

Marginal Oil and Gas: Fuel for Economic Growth

2001 Edition



IOGCC

A Publication of the Interstate Oil and Gas Compact Commission

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Marginal Oil and Gas: Fuel for Economic Growth

This edition of the Interstate Oil and Gas Compact Commission's Marginal Well report tells an exciting story. It is the story of a triumph of state regulatory policy. It is a story of government working with an essential domestic industry to encourage more oil production from old, tired wells.

A steady trend, chronicled by the IOGCC, saw marginal oil well production fall every year since 1985. Until 2000. Not only did domestic production for marginal oil wells increase for the first time in 15 years, the steady slide in the number of producing wells also was reversed. Total production from marginal wells, total number of wells, and average daily production for marginal wells all increased in the year 2000.

This is solid testament to the many efforts of producing state governments to assist this industry during the chaotic price collapse between 1997 and 1999.

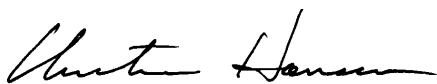
States responded to the price collapse by developing innovative programs, including new tax incentives, to assist producers in resurrecting low-volume wells known as stripper wells, while protecting the environment from those few wells which might leak.

Stripper oil and natural gas wells, in many cases only marginally profitable to operate, account for about 27 percent of the oil and 8 percent of the natural gas produced in the United States, excluding Alaska, Florida and federal offshore, which have no stripper well production.

The Interstate Oil and Gas Compact Commission (IOGCC) has documented production from stripper wells since 1941 and has drawn attention annually to their important contribution to the nation's economy.

States have encouraged domestic oil and natural gas production by maintaining programs that protect the public while allowing responsible owners to operate their wells in an efficient and profitable manner. Programs include orphan well plugging, landowner plugging grants, idle well adoption or tax incentives, which—in addition to typical financial assurance and enforcement activities—can address abandoned wells, some of which exist from pre-regulatory days. Examples can be found in two IOGCC publications, *Produce or Plug: The Dilemma over the Nation's Idle Oil and Natural Gas Wells* and *Investments in Energy Security: State Incentives to Maximize Oil and Natural Gas Recovery*.

Stripper oil and natural gas wells are a segment of the domestic petroleum industry often overlooked. As demand for natural gas continues to skyrocket and the United States continues to increase its heavy reliance on imported oil, these wells can help satisfy America's seemingly insatiable energy appetite.



Christine Hansen, Executive Director
Interstate Oil and Gas Compact Commission

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What is Marginal Oil?

Marginal oil is oil produced from wells that operate on the lower edge of profitability. Generally speaking, low-volume “stripper” wells — defined by the IOGCC as those wells producing 10 barrels of oil per day or less — fall into this category. The IOGCC has monitored the status of stripper wells in the United States since the 1940s, when our first stripper well surveys appeared.

Why all the concern about such small-volume wells? While each individual well contributes only a small amount of oil (2.16 barrels a day, on average), there are 411,793 of them in the United States. Combined, these stripper wells produced more than 326 million barrels of oil in 2000, 29 percent of the oil produced in the U.S. (excluding Alaska, Florida and federal offshore, which have no stripper well production).

Many states have programs that allow a well to temporarily stop production. These “idle” wells are not included in the abandoned well category of this report; only wells that have been permanently plugged are included in the IOGCC’s definition. Also not included in this study’s abandoned well figures are “orphaned” wells. These are wells that are not producing, have not been plugged, and whose owners are either insolvent or cannot be located. For more information about idled and orphaned wells, order a copy of the IOGCC study on these wells, *Produce or Plug: The Dilemma over the Nation’s Idle Oil and Natural Gas Wells*.

U. S. Stripper Oil Well Data – Past 10 Years

Year	Number of Stripper Oil Wells	Stripper Oil Production (M bbls)	Average Daily Production Per Well (bbls)	Pluggings/ Abandonments
1991	462,823	377,288	2.23	17,584
1992	453,277	368,410	2.23	16,211
1993	452,248	355,961	2.16	16,914
1994	442,500	339,930	2.10	17,896
1995	433,048	332,288	2.10	16,389
1996	428,842	323,468	2.06	16,674
1997#	420,674	322,090	2.10	15,172
1998#	406,380	316,870	2.14	13,912
1999#	410,680	315,514	2.10	11,227
2000	411,793	326,208	2.16	10,718

Revised.

U.S. State Rankings – Stripper Oil

	Number of Stripper Oil Wells	Production from Stripper Oil Wells (bbls)	Total 2000 Oil Production (Mbbbls)	Average Daily Production Per Well
1	Texas	Texas	Texas	Alabama
2	Oklahoma	Oklahoma	California	North Dakota
3	Kansas	California	Louisiana	Mississippi
4	Ohio	Kansas	Oklahoma	Utah
5	Kentucky	Louisiana	New Mexico	California
6	California	New Mexico	Wyoming	Wyoming
7	Louisiana	Wyoming	Kansas	Michigan
8	Illinois	Illinois	North Dakota	Nebraska
9	Pennsylvania	Ohio	Mississippi	Texas
10	New Mexico	Colorado	Colorado	Arizona
11	Wyoming	Michigan	Utah	New Mexico
12	West Virginia	Arkansas	Montana	Arkansas
13	Colorado	Kentucky	Illinois	South Dakota
14	Indiana	Pennsylvania	Michigan	Oklahoma
15	Arkansas	North Dakota	Arkansas	Montana
16	New York	Indiana	Ohio	Louisiana
17	Michigan	Montana	Alabama	Kansas
18	Montana	Nebraska	Nebraska	Tennessee
19	Nebraska	Utah	Kentucky	Illinois
20	North Dakota	West Virginia	Pennsylvania	Colorado
21	Utah	Alabama	Indiana	Indiana
22	Alabama	Mississippi	West Virginia	Missouri
23	Mississippi	Tennessee	South Dakota	Virginia
24	Missouri	New York	Tennessee	Ohio
25	Tennessee	Missouri	New York	West Virginia
26	Arizona	Arizona	Missouri	Pennsylvania
27	South Dakota	South Dakota	Arizona	Kentucky
28	Virginia	Virginia	Virginia	New York

NOTE: These rankings do not include Alaska, Florida and federal offshore which do not have any production from stripper wells.

Secondary Recovery of Stripper Oil

The term “secondary recovery” encompasses a variety of techniques designed to increase oil recovery from an existing well. Pressure in an underground formation pushes oil upward, allowing it to be extracted. In older wells and mature fields, this pressure has diminished over time, decreasing the flow of oil. Secondary recovery techniques permit the injection of a substance, such as water or gas, into the formation. This increases the pressure and encourages the oil to flow more easily.

Secondary Recovery of Stripper Oil As of January 1, 2001

State	Estimated Secondary Oil Produced from Stripper Wells (Mbbls)	Percent of Total Stripper Production from Secondary
Alabama	1,000	87.4
Colorado	407	10.4
Kansas	12,231	48.8
Kentucky	1,750	73.8
Missouri	101	95.3
Nebraska	1,202	65.6
New Mexico	5,333	41.6
New York	18	10.0
Ohio	59	01.1
Oklahoma	25,985	51.9
South Dakota	10	63.3
West Virginia	360	27.7

National Stripper Oil Well Survey As of January 1, 2001

State	Number of Stripper Oil Wells	Production from Stripper Oil Wells (bbls)	Oil Wells Plugged and Abandoned	Average Daily Production Per Well
Alabama	627	1,143,718	6	4.99
Arizona	20	21,083	0	2.88
Arkansas@	3,286	3,211,423	116	2.67
California	22,244	31,499,570	1,615	3.87
Colorado	7,618	3,913,368	124	1.40
Illinois	*18,491	*10,450,000	647	1.54
Indiana	5,049	2,052,000	72	1.11
Kansas	35,359	25,062,955	614	1.94
Kentucky	24,585	2,372,072	232	0.26
Louisiana	21,091	15,286,171	*605	1.98
Michigan	*2,550	3,214,363	139	3.44
Mississippi	376	576,252	91	4.19
Missouri	327	106,057	12	0.89
Montana	2,476	2,035,583	178	2.25
Nebraska	1,483	1,831,497	67	3.37
New Mexico	12,642	12,823,174	121	2.77
New York	2,638	180,591	66	0.19
North Dakota	1,357	2,112,883	35	4.25
Ohio	28,918	5,378,100	211	0.51
Oklahoma	60,120	50,068,248	922	2.28
Pennsylvania	*15,170	*2,223,500	*300	0.40
South Dakota	17	15,867	0	2.55
Tennessee	301	189,156	*76	1.72
Texas	126,028	135,151,385	4,255	2.93
Utah	943	1,418,314	16	4.11
Virginia	15	4,599	0	0.84
West Virginia	8,450	1,300,000	78	0.42
Wyoming	9,612	12,565,818	120	3.57
TOTALS	411,793	326,207,747	10,718	2.16

* Estimated.

@ Arkansas stripper oil well production for the year 1999 corrected to reflect 3,024,751 barrels.

National Stripper Oil Well Survey As of January 1, 2001

State	Total 2000 Oil Production (Mbbls)	Stripper Oil Well Reserves		Total
		Primary	Secondary (Mbbls)	
Alabama	6,020	1,099	1,144	2,243
Arizona	57	132	0	132
Arkansas	7,432	52,190	42,700	94,890
California	271,496	71,319	58,351	129,670
Colorado	18,821	20,379	13,586	33,965
Illinois	10,840	15,639	17,216	32,855
Indiana	2,052	8,397	8,314	16,711
Kansas	34,402	59,010	57,762	116,772
Kentucky	2,874	4,102	8,025	12,127
Louisiana@	74,373	65,638	63,064	128,702
Michigan	8,278	14,628	14,056	28,684
Mississippi	20,092	6,648	5,440	12,088
Missouri	106	1,373	1,429	2,802
Montana	15,138	29,318	40,486	69,804
Nebraska	2,955	3,633	6,930	10,563
New Mexico	61,304	20,603	16,857	37,460
New York	181	706	77	783
North Dakota	32,715	27,791	26,896	54,687
Ohio	6,574	35,582	118	35,700
Oklahoma	66,313	100,276	108,120	208,396
Pennsylvania#	*2,224	10,210	15,970	26,180
South Dakota	1,171	126	116	242
Tennessee	346	178	109	287
Texas	400,341	542,655	583,187	1,125,842
Utah	15,636	9,626	9,420	19,046
Virginia	12	59	47	106
West Virginia	1,300	6,281	4,516	10,797
Wyoming	60,607	66,362	58,850	125,212
TOTALS	1,123,660 +	1,173,960	1,162,786	2,336,746 +

* Estimated.

@ Total Louisiana crude oil production for 1999 revised to 78,929 M bbls.

Total Pennsylvania crude oil production for 1997 revised to 2,173 M bbls; 1998 revised to 2,027 M bbls; and 1999 revised to 2,138 M bbls.

+ These figures represent only states with stripper oil production and do not include production figures from states without stripper oil production.

Comparative Number of Stripper Oil Wells and Stripper Oil Well Production 1997–1998

State	1997		1998	
	Number of Stripper Wells	Production from Stripper Wells (bbls)	Number of Stripper Wells	Production from Stripper Wells (bbls)
Alabama	620	1,185,294	643	1,425,271
Arizona	23	39,530	22	28,371
Arkansas	3,730	3,286,878	3,515	3,026,268
California	22,451	33,834,839	23,058	33,979,973
Colorado	5,757	5,262,569	6,229	5,449,701
Illinois	30,224	14,808,329	19,532	12,933,500
Indiana	5,213	2,563,704	5,126	2,209,811
Kansas	40,504	30,675,301	40,159	26,225,073
Kentucky	20,084	2,413,662	19,883	2,429,899
Louisiana	18,034	10,597,984	*17,900	*10,500,000
Michigan	*2,896	3,495,632	*2,760	3,204,447
Mississippi	452	593,449	413	501,123
Missouri	344	114,058	293	92,805
Montana	2,417	1,957,252	2,478	2,063,156
Nebraska	*1,699	2,366,278	1,646	2,113,098
New Mexico	12,239	12,585,715	12,379	12,034,073
New York	3,278	276,330	3,041	217,154
North Dakota	1,399	2,197,113	1,338	1,979,819
Ohio	28,973	6,713,330	28,955	5,077,539
Oklahoma	67,498	55,621,841	66,444	49,664,796
Pennsylvania	#16,122	#2,172,775	#13,600	#2,027,230
South Dakota	21	29,124	17	14,183
Tennessee	368	143,126	387	237,721
Texas	118,693	118,709,553	120,090	128,822,329
Utah	821	1,167,482	838	1,113,425
Virginia	17	4,650	17	3,889
West Virginia	11,312	1,700,000	8,464	1,450,000
Wyoming	5,485	8,972,116	7,153	8,045,632
TOTALS	#420,674	#323,487,914	#406,380	#316,870,286

* *Estimated.*

Revised.

Comparative Number of Stripper Oil Wells and Stripper Oil Well Production 1999–2000

State	1999		2000	
	Number of Stripper Wells	Production from Stripper Wells (bbls)	Number of Stripper Wells	Production from Stripper Wells (bbls)
Alabama	623	1,198,666	627	1,143,718
Arizona	20	19,813	20	21,083
Arkansas**	3,803	#3,024,751	3,286	3,211,423
California	21,541	29,204,360	22,244	31,499,570
Colorado	7,739	4,133,362	7,618	3,913,368
Illinois	19,016	11,675,350	*18,491	*10,450,000
Indiana	5,101	1,997,991	5,049	2,052,000
Kansas	39,172	27,654,934	35,359	25,062,955
Kentucky	23,140	2,287,088	24,585	2,372,072
Louisiana	21,269	15,820,924	21,091	15,286,171
Michigan	1,993	1,398,712	*2,550	3,214,363
Mississippi	426	459,574	376	576,252
Missouri	299	91,487	327	106,057
Montana	2,325	1,834,431	2,476	2,035,583
Nebraska	1,498	1,828,293	1,483	1,831,497
New Mexico	12,057	12,005,005	12,642	12,823,174
New York	3,170	190,933	2,638	180,591
North Dakota	1,286	1,841,780	1,357	2,112,883
Ohio	28,960	4,269,317	28,918	5,378,100
Oklahoma	65,730	50,039,671	60,120	50,068,248
Pennsylvania	#14,450	#2,138,000	*15,170	*2,223,500
South Dakota	18	16,858	17	15,867
Tennessee	*392	*246,054	301	189,156
Texas	120,074	131,129,272	126,028	135,151,385
Utah	898	1,302,804	943	1,418,314
Virginia	13	3,991	15	4,599
West Virginia	8,434	1,390,000	8,450	1,300,000
Wyoming	7,233	8,310,862	9,612	12,565,818
TOTALS	#410,680	#315,514,283	411,793	326,207,747

* *Estimated.*

Revised.

** *Stripper oil production for Arkansas corrected to reflect 3,024,751 instead of 1,580,574 bbls. for 1999.*

What is Marginal Gas?

Marginal gas is natural gas produced from a well that operates on the lower edge of profitability. Generally speaking, these are low-volume “stripper” gas wells — defined by the IOGCC as a natural gas well that produces 60 thousand cubic feet (Mcf) per day or less.

Stripper gas wells represent about 8 percent of the total natural gas produced in the United States (excluding Alaska, Florida and federal offshore, which have no stripper well production).

The table below indicates the status of stripper gas production during calendar years 1993 through 2000. The number of gas wells in the stripper category has steadily increased during the past five years. Total production from stripper gas wells also has steadily increased, while average daily production remained virtually the same.

As with stripper oil wells, “abandoned” natural gas wells are those that have been permanently plugged. Although the total number of pluggings decreased slightly in 2000, over 3,500 natural gas wells were plugged. This is significant because demand for natural gas is on the rise. According to a 1999 study conducted by the National Petroleum Council, natural gas demand is likely to increase to 29 trillion cubic feet (Tcf) in 2010 and top 31 Tcf in 2015.

Climate change concerns also are expected to significantly increase future demand for natural gas as a transportation and home heating fuel (Source: U.S. Department of Energy). Currently, two-thirds of new homes built utilize natural gas heat (Source: U.S. Department of Commerce, Bureau of the Census).

Globally, projections show natural gas usage is projected to grow faster than any other primary energy source — 3.2 percent per year compared to about 2 percent for oil and coal. Much of the increase in gas usage will fuel electricity generation, particularly in industrialized countries where natural gas can replace other fossil fuels used for this purpose (Source: Energy Information Administration).

U.S. Stripper Natural Gas Well Data — Past 8 Years

Year	Number of Stripper Gas Wells	Stripper Gas Production (Mcf)	Pluggings/ Abandonments	Average Daily Production Per Well (Mcf)
1993	160,581	1,026,238,697	3,499	17.5
1994	159,369	940,420,777	3,163	16.2
1995	159,669	925,563,034	3,189	15.9
1996	168,702	986,676,219	4,671	16.0
1997#	189,756	1,042,153,002	4,671	15.0
1998#	199,745	1,104,683,975	4,203	15.2
1999#	207,766	1,138,979,506	3,546	15.3
2000	223,707	1,260,653,344	3,504	15.4

Revised.

U.S. State Rankings – Stripper Natural Gas

	Number of Stripper Natural Gas Wells	Production from Stripper Natural Gas Wells (Mcf)	Total 2000 Natural Gas Production (Mcf)	Average Daily Production Per Well
1	West Virginia	Texas	Texas	Virginia
2	Pennsylvania	West Virginia	Oklahoma	Michigan
3	Ohio	Pennsylvania	New Mexico	Kansas
4	Texas	Oklahoma	Louisiana	Oklahoma
5	Kentucky	Kansas	Wyoming	Alabama
6	Oklahoma	New Mexico	Colorado	Utah
7	Colorado	Ohio	Nebraska	Arkansas
8	Louisiana	Kentucky	Kansas	New Mexico
9	Kansas	Colorado	Alabama	South Dakota
10	New Mexico	Michigan	Utah	Texas
11	Wyoming	Wyoming	West Virginia	Arizona
12	New York	Louisiana	Michigan	Nebraska
13	Montana	Montana	Arkansas	California
14	Michigan	Arkansas	Pennsylvania	Montana
15	Arkansas	Alabama	Mississippi	West Virginia
16	Indiana	New York	Ohio	Colorado
17	Alabama	Utah	California	Tennessee
18	Utah	California	Kentucky	North Dakota
19	Mississippi	Virginia	Virginia	Kentucky
20	California	Mississippi	Montana	Maryland
21	Tennessee	Tennessee	New York	Mississippi
22	Virginia	Indiana	North Dakota	Pennsylvania
23	Illinois	Nebraska	Tennessee	Wyoming
24	Nebraska	South Dakota	Indiana	Louisiana
25	North Dakota	North Dakota	South Dakota	Ohio
26	South Dakota	Illinois	Arizona	New York
27	Maryland	Arizona	Illinois	Illinois
28	Arizona	Maryland	Maryland	Indiana

NOTE: These rankings do not include Alaska, Florida and federal offshore which do not have any production from stripper wells.

National Stripper Natural Gas Well Survey As of January 1, 2001

State	Number of Stripper Gas Wells	Production from Stripper Gas Wells (Mcf)	Gas Wells Plugged and Abandoned	Average Daily Production Per Well (Mcf)	Total 2000 Gas Production (MMcf)
Alabama	**1,416	**14,389,992	**54	27.8	**396,979
Arizona	5	39,937	0	21.8	368
Arkansas	1,609	14,926,696	26	25.3	157,369
California	369	2,832,541	32	21.0	87,077
Colorado	10,196	57,973,752	54	15.5	1,102,297
Illinois	101	88,000	0	2.4	88
Indiana	1,502	829,000	8	1.5	829
Kansas	8,701	94,148,749	230	29.6	530,381
Kentucky	13,855	72,477,105	78	14.3	81,545
Louisiana#	9,645	*26,899,000	*328	7.6	1,301,723
Maryland	7	34,036	0	13.2	34
Michigan	3,165	41,586,990	27	36.0	218,800
Mississippi	449	1,652,289	37	10.1	113,522
Montana	3,752	24,970,232	24	18.1	71,108
Nebraska	94	746,111	0	21.7	860,583
New Mexico	8,534	77,671,921	102	24.9	1,441,488
New York	5,446	11,091,622	28	5.6	16,802
North Dakota	63	347,476	43	15.1	12,981
Ohio	33,352	74,484,000	387	6.1	98,551
Oklahoma	11,554	120,014,250	325	28.4	1,481,840
Pennsylvania@	*35,337	*125,191,000	*120	9.7	149,750
South Dakota	54	460,942	0	23.3	648
Tennessee	191	1,065,860	*62	15.3	1,154
Texas	29,302	238,351,492	1,231	22.2	4,804,960
Utah	626	6,016,921	20	26.2	244,826
Virginia	133	2,053,579	0	42.2	71,545
West Virginia	36,816	220,000,000	236	16.3	220,000
Wyoming	7,433	30,309,851	52	11.1	1,282,918
TOTALS	223,707	1,260,653,344	3,504	15.4	14,750,166+

* Estimated.

** Includes coalbed methane gas fields.

Total 1999 natural gas production from wells classified as gas wells in Louisiana revised to reflect 1,302,903 MMcf.

@ Total 1997 natural gas production from wells classified as gas wells in Pennsylvania revised to reflect 139,739 MMcf; 1998 revised to reflect 142,160 MMcf; and 1999 revised to reflect 139,949 MMcf.

+ Represents only states with stripper natural gas production; does not include production figures from states without stripper natural gas production.

Comparative Number of Stripper Gas Wells and Stripper Gas Well Production 1997–1998

State	1997		1998	
	Number of Stripper Wells	Production From Stripper Wells (Mcf)	Number of Stripper Wells	Production From Stripper Wells (Mcf)
Alabama	167	1,824,548	181	1,801,454
Arizona	2	4,264	4	4,177
Arkansas	1,295	12,858,315	1,362	13,017,626
California	407	3,413,849	371	3,252,540
Colorado	2,082	35,093,812	5,555	55,797,280
Illinois	#101	88,000	#101	88,000
Indiana	1,458	526,322	1,479	615,132
Kansas	3,178	41,002,429	3,314	40,393,725
Kentucky	13,825	70,697,636	14,126	72,765,274
Louisiana	8,403	*23,500,000	*8,500	*23,300,000
Maryland	7	19,438	13	66,700
Michigan	1,926	26,338,144	2,242	29,467,850
Mississippi	163	1,370,143	172	1,388,776
Missouri	22	4,896	@	@
Montana	2,712	20,646,712	3,058	23,112,128
Nebraska	88	1,132,882	87	921,699
New Mexico	8,264	75,937,975	8,237	73,746,382
New York	6,146	12,998,000	6,118	12,500,771
North Dakota	63	362,438	62	342,500
Ohio	33,595	84,181,803	33,430	79,333,000
Oklahoma	11,397	108,287,286	12,257	114,668,483
Pennsylvania	#34,760	#115,790,000	#34,050	#115,860,000
South Dakota	44	413,942	48	488,300
Tennessee	209	1,211,551	225	1,316,408
Texas	26,268	195,063,312	27,368	221,513,637
Utah	415	3,965,497	484	4,373,542
Virginia	135	2,398,952	144	*2,501,856
West Virginia	32,305	198,000,000	35,594	*198,500,000
Wyoming	319	5,020,856	1,163	13,546,735
TOTALS	#189,756	#1,042,153,002	#199,745	#1,104,683,975

* Estimated.

Revised.

@ No commercial gas was produced in Missouri during 1998.

Comparative Number of Stripper Gas Wells and Stripper Gas Well Production 1999–2000

State	1999		2000	
	Number of Stripper Wells	Production From Stripper Wells (Mcf)	Number of Stripper Wells	Production From Stripper Wells (Mcf)
Alabama	188	1,860,016	**1,416	**14,389,992
Arizona	2	13,015	5	39,937
Arkansas	1,317	13,147,008	1,609	14,926,696
California	390	3,158,092	369	2,832,541
Colorado	9,583	55,584,112	10,196	57,973,752
Illinois	#101	88,000	101	88,000
Indiana	1,498	854,746	1,502	829,000
Kansas	3,741	46,089,777	8,701	94,148,749
Kentucky	14,381	68,232,871	13,855	72,477,105
Louisiana	9,301	*28,650,000	9,645	*26,899,000
Maryland	13	75,080	7	34,036
Michigan	2,654	36,802,624	3,165	41,586,990
Mississippi	176	1,510,691	449	1,652,289
Montana	3,130	23,194,775	3,752	24,970,232
Nebraska	91	846,096	94	746,111
New Mexico	8,197	74,182,940	8,534	77,671,921
New York	5,301	11,278,424	5,446	11,091,622
North Dakota	63	473,020	63	347,476
Ohio	33,259	67,612,000	33,352	74,484,000
Oklahoma	12,632	114,748,619	11,554	120,014,250
Pennsylvania	#34,470	#115,390,000	*35,337	*125,191,000
South Dakota	60	504,639	54	460,942
Tennessee	*203	1,183,725	191	1,065,860
Texas	28,281	226,317,787	29,302	238,351,492
Utah	601	5,848,384	626	6,016,921
Virginia	130	2,078,844	133	2,053,579
West Virginia	36,094	218,350,000	36,816	220,000,000
Wyoming	1,909	20,904,221	7,433	30,309,851
TOTAL	#207,766	1,138,979,506	223,707	1,260,653,344

* *Estimated.*

** *Includes coalbed methane gas.*

Revised.

The Economic Impact of Stripper Wells in the United States

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Executive Summary

Last year's report opened with a discussion of the "tremendous oil price rebound... from \$11.58 per barrel to \$16.30..." and went on to demonstrate the positive impact on stripper well production. This year's report finds oil at \$27.65 per barrel for the average of 2000, and gas at \$3.79 per MCF versus \$2.08 in 1999, and again we see a drop in stripper well abandonments. The total of 14,222 stripper oil and gas wells abandoned during 2000 is the lowest level of abandonments since 1984. At the same time, the total number of stripper wells in the U.S. rose by 9,364 to a total of 635,500, the highest level seen in the eight years of this report.

As with last year, the large gains came from gas wells. The number of stripper oil wells increased by more than 1,100 wells. The number of stripper gas wells increased by nearly 16,000. This trend is not unexpected due to the maturity of oil production in the U.S. compared to the less mature natural gas industry.

Last year's report noted that owners and operators of marginal gas wells had a realistic expectation of stable prices. Since that time, we have seen unprecedented high price levels in natural gas during December 2000 (over \$10 per MCF), and prices currently below \$2.00 per MCF while this report was being drafted. Further, the events of September 2001 have renewed an interest in energy security for the U.S. The high prices realized by producers of natural gas during last winter had a positive impact on stripper wells. However, such extreme price volatility makes it difficult for operators of marginal production to have the confidence to invest in maintaining production on a long-term basis. Despite the record level prices seen last winter, the current price level for natural gas discourages investment. This makes any national goals of energy security even more difficult to achieve.

The purpose of this study is to quantify the economic impact of marginal domestic oil and gas production. Each barrel of oil and MCF of gas that is produced represents an energy asset that the United States does not have to import. The actual profitability of these wells is not considered nor implied in this report. Energy production conducted at an economic loss to the well owner still represents a positive economic activity to the surrounding community and an asset to the country.

A concern arises when a well owner determines that a well is expended and fails to perform his obligation, under existing laws, to properly plug and abandon the well. The states are encouraged to create and maintain appropriate programs that provide appropriate safeguards to the public, while allowing responsible well owners to produce their wells in an efficient and profitable manner.

Development of Report Findings

Using data from the IOGCC's 2000 National Stripper Oil Well Survey and 2000 National Stripper Gas Well Survey, Table 1 shows that the 11 survey states have 297,390 stripper oil wells, or over 72 percent of the total reported stripper oil wells in the U.S. These wells produced about 89% percent of stripper oil well production. Oil wells in the survey states averaged 2.7 barrels of oil per day (BOPD), better than the overall national average of 2.2 BOPD. In 2000, 10,718 oil wells were plugged and abandoned; this is only 509 less than last year's total of 11,227 wells.

Looking at the stripper gas wells, Table 1 shows the 11 survey states have almost 39 percent of the total 223,707 stripper gas wells in the U.S. The number of stripper gas wells again increased significantly from last year, increasing by 20,301 wells. The number of stripper oil wells increased by 1,100 wells. Our original 11 survey states were based on the largest producers of stripper oil, which excluded the Appalachian states from consideration. The Appalachian Basin accounts for almost 57 percent of the stripper gas well count and over 40 percent of the stripper gas produced. In order to preserve the comparability of this report, the stripper gas wells use the same survey states as the oil wells, as any error that may be introduced is not thought to be materially significant due to the higher relative value of

TABLE 1**Stripper Well Data — Oil**

State	Number of Stripper Oil Wells	2000 Production from Stripper Wells (bbls)	2000 Abandonments	2000 Average Daily Production Per Well (BOPD)
California	22,244	31,499,570	1,615	3.88
Colorado	7,618	3,913,368	124	1.41
Kansas	35,359	25,062,955	614	1.94
Louisiana	21,091	15,286,171	605	1.99
Mississippi	376	576,252	91	4.20
New Mexico	12,642	12,823,174	121	2.78
North Dakota	1,357	2,112,883	35	4.27
Oklahoma	60,120	50,068,248	922	2.28
Texas	126,028	135,151,385	4,255	2.94
Utah	943	1,418,314	16	4.12
Wyoming	9,612	12,565,818	120	3.58
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SUBTOTAL	297,390	290,478,138	8,518	2.68
ALL OTHERS	114,403	35,729,609	2,200	0.86
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TOTAL U.S.	411,793	326,207,747	10,718	2.17

Stripper Well Data — Natural Gas

State	Number of Stripper Gas Wells	2000 Production from Stripper Wells (Mcf)	2000 Abandonments	2000 Average Daily Production Per Well (MCFD)
California	369	2,832,541	32	21.03
Colorado	10,196	57,973,752	54	15.58
Kansas	8,701	94,148,749	230	29.65
Louisiana	9,645	26,899,000	328	7.64
Mississippi	449	1,652,289	37	10.08
New Mexico	8,534	77,671,921	102	24.94
North Dakota	63	347,476	43	15.11
Oklahoma	11,554	120,014,250	325	28.46
Texas	29,302	238,351,492	1,231	22.29
Utah	626	6,016,921	20	26.33
Wyoming	7,433	30,309,851	52	11.17
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SUBTOTAL	86,872	656,218,242	2,454	20.70
ALL OTHERS	136,835	604,435,102	1,050	12.10
<hr/>				
TOTAL U.S.	223,707	1,260,653,344	3,504	15.44

Stripper Well Data — Oil and Natural Gas

	Number of Stripper Wells	2000 Abandonments
SUBTOTAL	384,262	10,972
ALL OTHERS	251,238	3,250
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TOTAL U.S.	635,500	14,222

stripper oil to stripper gas production.

Stripper gas wells produced 1,260 billion cubic feet (BCF) in 2000, over 3,444 BCF per day. This represents an increase of over 9 percent over 1999's production level. Each well averaged 15.4 thousand cubic feet per day (MCFD), down slightly from last year. Of the total stripper gas wells, 1.6 percent, or 3,504 wells were plugged and abandoned in 2000. This was virtually identical to last year's abandonment rate of 3,546 wells.

Wellhead Prices for Oil and Natural Gas

Table 2 uses a combination of data gathered directly from the various state agencies and the Department of Energy's Energy Information Administration (EIA). Statistics show that the weighted average wellhead price was \$27.65 per barrel of oil, versus last year's average of \$16.30 per barrel. The average price for gas was \$3.79 per MCF, versus last year's average of \$2.08 per MCF. In order to prepare this report in time for the IOGCC's use, estimates for average prices were made for several states where data is not yet available, as was done last year. This was particularly true for natural gas, where the Henry Hub spot price was used where specific state information was not available. The potential difference between the estimated prices and the actual prices is not expected to make a material difference in the calculations made in this report.

TABLE 2

Wellhead Prices — Oil and Natural Gas

	2000 Total Oil Value \$ x 1,000	2000 Total Oil Production bbl x 1,000	2000 Weighted Average Wellhead \$/bbl	2000 Total Natural Gas Value \$ x 1,000	2000 Total Natural Gas Production Mcf x 1,000	2000 Weighted Average Wellhead \$/Mcf
California	\$6,743,053	271,132	\$24.87	\$1,787,128	374,660	\$4.77
Colorado	\$533,489	18,479	\$28.87	\$2,742,243	763,856	\$3.59
Kansas	\$971,512	34,463	\$28.19	\$1,654,979	510,796	\$3.24
Louisiana	\$3,056,242	105,424	\$28.99	\$20,702,625	5,405,385	\$3.83
Mississippi	\$520,482	19,843	\$26.23	\$294,898	88,558	\$3.33
New Mexico	\$1,937,318	67,198	\$28.83	\$5,917,164	1,594,923	\$3.71
North Dakota	\$921,993	32,718	\$28.18	\$199,128	52,402	\$3.80
Oklahoma	\$2,038,401	69,976	\$29.13	\$5,906,693	1,636,203	\$3.61
Texas	\$12,685,560	443,396	\$28.61	\$25,066,481	6,313,975	\$3.97
Utah	\$445,782	15,636	\$28.51	\$881,434	268,730	\$3.28
Wyoming	\$1,632,315	60,726	\$26.88	\$3,447,770	1,029,185	\$3.35
SUBTOTAL	\$31,486,146	1,138,991	\$27.64	\$68,600,543	18,038,673	\$3.80
ALL OTHERS	\$2,176,117	78,377	\$27.76	\$5,647,090	1,568,636	\$3.60
TOTAL U.S. *	\$33,662,263	1,217,368	\$27.65	\$74,247,632	19,607,309	\$3.79

* Excludes Alaska, Federal Offshore Oil; includes Federal Offshore Gas due to changes in EIA reporting

Effects of Stripper Oil and Gas Well Abandonment

Using the values from Tables 1 and 2, tables 3A and 3B show the gross value associated with stripper wells. Assuming the average stripper well producing rates for each state, Table 3A shows that the oil and gas wells plugged and abandoned in the survey states during 2000 would have produced oil and gas valued at \$321.8 million. The total value of oil and gas lost due to abandonments during 2000 for all states was \$370 million – an increase of almost 80% due to the higher prices over 1999.

It should be noted that, by attributing the average production rates of existing wells to abandoned wells, the actual productivity of abandoned wells may be slightly overstated. While no data was found to estimate the average production rates at the time of abandonment, the IOGCC and Department of Energy estimate that the range is between one and two BOPD, and the equivalent rate of 10 to 20 MCFD is assumed for gas wells.

To illustrate the overall economic impact on the U.S. economy, Table 3B assumes the abandonment of all stripper wells. This shows a theoretical loss value of \$10.5 billion for the survey states or \$13.8 billion for the entire U.S. in 2000.

If the stripper oil and gas production represented in Table 3B were indeed lost to the U.S., this would represent approximately 891,000 barrels of oil and 3.4 BCF of gas each day. Using the weighted average wellhead prices for stripper production, the daily amount that would have to be spent on imports would be \$37.7 million each day.

In 2000, American Petroleum Institute (API) statistics show that we imported 3.98 billion barrels of crude oil and products. If the oil production from stripper wells active in 2000 did not exist, imports would have increased 8.2 percent to make up for the shortage. Energy Information Administration (EIA) statistics show that 2000's total gas production was 20,074 BCF. (Note: this figure includes federal offshore gas production.) Stripper gas wells contributed 6.3 percent of the total production. EIA statistics also show the total of 2000 natural gas imports was 3,782 BCF, an amount equal to 18.8 percent of natural gas production. If stripper gas wells did not exist, imports to make up the shortage would bring the level up to 25.1 percent of production.

TABLE 3A**Effect of 2000's Abandonment — Oil**

State	Number of Stripper Wells	2000 Production From Stripper Wells (bbls)	2000 Abandonments	2000 Average Daily Production Per Well (BOPD)	Lost Annual Production (bbls)	2000 Average \$ / bbl	2000 Lost Gross Revenue
California	22,244	31,499,570	1,615	3.88	2,280,741	\$24.87	\$56,722,038
Colorado	7,618	3,913,368	124	1.41	63,525	\$28.87	\$1,833,960
Kansas	35,359	25,062,955	614	1.94	434,023	\$28.19	\$12,235,100
Louisiana	21,091	15,286,171	605	1.99	437,289	\$28.99	\$12,677,012
Mississippi	376	576,252	91	4.20	139,084	\$26.23	\$3,648,178
New Mexico	12,642	12,823,174	121	2.78	122,399	\$28.83	\$3,528,755
North Dakota	1,357	2,112,883	35	4.27	54,347	\$28.18	\$1,531,498
Oklahoma	60,120	50,068,248	922	2.28	765,748	\$29.13	\$22,306,252
Texas	126,028	135,151,385	4,255	2.94	4,550,560	\$28.61	\$130,191,508
Utah	943	1,418,314	16	4.12	23,999	\$28.51	\$684,210
Wyoming	9,612	12,565,818	120	3.58	156,448	\$26.88	\$4,205,322
SUBTOTAL	297,390	290,478,138	8,518	2.68	9,028,163	\$27.64	\$249,573,577
ALL OTHERS	114,403	35,729,609	2,200	0.86	1,094,287	\$27.76	\$30,382,577
TOTAL U.S. *	411,793	326,207,747	10,718	2.17	10,122,449	\$27.65	\$279,902,672

Effect of 2000's Abandonment — Natural Gas

State	Number of Stripper Wells	2000 Production From Stripper Wells (Mcf)	2000 Abandonments	2000 Average Daily Production Per Well (MCFD)	Lost Annual Production (Mcf)	2000 Average \$ / Mcf	2000 Lost Gross Revenue
California	369	2,832,541	32	21.03	244,969	\$4.77	\$1,168,503
Colorado	10,196	57,973,752	54	15.58	306,201	\$3.59	\$1,099,263
Kansas	8,701	94,148,749	230	29.65	2,481,904	\$3.24	\$8,041,369
Louisiana	9,645	26,899,000	328	7.64	912,262	\$3.83	\$3,493,963
Mississippi	449	1,652,289	37	10.08	135,785	\$3.33	\$452,165
New Mexico	8,534	77,671,921	102	24.94	925,813	\$3.71	\$3,434,767
North Dakota	63	347,476	43	15.11	236,518	\$3.80	\$898,769
Oklahoma	11,554	120,014,250	325	28.46	3,366,632	\$3.61	\$12,153,540
Texas	29,302	238,351,492	1,231	22.29	9,985,974	\$3.97	\$39,644,318
Utah	626	6,016,921	20	26.33	191,709	\$3.28	\$628,804
Wyoming	7,433	30,309,851	52	11.17	211,463	\$3.35	\$708,402
SUBTOTAL	86,872	656,218,242	2,454	20.70	18,999,231	\$3.80	\$72,253,517
ALL OTHERS	136,835	604,435,102	1,050	12.10	4,806,419	\$3.60	\$17,303,108
TOTAL U.S. *	223,707	1,260,653,344	3,504	15.44	23,805,650	\$3.79	\$90,145,626

Effect of 2000's Abandonment — Oil and Natural Gas Combined

	Number of Stripper Wells	2000 Abandonments	2000 Lost Gross Revenue
SUBTOTAL	384,262	10,972	\$321,827,094
ALL OTHERS	251,238	3,250	\$47,685,684
TOTAL U.S. *	635,500	14,222	\$370,048,298

* Excludes Alaska, Federal Offshore Oil; includes Federal Offshore Gas due to changes in EIA reporting

TABLE 3B**Effect of Hypothetical Abandonment of All Stripper Wells – Oil**

State	Number of Stripper Wells	2000 Production From Stripper Wells (bbls)	Hypothetical Abandonments	2000 Average Daily Production Per Well (BOPD)	Lost Annual Production (bbls)	2000 Average \$ / bbl	Hypothetical 2000 Lost Gross Revenue
California	22,244	31,499,570	22,244	3.88	31,499,570	\$24.87	\$783,394,306
Colorado	7,618	3,913,368	7,618	1.41	3,913,368	\$28.87	\$112,978,934
Kansas	35,359	25,062,955	35,359	1.94	25,062,955	\$28.19	\$706,524,701
Louisiana	21,091	15,286,171	21,091	1.99	15,286,171	\$28.99	\$443,146,097
Mississippi	376	576,252	376	4.20	576,252	\$26.23	\$15,115,090
New Mexico	12,642	12,823,174	12,642	2.78	12,823,174	\$28.83	\$369,692,106
North Dakota	1,357	2,112,883	1,357	4.27	2,112,883	\$28.18	\$59,541,043
Oklahoma	60,120	50,068,248	60,120	2.28	50,068,248	\$29.13	\$1,458,488,064
Texas	126,028	135,151,385	126,028	2.94	135,151,385	\$28.61	\$3,866,681,125
Utah	943	1,418,314	943	4.12	1,418,314	\$28.51	\$40,436,132
Wyoming	9,612	12,565,818	9,612	3.58	12,565,818	\$26.88	\$337,769,188
SUBTOTAL	297,390	290,478,138	297,390	2.68	290,478,138	\$27.64	\$8,029,946,851
ALL OTHERS	114,403	35,729,609	114,403	0.86	35,729,609	\$27.76	\$992,023,110
TOTAL U.S. *	411,793	326,207,747	411,793	2.17	326,207,747	\$27.65	\$9,020,190,270

Effect of Hypothetical Abandonment of All Stripper Wells – Natural Gas

State	Number of Stripper Wells	2000 Production From Stripper Wells (Mcf)	Hypothetical Abandonments	2000 Average Daily Production Per Well (Mcf/d)	Lost Annual Production (Mcf)	2000 Average \$ / Mcf	Hypothetical 2000 Lost Gross Revenue
California	369	2,832,541	369	21.03	2,832,541	\$4.77	\$13,511,221
Colorado	10,196	57,973,752	10,196	15.58	57,973,752	\$3.59	\$208,125,770
Kansas	8,701	94,148,749	8,701	29.65	94,148,749	\$3.24	\$305,041,947
Louisiana	9,645	26,899,000	9,645	7.64	26,899,000	\$3.83	\$103,023,170
Mississippi	449	1,652,289	449	10.08	1,652,289	\$3.33	\$5,502,122
New Mexico	8,534	77,671,921	8,534	24.94	77,671,921	\$3.71	\$288,162,827
North Dakota	63	347,476	63	15.11	347,476	\$3.80	\$1,320,409
Oklahoma	11,554	120,014,250	11,554	28.46	120,014,250	\$3.61	\$433,251,443
Texas	29,302	238,351,492	29,302	22.29	238,351,492	\$3.97	\$946,255,423
Utah	626	6,016,921	626	26.33	6,016,921	\$3.28	\$19,735,501
Wyoming	7,433	30,309,851	7,433	11.17	30,309,851	\$3.35	\$101,538,001
SUBTOTAL	86,872	656,218,242	86,872	20.70	656,218,242	\$3.80	\$2,495,578,665
ALL OTHERS	136,835	604,435,102	136,835	12.10	604,435,102	\$3.60	\$2,175,966,367
TOTAL U.S. *	223,707	1,260,653,344	223,707	15.44	1,260,653,344	\$3.79	\$4,773,756,861

Effect of Hypothetical Abandonment of All Stripper Wells – Oil and Natural Gas

	Number of Stripper Wells	Hypothetical Abandonments	Hypothetical 2000 Lost Gross Revenue
SUBTOTAL	384,262	384,262	\$10,525,525,516
ALL OTHERS	251,238	251,238	\$3,167,989,477
TOTAL US *	635,500	635,500	\$13,793,947,130

* Excludes Alaska, Federal Offshore Oil; includes Federal Offshore Gas due to changes in EIA reporting

RIMS II Multipliers

The RIMS II multipliers provided by the Bureau of Economic Analysis (BEA) for industry number 8.0000, crude petroleum and natural gas, are shown in Table 4. The Final Demand Multipliers shown in the first three columns represent the total economic impact on the region relative to a change in demand of the output, which, in this case, is expressed as the value of stripper oil production. The same oil and gas values can be used to determine the total impact on earnings and employment for the region. These final demand multipliers include not only output, earnings, and employment in the crude petroleum and natural gas industry, but all secondary industries, goods, and services that are impacted in the region. Examples of these secondary sectors could be non-oilfield equipment manufacturers, such as steel mill output, truck manufacturers, and doctors in the region that provide goods and services to both the oil sector and other sectors. Please refer to the Appendix for a more complete discussion about RIMS.

The direct effect multipliers shown in the fourth and fifth columns represent the total impact relative to a direct change in household earnings or employment. They are used whenever changes in household earnings or employment are known. As presented, they are not directly applicable for the purposes of this study. However, they represent the ratio between the industry specific multiplier and the final demand multiplier. This relationship allows the calculation of earnings and employment multipliers for the oil and gas industry alone (sixth and seventh columns), without regard to the earnings and employment levels of any secondary industries.

TABLE 4

State	Output	FINAL DEMAND MULTIPLIERS		DIRECT EFFECT MULTIPLIERS		CALCULATED OIL & GAS INDUSTRY MULTIPLIERS	
		Earnings	Employment	Earnings	Employment	Earnings	Employment
California	1.5123	0.2043	6.5	2.0770	2.8152	0.0984	2.3089
Colorado	1.4951	0.1995	7.6	2.0304	2.7773	0.0983	2.7365
Kansas	1.4982	0.1925	14.2	1.9569	1.5602	0.0984	9.1014
Louisiana	1.5009	0.1936	7.9	1.9818	2.4793	0.0977	3.1864
Mississippi	1.4499	0.1820	11.0	1.9337	1.9058	0.0941	5.7719
New Mexico	1.4535	0.1810	8.4	1.8402	2.2312	0.0984	3.7648
North Dakota	1.4431	0.1712	8.3	1.8002	2.1954	0.0951	3.7806
Oklahoma	1.4470	0.1850	8.9	1.8809	2.0420	0.0984	4.3585
Texas	1.5795	0.2150	8.5	2.1916	2.6803	0.0981	3.1713
Utah	1.4702	0.1897	8.7	1.9290	2.4008	0.0983	3.6238
Wyoming	1.4037	0.1636	7.2	1.6845	2.2349	0.0971	3.2216

Impact of Stripper Oil and Gas Production on the U.S. Economy

Tables 5A and 5B show the economic impact of stripper oil and gas production. Using the values determined from Table 3A and the multipliers from Table 4, Table 5A shows that the 14,222 stripper oil and gas wells plugged and abandoned in 2000 resulted in a reduction of total economic output of \$566.3 million, earnings reductions of \$75.6 million, and lost employment of 3,131 jobs. In 2000 the oil and gas industry alone lost \$36.2 million of earnings and 1,320 jobs.

Table 5B shows the economic impact of the theoretical abandonment of all stripper oil and gas wells. Economic output would decline by \$20.9 billion; earnings would decrease by \$2.75 billion, and 122,284 jobs would be lost. Within the oil and gas industry alone, \$1.348 million of earnings and 54,344 jobs would be lost.

TABLE 5A**Economic Effect of 2000's Abandonment — Oil**

	2000 Revenue Lost From Abandonment (Million \$)	Final Demand Multipliers Output	Final Demand Multipliers Earnings	Final Demand Multipliers Employment*	OVERALL EFFECT IN			Direct Effect Multipliers Earnings	Direct Effect Multipliers Employment	O&G	
					FINAL DEMAND		INDUSTRY			Lost Earnings (Million \$)	Lost Employment
					Lost Output (Million \$)	Lost Earnings (Million \$)		Employment			
California	\$56.722	1.5123	0.2043	6.5	\$85.781	\$11.588	369	0.0984	2.3089	\$5.579	131
Colorado	\$1.834	1.4951	0.1995	7.6	\$2.742	\$0.366	14	0.0983	2.7365	\$0.180	5
Kansas	\$12.235	1.4982	0.1925	14.2	\$18.331	\$2.355	174	0.0984	9.1014	\$1.204	111
Louisiana	\$12.677	1.5009	0.1936	7.9	\$19.027	\$2.454	100	0.0977	3.1864	\$1.238	40
Mississippi	\$3.648	1.4499	0.1820	11.0	\$5.289	\$0.664	40	0.0941	5.7719	\$0.343	21
New Mexico	\$3.529	1.4535	0.1810	8.4	\$5.129	\$0.639	30	0.0984	3.7648	\$0.347	13
North Dakota	\$1.531	1.4431	0.1712	8.3	\$2.210	\$0.262	13	0.0951	3.7806	\$0.146	6
Oklahoma	\$22.306	1.4470	0.1850	8.9	\$32.277	\$4.127	199	0.0984	4.3585	\$2.194	97
Texas	\$130.192	1.5795	0.2150	8.5	\$205.637	\$27.991	1,107	0.0981	3.1713	\$12.772	413
Utah	\$0.684	1.4702	0.1897	8.7	\$1.006	\$0.130	6	0.0983	3.6238	\$0.067	2
Wyoming	\$4.205	1.4037	0.1636	7.2	\$5.903	\$0.688	30	0.0971	3.2216	\$0.408	14
SUBTOTAL	\$249.574	1.5359	0.2054	8.3	\$383.332	\$51.264	2,080	0.0981	3.4200	\$24.479	854
ALL OTHERS*	\$30.383	1.5359	0.2054	8.3	\$46.665	\$6.241	252	0.0981	3.4200	\$2.981	104
TOTAL	\$279.903	1.5362	0.2054	8.3	\$429.997	\$57.505	2,333	0.0981	3.4200	\$27.460	958

Economic Effect of 2000's Abandonment — Natural Gas

	2000 Revenue Lost From Abandonment (Million \$)	Final Demand Multipliers Output	Final Demand Multipliers Earnings	Final Demand Multipliers Employment*	OVERALL EFFECT IN			Direct Lost Employment	Direct Effect Multipliers Employment	O&G	
					FINAL DEMAND		INDUSTRY			Lost Earnings (Million \$)	Lost Employment
					Lost Output (Million \$)	Lost Earnings (Million \$)		Employment			
California	\$1.169	1.5123	0.2043	6.5	\$1.767	\$0.239	8	0.0984	2.3089	\$0.115	3
Colorado	\$1.099	1.4951	0.1995	7.6	\$1.644	\$0.219	8	0.0983	2.7365	\$0.108	3
Kansas	\$8.041	1.4982	0.1925	14.2	\$12.048	\$1.548	114	0.0984	9.1014	\$0.791	73
Louisiana	\$3.494	1.5009	0.1936	7.9	\$5.244	\$0.676	28	0.0977	3.1864	\$0.341	11
Mississippi	\$0.452	1.4499	0.1820	11.0	\$0.656	\$0.082	5	0.0941	5.7719	\$0.043	3
New Mexico	\$3.435	1.4535	0.1810	8.4	\$4.992	\$0.622	29	0.0984	3.7648	\$0.338	13
North Dakota	\$0.899	1.4431	0.1712	8.3	\$1.297	\$0.154	7	0.0951	3.7806	\$0.085	3
Oklahoma	\$12.154	1.4470	0.1850	8.9	\$17.586	\$2.248	108	0.0984	4.3585	\$1.195	53
Texas	\$39.644	1.5795	0.2150	8.5	\$62.618	\$8.524	337	0.0981	3.1713	\$3.889	126
Utah	\$0.629	1.4702	0.1897	8.7	\$0.924	\$0.119	5	0.0983	3.6238	\$0.062	2
Wyoming	\$0.708	1.4037	0.1636	7.2	\$0.994	\$0.116	5	0.0971	3.2216	\$0.069	2
SUBTOTAL	\$72.254	1.5359	0.2054	8.3	\$109.771	\$14.547	655	0.0974	4.0400	\$7.036	292
ALL OTHERS*	\$17.303	1.5359	0.2054	8.3	\$26.576	\$3.554	144	0.0974	4.0400	\$1.685	70
TOTAL	\$90.146	1.5362	0.2054	8.3	\$136.346	\$18.101	798	0.0968	4.0200	\$8.722	362

Economic Effect of 2000's Abandonment — Oil and Natural Gas

	2000 Revenue Lost From Abandonment (Million \$)	Final Demand Multipliers Output	Final Demand Multipliers Earnings	Final Demand Multipliers Employment*	OVERALL EFFECT IN			Direct Lost Employment	Direct Effect Multipliers Employment	O&G	
					FINAL DEMAND		INDUSTRY			Lost Earnings (Million \$)	Lost Employment
					Lost Output (Million \$)	Lost Earnings (Million \$)		Employment			
SUBTOTAL	\$321.827	1.5322	0.2045	8.5	\$493.103	\$65.812	2,735	0.0979	3.5616	\$31.516	1,146
ALL OTHERS*	\$47.686	1.5359	0.2054	8.3	\$73.240	\$9.795	396	0.0978	3.6450	\$4.666	174
TOTAL	\$370.048	1.5305	0.2043	8.5	\$566.343	\$75.606	3,131	0.0978	3.5672	\$36.182	1,320

* Weighted averages used for RIMS II Multipliers. Excludes Alaska, Federal Offshore Oil; includes Federal Offshore Gas due to changes in EIA reporting

TABLE 5B**Economic Effect of Hypothetical Abandonment of All Stripper Wells — Oil**

	2000 Revenue Lost From Abandonment (Million \$)	Final Demand Multipliers Output	Final Demand Multipliers Earnings	Final Demand Multipliers Employment	OVERALL EFFECT IN			Direct Effect Multipliers Earnings	Direct Effect Multipliers Employment	O&G INDUSTRY	
					FINAL DEMAND Lost Output (Million \$)	Lost Earnings (Million \$)	Lost Employment			Lost Earnings (Million \$)	Lost Employment
California	\$783.394	1.5123	0.2043	6.5	\$1,184.727	\$160.047	5,092	0.0984	2.3089	\$77.057	1,809
Colorado	\$112.979	1.4951	0.1995	7.6	\$168.915	\$22.539	859	0.0983	2.7365	\$11.101	309
Kansas	\$706.525	1.4982	0.1925	14.2	\$1,058.515	\$136.006	10,033	0.0984	9.1014	\$69.501	6,430
Louisiana	\$443.146	1.5009	0.1936	7.9	\$665.118	\$85.793	3,501	0.0977	3.1864	\$43.290	1,412
Mississippi	\$15.115	1.4499	0.1820	11.0	\$21.915	\$2.751	166	0.0941	5.7719	\$1.423	87
New Mexico	\$369.692	1.4535	0.1810	8.4	\$537.347	\$66.914	3,105	0.0984	3.7648	\$36.362	1,392
North Dakota	\$59.541	1.4431	0.1712	8.3	\$85.924	\$10.193	494	0.0951	3.7806	\$5.662	225
Oklahoma	\$1,458.488	1.4470	0.1850	8.9	\$2,110.432	\$269.820	12,981	0.0984	4.3585	\$143.453	6,357
Texas	\$3,866.681	1.5795	0.2150	8.5	\$6,107.423	\$831.336	32,867	0.0981	3.1713	\$379.329	12,262
Utah	\$40.436	1.4702	0.1897	8.7	\$59.449	\$7.671	352	0.0983	3.6238	\$3.977	147
Wyoming	\$337.769	1.4037	0.1636	7.2	\$474.127	\$55.259	2,432	0.0971	3.2216	\$32.804	1,088
SUBTOTAL	\$8,029.947	1.5534	0.2053	9.0	\$12,473.893	\$1,648.331	71,881	0.1001	3.9300	\$803.959	31,518
ALLOTHERS*	\$992.023	1.5534	0.2053	9.0	\$1,541.009	\$203.662	8,928	0.1001	3.9300	\$99.302	3,899
TOTAL	\$9,020.190	1.5537	0.2053	9.0	\$14,014.901	\$1,851.993	80,809	0.1001	3.9300	\$903.260	35,417

Economic Effect of Hypothetical Abandonment of All Stripper Wells — Natural Gas

	2000 Revenue Lost From Abandonment (Million \$)	Final Demand Multipliers Output	Final Demand Multipliers Earnings	Final Demand Multipliers Employment	OVERALL EFFECT IN			Direct Effect Multipliers Earnings	Direct Effect Multipliers Employment	O&G INDUSTRY	
					FINAL DEMAND Lost Output (Million \$)	Lost Earnings (Million \$)	Lost Employment			Lost Earnings (Million \$)	Lost Employment
California	\$13.511	1.5123	0.2043	6.5	\$20.433	\$2.760	88	0.0984	2.3089	\$1.329	31
Colorado	\$208.126	1.4951	0.1995	7.6	\$311.169	\$41.521	1,582	0.0983	2.7365	\$20.450	570
Kansas	\$305.042	1.4982	0.1925	14.2	\$457.014	\$58.721	4,332	0.0984	9.1014	\$30.007	2,776
Louisiana	\$103.023	1.5009	0.1936	7.9	\$154.627	\$19.945	814	0.0977	3.1864	\$10.064	328
Mississippi	\$5.502	1.4499	0.1820	11.0	\$7.978	\$1.001	61	0.0941	5.7719	\$0.518	32
New Mexico	\$288.163	1.4535	0.1810	8.4	\$418.845	\$52.157	2,421	0.0984	3.7648	\$28.343	1,085
North Dakota	\$1.320	1.4431	0.1712	8.3	\$1.905	\$0.226	11	0.0951	3.7806	\$0.126	5
Oklahoma	\$433.251	1.4470	0.1850	8.9	\$626.915	\$80.152	3,856	0.0984	4.3585	\$42.613	1,888
Texas	\$946.255	1.5795	0.2150	8.5	\$1,494.610	\$203.445	8,043	0.0981	3.1713	\$92.829	3,001
Utah	\$19.736	1.4702	0.1897	8.7	\$29.015	\$3.744	172	0.0983	3.6238	\$1.941	72
Wyoming	\$101.538	1.4037	0.1636	7.2	\$142.529	\$16.612	731	0.0971	3.2216	\$9.861	327
SUBTOTAL	\$2,495.579	1.4686	0.1925	8.9	\$3,665.040	\$480.284	22,109	0.0954	4.0500	\$238.082	10,115
ALLOTHERS*	\$2,175.966	1.4686	0.1925	8.9	\$3,195.624	\$418.874	19,366	0.0954	4.0500	\$207.587	8,813
TOTAL	\$4,773.757	1.4372	0.1884	8.7	\$6,860.664	\$899.158	41,475	0.0934	3.9600	\$445.669	18,927

Table 5B continued on page 26

TABLE 5B (continued)**Economic Effect of Hypothetical Abandonment of All Stripper Wells — Oil & Natural Gas**

	2000 Revenue Lost From Abandonment (Million \$)	Final Demand Multipliers Output*	Final Demand Multipliers Earnings*	Final Demand Multipliers Employment*	OVERALL EFFECT IN			Direct Effect Multipliers Earnings	Direct Effect Multipliers Employment	O&G INDUSTRY	
					FINAL DEMAND Lost Output (Million \$)	Lost Earnings (Million \$)	Lost Employment			Lost Earnings (Million \$)	Lost Employment
SUBTOTAL	\$10,525.526	1.5333	0.2022	8.9	\$16,138.933	\$2,128.615	93,990	0.0990	3.9554	\$1,042.041	41,633
ALLOTHERS*	\$3,167.989	1.4952	0.1965	8.9	\$4,736.633	\$622.536	28,294	0.0969	4.0124	\$306.889	12,711
TOTAL	\$13,793.947	1.5134	0.1994	8.9	\$20,875.566	\$2,751.151	122,284	0.0978	3.9397	\$1,348.929	54,344

* Weighted averages used for RIMS II Multipliers; excludes Alaska, Federal Offshore.

Severance and Ad Valorem Tax

RIMS II multipliers do not take into consideration any impact on state or local government. Therefore, the economic impact predictions do not include any payments of state or local severance taxes or any local ad valorem taxes.

Many states have reduced severance tax rates for wells that qualify for stripper status under their guidelines. For the purposes of this report, it was assumed that all of the stripper production reported for a given state would qualify for stripper status tax reductions at the lowest level of stripper status granted. No additional tax reductions for secondary or tertiary production were assumed for the states that grant such reductions. Several states have additional taxes levied on production for the purpose of funding conservation, environmental, or maintenance related activities. These taxes have been included in the severance tax calculations.

Based on the average oil and gas prices and stripper production from Table 6, severance taxes collected for stripper production were \$601.6 million during 2000. Furthermore, the production loss from stripper oil and gas well abandonments in 2000 would represent a \$15.5 million loss in severance taxes assuming average stripper production rates.

Ad valorem taxes are property taxes assessed by local government entities, and a stripper well may be subject to multiple overlapping taxing entities. As noted in prior reports, a survey of ad valorem taxation approaches in oil and gas producing states shows that the tax assessment process differs widely among the states and sometimes also within a state, with corresponding varying tax rates. While we are not aware of any published data that allows a reasonable estimate for stripper well ad valorem tax expense, our experience suggests that the ad valorem tax expense is probably a value of similar magnitude to the severance taxes.

TABLE 6

SEVERANCE TAXES

	Stripper Oil Severance Tax Rate	Other Taxes (Conservation, Environ- mental, etc.)	2000 Average Oil Price \$/bbl	2000 Production from Stripper Oil Wells (bbls)	Annual Total Stripper Oil Severance Tax Revenue	2000 Lost Production (BBLS)	Annual Lost Stripper Oil Severance Tax Revenue	Stripper Gas Severance Tax Rate	Other Taxes (Conservation, Environ- mental, etc.)	2000 Average Gas Price \$/Mcf	2000 Production from Stripper Gas Wells (Mcf)	Annual Total Stripper Gas Severance Tax Revenue	2000 Lost Production (Mcf)	Annual Lost Stripper Gas Severance Tax Revenue	Annual Total Stripper Severance Tax Revenue	Annual Lost Stripper Severance Tax Revenue
Alabama	6.00%		\$27.63	1,143,718	\$1,896,056	10,915	\$18,094	6.00%		3.60	14,389,992	\$3,108,238	547,272	\$118,211	\$5,004,294	\$136,305
Alaska	15.00%	\$0.034	\$23.62	0	\$0	0		10.00%	\$ 0.00008	3.60	0	\$0	0	\$0	\$0	\$0
Arizona	3.125%		\$0	21,083	\$0	0	\$0	3.125%		3.60	39,937	\$4,493	0	\$0	\$4,493	\$0
Arkansas	4.00%	\$0.045	\$26.98	3,211,423	\$3,610,282	113,058	\$127,099	\$0.003	\$0.005	3.60	14,926,696	\$119,414	240,543	\$1,924	\$3,729,695	\$129,024
California	0.00%	\$0.0373	\$24.87	31,499,570	\$1,176,049	2,280,741	\$85,152	0.00%	\$0.0037	4.77	2,832,541	\$1,058	244,969	\$91	\$1,177,107	\$85,244
Colorado	0.00%	0.12%	\$28.87	3,913,368	\$135,575	63,525	\$2,201	0.00%	0.12%	3.59	57,973,752	\$249,751	306,201	\$1,319	\$385,326	\$3,520
Florida	5.00%		\$28.12	0	\$0	0		\$0.235		3.60	0	\$0	0	\$0	\$0	\$0
Illinois	0.00%		\$28.22	10,450,000	\$0	364,646	\$0	0.00%		3.60	88,000	\$0	0	\$0	\$0	\$0
Indiana	1.00%		\$27.91	2,052,000	\$572,713	29,182	\$8,145	1.00%		3.60	829,000	\$29,844	4,403	\$159	\$602,557	\$8,303
Kansas	0.00%	\$0.0273	\$28.19	25,062,955	\$683,467	434,023	\$11,836	0.00%	\$0.0058	3.24	94,148,749	\$548,887	2,481,904	\$14,470	\$1,232,354	\$26,305
Kentucky	4.50%		\$26.47	2,372,072	\$2,825,494	22,323	\$26,590	4.50%		3.60	72,477,105	\$11,741,291	406,912	\$65,920	\$14,566,785	\$92,510
Louisiana	3.125%		\$28.99	15,286,171	\$13,848,316	437,289	\$396,157	\$0.013		3.83	26,899,000	\$349,687	912,262	\$11,859	\$14,198,003	\$408,016
Maryland	0.00%		\$0.00	0	\$0	0		7.00%		3.60	34,036	\$8,577	0	\$0	\$8,577	\$0
Michigan	4.00%	1.00%	\$28.88	3,214,363	\$4,641,540	174,736	\$252,318	5.00%	1.00%	3.60	41,586,990	\$8,982,790	353,801	\$63,684	\$13,624,330	\$316,002
Mississippi	6.00%	\$0.044	\$26.23	576,252	\$932,260	139,084	\$225,010	6.00%	\$0.005	3.33	1,652,289	\$338,389	135,785	\$27,809	\$1,270,649	\$252,819
Missouri	0.00%		\$28.55	106,057	\$0	3,881	\$0	0.00%		3.60	0	\$0	0	\$0	\$0	\$0
Montana	9.00%	0.30%	\$27.67	2,035,583	\$5,238,186	145,939	\$375,545	11.00%	0.30%	3.60	24,970,232	\$10,157,890	159,288	\$63,078	\$15,396,076	\$438,623
Nebraska	2.00%	1.00%	\$27.97	1,831,497	\$1,536,809	82,519	\$69,241	3.00%	1.00%	3.60	746,111	\$107,440	0	\$0	\$1,644,249	\$69,241
Nevada	\$0.05		\$24.16	0	\$0	0		\$0.001		3.60	0	\$0	0	\$0	\$0	\$0
New Mexico	7.09%		\$28.83	12,823,174	\$26,211,170	122,399	\$250,189	8.19%		3.71	77,671,921	\$23,600,536	925,813	\$281,307	\$49,811,706	\$531,496
New York	0.00%		\$28.78	180,591	\$0	4,506	\$0	0.00%		3.60	11,091,622	\$0	56,871	\$0	\$0	\$0
North Dakota	5.00%		\$28.18	2,112,883	\$2,977,052	54,347	\$76,575	\$0.0772		3.80	347,476	\$26,825	236,518	\$18,259	\$3,003,877	\$94,834
Ohio	\$0.100		\$27.49	5,378,100	\$537,810	39,134	\$3,913	\$0.025		3.60	74,484,000	\$1,862,100	861,914	\$21,548	\$2,399,910	\$25,461
Oklahoma	7.195%	\$0.002	\$29.13	50,068,248	\$105,038,353	765,748	\$1,604,935	7.195%	\$0.0001	3.61	120,014,250	\$31,184,443	3,366,632	\$874,447	\$136,222,795	\$2,479,382
Oregon	6.00%		\$0.00	0	\$0	0		6.000%		3.60	0	\$0	0	\$0	\$0	\$0
Pennsylvania	0.00%		\$28.80	2,223,500	\$0	43,852	\$0	0.00%		3.60	125,191,000	\$0	423,971	\$0	\$0	\$0
South Dakota	4.74%		\$28.18	15,867	\$21,194	0	\$0	4.74%		3.60	460,942	\$78,655	0	\$0	\$99,849	\$0
Tennessee	3.00%		\$28.55	189,156	\$162,012	47,630	\$40,795	3.00%		3.60	1,065,860	\$115,113	345,041	\$37,264	\$277,125	\$78,059
Texas	4.60%	\$0.1906	\$28.61	135,151,385	\$203,630,565	4,550,560	\$6,856,260	7.50%	\$0.0033	3.97	238,351,492	\$71,763,582	9,985,974	\$2,973,324	\$275,394,147	\$9,829,584
Utah	0.00%	0.20%	\$28.51	1,418,314	\$80,872	23,999	\$1,368	0.00%	0.20%	3.28	6,016,921	\$39,471	191,709	\$1,258	\$120,343	\$2,626
Virginia	0.50%		\$28.12	4,599	\$647	0	\$0	3.00%		3.60	2,053,579	\$221,787	0	\$0	\$222,433	\$0
West Virginia	5.00%		\$27.12	1,300,000	\$1,762,800	11,967	\$16,228	5.00%		3.60	220,000,000	\$39,600,000	1,406,403	\$253,153	\$41,362,800	\$269,380
Wyoming	4.00%	0.06%	\$26.88	12,565,818	\$13,713,429	156,448	\$170,736	6.00%	0.06%	3.35	30,309,851	\$6,153,203	211,463	\$42,929	\$19,866,632	\$213,665
TOTAL				326,207,747	\$391,232,650	10,122,449	\$10,618,388				1,260,653,344	\$210,393,463	23,805,650	\$4,872,013	\$601,626,113	\$15,490,401

Conclusion

The results of this study serve to quantify the economic impact of stripper oil and gas well production on the U.S. economy. In 2000, total domestic production, including Alaska and the federal offshore areas was 2.13 billion barrels of oil and 20.1 trillion cubic feet of gas. Stripper oil production accounted for 326 million barrels, or 15.3 percent of total oil. Stripper gas production accounted for 1.26 TCF, or 6.3 percent of total gas production. The use of RIMS II multipliers show that every dollar of stripper oil and gas production creates an additional \$.5134 of economic activity throughout the economy, and that 8.9 jobs are dependent on every \$1 million of stripper oil and gas produced.

The cumulative impact of stripper production plays a significant role in the U.S. economy. Table 7 summarizes this impact during the nine years of this report; 4.3 billion barrels of oil equivalent production has been achieved from these marginal producers. The lost output of the wells abandoned during this time would have represented \$3.9 billion of economic activity and more than 22,000 jobs.

TABLE 7**Stripper Wells' Cumulative Impact on the U.S. Economy — Oil**

	No. of Stripper Wells	Stripper Oil Production (Million bbls)	Abandonments	Avg. Daily Production Per Well (BOPD)	Lost Annual Production (Million bbls)	Lost Output (Million \$)	Lost Earnings (Million \$)	Lost Employment	Lost Severance Taxes (Million \$)
1992	453,277	368.132	16,211	2.23	15.659	\$416.935	\$55.372	2,385	\$10.443
1993	452,248	355.961	16,914	2.16	15.210	357.783	47.614	2,026	10.101
1994	442,500	339.930	17,896	2.10	16.153	359.506	48.065	2,019	10.577
1995	434,422	333.125	17,120	2.10	15.322	374.833	50.019	2,133	10.310
1996	433,171	352.442	17,023	2.22	16.452	497.243	66.086	2,829	13.688
1997	436,084	352.928	15,173	2.22	14.049	387.536	51.427	2,220	9.912
1998	419,280	316.173	13,912	2.07	11.984	216.490	28.874	1,231	5.992
1999	422,730	313.372	11,227	2.03	9.616	247.871	33.059	1,483	6.140
2000	411,793	326.208	10,718	2.16	10.122	429.997	57.505	2,333	10.618
TOTAL		3,058.271	136,194		124.568	\$3,288.194	\$438.021	18,659	\$87.782

Stripper Wells' Cumulative Impact on the U.S. Economy — Natural Gas

	No. of Stripper Wells	Stripper Gas Production (Bcf)	Abandonments	Avg. Daily Production Per Well (MCFD)	Lost Annual Production (Bcf)	Lost Output (Million \$)	Lost Earnings (Million \$)	Lost Employment	Lost Severance Taxes (Million \$)
1994	159,369	940.421	3,163	16.17	21.256	\$61.758	\$8.112	376	\$1.608
1995	161,626	936.336	3,613	15.87	23.053	51.853	6.771	315	1.518
1996	169,986	996.305	5,251	16.01	39.978	137.092	18.065	804	4.860
1997	176,530	1,012.724	4,914	15.72	35.839	122.772	16.192	729	3.947
1998	191,805	1,088.824	4,235	15.55	29.258	92.721	12.286	549	3.128
1999	203,406	1,155.590	3,541	15.56	24.407	80.846	10.707	481	2.799
2000	223,707	1,260.653	3,504	15.40	23.806	136.346	18.101	798	4.872
TOTAL		7,390.852	28,221		197.597	\$683.388	\$90.234	4,052	\$22.732

Stripper Wells' Cumulative Impact on the U.S. Economy — Oil and Natural Gas

	No. of Stripper Wells	Stripper Well Production (MMBOE 6:1)	Abandonments	Avg. Daily Production Per Well (BOEPD)	Lost Annual Production (MMBOE 6:1)	Lost Output (Million \$)	Lost Earnings (Million \$)	Lost Employment	Lost Severance Taxes (Million \$)
1992	453,277	368.132	16,211	2.23	15.659	\$416.935	\$55.372	2,385	\$10.443
1993	452,248	355.961	16,914	2.16	15.210	357.783	47.614	2,026	10.101
1994	601,869	496.667	21,059	4.80	19.695	421.264	56.177	2,395	12.185
1995	596,048	489.181	20,733	4.75	19.164	426.686	56.790	2,448	11.828
1996	603,157	518.493	22,274	4.89	23.115	634.335	84.151	3,633	18.548
1997	612,614	521.716	20,087	4.84	20.023	510.308	67.619	2,949	13.859
1998	611,085	497.644	18,147	4.66	16.861	309.211	41.160	1,780	9.120
1999	626,136	505.970	14,768	4.63	13.684	328.717	43.766	1,964	8.939
2000	635,500	536.317	14,222	4.73	14.090	566.343	75.606	3,131	15.490
TOTAL		4,290.080	164,415		157.501	\$3,971.582	\$528.255	22,711	\$110.514

*Natural gas data not available for 1992 and 1993.

Appendix – Background of RIMS

The U.S. Department of Commerce's Bureau of Economic Analysis (BEA) prepares regional input-output multipliers that allow the estimation of the total economic impact of the addition or removal of industries or projects to a given region. The IOGCC's annual stripper well study uses these multipliers to investigate the economic impact of stripper well production on 11 states and extrapolates those findings to determine the economic impact of stripper oil and gas well abandonments to both the overall economy and the oil and gas industry specifically.

Recognizing the need for a basis of estimating the economic impacts of projects and programs on a regional basis, the BEA developed RIMS, or the Regional Industrial Multiplier Systems, in the mid-1970s. Enhancements to RIMS in the mid-1980s led to RIMS II (Regional Input-Output Modeling System).

RIMS II multipliers show the interdependence of economic activity throughout a given region, where a region comprises one or more counties. Multipliers are provided for output, earnings, and employment, considering final demand and direct effect. These multipliers plus assumptions of projects or programs introduced into a region can be used to calculate variables such as the increase in the output value, i.e. gross receipts or sales. Multipliers plus assumptions are also instrumental in calculating earnings income such as wages, salaries or proprietor's income less any contributions to private pension funds, and employment levels for all other industries in that region.

In some situations RIMS II multipliers have certain limitations. For instance, the multipliers are best used when total demand changes are relatively small compared to the economy of the region under consideration. Interrelations with adjacent regions are another potential source of error when the regions under consideration are small. The multipliers do not consider the possible subsequent incremental economic activity that may be associated with economic impacts of considerable relative magnitude to a region, although if such activity can be predicted, the RIMS II multipliers can be added for the expected activity to show a cumulative effect. Demand substitution can affect the RIMS II estimates, in that the multipliers assume an adequate supply of resources and labor exists within the region under study. The multipliers are static in the sense that the changes predicted are overall changes with no regard to the timing. The multipliers estimate short-term economic effects that often change over the long term. For example, multipliers may overstate job losses in the long term, as displaced employees find new jobs.

Since RIMS II multipliers are limited to the private sector, they exclude the economic impacts on state and local governments. For the proper consideration of economic impact from stripper oil and gas production, state severance taxes and local and ad valorem taxes must be added to any estimates derived from RIMS II.

The BEA was able to provide the RIMS II multipliers for the 12 largest oil producing states: Alaska, California, Colorado, Kansas, Louisiana, Mississippi, New Mexico, North Dakota, Oklahoma, Texas, Utah, and Wyoming. However, Alaska has no stripper well production reported, and its inclusion in U.S. production statistics can significantly skew the analysis results, due to the large volume of North Slope production with its corresponding low wellhead value. Therefore, the IOGCC analysis excludes Alaska. The remaining 11 states used for this study (referred to as the "survey states") account for the majority of stripper oil and gas production. Average values applied for the remaining states reflect weighted averages.

The use of state level RIMS II multipliers is most accurate when the economic activity is evenly distributed across the state. This appears to be a reasonable assumption for the majority of the states considered in this study. In California, the oil and gas industry is not evenly distributed and other significant economic activity is present. These factors suggest that the potential for error in the RIMS II estimate is greater for states such as California, whereas accuracy should be better in states with more evenly distributed production, such as Louisiana.

Since the RIMS II multipliers used for this study are aggregations of regional data at the state level, it is expected that any errors introduced by the limitations previously discussed will be minimized. While RIMS II does not consider timing, many of the effects predicted in this report are based on annual values. It would follow that some portions of the predicted areas impacted, such as annual severance tax collections, could be considered as time dependent.

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Glossary

Frequently Used Abbreviations - Oil

bbls=barrels

Mbbls=one thousand barrels (1,000 barrels)

MMbbls=one million barrels (1,000,000 barrels)

BOPD=barrels of oil per day

BOEPD=barrels of oil equivalent per day

MMBOE=million barrels of oil equivalent per day (1,000,000 barrels of oil equivalent per day)

Frequently Used Abbreviations - Natural Gas

Mcf=one thousand cubic feet (1,000 cubic feet)

Bcf=one billion cubic feet (1,000,000,000 cubic feet)

MCFD=one thousand cubic feet per day (1,000 cubic feet per day)

MMCF=one million cubic feet (1,000,000 cubic feet per day)

MMCFD=one million cubic feet per day (1,000,000 cubic feet per day)

Source:

Langenkamp, Robert D., ed. *The Illustrated Petroleum Reference Dictionary*. 4th ed. PennWell Books: Tulsa, 1994.

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About the INTERSTATE OIL and GAS COMPACT COMMISSION

The Interstate Oil and Gas Compact Commission (IOGCC) represents the governors of 37 states — 30 member and seven associate states — that produce virtually all the domestic oil and natural gas in the United States. Five international affiliates have been accepted into the IOGCC in recent years.

The organization's mission is to promote the conservation and efficient recovery of domestic oil and natural gas resources, while protecting health, safety and the environment.

Since its creation in 1935, the IOGCC has assisted states in balancing a multitude of interests — maximizing domestic oil and natural gas production, minimizing the waste of irreplaceable natural resources, and protecting human and environmental health — through sound regulatory practices. The IOGCC plays an active role in Washington, D.C., serving as the voice of the states on oil and natural gas issues and advocating states' rights to govern the resources found within their borders.

For more information about the IOGCC, please call 405/525-3556, visit the World Wide Web at www.iogcc.state.ok.us, or send electronic mail to iogcc@iogcc.state.ok.us

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