

National Assessment of Oil and Gas Fact Sheet

Assessment of Undiscovered Oil and Gas Resources in Selected Rocky Mountain Provinces for the Energy Policy and Conservation Act of 2000 (EPCA 2000)

Using a geology-based assessment methodology, the U.S. Geological Survey estimated a mean of 183 trillion cubic feet of undiscovered natural gas, a mean of 2,350 million barrels of undiscovered oil, and a mean of 3,160 million barrels of undiscovered natural gas liquids in six provinces for EPCA 2000.

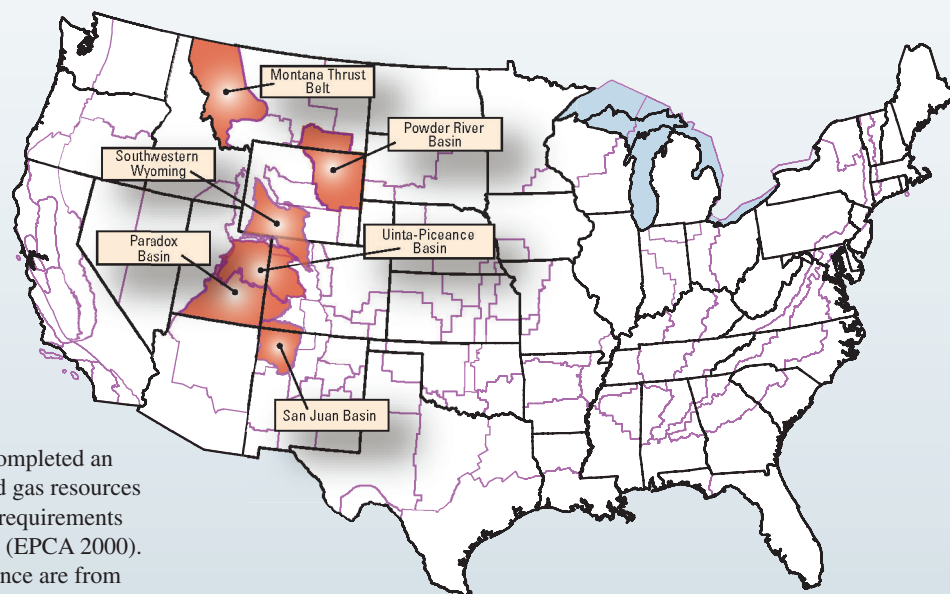


Figure 1. Location of six Energy Policy and Conservation Act of 2000 provinces.

Introduction

The U.S. Geological Survey (USGS) recently completed an assessment of the potential for undiscovered oil and gas resources of five of six priority provinces (fig. 1) to meet the requirements of the Energy Policy and Conservation Act of 2000 (EPCA 2000). The assessment results for the Paradox Basin Province are from Dolton and Fox (1996). The assessment of each province is based on the geologic elements of each Total Petroleum System defined in the province, including hydrocarbon source rocks (source-rock maturation, hydrocarbon generation and migration), reservoir rocks (sequence stratigraphy and petrophysical properties), and hydrocarbon traps (trap formation and timing). Using this geologic framework, the USGS quantitatively estimated the undiscovered oil and gas resources within each province (table 1).

Resource Summary

The USGS assessed undiscovered conventional oil and gas and continuous (unconventional) oil and gas. The USGS estimated a mean of 183 trillion cubic feet of gas (TCFG), a mean of 2,350 million barrels of oil (MMBO), and a mean of 3,160 million barrels of total natural gas liquids (MMBNGL) in six provinces. About 92 percent (169 TCFG) of the undiscovered gas resource is continuous, and about 8 percent (13 TCFG) is conventional (table 1). Of the 169 TCFG of undiscovered continuous gas at the mean, about 42 TCFG (or 25 percent) is estimated to be coal-bed gas. Volumes of undiscovered continuous gas resources are estimated to be far greater than undiscovered conventional gas resources in the Southwestern Wyoming, San Juan, Uinta-Piceance, and Powder River Provinces; only the Montana Thrust Belt Province and the Southwestern Wyoming Province contain significant undiscovered conventional gas resources (table 1).

Of the 2,350 MMB of undiscovered oil at the mean, about 837 MMB (36 percent) is estimated to be undiscovered continuous oil, and 1,513 MMB (64 percent) is undiscovered conventional oil. About 75 percent (1,131 MMBO) of the undiscovered conventional oil is in the Powder River Basin Province.

For Further Information

Supporting geologic studies of Total Petroleum Systems and Assessment Units, and reports on the methodology used in the EPCA 2000 province assessments, are in progress. Assessment results are available at the USGS Central Energy Team website:
<http://energy.cr.usgs.gov/oilgas/noga/>

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Reference Cited

Dolton, G.L., and Fox, J.E., 1996, Powder River Basin Province (033), in Gautier, D.L., Dolton, G.L., Takahashi, K.I., and Varnes, K.L., eds., 1995 National Assessment of Oil and Gas Resources—Results, methodology, and supporting data: U.S. Geological Survey Digital Data Series DDS-30, one CD-ROM, Release 2.

Table 1. Assessment results for six Energy Policy and Conservation Act of 2000 provinces.

[MMBO, million barrels of oil; BCFG, billion cubic feet of gas; MMBNGL, million barrels of natural gas liquids. Results shown are fully risked estimates. For gas fields, all liquids are included under the NGL (natural gas liquids) category. F95 denotes a 95-percent chance of at least the amount tabulated. Other fractiles are defined similarly. Fractiles are additive under the assumption of perfect positive correlation. Assessment results for the Paradox Basin are from Dolton and Fox (1996). Gray shading indicates not applicable]

Total Petroleum Systems (TPS) and Assessment Units (AU)	Field type	Total undiscovered resources											
		Oil (MMBO)				Gas (BCFG)				NGL (MMBNGL)			
		F95	F50	F5	Mean	F95	F50	F5	Mean	F95	F50	F5	Mean
Montana Thrust Belt Province													
Conventional Resources	Oil	11.80	68.60	191.50	80.90	25.00	137.50	408.80	167.10	1.00	5.40	16.70	6.60
	Gas					1,075.50	6,994.50	20,265.40	8,359.70	27.20	184.30	573.30	227.60
Continuous Resources	Oil	12.90	25.50	50.60	27.90	46.80	100.10	214.30	111.40	2.10	4.90	11.30	5.60
Paradox Basin Province													
Conventional Resources	Oil	17.40	137.30	458.50	233.30	40.71	332.05	1,110.50	570.57	4.25	34.44	115.36	59.47
	Gas					64.60	483.20	1,501.40	716.20	0.55	4.21	12.96	5.28
Continuous Resources	Oil	60.68	190.34	597.03	242.32	48.55	152.27	477.62	193.86	0.00	0.00	0.00	0.00
Powder River Basin Province													
Conventional Resources	Oil	80.70	629.70	2,513.80	1,131.20	57.73	446.51	1,679.05	739.22	3.75	28.67	95.43	44.75
	Gas					22.40	155.50	574.30	271.80	1.34	9.33	34.46	16.31
Continuous Resources	Oil	252.52	406.81	655.41	424.28	222.89	398.60	712.82	424.28	11.99	23.44	45.77	25.46
	Gas					8,585.99	14,335.40	23,903.15	15,051.13	0.00	0.00	0.00	0.00
San Juan Basin Province													
Conventional Resources	Oil	7.00	17.76	35.92	19.10	31.35	87.03	175.31	93.33	0.45	1.23	2.79	1.37
	Gas					27.21	66.21	135.49	71.82	0.93	2.34	5.14	2.60
Continuous Resources	Gas					41,015.03	49,929.85	61,488.02	50,419.45	91.52	139.56	213.68	144.40
Southwestern Wyoming Province													
Conventional Resources	Oil	7.30	22.60	66.40	27.80	20.60	59.80	164.90	72.00	1.00	3.10	9.20	3.90
	Gas					590.10	2,028.90	5,211.40	2,348.80	16.50	58.90	162.10	70.20
Continuous Resources	Oil	66.90	100.50	151.00	103.60	34.90	59.10	99.90	62.20	1.90	3.50	6.50	3.70
	Gas					52,574.00	79,075.70	121,731.00	82,169.10	1,275.60	2,326.10	4,335.20	2,503.90
Uinta-Piceance Province													
Conventional Resources	Oil	7.15	19.09	40.44	20.39	8.77	27.74	70.09	32.11	0.49	1.62	4.38	1.92
	Gas					59.01	162.31	366.71	181.15	0.93	2.67	6.28	3.01
Continuous Resources	Oil	24.83	37.57	56.84	38.78	35.72	60.74	103.29	63.99	2.23	4.17	7.79	4.48
	Gas					2,118.77	20,060.53	33,875.52	21,147.04	16.49	30.88	58.62	33.36
Total Conventional Resources													
		131.35	895.05	3,306.56	1,512.69	2,023.48	10,981.25	31,663.35	13,623.80	58.39	336.21	1,038.10	443.01
Total Continuous Resources													
		417.83	760.72	1,510.88	836.88	114,862.65	164,172.29	242,605.62	169,580.25	1,339.93	2,529.05	4,672.36	2,717.20
Total Undiscovered Oil and Gas Resources													
		549.18	1,655.77	4,817.44	2,349.57	116,886.13	175,153.54	274,268.97	183,204.05	1,458.32	2,865.26	5,710.46	3,160.21