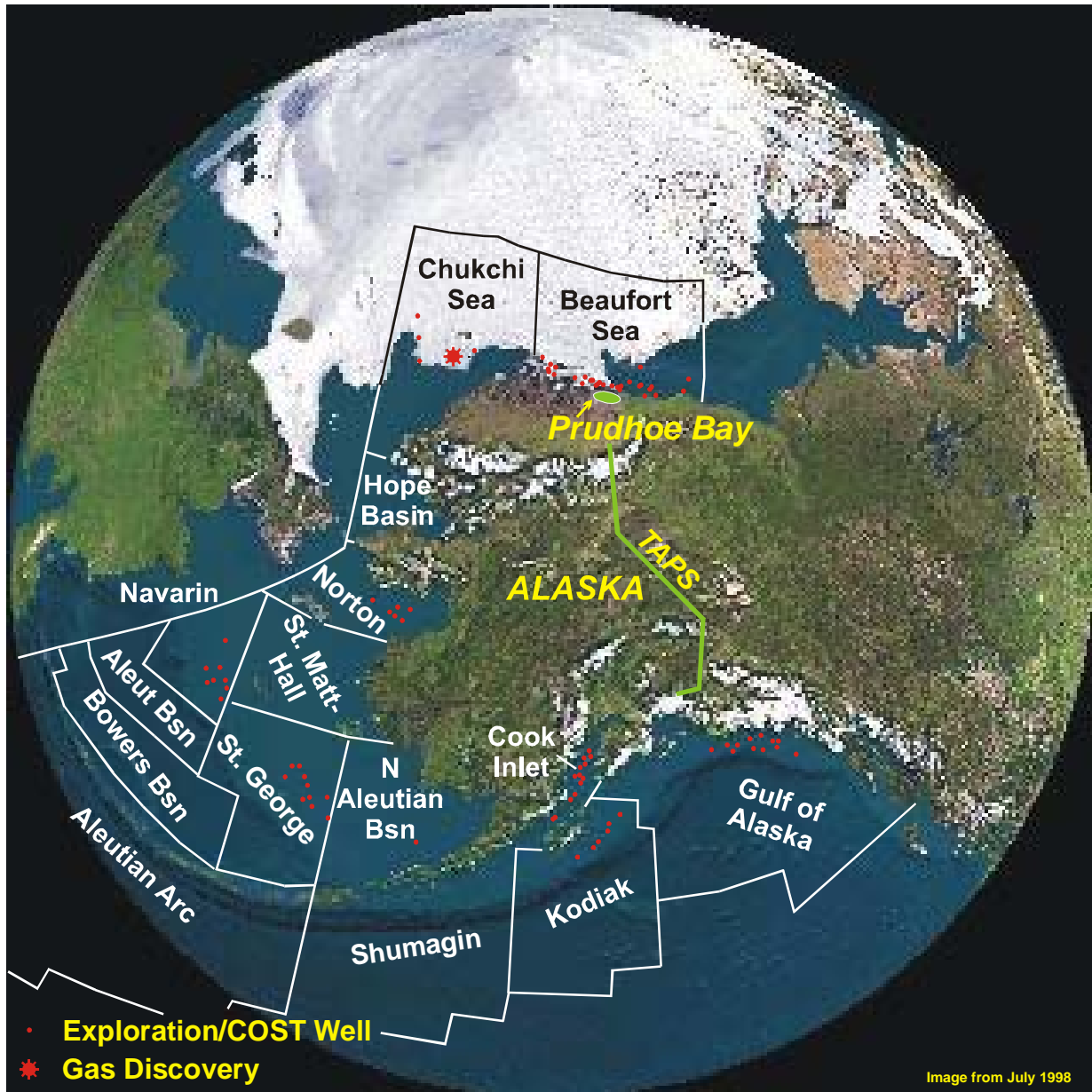


# Undiscovered Oil and Gas Resources, Alaska Federal Offshore

As of 2006



**MMS**

U.S. Department of the Interior  
Minerals Management Service  
Alaska OCS Region



## **Undiscovered Oil and Gas Resources, Alaska Federal Offshore, 2006 National Assessment**

The Minerals Management Service (MMS) has revised its assessments of the undiscovered oil and gas resource potential of the Alaska Outer Continental Shelf (OCS). These assessments provide current estimates of both technically and economically recoverable resources to assist with the development of a new 5-Year Oil and Gas Leasing Program (2007 through 2012). Analysis performed for the 5-Year Program weighs the positive economic value of marketable oil and gas against possible environmental consequences of development and production.

Furthermore, the Energy Policy Act of 2005 (Section 357) required the Secretary of the Interior to conduct an inventory of the oil and gas resources located on the OCS. This assessment was also conducted in response to that directive. The final report to Congress is available at <http://www.mms.gov/PDFs/2005EPAct/InventoryRTC.pdf>

### **Background**

The OCS Lands Act requires the Secretary of the Interior to develop a 5-Year Oil and Gas Leasing Program to meet the Nation's energy needs, and to ensure that resource development occurs in an orderly fashion rather than in hasty response to a shortfall in energy resources. In preparation for the development of a new 5-Year Program, the MMS Alaska Region, Resource Evaluation Office, assessed new geologic, geophysical, engineering, and economic data, and used this information in a new assessment computer model to estimate *undiscovered* oil and gas resources. Undrilled *prospects* (see definitions provided at the end), identified and mapped by geophysicists and geologists, have a risk of not containing any oil or gas resources. In addition to this geologic risk, if the prospect does contain oil or gas, the quantities could be too low to produce commercially, so an additional economic risk must be taken into account. Uncertainty surrounds the location and size of possible prospects, the geologic and reservoir engineering factors influencing ability of the hydrocarbons to flow, recoverability, costs associated with exploration, development and production, and so forth.

Statistical methods have evolved specifically to handle both risk and uncertainty. The assessors portray their knowledge about uncertain variables as ranges of possible values and probabilities associated with these values. Subject matter specialists contribute their knowledge and expertise to developing values for the geologic, engineering, and economic variables. A computer model developed by MMS uses these ranges of values and probabilities, along with estimates of the associated risk at various assessment levels (prospect, play, and basin), to develop estimates of the undiscovered resource potential. The results from running this model are ranges of possible results (volumes of oil and gas) and their associated probabilities of occurrence (i.e., probability distributions). The geologic provinces and administrative planning areas that were assessed are shown on the [following map](#).

Two general types of estimates are prepared by MMS: 1) undiscovered, technically recoverable oil and gas resources, and 2) undiscovered, economically recoverable oil and gas resources.

### **Undiscovered, technically recoverable resources**

*Undiscovered, technically recoverable resources* focus on geologic attributes. The resource potential is estimated without being constrained by economic considerations, such as the existence of transportation infrastructure to take the resources to market. The only constraint is that conventional recovery techniques are assumed. The reported resources are those that would be produced at the surface, but estimates of recovery efficiency are based on current, known techniques. Ranges of values imply that some improvement in efficiency is considered, but dramatic improvements from unknown future techniques are not included.

The 2006 assessment of undiscovered, technically recoverable oil and gas resources is shown on the [following table](#):

Comparisons of the various areas by commodity (oil, gas, and barrels of oil equivalent) are shown on the following histograms:

[Oil](#)  
[Gas](#)  
[BOE](#)

### **Undiscovered, economically recoverable resources**

*Undiscovered, economically recoverable resources* do consider the costs associated with development and production. The economic estimates give the greatest insight into the areas most likely to be of interest for leasing and development in the near term (i.e., the period covered by the next 5-year program). Often, these estimates are reported along with the basic economic assumptions, most commonly price. Now and in the past, MMS has reported economically recoverable resources both at a base case price and at a significantly higher price. In 2006, MMS used a new computer model to assess economic resources at \$2/barrel increments. Four representative cases are reported:

[\\$18/bbl \(\\$2.72/mcf\)](#)  
[\\$30/bbl \(\\$4.54/mcf\)](#)  
[\\$46/bbl \(\\$6.96/mcf\)](#)  
[\\$60/bbl \(\\$9.07/mcf\)](#)  
[\\$80/bbl \(\\$12.10/mcf\)](#)

These curves indicate the change in the amount of resources that could be commercially developed given a change in price. By examining the price-supply curves, the expected magnitude of resources at any given price can be determined without having to rerun assessment models. Examples for total Alaska are presented here:

[Gas P/S Curve \(95/mean/5\)](#)  
[Oil P/S Curve \(95/mean/5\)](#)

Four offshore Alaska areas are being considered for leasing in the 2007 to 2012 5-Year OCS Oil and Gas Leasing Program: Beaufort Sea, Chukchi Sea, Cook Inlet, and North Aleutian Basin. Price-supply curves are shown for each of these areas, with the oil and gas mean curves summarized on one graph per area.

[Beaufort Sea P/S Curve \(mean oil and gas\)](#)

[Chukchi Sea P/S Curve \(mean oil and gas\)](#)

[Cook Inlet Sea P/S Curve \(mean oil and gas\)](#)

[North Aleutian Basin P/S Curve \(mean oil and gas\)](#)

To create the price-supply curves, the computer model is run numerous times, changing only the price variable (in increments of \$2/barrel), resulting in a suite of prices and corresponding resource amounts at various percentiles. The prices are plotted versus the *average* (mean) resource estimates. *Low* and *high* case curves can also be plotted on the same graph. Although not as precise as a model run at a specific price, the price-supply curves give a quick answer to “what if” questions, an important capability during times of high price volatility. The curves can be a useful tool for planning purposes, where different price projections are assumed (*e.g.*, prices anticipated to remain stable, to increase substantially, etc.). For example, a geologic planning area may show low resource potential at an \$18 per barrel price but have significant resources at a \$46 per barrel price. Such an area may not be considered for leasing in a period of sustained low prices, but could be considered for leasing when higher prices are anticipated.

### **Comparison to Year 2000 Assessment**

The assessment conducted by MMS in 2000 was an update of the more extensive assessment conducted in 1995 (Undiscovered Oil and Gas Resources, Alaska Federal Offshore, as of January 1995, Sherwood, et al., OCS Monograph MMS 98-0054). In 2000, only 5 areas had sufficient new data or industry interest to warrant revision: Chukchi Sea, Beaufort Sea, Hope Basin, Cook Inlet, and Gulf of Alaska. The remaining areas were unchanged from the 1995 assessment.

All prospective Alaska OCS geologic provinces were reassessed for the 2006 assessment. The technically recoverable resource results for the 2006 assessment are compared with the 2000 assessment on the [following table](#):

The results for the 1995, 2000, and 2006 assessments are compared graphically for oil, gas, and barrels of oil equivalent (where gas is converted to an energy equivalent oil volume and added to the crude oil and condensate volumes):

[Oil](#)

[Gas](#)

[BOE](#)

### **Common Assessment Terms:**

**Prospect** – an untested geologic feature having the potential for trapping and accumulating hydrocarbons.

**Pool** – a subsurface accumulation of liquid or gaseous hydrocarbons, typically within a single stratigraphic interval, that is hydraulically separated from any other hydrocarbon accumulation.

**Field** – a pool or grouping of related pools, sufficient large to be economically producible.

**Play** – a family of geologically related prospects, having similar hydrocarbon source, reservoir, and trapping mechanism.

**Basin** – a large downwarped region serving as a center of sediment deposition. It can contain numerous geologic plays.

**Province** – a large area or region unified geologically by a single dominant structural element or a number of contiguous elements. A province can be defined to contain a single basin or may contain several related or similar basins.

**Planning Area** – an administrative subdivision of an offshore area used as the initial basis for considering blocks to be offered for lease in the DOI offshore oil and gas leasing program.

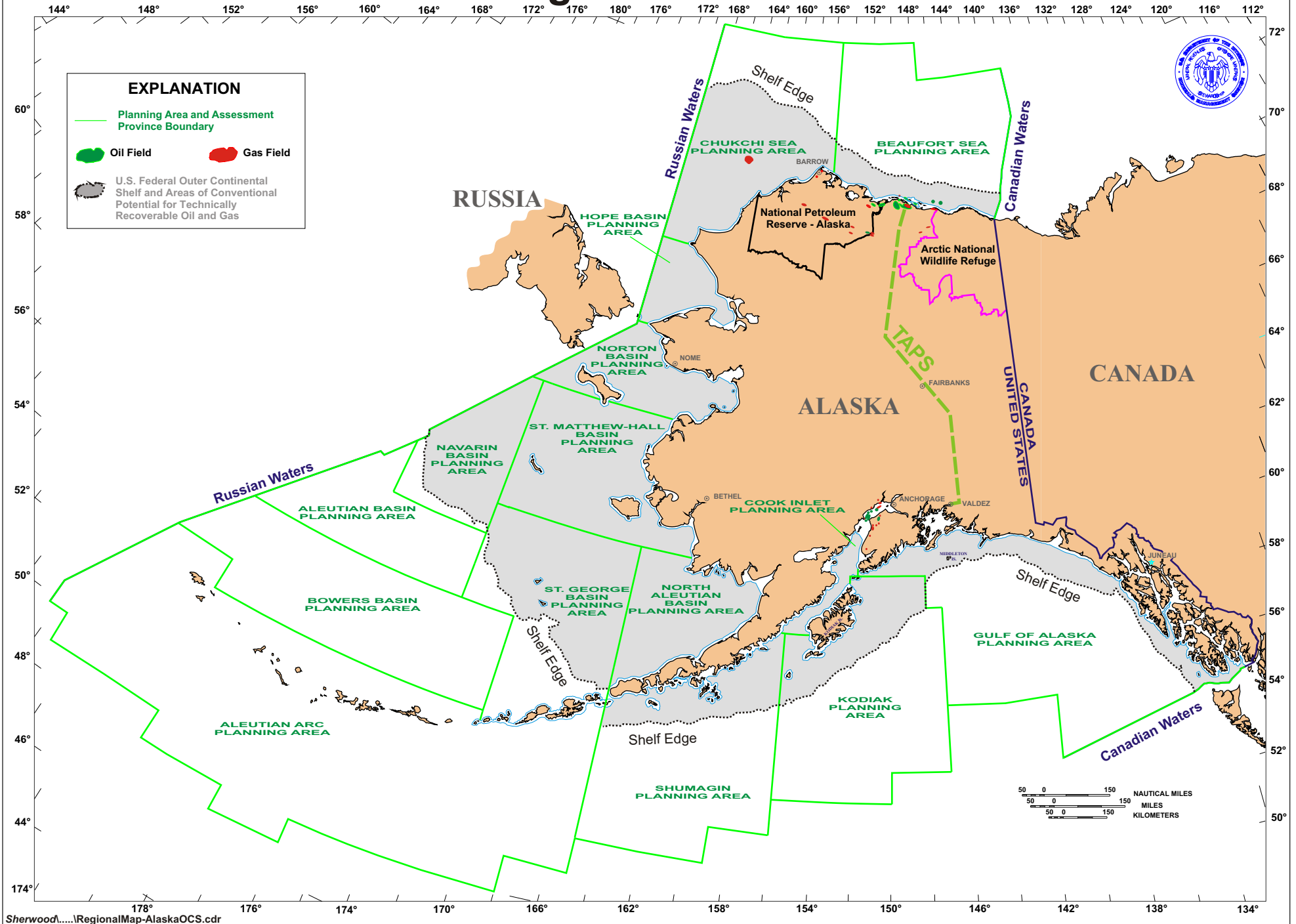
### **RESOURCE REPORTING LEVELS**

**Low Case Estimate** – an estimate of resources having a 95 percent chance of being that amount or greater

**Average Case Estimate** – the mean value or arithmetic average, derived by summing all values and dividing by the total number of values. The mean value is popular when a single estimate is needed because it combines both the magnitude and probability of the possible resource amount.

**High Case Estimate** - an estimate of resources having a 5 percent chance of being that amount or greater

# 2006 Alaska OCS Planning Areas and Assessment Provinces



**EXPLANATION**

- Planning Area and Assessment Province Boundary
- Oil Field
- Gas Field
- ⊖ U.S. Federal Outer Continental Shelf and Areas of Conventional Potential for Technically Recoverable Oil and Gas



**Year 2006 National Assessment - Alaska Outer Continental Shelf  
RISKED, UNDISCOVERED, TECHNICALLY RECOVERABLE OIL AND GAS**

AREA	OIL AND COND (BBO)			GAS (TCFG)			BOE (BBOE)			MPhc (Geol)
	F95	MEAN	F05	F95	MEAN	F05	F95	MEAN	F05	
ALASKA OFFSHORE	8.66	26.61	55.14	48.28	132.06	279.62	17.25	50.11	104.89	1.00
ARCTIC SUBREGION	6.03	23.75	53.17	27.83	108.19	247.19	10.98	43.00	97.16	1.00
BERING SHELF SUBREGION	0.09	1.16	3.04	1.48	15.70	34.36	0.35	3.95	9.15	1.00
PACIFIC MARGIN SUBREGION	0.23	1.70	3.90	0.93	8.18	19.23	0.40	3.16	7.32	1.00

**ARCTIC SUBREGION**

CHUKCHI SHELF	2.32	15.38	40.08	10.32	76.77	209.53	4.15	29.04	77.36	1.00
BEAUFORT SHELF	0.41	8.22	23.24	0.65	27.65	72.18	0.53	13.14	36.08	1.00
HOPE BASIN	0.00	0.15	0.60	0.00	3.77	14.98	0.00	0.82	3.27	0.40

**BERING SHELF SUBREGION**

NAVARIN BASIN	0.00	0.13	0.62	0.00	1.22	5.80	0.00	0.35	1.65	0.40
N. ALEUTIAN BASIN	0.02	0.75	2.50	0.40	8.62	23.28	0.09	2.29	6.65	1.00
ST. GEORGE BASIN	0.00	0.21	0.79	0.00	2.80	11.15	0.00	0.71	2.77	0.60
NORTON BASIN	0.00	0.06	0.24	0.00	3.06	13.27	0.00	0.60	2.61	0.42

**PACIFIC MARGIN SUBREGION**

COOK INLET	0.06	1.01	2.85	0.03	1.20	3.48	0.06	1.23	3.47	1.00
GULF OF ALASKA	0.00	0.63	2.04	0.00	4.65	16.00	0.00	1.45	4.89	0.80
SHUMAGIN	0.00	0.01	0.05	0.00	0.49	2.04	0.00	0.10	0.42	0.40
KODIAK	0.00	0.05	0.20	0.00	1.84	7.62	0.00	0.38	1.55	0.40

*BBO*, billions of barrels of oil and condensate; *TCFG*, trillions of cubic feet, gas; *BBOE*, total oil and gas in billions of energy-equivalent barrels; *MEAN*, resource quantities at the mean in cumulative probability distributions; *F95*, the resource quantity having a 95-percent probability of being met or exceeded; *F05*, the resource quantity having a 5-percent probability of being met or exceeded; *MPhc*, marginal probability for hydrocarbons in the basin (i.e., chance for the existence of at least one pool of undiscovered, conventionally recoverable hydrocarbons somewhere in the basin). Resource quantities are risked (product of multiplying the conditional resources and MPhc). Mean values for provinces may not sum to values shown for the subregions or region because of rounding. All liquid resources in Norton, Shumagin, and Kodiak areas are natural gas liquids that would only be recovered by natural gas production.

**Year 2006 National Assessment - Alaska Outer Continental Shelf**  
**RISKED, UNDISCOVERED, ECONOMICALLY RECOVERABLE OIL AND GAS**  
**(\$18/bbl, \$2.72/mcfg)**

AREA	OIL AND COND (BBO)			GAS (TCFG)			BOE (BBOE)			MPhc (Econ)
	F95	MEAN	F05	F95	MEAN	F05	F95	MEAN	F05	
ALASKA OFFSHORE	0.10	0.11	0.15	0.06	0.07	0.07	0.11	0.12	0.16	0.22
ARCTIC SUBREGION	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BERING SHELF SUBREGION	0.00	0.04	0.09	0.00	0.02	0.03	0.00	0.05	0.10	0.05
PACIFIC MARGIN SUBREGION	0.00	0.06	0.17	0.00	0.05	0.24	0.00	0.07	0.22	0.18

**ARCTIC SUBREGION**

CHUKCHI SHELF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BEAUFORT SHELF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HOPE BASIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**BERING SHELF SUBREGION**

NAVARIN BASIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
N. ALEUTIAN BASIN	0.00	0.04	0.20	0.00	0.02	0.05	0.00	0.05	0.21	0.05
ST. GEORGE BASIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NORTON BASIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**PACIFIC MARGIN SUBREGION**

COOK INLET	0.00	0.06	0.25	0.00	0.05	0.28	0.00	0.07	0.30	0.18
GULF OF ALASKA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SHUMAGIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
KODIAK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**ECONOMIC ASSUMPTIONS:** 2005 base year, \$18 per barrel oil price, \$2.72 per thousand cubic feet (mcfg) gas price, 0.8488 gas value discount, flat real prices and costs, 3% inflation, 12% discount, 35% Fed tax. **BBO**, billions of barrels of oil and condensate; **TCFG**, trillions of cubic feet, gas; **BBOE**, total oil and gas in billions of energy-equivalent barrels; **MEAN**, resource quantities at the mean in cumulative probability distributions; **F95**, the resource quantity having a 95-percent probability of being met or exceeded; **F05**, the resource quantity having a 5-percent probability of being met or exceeded; **MPhc**, marginal probability for economic hydrocarbons existing in at least one pool somewhere in the basin, under the given economic conditions. Resource quantities are risked (product of multiplying the conditional resources and MPhc). Mean values for provinces may not sum to values shown for the subregions or region because of rounding. All liquid resources in Norton, Shumagin, and Kodiak areas are natural gas liquids that would only be recovered by natural gas production.



**Year 2006 National Assessment - Alaska Outer Continental Shelf**  
**RISKED, UNDISCOVERED, ECONOMICALLY RECOVERABLE OIL AND GAS**  
**(\$30/bbl, \$4.54/mcfg)**

AREA	OIL AND COND (BBO)			GAS (TCFG)			BOE (BBOE)			MPhc (Econ)
	F95	MEAN	F05	F95	MEAN	F05	F95	MEAN	F05	
ALASKA OFFSHORE	0.77	1.45	2.10	1.96	3.00	4.36	1.12	1.99	2.88	0.95
ARCTIC SUBREGION	0.04	0.47	2.00	0.04	0.59	3.22	0.05	0.57	2.57	0.43
BERING SHELF SUBREGION	0.00	0.38	1.26	0.01	0.91	2.52	0.01	0.54	1.71	0.54
PACIFIC MARGIN SUBREGION	0.04	0.61	1.47	0.04	1.50	4.11	0.05	0.88	2.20	0.82

**ARCTIC SUBREGION**

CHUKCHI SHELF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.01
BEAUFORT SHELF	0.00	0.47	1.79	0.00	0.59	2.39	0.00	0.57	2.22	0.43
HOPE BASIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.01

**BERING SHELF SUBREGION**

NAVARIN BASIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.01
N. ALEUTIAN BASIN	0.00	0.38	1.37	0.00	0.91	2.78	0.00	0.54	1.87	0.54
ST. GEORGE BASIN	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	<0.01
NORTON BASIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**PACIFIC MARGIN SUBREGION**

COOK INLET	0.00	0.51	1.78	0.00	0.64	2.25	0.00	0.63	2.18	0.73
GULF OF ALASKA	0.00	0.08	0.39	0.00	0.48	2.39	0.00	0.17	0.81	0.22
SHUMAGIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	<0.01
KODIAK	0.00	0.01	0.05	0.00	0.39	1.93	0.00	0.08	0.40	0.16

*ECONOMIC ASSUMPTIONS: 2005 base year, \$30 per barrel oil price, \$4.54 per thousand cubic feet (mcfg) gas price, 0.8488 gas value discount, flat real prices and costs, 3% inflation, 12% discount, 35% Fed tax*  
*BBO*, billions of barrels of oil and condensate; *TCFG*, trillions of cubic feet, gas; *BBOE*, total oil and gas in billions of energy-equivalent barrels; *MEAN*, resource quantities at the mean in cumulative probability distributions; *F95*, the resource quantity having a 95-percent probability of being met or exceeded; *F05*, the resource quantity having a 5-percent probability of being met or exceeded; *MPhc*, marginal probability for economic hydrocarbons existing in at least one pool somewhere in the basin, under the given economic conditions. Resource quantities are risked (product of multiplying the conditional resources and MPhc). Mean values for provinces may not sum to values shown for the subregions or region because of rounding. All liquid resources in Norton, Shumagin, and Kodiak areas are natural gas liquids that would only be recovered by natural gas production.

**Year 2006 National Assessment - Alaska Outer Continental Shelf**  
**RISKED, UNDISCOVERED, ECONOMICALLY RECOVERABLE OIL AND GAS**  
**(\$46/bbl, \$6.96/mcfg)**

AREA	OIL AND COND (BBO)			GAS (TCFG)			BOE (BBOE)			MPhc (Econ)
	F95	MEAN	F05	F95	MEAN	F05	F95	MEAN	F05	
ALASKA OFFSHORE	2.44	8.35	17.62	10.52	26.86	56.97	4.31	13.13	27.76	1.00
ARCTIC SUBREGION	0.97	6.51	18.23	2.04	16.74	48.57	1.33	9.49	26.88	1.00
BERING SHELF SUBREGION	0.02	0.69	2.12	0.32	5.99	14.04	0.08	1.75	4.61	0.92
PACIFIC MARGIN SUBREGION	0.11	1.16	2.78	0.24	4.13	10.92	0.15	1.89	4.72	0.98

**ARCTIC SUBREGION**

CHUKCHI SHELF	0.18	2.37	8.00	0.42	7.91	28.20	0.25	3.77	13.02	0.86
BEAUFORT SHELF	0.14	4.12	14.58	0.23	8.79	30.79	0.18	5.68	20.06	0.99
HOPE BASIN	0.00	0.02	0.08	0.00	0.04	0.21	0.00	0.03	0.12	0.09

**BERING SHELF SUBREGION**

NAVARIN BASIN	0.00	0.01	0.07	0.00	0.04	0.18	0.00	0.02	0.11	0.04
N. ALEUTIAN BASIN	0.01	0.63	2.18	0.13	5.85	16.55	0.03	1.67	5.12	0.90
ST. GEORGE BASIN	0.00	0.04	0.20	0.00	0.06	0.24	0.00	0.05	0.24	0.10
NORTON BASIN	0.00	0.00	0.01	0.00	0.04	0.32	0.00	0.01	0.06	0.02

**PACIFIC MARGIN SUBREGION**

COOK INLET	0.01	0.82	2.44	0.01	1.02	3.12	0.01	1.00	3.00	0.88
GULF OF ALASKA	0.00	0.31	1.26	0.00	1.88	7.94	0.00	0.64	2.67	0.68
SHUMAGIN	0.00	0.00	0.01	0.00	0.04	0.23	0.00	0.01	0.05	0.04
KODIAK	0.00	0.03	0.14	0.00	1.19	5.50	0.00	0.24	1.12	0.39

*ECONOMIC ASSUMPTIONS: 2005 base year, \$46 per barrel oil price, \$6.96 per thousand cubic feet (mcfg) gas price, 0.8488 gas value discount, flat real prices and costs, 3% inflation, 12% discount, 35% Fed tax*

*BBO, billions of barrels of oil and condensate; TCFG, trillions of cubic feet, gas; BBOE, total oil and gas in billions of energy-equivalent barrels; MEAN, resource quantities at the mean in cumulative probability distributions; F95, the resource quantity having a 95-percent probability of being met or exceeded; F05, the resource quantity having a 5-percent probability of being met or exceeded; MPhc, marginal probability for economic hydrocarbons existing in at least one pool somewhere in the basin, under the given economic conditions. Resource quantities are risked (product of multiplying the conditional resources and MPhc). Mean values for provinces may not sum to values shown for the subregions or region because of rounding. All liquid resources in Norton, Shumagin, and Kodiak areas are natural gas liquids that would only be recovered by natural gas production.*

**Year 2006 National Assessment**  
**RISKED UNDISCOVERED ECONOMICALLY RECOVERABLE OIL AND GAS**  
**(\$60/bbl - \$9.07/mcfg)**

AREA	OIL AND COND (BBO)			GAS (TCFG)			BOE (BBOE)			MPhc (Econ)
	F95	MEAN	F05	F95	MEAN	F05	F95	MEAN	F05	
ALASKA OFFSHORE	4.83	16.62	36.47	22.20	64.91	148.13	8.78	28.17	62.82	1.00
ARCTIC SUBREGION	2.83	14.39	35.73	9.18	50.71	129.89	4.46	23.42	58.85	1.00
BERING SHELF SUBREGION	0.04	0.83	2.43	0.71	8.82	20.39	0.16	2.40	6.06	0.99
PACIFIC MARGIN SUBREGION	0.16	1.40	3.28	0.44	5.38	13.77	0.24	2.36	5.73	1.00

**ARCTIC SUBREGION**

CHUKCHI SHELF	0.86	8.38	24.30	3.03	34.43	103.31	1.39	14.51	42.68	1.00
BEAUFORT SHELF	0.26	5.97	19.31	0.40	15.94	50.65	0.33	8.80	28.32	1.00
HOPE BASIN	0.00	0.04	0.19	0.00	0.34	1.52	0.00	0.10	0.46	0.28

**BERING SHELF SUBREGION**

NAVARIN BASIN	0.00	0.03	0.19	0.00	0.16	0.78	0.00	0.06	0.33	0.13
N. ALEUTIAN BASIN	0.02	0.71	2.39	0.32	7.65	21.12	0.07	2.07	6.15	0.98
ST. GEORGE BASIN	0.00	0.08	0.34	0.00	0.37	2.13	0.00	0.14	0.72	0.28
NORTON BASIN	0.00	0.01	0.07	0.00	0.64	3.62	0.00	0.13	0.71	0.28

**PACIFIC MARGIN SUBREGION**

COOK INLET	0.03	0.92	2.67	0.01	1.11	3.30	0.03	1.12	3.26	0.96
GULF OF ALASKA	0.00	0.43	1.60	0.00	2.66	10.00	0.00	0.91	3.37	0.77
SHUMAGIN	0.00	0.00	0.02	0.00	0.13	0.70	0.00	0.03	0.14	0.18
KODIAK	0.00	0.04	0.17	0.00	1.48	6.42	0.00	0.30	1.31	0.40

*ECONOMIC ASSUMPTIONS: 2005 base year, \$60 per barrel oil price, \$9.07 per thousand cubic feet (mcfg) gas price, 0.8488 gas value discount, flat real prices and costs, 3% inflation, 12% discount, 35% Fed tax*  
**BBO**, billions of barrels of oil and condensate; **TCFG**, trillions of cubic feet, gas; **BBOE**, total oil and gas in billions of energy-equivalent barrels; **MEAN**, resource quantities at the mean in cumulative probability distributions; **F95**, the resource quantity having a 95-percent probability of being met or exceeded; **F05**, the resource quantity having a 5-percent probability of being met or exceeded; **MPhc**, marginal probability for economic hydrocarbons existing in at least one pool somewhere in the basin, under the given economic conditions. Resource quantities are risked (product of multiplying the conditional resources and MPhc). Mean values for provinces may not sum to values shown for the subregions or region because of rounding. All liquid resources in Norton, Shumagin, and Kodiak areas are natural gas liquids that would only be recovered by natural gas production.

**Year 2006 National Assessment - Alaska Outer Continental Shelf**  
**RISKED, UNDISCOVERED, ECONOMICALLY RECOVERABLE OIL AND GAS**  
**(\$80/bbl, \$12.10/mcfg)**

AREA	OIL AND COND (BBO)			GAS (TCFG)			BOE (BBOE)			MPhc (Econ)
	F95	MEAN	F05	F95	MEAN	F05	F95	MEAN	F05	
ALASKA OFFSHORE	6.56	21.50	45.95	32.72	93.99	207.82	12.38	38.23	82.93	1.00
ARCTIC SUBREGION	4.26	19.00	44.59	16.41	75.94	183.53	7.18	32.52	77.25	1.00
BERING SHELF SUBREGION	0.05	0.96	2.69	0.94	11.78	27.09	0.22	3.05	7.51	1.00
PACIFIC MARGIN SUBREGION	0.19	1.54	3.53	0.61	6.27	15.52	0.30	2.66	6.29	1.00

**ARCTIC SUBREGION**

CHUKCHI SHELF	1.52	12.00	32.66	6.01	54.44	153.70	2.59	21.68	60.01	1.00
BEAUFORT SHELF	0.34	6.92	21.17	0.54	19.97	59.38	0.44	10.47	31.74	1.00
HOPE BASIN	0.00	0.09	0.37	0.00	1.53	6.77	0.00	0.36	1.57	0.40

**BERING SHELF SUBREGION**

NAVARIN BASIN	0.00	0.06	0.31	0.00	0.37	1.87	0.00	0.12	0.65	0.28
N. ALEUTIAN BASIN	0.02	0.74	2.47	0.39	8.40	22.77	0.09	2.23	6.52	0.99
ST. GEORGE BASIN	0.00	0.13	0.52	0.00	1.05	5.41	0.00	0.31	1.48	0.49
NORTON BASIN	0.00	0.04	0.18	0.00	1.97	9.62	0.00	0.39	1.89	0.41

**PACIFIC MARGIN SUBREGION**

COOK INLET	0.04	0.97	2.77	0.02	1.16	3.40	0.05	1.18	3.37	0.98
GULF OF ALASKA	0.00	0.52	1.81	0.00	3.21	11.58	0.00	1.09	3.87	0.79
SHUMAGIN	0.00	0.01	0.03	0.00	0.25	1.23	0.00	0.05	0.25	0.34
KODIAK	0.00	0.04	0.18	0.00	1.65	7.01	0.00	0.34	1.43	0.40

*ECONOMIC ASSUMPTIONS: 2005 base year, \$80 per barrel oil price, \$12.10 per thousand cubic feet (mcfg) gas price, 0.8488 gas value discount, flat real prices and costs, 3% inflation, 12% discount, 35% Fed tax*  
*BBO*, billions of barrels of oil and condensate; *TCFG*, trillions of cubic feet, gas; *BBOE*, total oil and gas in billions of energy-equivalent barrels; *MEAN*, resource quantities at the mean in cumulative probability distributions; *F95*, the resource quantity having a 95-percent probability of being met or exceeded; *F05*, the resource quantity having a 5-percent probability of being met or exceeded; *MPhc*, marginal probability for economic hydrocarbons existing in at least one pool somewhere in the basin, under the given economic conditions. Resource quantities are risked (product of multiplying the conditional resources and MPhc). Mean values for provinces may not sum to values shown for the subregions or region because of rounding. All liquid resources in Norton, Shumagin, and Kodiak areas are natural gas liquids that would only be recovered by natural gas production.

**Comparison of 2006 vs 2000 National Assessments  
RISKED, MEAN, UNDISCOVERED, TECHNICALLY RECOVERABLE OIL AND GAS**

AREA	OIL AND COND (BBO)			GAS (TCFG)			BOE (BBOE)		
	2000	2006	%DIFF	2000	2006	%DIFF	2000	2006	%DIFF
ALASKA OFFSHORE	24.86	26.61	+7.04	122.58	132.06	+7.73	46.72	50.11	+7.26
ARCTIC SUBREGION	22.49	23.75	+5.60	95.56	108.19	+13.22	39.54	43.00	+8.75
BERING SHELF SUBREGION	0.91	1.16	+27.47	18.80	15.70	-16.49	4.26	3.95	-7.28
PACIFIC MARGIN SUBREGION	1.46	1.70	+16.44	8.22	8.18	-0.49	2.92	3.16	+8.22

**ARCTIC SUBREGION**

CHUKCHI SHELF	15.46	15.38	-0.52	60.11	76.77	+27.72	26.21	29.04	+10.80
BEAUFORT SHELF	6.94	8.22	+18.44	32.07	27.65	-13.78	12.64	13.14	+3.96
HOPE BASIN	0.09	0.15	+66.67	3.38	3.77	+11.54	0.69	0.82	+18.84

**BERING SHELF SUBREGION**

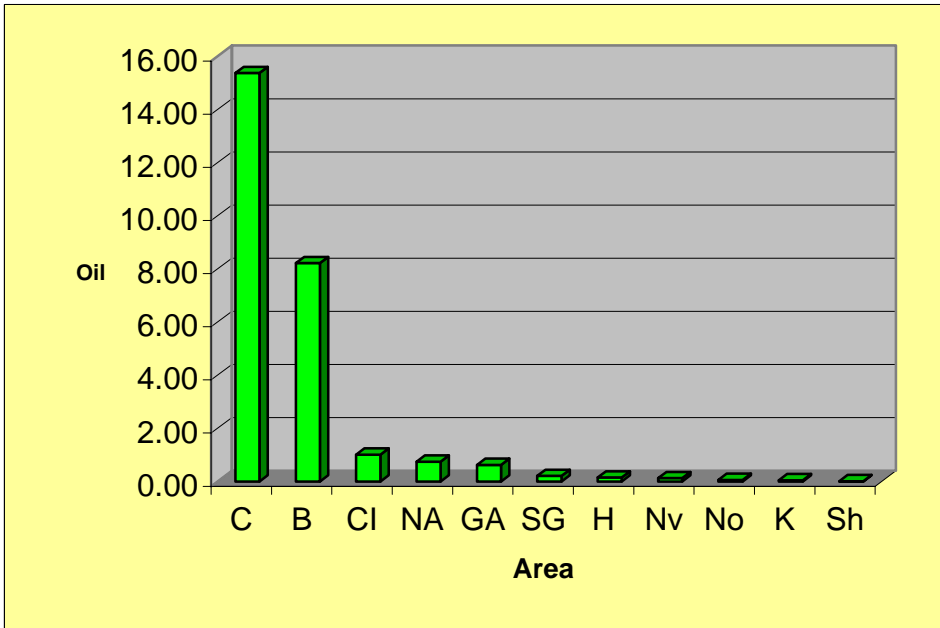
NAVARIN BASIN	0.50	0.13	-74.00	6.15	1.22	-80.16	1.59	0.35	-77.99
N. ALEUTIAN BASIN	0.23	0.75	+226.09	6.79	8.62	+26.95	1.44	2.29	+59.03
ST. GEORGE BASIN	0.13	0.21	+61.54	3.00	2.80	-6.67	0.67	0.71	+5.97
NORTON BASIN	0.05	0.06	+20.00	2.71	3.06	+12.92	0.53	0.60	+13.21

**PACIFIC MARGIN SUBREGION**

COOK INLET	0.76	1.01	+32.90	1.39	1.20	-13.67	1.01	1.23	+21.78
GULF OF ALASKA	0.63	0.63	0.00	4.18	4.65	+11.24	1.37	1.45	+5.84
SHUMAGIN and KODIAK	0.07	0.06	-14.29	2.65	2.33	-12.08	0.54	0.48	-11.11

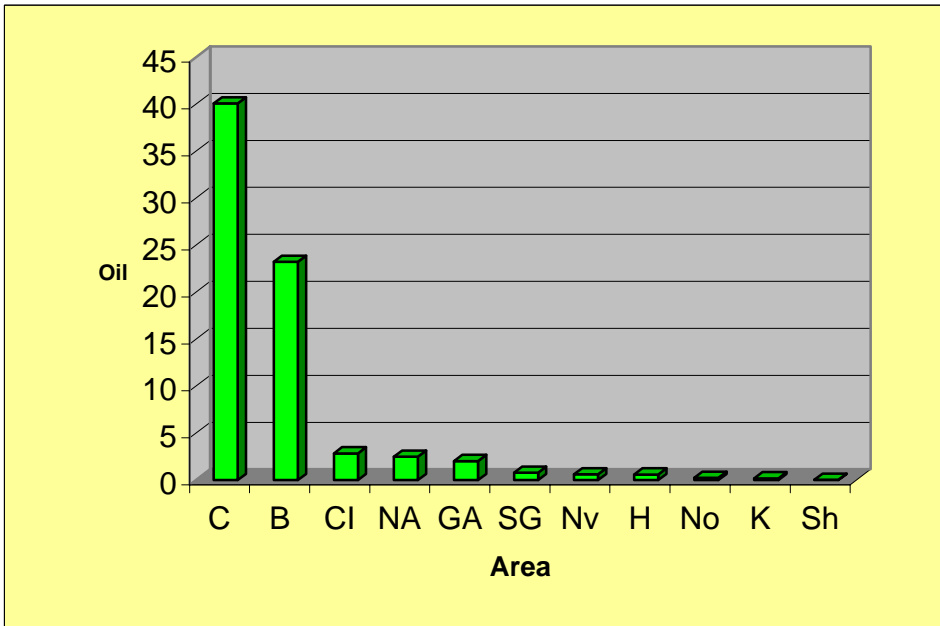
*BBO*, billions of barrels of oil and condensate; *TCFG*, trillions of cubic feet, gas; *BBOE*, total oil and gas in billions of energy-equivalent barrels; *MEAN*, resource quantities at the mean in cumulative probability distributions. Mean values for provinces may not sum to values shown for the subregions or region because of rounding. All liquid resources in Norton, Shumagin, and Kodiak areas are natural gas liquids that would only be recovered by natural gas production.

**MMS Alaska 2006 National Assessment  
Area Comparisons - OIL (mean - BBO)**  
Undiscovered, Technically Recoverable Resources



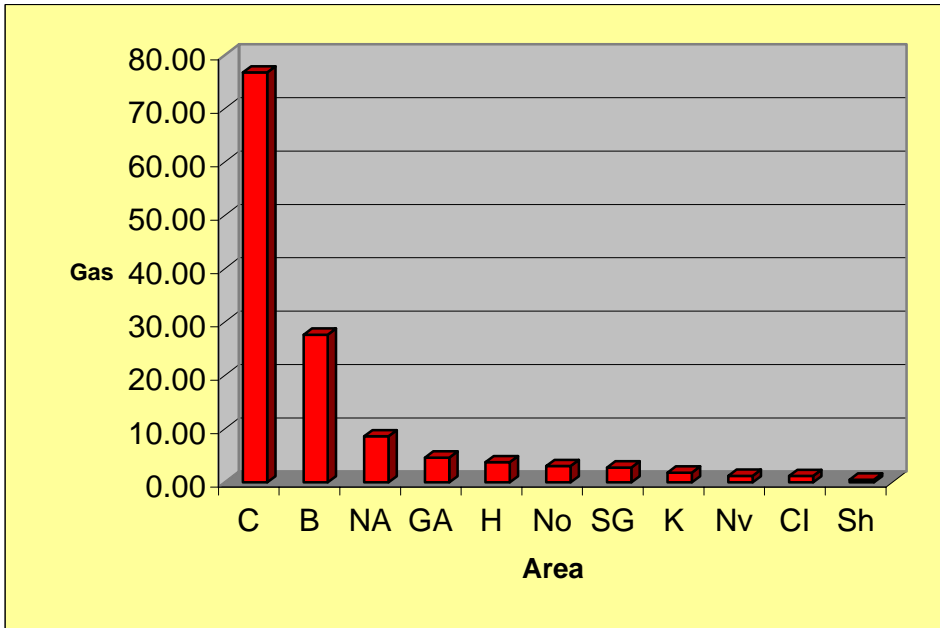
AREA		OIL mean (BBO)
Chukchi	C	15.38
Beaufort	B	8.22
Cook Inlet	CI	1.01
N.Aleutian	NA	0.75
GOA	GA	0.63
St George	SG	0.21
Hope	H	0.15
Navarin	Nv	0.13
Norton	No	0.06
Kodiak	K	0.05
Shumagin	Sh	0.01

**MMS Alaska 2006 National Assessment  
Area Comparisons - OIL 5% (high side potential - BBO)**  
Undiscovered, Technically Recoverable Resources



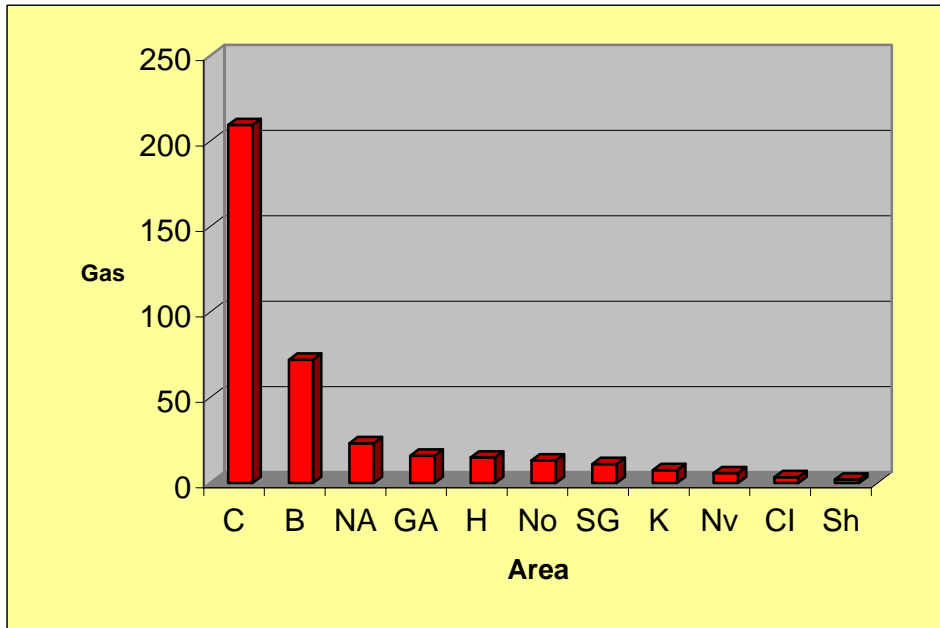
AREA		OIL 5% (BBO)
Chukchi	C	40.08
Beaufort	B	23.24
Cook Inlet	CI	2.85
N.Aleutian	NA	2.5
GOA	GA	2.04
St George	SG	0.79
Navarin	Nv	0.62
Hope	H	0.6
Norton	No	0.24
Kodiak	K	0.2
Shumagin	Sh	0.05

**MMS Alaska 2006 National Assessment  
Area Comparisons - GAS (mean - TCFG)**  
Undiscovered, Technically Recoverable Resources



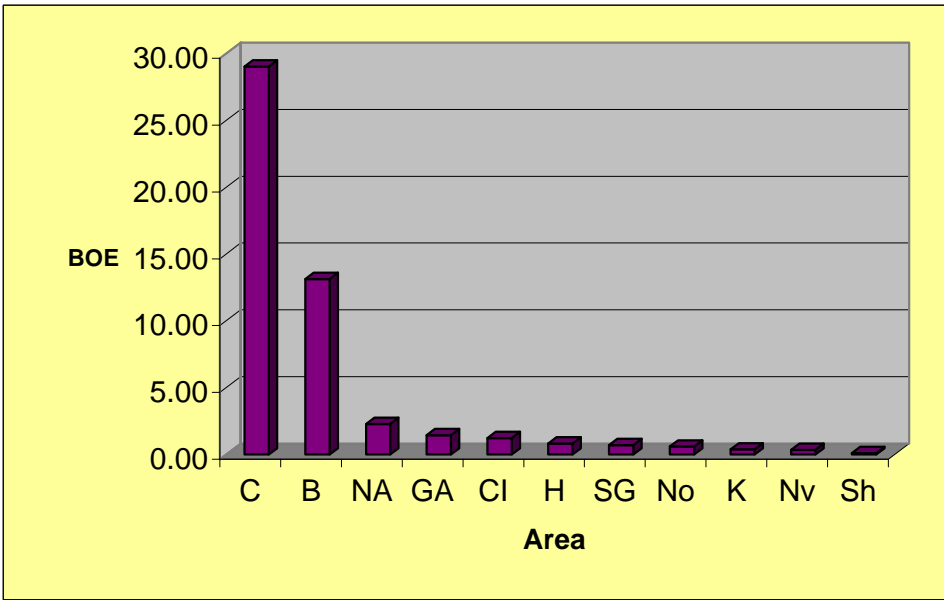
AREA		GAS mean (TCFG)
Chukchi	C	76.77
Beaufort	B	27.65
N.Aleutian	NA	8.62
GOA	GA	4.65
Hope	H	3.77
Norton	No	3.06
St George	SG	2.80
Kodiak	K	1.84
Navarin	Nv	1.22
Cook Inlet	CI	1.20
Shumagin	Sh	0.49

**MMS Alaska 2006 National Assessment  
Area Comparisons - GAS 5% (high side potential - TCFG)**  
Undiscovered, Technically Recoverable Resources



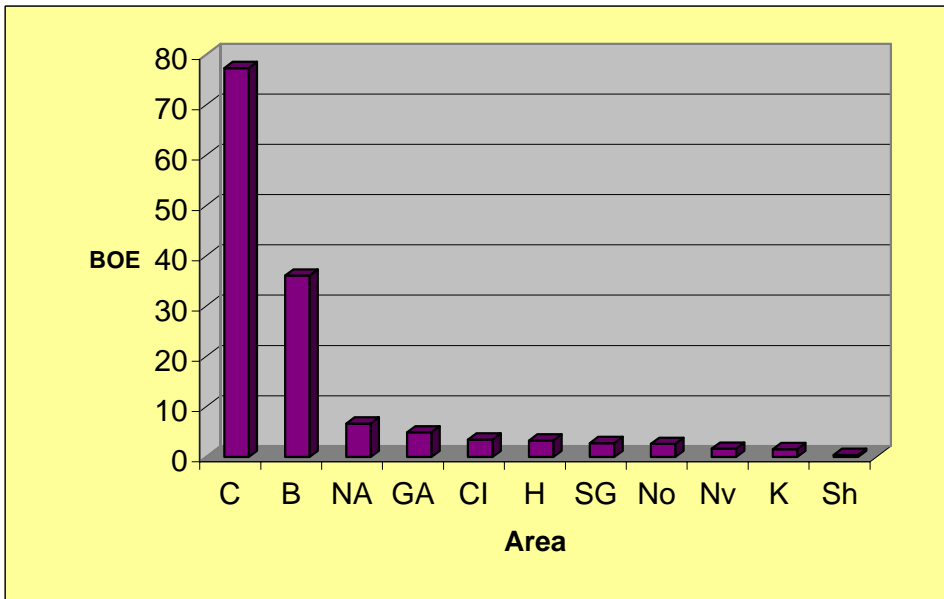
AREA		GAS 5% (TCFG)
Chukchi	C	209.53
Beaufort	B	72.18
N.Aleutian	NA	23.28
GOA	GA	16
Hope	H	14.98
Norton	No	13.27
St George	SG	11.15
Kodiak	K	7.62
Navarin	Nv	5.8
Cook Inlet	CI	3.48
Shumagin	Sh	2.04

**MMS Alaska 2006 National Assessment  
Area Comparisons - BOE (mean - BBOE)**  
Undiscovered, Technically Recoverable Resources



AREA		BOE mean (BBOE)
Chukchi	C	29.04
Beaufort	B	13.14
N.Aleutian	NA	2.29
GOA	GA	1.45
Cook Inlet	CI	1.23
Hope	H	0.82
St George	SG	0.71
Norton	No	0.60
Kodiak	K	0.38
Navarin	Nv	0.35
Shumagin	Sh	0.10

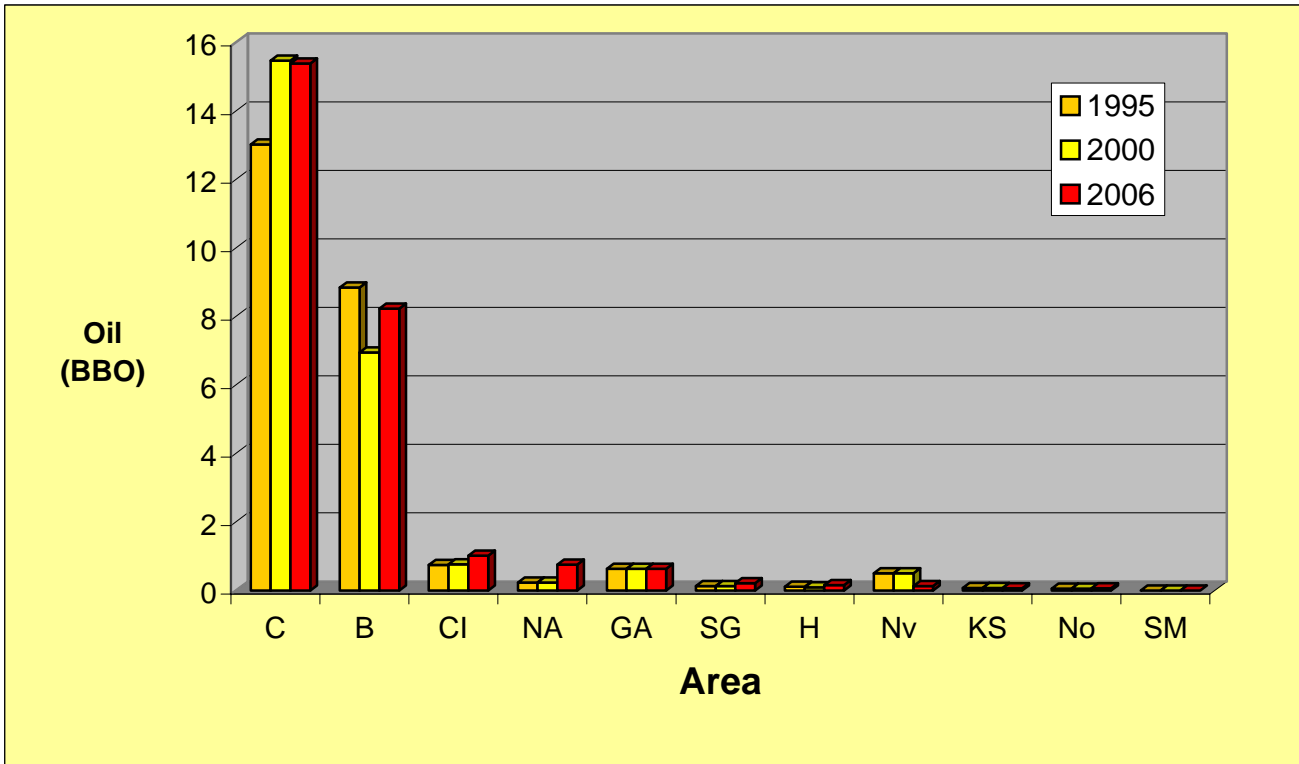
**MMS Alaska 2006 National Assessment  
Area Comparisons - BOE 5% (high side potential - BBOE)**  
Undiscovered, Technically Recoverable Resources



AREA		BOE 5% (BBOE)
Chukchi	C	77.36
Beaufort	B	36.08
N.Aleutian	NA	6.65
GOA	GA	4.89
Cook Inlet	CI	3.47
Hope	H	3.27
St George	SG	2.77
Norton	No	2.61
Navarin	Nv	1.65
Kodiak	K	1.55
Shumagin	Sh	0.42

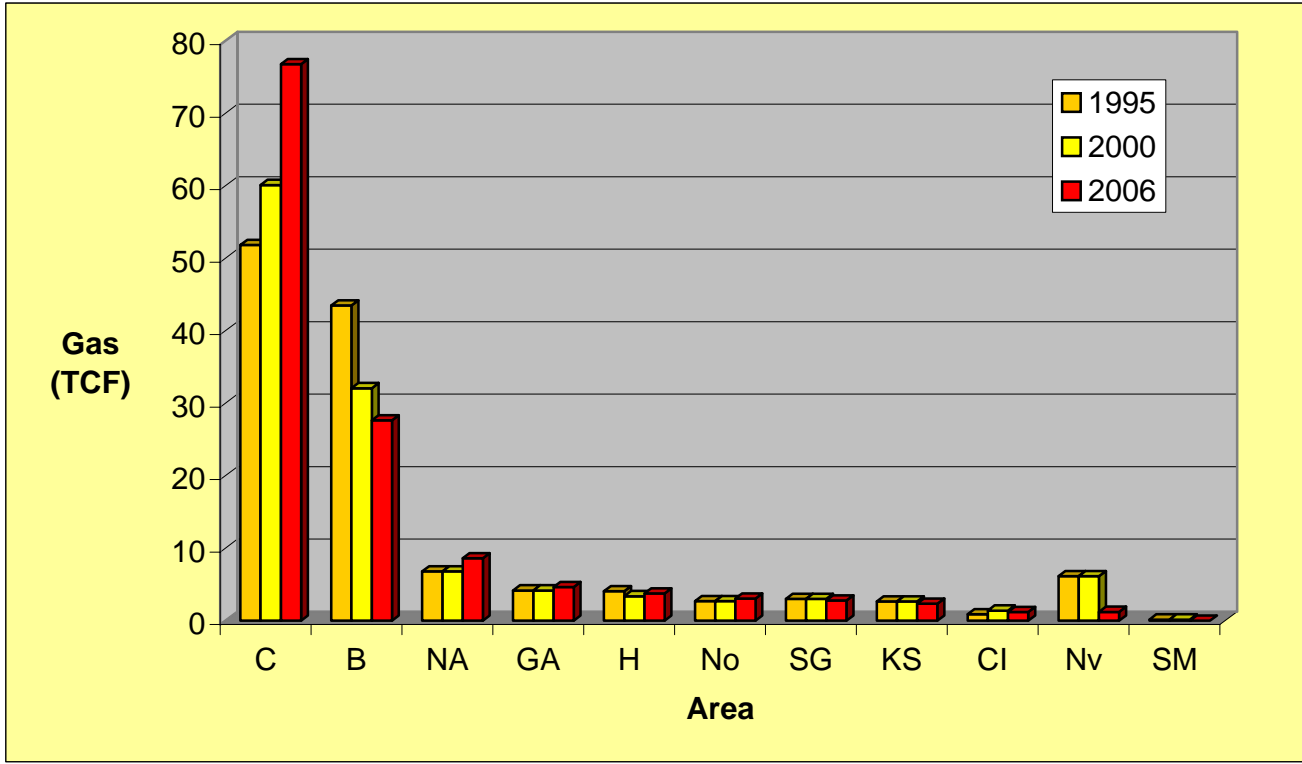


**Comparison of MMS Assessments, Oil, (BBO)**  
Undiscovered, Technically Recoverable Resources



AREA		1995	2000	2006	% DIFF 2000 to 2006
Chukchi	C	13.02	15.46	15.38	-0.52%
Beaufort	B	8.84	6.94	8.22	18.44%
Cook Inlet	CI	0.74	0.76	1.01	32.89%
N.Aleutian	NA	0.23	0.23	0.75	226.09%
GOA	GA	0.63	0.63	0.63	0.00%
St George	SG	0.13	0.13	0.21	61.54%
Hope	H	0.11	0.09	0.15	66.67%
Navarin	Nv	0.50	0.50	0.13	-74.00%
Kod/Shu	KS	0.07	0.07	0.06	-14.29%
Norton	No	0.05	0.05	0.06	20.00%
St Matt-Hall	SM	< 0.01	< 0.01	NA	NA
<b>Total Alaska</b>		<b>24.31</b>	<b>24.86</b>	<b>26.61</b>	<b>7.04%</b>

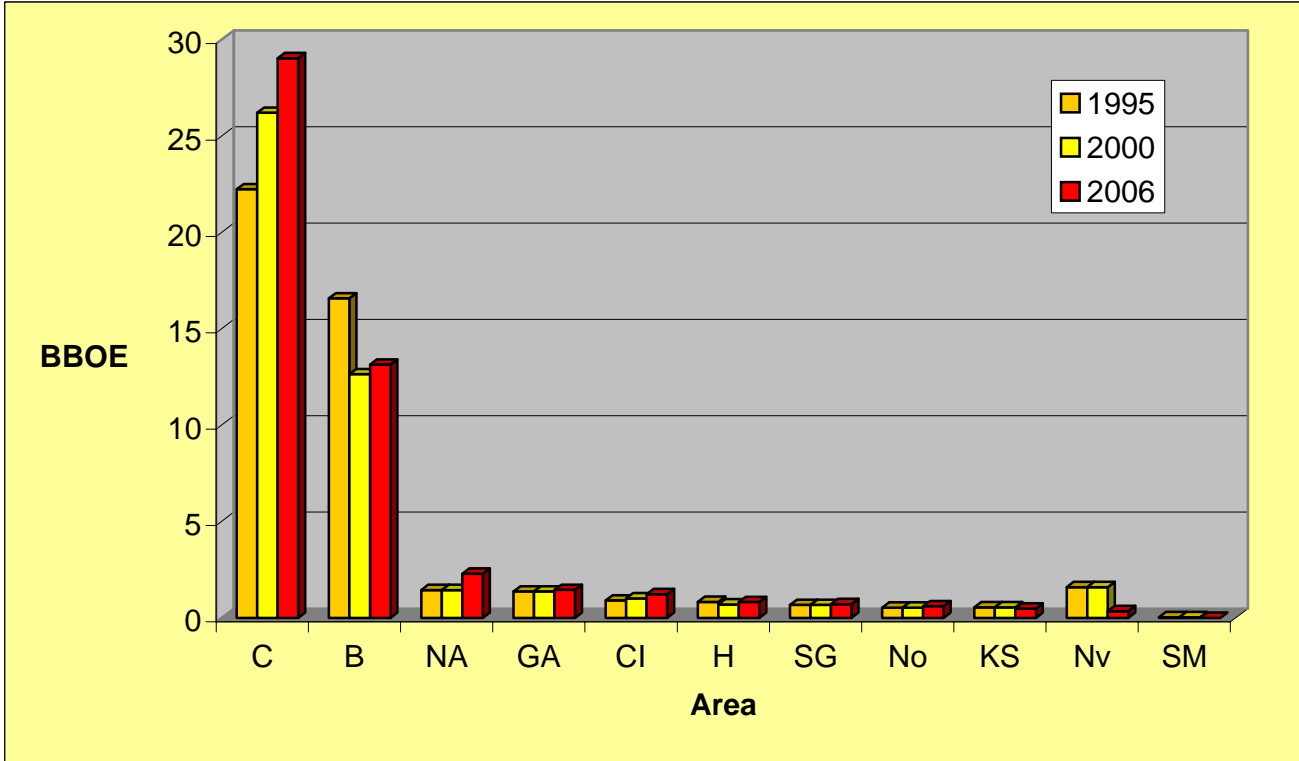
**Comparison of MMS Assessments, Gas (TCF)**  
Undiscovered, Technically Recoverable Resources



\*TCF-Trillion Cubic Feet Gas

AREA		1995	2000	2006	% DIFF 2000 to 2006
Chukchi	C	51.84	60.11	76.77	27.72%
Beaufort	B	43.5	32.07	27.65	-13.78%
N.Aleutian	NA	6.79	6.79	8.62	26.95%
GOA	GA	4.18	4.18	4.65	11.24%
Hope	H	4.06	3.38	3.77	11.54%
Norton	No	2.71	2.71	3.06	12.92%
St George	SG	3.00	3.00	2.80	-6.67%
Kod/Shu	KS	2.65	2.65	2.33	-12.08%
Cook Inlet	CI	0.89	1.39	1.20	-13.67%
Navarin	Nv	6.15	6.15	1.22	-80.16%
St Matt-Hall	SM	0.16	0.16	NA	NA
<b>Total Alaska</b>		<b>125.93</b>	<b>122.58</b>	<b>132.06</b>	<b>7.73%</b>

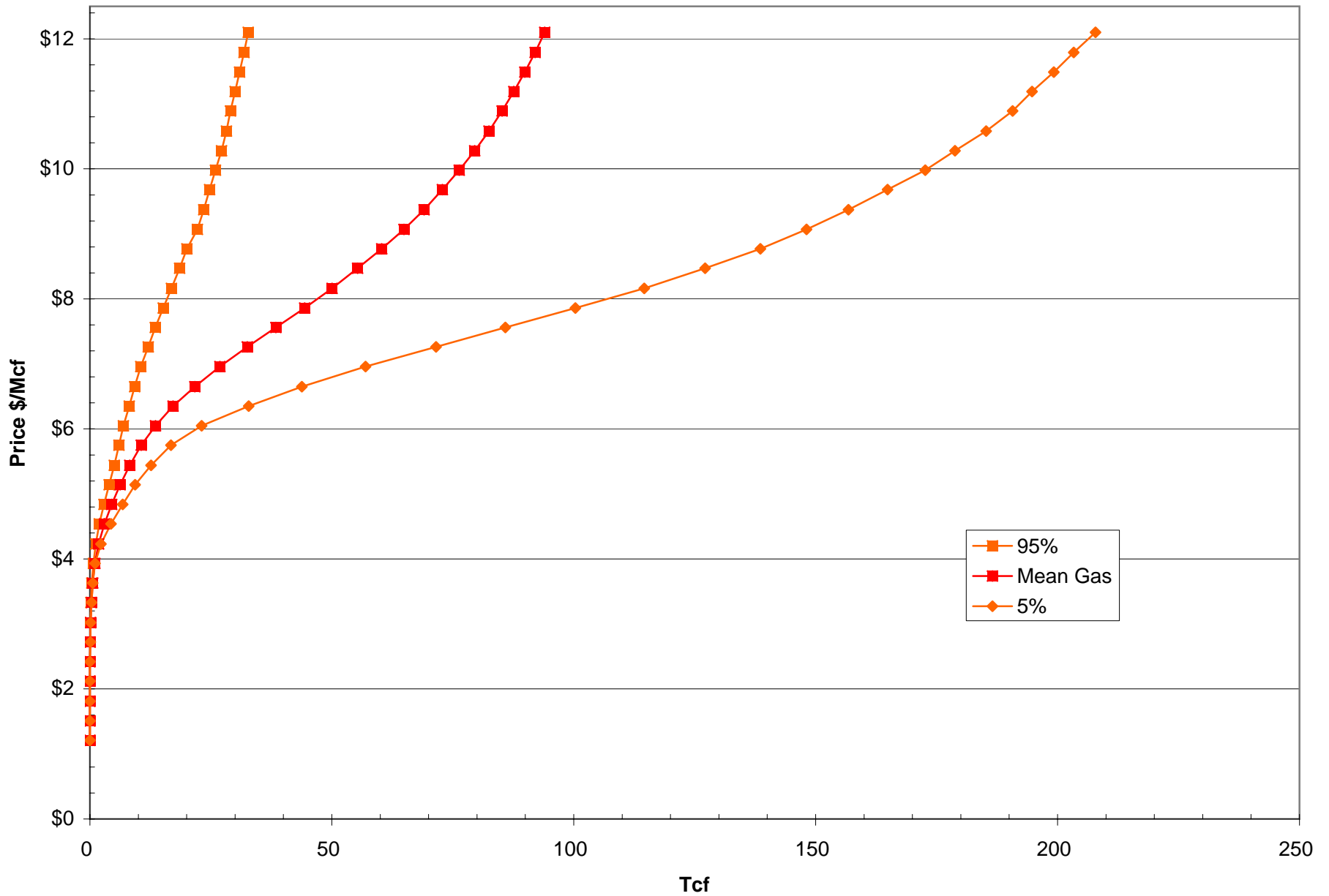
**Comparison of MMS Assessments, BBOE**  
Undiscovered, Technically Recoverable Resources



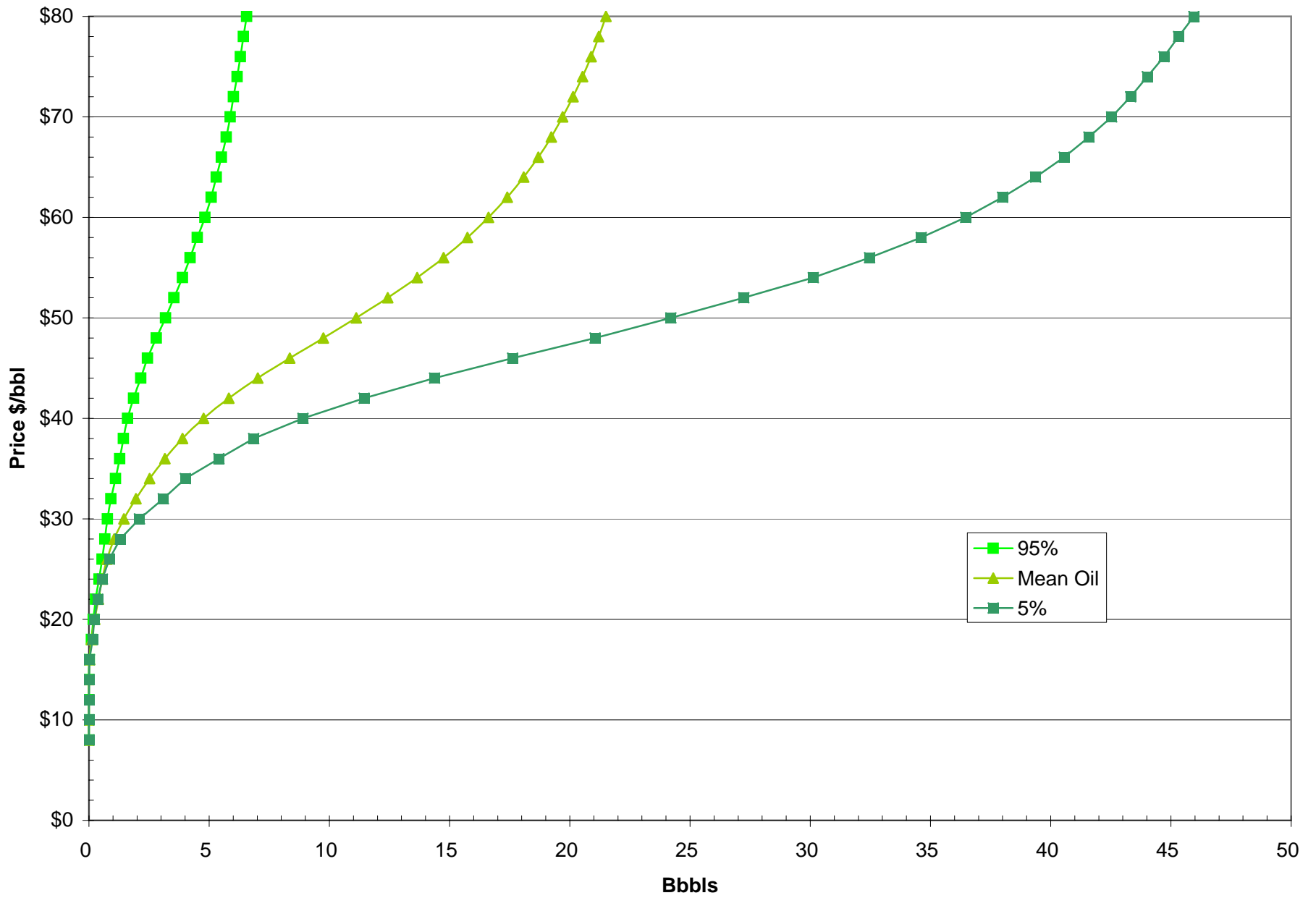
\*BBOE- Billion Barrels Oil Equivalent

AREA		1995	2000	2006	% DIFF 2000 to 2006
Chukchi	C	22.24	26.21	29.04	10.80%
Beaufort	B	16.58	12.64	13.14	3.96%
N.Aleutian	NA	1.44	1.44	2.29	59.03%
GOA	GA	1.37	1.37	1.45	5.84%
Cook Inlet	CI	0.9	1.01	1.23	21.78%
Hope	H	0.83	0.69	0.82	18.84%
St George	SG	0.67	0.67	0.71	5.97%
Norton	No	0.53	0.53	0.60	13.21%
Kod/Shu	KS	0.54	0.54	0.48	-11.11%
Navarin	Nv	1.59	1.59	0.35	-77.99%
St Matt-Hall	SM	0.03	0.03	NA	NA
<b>Total Alaska</b>		<b>46.72</b>	<b>46.72</b>	<b>50.11</b>	<b>7.26%</b>

Alaska Margin Gas Price/Supply Curve (95/Mean/5)

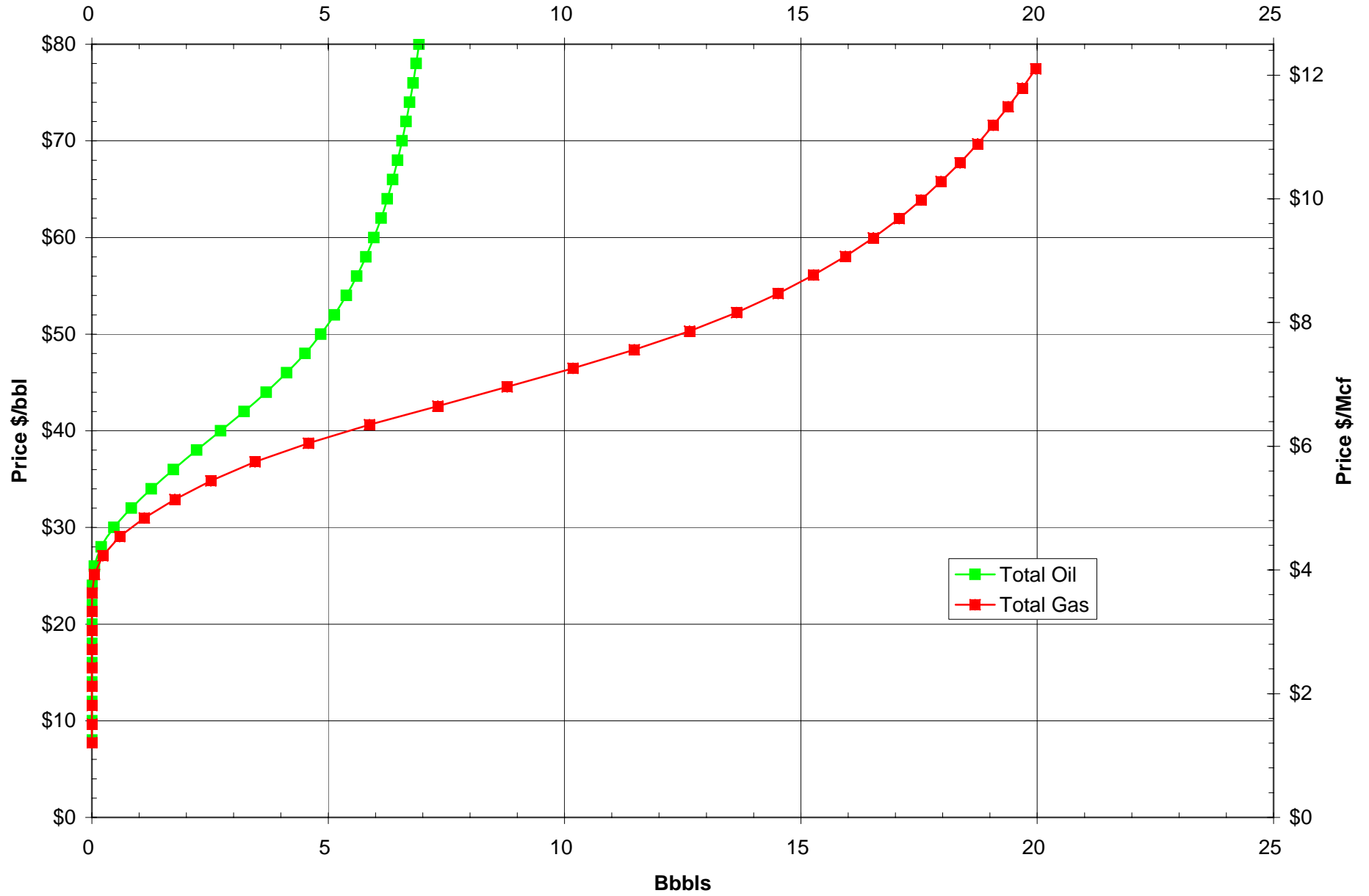


Alaska Margin Oil Price/Supply Curve (95/Mean/5)

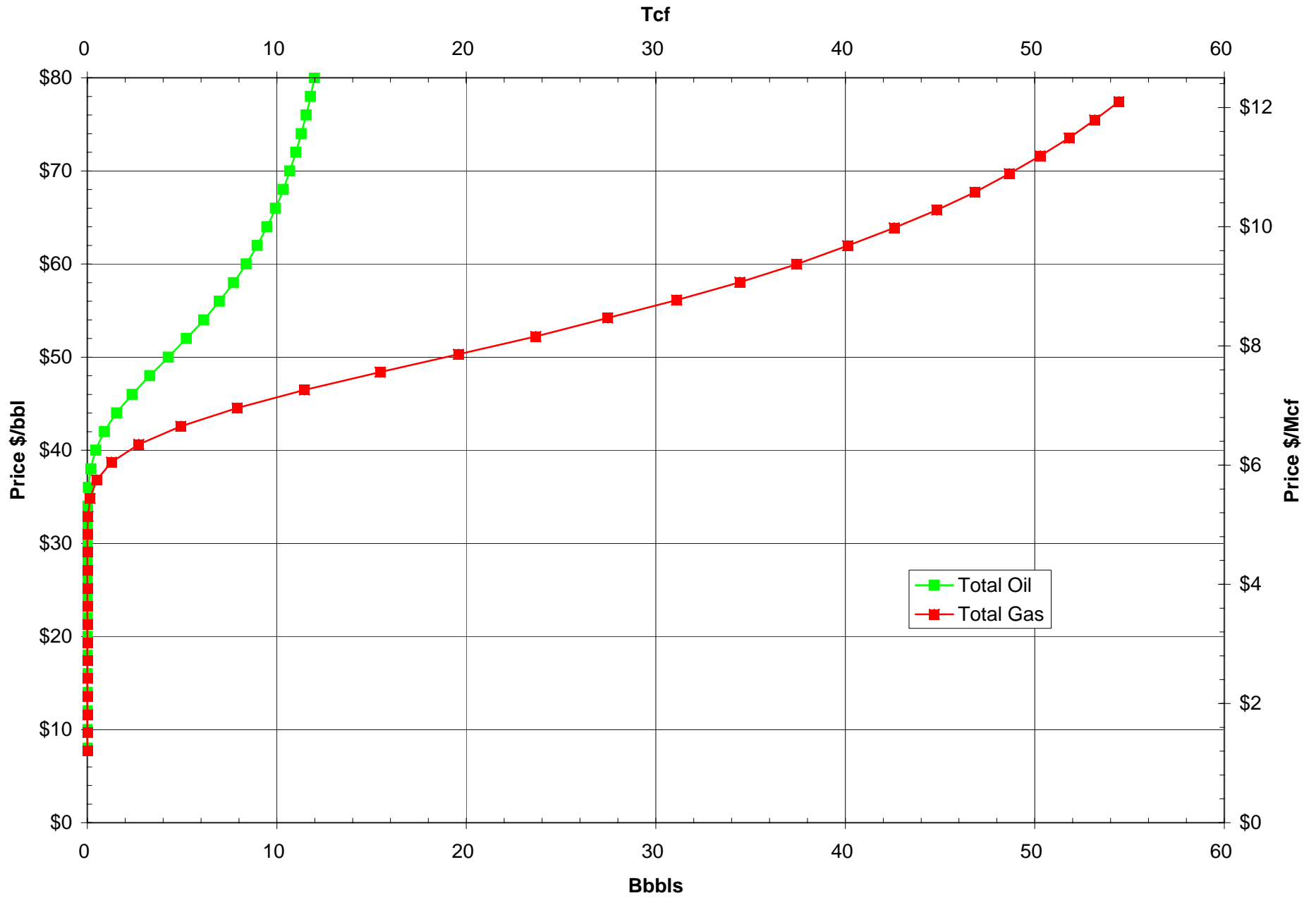


# Beaufort Price/Supply Curve (Mean)

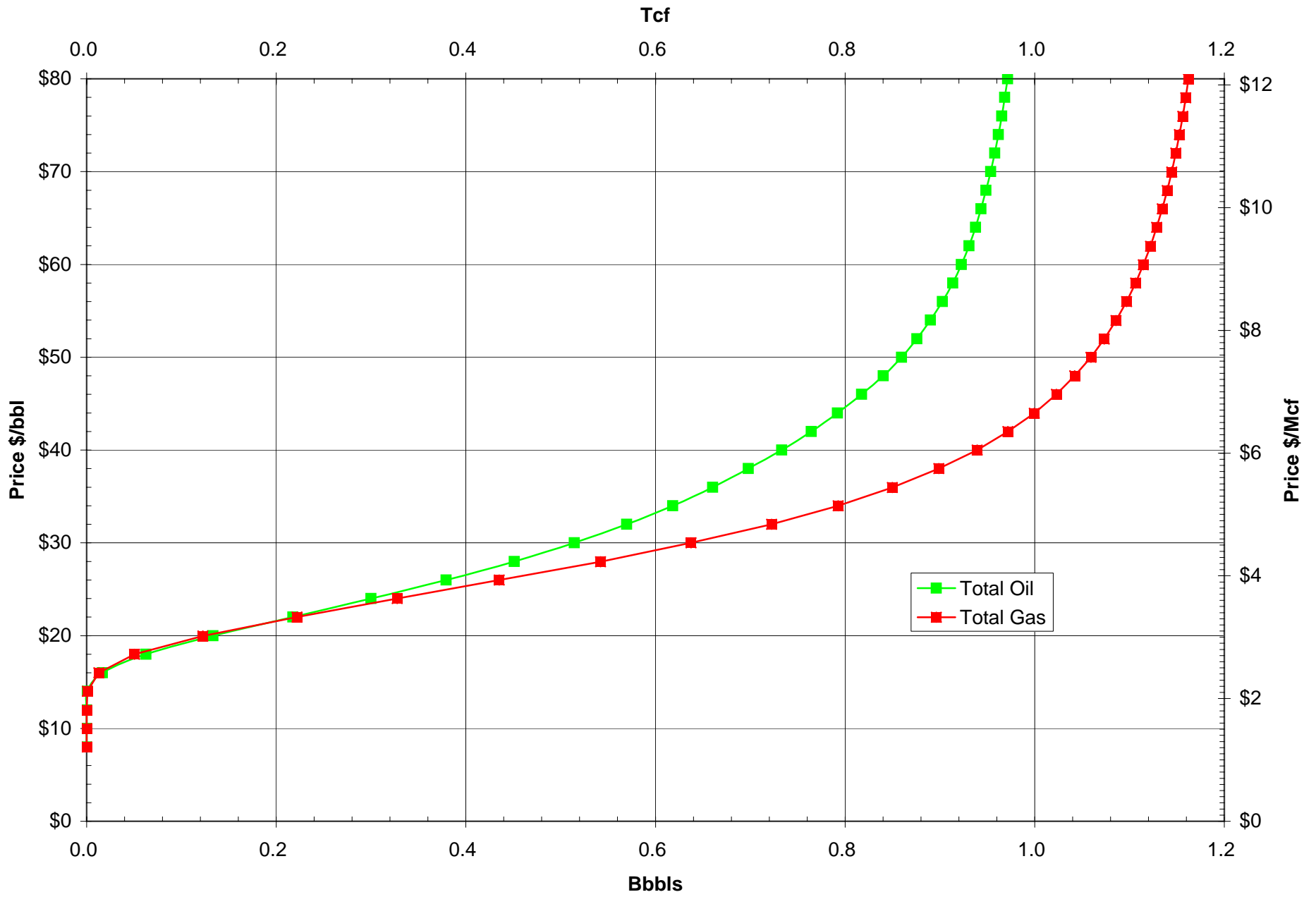
Tcf



### Chukchi Price/Supply Curve (Mean)



### Cook Inlet Price/Supply Curve (Mean)





# North Aleutian Price/Supply Curve (Mean)

Tcf

