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Edition

Marginal Oil and Gas: Fuel for Economic Growth



IOGCC

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Marginal Oil and Gas: Fuel for Economic Growth

Over the past year, terrorist attacks and instability in the Middle East have increased the average American's awareness of our nation's dependence on foreign sources of energy. More than ever, America needs American energy.

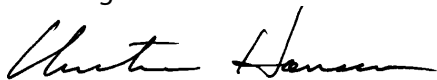
American energy is increasingly supplied by what we call marginal oil and natural gas wells, also known as stripper wells.

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. Stripper wells are the ultimate in conservation; no other nation produces as much oil and natural gas from such a source.

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 an often overlooked, but vitally important, segment of the domestic petroleum industry. As demand for oil and natural gas continues to rise and reliance on imported oil continues to be a troubling reality, production from these wells must be encouraged. America needs American energy.



Christine Hansen, Executive Director
Interstate Oil and Gas Compact Commission

Table of Contents

SECTION I

What is Marginal Oil?	3
U.S. Stripper Oil Well Data — Past 10 Years	3
U.S. Stripper Oil State Rankings	4
Secondary Recovery of Stripper Oil	5
National Stripper Oil Well Survey	6
Comparative Number of Stripper Oil Wells and Stripper Oil Well Production	
1998–1999	8
2000–2001	9

SECTION II

What is Marginal Gas?	11
U.S. Stripper Gas Well Data — Past 9 Years	11
U.S. Stripper Natural Gas State Rankings	12
National Stripper Gas Well Survey	13
Comparative Number of Stripper Gas Wells and Stripper Gas Well Production	
1998–1999	14
2000–2001	15

SECTION III

The Economic Impact of Stripper Wells in the United States	
Executive Summary	17
Stripper Well Production and Abandonments	19
Wellhead Prices for Oil and Natural Gas	19
Effects of Stripper Oil and Natural Gas Abandonment	20
RIMS II Multipliers	23
Impact of Stripper Oil and Gas Production on the U.S. Economy	23
Severance and Ad Valorem Tax	26
Conclusion	28
Appendix–Background of RIMS	30

GLOSSARY	32
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ACKNOWLEDGMENTS	33
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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 (2.15 barrels a day, on average), there are 403,459 of them in the United States. Combined, these stripper wells produced more than 316 million barrels of oil in 2001, 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
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	#411,629	#325,947	2.16	10,718
2001	403,459	316,099	2.15	12,234

Revised.

U.S. State Rankings — Stripper Oil

	Number of Stripper Oil Wells	Production from Stripper Oil Wells (bbls)	Total 2001 Oil Production (Mbbbls)	Average Daily Production Per Well
1	Texas	Texas	Texas	South Dakota
2	Oklahoma	Oklahoma	California	Alabama
3	Kansas	California	Louisiana	North Dakota
4	Ohio	Kansas	Oklahoma	California
5	California	Louisiana	New Mexico	Utah
6	Louisiana	New Mexico	Wyoming	Arizona
7	Kentucky	Illinois	Kansas	Colorado
8	Illinois	Wyoming	North Dakota	Mississippi
9	Pennsylvania	Ohio	Colorado	Nebraska
10	New Mexico	Arkansas	Mississippi	Texas
11	Wyoming	Colorado	Montana	New Mexico
12	West Virginia	Pennsylvania	Utah	Arkansas
13	Colorado	North Dakota	Illinois	Oklahoma
14	Indiana	Kentucky	Arkansas	Michigan
15	Arkansas	Indiana	Michigan	Tennessee
16	New York	Michigan	Ohio	Montana
17	Montana	Montana	Alabama	Louisiana
18	Michigan	Nebraska	Nebraska	Kansas
19	Nebraska	Utah	Kentucky	Wyoming
20	North Dakota	West Virginia	Pennsylvania	Illinois
21	Utah	Alabama	Indiana	Indiana
22	Alabama	Mississippi	South Dakota	Virginia
23	Mississippi	Tennessee	West Virginia	Missouri
24	Missouri	New York	Tennessee	Ohio
25	Tennessee	Missouri	New York	West Virginia
26	Arizona	South Dakota	Missouri	Pennsylvania
27	South Dakota	Arizona	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, 2002

State	Estimated Secondary Oil Produced from Stripper Wells (Mbbls)	Percent of Total Stripper Production from Secondary
Alabama	898	85.2
Colorado	6,080	67.9
Kansas	12,186	48.4
Kentucky	1,668	80.3
Missouri	78	85.7
Nebraska	1,128	64.0
New Mexico	5,387	40.9
New York	30	16.4
Ohio	53	01.1
Oklahoma	24,524	52.1
South Dakota	23	66.5
West Virginia	375	30.0

National Stripper Oil Well Survey As of January 1, 2002

State	Number of Stripper Oil Wells	Production from Stripper Oil Wells (bbls)	Oil Wells Plugged and Abandoned	Average Daily Production Per Well
Alabama	641	1,054,118	3	4.51
Arizona	20	25,942	0	3.55
Arkansas	3,404	3,316,454	43	2.67
California	24,303	35,133,050	1,469	3.96
Colorado	7,003	4,646,241	168	1.82
Illinois	*17,876	*10,220,000	689	1.57
Indiana	5,034	2,021,618	93	1.10
Kansas	33,886	25,178,007	1,614	2.04
Kentucky	19,615	2,077,228	202	0.29
Louisiana	21,024	16,126,868	*760	2.10
Michigan	2,210	1,849,850	*141	2.29
Mississippi	385	490,784	62	3.49
Missouri	308	90,919	1	0.81
Montana	2,267	1,830,438	135	2.21
Nebraska	1,475	1,765,208	83	3.28
New Mexico	13,243	13,175,602	203	2.73
New York	2,876	183,095	36	0.17
North Dakota	1,340	2,110,860	48	4.32
Ohio	28,887	4,904,815	216	0.47
Oklahoma	55,295	47,070,879	710	2.33
Pennsylvania	*15,270	*2,233,000	~200	0.40
South Dakota	20	34,574	0	4.74
Tennessee	*288	241,036	*45	2.29
Texas	125,823	129,017,097	5,126	2.81
Utah	1,043	1,449,051	30	3.81
Virginia	16	5,764	0	0.99
West Virginia	8,384	1,250,000	50	0.41
Wyoming	11,523	8,596,694	107	2.04
TOTALS	403,459	316,099,192	12,234	2.15

* Estimated.

~ Does not include wells plugged under the state's abandoned and orphaned well plugging programs.

National Stripper Oil Well Survey As of January 1, 2002

State	Total 2001 Oil Production (Mbbls)	Stripper Oil Well Reserves		Total
		Primary	Secondary (Mbbls)	
Alabama	5,401	1,034	1,100	2,134
Arizona	60	105	0	105
Arkansas	7,500	37,180	31,800	68,980
California	291,686	66,688	57,731	124,419
Colorado	19,209	18,363	13,297	31,660
Illinois	11,240	14,254	15,913	30,167
Indiana	2,021	7,868	7,774	15,642
Kansas	34,098	59,152	52,773	111,925
Kentucky	2,798	3,852	7,548	11,400
Louisiana	70,945	64,920	62,375	127,295
Michigan	7,374	12,677	12,180	24,857
Mississippi	18,243	6,818	5,807	12,625
Missouri	91	1,320	1,360	2,680
Montana	16,263	27,801	36,110	63,911
Nebraska	2,922	3,081	5,542	8,533
New Mexico	60,817	22,095	16,144	38,239
New York	183	1,072	117	1,189
North Dakota	31,692	26,336	25,814	52,150
Ohio	6,050	41,164	136	41,300
Oklahoma	66,842	97,242	104,421	201,663
Pennsylvania	*2,233	8,634	12,531	21,165
South Dakota	1,255	128	122	250
Tennessee	386	165	110	275
Texas	380,473	542,318	581,658	1,123,976
Utah	15,252	10,411	10,205	20,616
Virginia	11	55	52	107
West Virginia	1,250	5,031	4,141	9,172
Wyoming	49,094	39,075	35,925	75,000
TOTALS	1,105,389 +	1,118,839	1,102,596	2,221,435

* Estimated.

+ Total represents only oil production from states with stripper wells.

Comparative Number of Stripper Oil Wells and Stripper Oil Well Production 1998–1999

State	1998		1999	
	Number of Stripper Wells	Production from Stripper Wells (bbls)	Number of Stripper Wells	Production from Stripper Wells (bbls)
Alabama	643	1,425,271	623	1,198,666
Arizona	22	28,371	20	19,813
Arkansas	3,515	3,026,268	3,803	#3,024,751
California	23,058	33,979,973	21,541	29,204,360
Colorado	6,229	5,449,701	7,739	4,133,362
Illinois	19,532	12,933,500	19,016	11,675,350
Indiana	5,126	2,209,811	5,101	1,997,991
Kansas	40,159	26,225,073	39,172	27,654,934
Kentucky	19,883	2,429,899	23,140	2,287,088
Louisiana	*17,900	*10,500,000	21,269	15,820,924
Michigan	*2,760	3,204,447	1,993	1,398,712
Mississippi	413	501,123	426	459,574
Missouri	293	92,805	299	91,487
Montana	2,478	2,063,156	2,325	1,834,431
Nebraska	1,646	2,113,098	1,498	1,828,293
New Mexico	12,379	12,034,073	12,057	12,005,005
New York	3,041	217,154	3,170	190,933
North Dakota	1,338	1,979,819	1,286	1,841,780
Ohio	28,955	5,077,539	28,960	4,269,317
Oklahoma	66,444	49,664,796	65,730	50,039,671
Pennsylvania	#13,600	#2,027,230	#14,450	#2,138,000
South Dakota	17	14,183	18	16,858
Tennessee	387	237,721	*392	*246,054
Texas	120,090	128,822,329	120,074	131,129,272
Utah	838	1,113,425	898	1,302,804
Virginia	17	3,889	13	3,991
West Virginia	8,464	1,450,000	8,434	1,390,000
Wyoming	7,153	8,045,632	7,233	8,310,862
TOTALS	#406,380	#316,870,286	#410,680	#315,514,283

* Estimated.

Revised.

Comparative Number of Stripper Oil Wells and Stripper Oil Well Production 2000–2001

State	2000		2001	
	Number of Stripper Wells	Production from Stripper Wells (bbls)	Number of Stripper Wells	Production from Stripper Wells (bbls)
Alabama	627	1,143,718	641	1,054,118
Arizona	20	21,083	20	25,942
Arkansas	3,286	3,211,423	3,404	3,316,454
California	22,244	31,499,570	24,303	35,133,050
Colorado	7,618	3,913,368	7,003	8,948,023
Illinois	*18,491	*10,450,000	*17,876	*10,220,000
Indiana	5,049	2,052,000	5,034	2,021,618
Kansas	35,359	25,062,955	33,886	25,178,007
Kentucky	24,585	2,372,072	19,615	2,077,228
Louisiana	21,091	15,286,171	21,024	16,126,868
Michigan	*2,550	3,214,363	2,210	1,849,850
Mississippi	376	576,252	385	490,784
Missouri	327	106,057	308	90,919
Montana	#2,312	#1,775,017	2,267	1,830,438
Nebraska	1,483	1,831,497	1,475	1,765,208
New Mexico	12,642	12,823,174	13,243	13,175,602
New York	2,638	180,591	2,876	183,095
North Dakota	1,357	2,112,883	1,340	2,110,860
Ohio	28,918	5,378,100	28,887	4,904,815
Oklahoma	60,120	50,068,248	55,295	47,070,879
Pennsylvania	*15,170	*2,223,500	*15,270	*2,233,000
South Dakota	17	15,867	20	34,574
Tennessee	301	189,156	*288	241,036
Texas	126,028	135,151,385	125,823	129,017,097
Utah	943	1,418,314	1,043	1,449,051
Virginia	15	4,599	16	5,764
West Virginia	8,450	1,300,000	8,384	1,250,000
Wyoming	9,612	12,565,818	11,523	8,596,694
TOTALS	411,629	325,947,181	403,459	320,400,974

* Estimated.

Revised.

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 2001. 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 has shown a slight increase.

As with stripper oil wells, “abandoned” natural gas wells are those that have been permanently plugged. After a one year decline, the total number of pluggings increased again in 2001 (3,600 natural gas wells 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 9 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	4,661	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#	223,222	1,258,726,664	3,534	15.4
2001	234,507	1,353,516,378	3,600	15.8

Revised.

U.S. State Rankings — Stripper Natural Gas

	Number of Stripper Natural Gas Wells	Production from Stripper Natural Gas Wells (Mcf)	Total 2001 Natural Gas Production (Mcf)	Average Daily Production Per Well
1	Pennsylvania	Texas	Texas	Virginia
2	West Virginia	West Virginia	New Mexico	Michigan
3	Ohio	Pennsylvania	Oklahoma	Colorado
4	Texas	Oklahoma	Wyoming	Kansas
5	Kentucky	Colorado	Louisiana	Alabama
6	Oklahoma	New Mexico	Colorado	Utah
7	Wyoming	Kansas	Kansas	Oklahoma
8	Colorado	Ohio	Alabama	New Mexico
9	Louisiana	Kentucky	Utah	California
10	New Mexico	Michigan	West Virginia	Mississippi
11	Kansas	Wyoming	Michigan	Arkansas
12	New York	Louisiana	Pennsylvania	Texas
13	Michigan	Montana	Arkansas	Nebraska
14	Montana	Alabama	Mississippi	South Dakota
15	Arkansas	Arkansas	Ohio	Montana
16	Alabama	New York	California	West Virginia
17	Indiana	Utah	Kentucky	North Dakota
18	Utah	California	Montana	Maryland
19	California	Virginia	Virginia	Kentucky
20	Tennessee	Mississippi	New York	Wyoming
21	Mississippi	Indiana	North Dakota	Louisiana
22	Virginia	Tennessee	Tennessee	Pennsylvania
23	Nebraska	Nebraska	Indiana	Arizona
24	Illinois	South Dakota	Nebraska	Tennessee
25	North Dakota	North Dakota	South Dakota	Ohio
26	South Dakota	Illinois	Arizona	New York
27	Maryland	Maryland	Illinois	Illinois
28	Arizona	Arizona	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, 2002

State	Number of Stripper Gas Wells	Production from Stripper Gas Wells (Mcf)	Gas Wells Plugged and Abandoned	Average Daily Production Per Well (Mcf)	Total 2001 Gas Production (MMcf)
Alabama	**1,562	**16,426,849	**35	28.8	**388,146
Arizona	4	12,494	0	8.6	307
Arkansas	1,685	14,384,737	49	23.4	151,827
California	422	3,661,981	9	23.8	94,781
Colorado	9,696	117,016,679	25	33.1	1,105,316
Illinois	84	84,000	*10	2.7	84
Indiana	1,533	1,063,673	8	1.9	1,064
Kansas	6,350	74,416,072	263	32.1	480,926
Kentucky	15,492	72,635,394	60	12.8	81,723
Louisiana	9,481	*37,344,000	*409	10.8	@1,376,123
Maryland	10	49,442	0	13.5	49
Michigan	3,423	44,411,120	55	35.5	208,000
Mississippi	237	2,040,032	31	23.6	99,411
Montana	3,411	24,194,551	25	19.4	75,182
Nebraska	97	779,443	2	22.0	#855
New Mexico	8,844	78,022,278	135	24.2	1,465,383
New York	5,530	11,049,922	23	5.5	27,201
North Dakota	65	341,700	41	14.4	13,873
Ohio	33,306	72,905,000	408	6.0	98,255
Oklahoma	13,550	126,632,440	265	25.6	1,455,938
Pennsylvania	*39,480	*130,853,000	~124	9.1	*156,710
South Dakota	61	475,009	0	21.3	563
Tennessee	*405	1,059,499	*12	7.2	2,003
Texas	31,018	249,667,163	1,179	22.1	4,885,293
Utah	751	7,445,472	12	27.2	265,464
Virginia	150	2,238,136	9	40.9	71,543
West Virginia	37,539	*221,662,000	370	16.2	221,662
Wyoming	10,321	42,644,292	32	11.3	1,385,962
TOTALS	234,507	1,353,516,378	3,591	15.8	14,113,644+

* Estimated.

** Includes natural gas from coal seams.

@ Total 1999 natural gas production revised to 1,304,284 MMcf; 2000 production revised to 1,325,810 MMcf.

Total 2000 natural gas production changed to 861 MMcf.

~ Does not include wells plugged under the state's abandoned and orphaned well plugging programs.

+ Total represents only gas production from states with stripper wells.

Comparative Number of Stripper Gas Wells and Stripper Gas Well Production 1998–1999

State	1998		1999	
	Number of Stripper Wells	Production From Stripper Wells (Mcf)	Number of Stripper Wells	Production From Stripper Wells (Mcf)
Alabama	181	1,801,454	188	1,860,016
Arizona	4	4,177	2	13,015
Arkansas	1,362	13,017,626	1,317	13,147,008
California	371	3,252,540	390	3,158,092
Colorado	5,555	55,797,280	9,583	55,584,112
Illinois	#101	88,000	#101	88,000
Indiana	1,479	615,132	1,498	854,746
Kansas	3,314	40,393,725	3,741	46,089,777
Kentucky	14,126	72,765,274	14,381	68,232,871
Louisiana	*8,500	*23,300,000	9,301	*28,650,000
Maryland	13	66,700	13	75,080
Michigan	2,242	29,467,850	2,654	36,802,624
Mississippi	172	1,388,776	176	1,510,691
Montana	3,058	23,112,128	3,130	23,194,775
Nebraska	87	921,699	91	846,096
New Mexico	8,237	73,746,382	8,197	74,182,940
New York	6,118	12,500,771	5,301	11,278,424
North Dakota	62	342,500	63	473,020
Ohio	33,430	79,333,000	33,259	67,612,000
Oklahoma	12,257	114,668,483	12,632	114,748,619
Pennsylvania	#34,050	#115,860,000	#34,470	#115,390,000
South Dakota	48	488,300	60	504,639
Tennessee	225	1,316,408	*203	1,183,725
Texas	27,368	221,513,637	28,281	226,317,787
Utah	484	4,373,542	601	5,848,384
Virginia	144	*2,501,856	130	2,078,844
West Virginia	35,594	198,500,000	36,094	218,350,000
Wyoming	1,163	13,546,735	1,909	20,904,221
TOTALS	#199,745	#1,104,683,975	#207,766	1,138,979,506

* Estimated.

Revised.

Comparative Number of Stripper Gas Wells and Stripper Gas Well Production 2000–2001

State	2000		2001	
	Number of Stripper Wells	Production From Stripper Wells (Mcf)	Number of Stripper Wells	Production From Stripper Wells (Mcf)
Alabama	**1,416	**14,389,992	**1,562	**16,426,849
Arizona	5	39,937	4	12,494
Arkansas	1,609	14,926,696	1,685	14,384,737
California	369	2,832,541	422	3,661,981
Colorado	10,196	57,973,752	9,696	117,016,679
Illinois	101	88,000	84	84,000
Indiana	1,502	829,000	1,533	1,063,673
Kansas	8,701	94,148,749	6,350	74,416,072
Kentucky	13,855	72,477,105	15,492	72,635,394
Louisiana	9,645	*26,899,000	9,481	*37,344,000
Maryland	7	34,036	10	49,442
Michigan	3,165	41,586,990	3,423	44,411,120
Mississippi	449	1,652,289	237	2,040,032
Montana	#3,267	#23,043,552	3,411	24,194,551
Nebraska	94	746,111	97	779,443
New Mexico	8,534	77,671,921	8,844	78,022,278
New York	5,446	11,091,622	5,530	11,049,922
North Dakota	63	347,476	65	341,700
Ohio	33,352	74,484,000	33,306	72,905,000
Oklahoma	11,554	120,014,250	13,550	126,632,440
Pennsylvania	*35,337	*125,191,000	*39,480	*130,853,000
South Dakota	54	460,942	61	475,009
Tennessee	191	1,065,860	*405	1,059,499
Texas	29,302	238,351,492	31,018	249,667,163
Utah	626	6,016,921	751	7,445,472
Virginia	133	2,053,579	150	2,238,136
West Virginia	36,816	220,000,000	37,539	221,662,000
Wyoming	7,433	30,309,851	10,321	42,644,292
TOTAL	#223,222	#1,258,726,664	234,507	1,353,516,378

* Estimated.

** Includes natural gas from coal seams.

Revised.

The Economic Impact of Stripper Wells in the United States

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Executive Summary

The current recession sent energy markets into a tailspin in 2001. In comparison to a domestic first-purchase price per barrel of oil averaging \$26.72 in year 2000, the average 2001 price was only \$21.84. By December 2001, the price per barrel had fallen to \$15.54. Prices began to pick up in 2002, reaching \$23.02 in May. Wellhead natural gas prices reached historic levels in 2001, averaging \$8.06 per MCF in January 2001. From that stratospheric level, the decline has been startling. By December of that same year, the price had fallen to \$2.38 per MCF and continued to fall until February 2002, recording a \$2.14 per MCF average price. From that time, there has been some increase in prices, but these markets remain volatile. Talk of war in Iraq and continuing difficulties with the economy are likely to lead to further volatility.

While prices have been volatile, energy production has been comparatively stable. Domestic production of crude oil declined mildly from averaged 5,822 million BOPD in 2000 to 5,801 million in 2001. Marketed production of natural gas increased from 20,002 BCF in 2000 to an estimated 20,474 BCF in 2001. Both the 2000 and 2001 production levels show some growth from an average marketed production level of 19,861 BCF, 1996-1999. As evidenced by the rising burden of imports, America's demand for oil seems almost insatiable. Imports of crude oil overtook domestic production in 1994. Since that time, imports have continued to expand dramatically. In 2001, imports exceed domestic production by a striking 3.5 million BOPD.

Each barrel of oil and MCF of natural gas produced domestically adds to the economic vitality of the U.S., reduces energy dependency, and keeps dollars from flowing abroad. It also produces considerable tax revenue to states and localities. Stripper wells are very much a part of the oil and natural gas production scene domestically. This study provides an analysis of the economic impacts of stripper-well oil and gas production in the United States.

Stripper oil wells produced 316,099,192 barrels of oil in 2001, according to the IOGCC's 2001 National Stripper Oil Well Survey. Better than one in seven (14.9 percent) domestically produced barrels of oil was from the nation's 403,459 stripper wells. A total of 12,244 of these wells were abandoned in 2001. The number of oil stripper wells fell from the 2000 level of 411,629 in contrast to a brief period of trend-reversing growth in that year from the 1999 level of 410,680. The nation's 234,507 stripper gas wells produced 1.354 trillion cubic feet of natural gas in 2001, according to the IOGCC's 2001 National Stripper Gas Well Survey, or about one in ten (9.6 percent) of all natural gas production. A total of 3,591 of these wells were abandoned. Despite these abandonments, the number of gas stripper wells grew from the 2000 level of 223,222 by almost 11,300 wells.

This study quantifies the economic impact of stripper well production and abandonments in terms of the value of industry and final demand output, earnings, employment, and tax receipts. The results underscore the importance of the stripper well production to economic well-being in the United States. The study shows that 2001 production from stripper wells had a market value of \$12.7 billion. This translates through input-output analysis to an economy-wide estimated impact of \$19.6 billion in all industry output, and accounts for earnings of \$2.6 billion and employment of 111,000. In addition, state severance taxes on stripper-well production amounted to an estimated \$471.2 million.

The detailed results presented below document the process by which the economy-wide effects are calculated. Reviewed first is stripper well production in the 11 survey states. This is followed by computation of wellhead prices. The analysis then turns to examination of the gross revenue effects of abandonment, also considering the effects of a hypothetical total abandonment, which enables the gross revenue impact of stripper well production to be assessed. Using RIMS II multipliers, these gross revenue effects of abandonment are translated into economy-wide impacts. Severance tax collections are, then, estimated, followed by a concluding section, some historical data from previous studies and references.

TABLE 1**Stripper Well Data — Oil**

State	Number of Stripper Oil Wells	2001 Production from Stripper Wells (bbls)	2001 Abandonments	2001 Average Daily Production Per Well (BOPD)
California	24,303	35,133,050	1,469	3.96
Colorado	7,003	4,646,241	168	1.82
Kansas	33,886	25,178,007	1,614	2.03
Louisiana	21,024	16,126,868	760	2.10
Mississippi	385	490,784	62	3.49
New Mexico	13,243	13,175,602	203	2.72
North Dakota	1,340	2,110,860	48	4.31
Oklahoma	55,295	47,070,879	710	2.33
Texas	125,823	129,017,097	5,126	2.81
Utah	1,043	1,449,051	30	3.81
Wyoming	11,523	8,596,694	107	2.04

SUBTOTAL	294,791	282,995,133	10,297	2.63
ALL OTHERS	108,668	33,503,924	1,998	0.84

TOTAL U.S.	403,459	316,099,192	12,234	2.15
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Stripper Well Data — Natural Gas

State	Number of Stripper Gas Wells	2001 Production from Stripper Wells (Mcf)	2001 Abandonments	2001 Average Daily Production Per Well (MCFD)
California	422	3,661,981	9	23.77
Colorado	9,696	117,016,679	25	33.06
Kansas	6,350	74,416,072	263	32.10
Louisiana	9,481	37,344,000	409	10.79
Mississippi	237	2,040,032	31	23.58
New Mexico	8,844	78,022,278	135	24.17
North Dakota	65	341,700	41	14.40
Oklahoma	13,550	126,632,440	265	25.60
Texas	31,018	249,667,163	1,179	22.05
Utah	751	7,445,472	12	27.16
Wyoming	10,321	42,644,292	32	11.32

SUBTOTAL	90,735	739,232,109	2,401	22.30
ALL OTHERS	143,772	614,284,269	1,190	11.70

TOTAL U.S.	234,507	1,353,516,378	3,591	15.80
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Stripper Well Data — Oil and Natural Gas

	Number of Stripper Wells	2001 Abandonments
SUBTOTAL	385,526	12,698
ALL OTHERS	252,440	3,188
TOTAL U.S.	637,966	15,825

Stripper Well Production and Abandonments

Data from the IOGCC's survey detail production and abandonments in the 11 survey states. Stripper oil wells number 294,791 in these 11 states, representing 283 million barrels of oil in 2001, accounting for 73 percent of all such wells and almost 90 percent of stripper oil well production. The total number of stripper oil wells fell in 2001, from 411,793 to 403,459. Abandonments in 2001 were 12,234, up from 10,718 in 2000. The survey states accounted for the lion's share of abandonments, 85 percent. Average BOPD was 2.63 for the survey states and averaged only 0.84 in all other states.

Stripper gas wells number 234,507 in 2001 with the survey states representing 90,735, or 39 percent of the total number of stripper gas wells. These 11 states, however, accounted for a majority of production, 54.6 percent. In total, stripper gas wells produced 1.354 trillion cubic feet of natural gas. 3,591 wells were abandoned with about two-thirds occurring in the survey states. As noted above, despite the abandonments, the total number of stripper gas wells rose by almost 11,000 in 2001. The rate of abandonment for stripper gas wells has remained fairly constant in recent years. Average daily production of natural gas was about two-thirds higher than the rate in the survey states in comparison to non-survey states at 21.6 MCF. Total abandonments of both types of stripper wells were 15,825, about 1,600 higher than in 2000.

Wellhead Prices for Oil and Natural Gas

Table 2 presents the total value of oil production, total production, and weighted average wellhead price for oil and gas for the survey states, balance of states, and the U.S. The primary source of this information is the Department of Energy's Energy Information Administration (EIA). Oil prices for the survey states is as reported by the EIA. Wellhead prices of natural gas for 2001 are not available from the EIA at the time of this reporting. The average price nationally is available. To estimate natural gas prices for year 2001, a regression technique

TABLE 2

Wellhead Prices — Oil and Natural Gas

	2001 Total Oil Value \$ x 1,000	2001 Total Oil Production bbl x 1,000	2001 Weighted Average Wellhead \$/bbl	2001 Total Natural Gas Value \$ x 1,000	2001 Total Natural Gas Production Mcf x 1,000	2001 Weighted Average Wellhead \$/Mcf
California	\$5,241,973	260,665	\$20.11	\$2,108,552	375,856	\$5.61
Colorado	\$409,976	16,518	\$24.82	\$3,040,914	736,299	\$4.13
Kansas	\$799,673	33,942	\$23.56	\$1,687,168	468,658	\$3.60
Louisiana	\$2,563,942	104,608	\$24.51	\$22,316,934	5,456,463	\$4.09
Mississippi	\$412,668	19,530	\$21.13	\$409,727	107,540	\$3.81
New Mexico	\$1,612,983	68,001	\$23.72	\$5,736,967	1,521,742	\$3.77
North Dakota	\$746,323	31,691	\$23.55	\$234,057	54,432	\$4.30
Oklahoma	\$1,691,345	68,531	\$24.68	\$6,968,190	1,679,082	\$4.15
Texas	\$9,932,745	424,295	\$23.41	\$27,940,852	6,335,794	\$4.41
Utah	\$367,396	15,251	\$24.09	\$1,032,484	284,431	\$3.63
Wyoming	\$1,237,659	57,432	\$21.55	\$5,099,733	1,345,576	\$3.79
SUBTOTAL	\$25,016,688	1,100,464	\$22.73	\$76,575,581	18,365,873	\$4.17
ALL OTHERS	\$1,707,031	74,047	\$23.05	\$7,778,534	2,108,427	\$3.69
TOTAL U.S. *	\$26,723,720	1,174,511	\$22.75	\$84,354,116	20,474,300	\$4.12

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

was used to estimate the relationship between historical state prices and the national average price. Then, the value of the national average price was plugged into the resulting regression equation in order to produce an estimated price for each state. The total value of oil production, excluding Alaska and Federal Offshore, was \$26.7 billion in 2001, down from \$33.7 billion in 2000. Total oil production was 1.17 billion barrels. The weighted average price per barrel was \$22.75. This is almost four dollars lower than the weighted average price in 2000.

The value of natural gas production, which includes Alaska and Federal Offshore, was \$84.4 billion. A total of 20.5 trillion cubic feet of gas was produced in 2001 at an average wellhead price of \$4.12. The vast majority of this natural gas was produced in the survey states, indicating the dominance of these states in such production.

Effects of Stripper Oil and Gas Well Abandonment

Using the information developed in Tables 1 and 2, Tables 3A and 3B estimate the gross revenue loss associated with abandoned wells and total abandonment of stripper production. The latter set of estimates provides a review of the gross revenue contribution of the stripper well industry.

There is a small difference between aggregate average price per barrel of oil and per MCF in Table 3A and 3B in comparison to Table 2 results that warrants explanation. The percentage distribution of abandonments among the 11 survey states, indeed all states, differs from the distribution of stripper wells. To obtain an appropriate weighted average of the price, it is necessary to use the 2001 Abandonments values as the weighting factor for Table 3A, but the Number of Stripper Wells values as the weighting factor for Table 3B. Using this procedure, it can be seen that there is an inherent consistency in the tables. For example, summing the individual 11 detailed state values of 2001 Lost Gross Revenue yields a subtotal of \$236,943,449. This is also the result one obtains by multiplying the Lost Annual Production (bbls) value of 10,355,943.9 times the \$22.88 price in the subtotal row from the oil abandonment table. This weighted price differs from the \$22.73 price shown in Table 2, where total oil production per state was used as the weighting factor. It is important to use the appropriate weighting factor for the economic impact computations.

Average per day production is used to compute the estimates of revenue loss in Tables 3A and 3B. It should be noted that this is tantamount to an assumption that abandoned wells have the same average productivity as their unabandoned counterparts. This likely leads to some overstatement of the gross revenue loss from abandonment. There is no definitive estimate of the average production rates for abandoned wells. The IOGCC and the Department of Energy estimate that the range is between one and two BOPD, and the equivalent rate of 10 to 20 MCFD is pertinent for gas wells. While there is likely overstatement of the effects of abandonment, use of average figures is justified as an historical benchmark for comparison with results from prior years.

As reported in the first set of tables in Table 3A, the 12,234 abandonments of oil stripper wells are estimated to have generated 11.3 million barrels of oil in 2001 with an economic value of \$258.9 million. The 11 survey states account for 92 percent of this estimated production and gross revenue loss. The second table in 3A reveals an estimated loss of 24.66 BCF with an economic value of \$100.1 billion from 3,591 gas well abandonments. Survey states represent 77 percent of this total lost output and 79 percent of the economic value.

As mentioned above, Table 3B estimates the hypothetical revenue loss associated with total abandonment of oil and gas stripper wells. Total oil production loss is estimated to be 320 million barrels in 2001 with an economic value of \$7.46 billion. The survey states represent about 90 percent of this hypothetical output loss and 89 percent of the economic value. Total abandonment of marginal gas wells is estimated to produce a loss of 1.35 trillion cubic feet of natural gas having an economic value of \$5.39 billion. Only 39 percent of the 234,507 stripper gas wells are found in the survey states, but these states represent about 55 percent of the production loss and 56 percent of the economic value loss.

The combined hypothetical revenue loss from abandonment of all oil and gas stripper wells is \$12.8 billion, representing 11.5 percent of total value of oil and gas production in the lower 48 in 2001 of \$111.1 billion.

TABLE 3A

Effect of 2001's Abandonment — Oil

State	Number of Stripper Wells	2001 Production From Stripper Wells (bbls)	2001 Abandonments	2001 Average Daily Production Per Well (BOPD)	Lost Annual Production (bbls)	2001 Average \$ / bbl	2001 Lost Gross Revenue
California	24,303	35,133,050	1,469	3.96	2,123,624	\$20.11	\$42,706,092
Colorado	7,003	4,646,241	168	1.82	111,462	\$24.82	\$2,766,487
Kansas	33,886	25,178,007	1,614	2.03	1,199,235	\$23.56	\$28,253,994
Louisiana	21,024	16,126,868	760	2.10	582,972	\$24.51	\$14,288,662
Mississippi	385	490,784	62	3.49	79,035	\$21.13	\$1,670,016
New Mexico	13,243	13,175,602	203	2.72	201,966	\$23.72	\$4,790,654
North Dakota	1,340	2,110,860	48	4.31	75,612	\$23.55	\$1,780,683
Oklahoma	55,295	47,070,879	710	2.33	604,400	\$24.68	\$14,916,603
Texas	125,823	129,017,097	5,126	2.81	5,256,126	\$23.41	\$123,045,927
Utah	1,043	1,449,051	30	3.81	41,679	\$24.09	\$1,004,054
Wyoming	11,523	8,596,694	107	2.04	79,826	\$21.55	\$1,720,271
SUBTOTAL	294,868	282,995,133	10,297	2.63	10,355,943	\$22.88	\$236,943,449
ALL OTHERS	108,591	33,104,059	1,937	1.33	939,460	\$23.34	\$21,930,271
TOTAL U.S. *	403,459	316,099,192	12,234	2.53	11,295,404	\$22.92	\$258,873,720

Effect of 2001's Abandonment — Natural Gas

State	Number of Stripper Wells	2001 Production From Stripper Wells (Mcf)	2001 Abandonments	2001 Average Daily Production Per Well (MCFD)	Lost Annual Production (Mcf)	2001 Average \$ / Mcf	2001 Lost Gross Revenue
California	422	3,661,981	9	23.77	78,099	\$5.61	\$438,136
Colorado	9,696	117,016,679	25	33.06	301,713	\$4.13	\$1,246,078
Kansas	6,350	74,416,072	263	32.11	3,082,114	\$3.60	\$11,095,612
Louisiana	9,481	37,344,000	409	10.79	1,610,979	\$4.09	\$6,588,905
Mississippi	237	2,040,032	31	23.58	266,839	\$3.81	\$1,016,659
New Mexico	8,844	78,022,278	135	24.17	1,190,977	\$3.77	\$4,489,986
North Dakota	65	341,700	41	14.40	215,533	\$4.30	\$926,795
Oklahoma	13,550	126,632,440	265	25.60	2,476,575	\$4.15	\$10,277,788
Texas	31,018	249,667,163	1,179	22.05	9,489,895	\$4.41	\$41,850,440
Utah	751	7,445,472	12	27.16	118,968	\$3.63	\$431,857
Wyoming	10,321	42,644,292	32	11.31	132,217	\$3.79	\$501,104
SUBTOTAL	90,735	739,232,109	2,401	21.64	18,963,915	\$4.16	\$78,863,363
ALL OTHERS	143,772	614,284,269	1,190	13.10	5,690,749	\$3.74	\$21,270,462
TOTAL U.S. *	234,507	1,353,516,378	3,591	18.81	24,654,664	\$4.06	\$100,133,824

Effect of 2001's Abandonment — Oil and Natural Gas Combined

	Number of Stripper Wells	2001 Abandonments	2001 Lost Gross Revenue
SUBTOTAL	385,603	12,698	315,806,812
ALL OTHERS	252,363	3,127	794,693,590
TOTAL U.S. *	637,966	15,825	1,110,500,402

* 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	2001 Production Number of Stripper Wells	Hypothetical From Stripper Wells (bbls)	2001 Average Abandon- ments	Lost Annual Daily Production Per Well (BOPD)	2001 Production (bbls)	Hypothetical Average \$ / bbl	2001 Lost Gross Revenue
California	24,303	35,133,050	24,303	3.96	35,133,050	\$20.11	\$706,525,635
Colorado	7,003	4,646,241	7,003	3.50	4,646,241	\$24.82	\$115,319,701
Kansas	33,886	25,178,007	33,886	2.03	25,178,007	\$23.56	\$593,193,844
Louisiana	21,024	16,126,868	21,024	2.10	16,126,868	\$24.51	\$395,269,534
Mississippi	385	490,784	385	3.49	490,784	\$21.13	\$10,370,265
New Mexico	13,243	13,175,602	13,243	2.72	13,175,602	\$23.72	\$312,525,279
North Dakota	1,340	2,110,860	1,340	4.31	2,110,860	\$23.55	\$49,710,753
Oklahoma	55,295	47,070,879	55,295	2.33	47,070,879	\$24.68	\$1,161,709,294
Texas	125,823	129,017,097	125,823	2.81	129,017,097	\$23.41	\$3,020,290,241
Utah	1,043	1,449,051	1,043	3.81	1,449,051	\$24.09	\$34,907,638
Wyoming	11,523	8,596,694	11,523	2.04	8,596,694	\$21.55	\$185,258,755
SUBTOTAL	294,868	282,995,133	294,868	2.63	282,995,133	\$23.18	\$6,585,080,939
ALL OTHERS	108,591	33,104,059	108,591	0.83	33,104,059	\$23.34	\$772,763,319
TOTAL U.S. *	403,459	316,099,192	403,459	2.15	316,099,192	\$23.26	\$7,352,409,513

Effect of Hypothetical Abandonment of All Stripper Wells — Natural Gas

State	Number of Stripper Wells	2001 Production From Stripper Wells (Mcf)	Hypothetical Abandon- ments	2001 Average Daily Production Per Well (Mcf/d)	Lost Annual Production (Mcf)	2001 Average \$ / Mcf	Hypothetical 2001 Lost Gross Revenue
California	422	3,661,981	422	23.80	3,665,914	\$5.61	\$20,565,777
Colorado	9,696	117,016,679	9,696	33.10	117,142,224	\$4.13	\$483,797,385
Kansas	6,350	74,416,072	6,350	32.10	74,399,775	\$3.60	\$267,839,190
Louisiana	9,481	37,344,000	9,481	10.80	37,374,102	\$4.09	\$152,860,077
Mississippi	237	2,040,032	237	23.60	2,041,518	\$3.81	\$7,778,183
New Mexico	8,844	78,022,278	8,844	24.20	78,119,052	\$3.77	\$294,508,826
North Dakota	65	341,700	65	14.40	341,640	\$4.30	\$1,469,052
Oklahoma	13,550	126,632,440	13,550	25.60	126,611,200	\$4.15	\$525,436,480
Texas	31,018	249,667,163	31,018	22.10	250,206,697	\$4.41	\$1,103,411,534
Utah	751	7,445,472	751	27.20	7,455,928	\$3.63	\$27,065,018
Wyoming	10,321	42,644,292	10,321	11.30	42,568,964	\$3.79	\$161,336,375
SUBTOTAL	90,735	739,232,109	90,735	22.32	739,232,109	\$4.11	\$3,042,964,092
ALL OTHERS	143,772	614,284,269	143,772	11.71	614,284,269	\$3.81	\$2,344,095,623
TOTAL U.S. *	234,507	1,353,516,378	234,507	15.81	1,353,516,378	\$3.98	\$5,387,059,715

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

	Number of Stripper Wells	Hypothetical Abandonments	Hypothetical 2001 Lost Gross Revenue
SUBTOTAL	385,603		\$9,602,590,227
ALL OTHERS	252,363		\$3,116,858,942
TOTAL US *	637,966		\$12,719,449,169

* 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 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-oilfiled equipment manufacturers, such as steel mill output, truck manufacturers, and doctors and lawyers 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 the 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.

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

Using the results from Table 3 and applying the multiplier values from Table 4 yields the estimated impacts of actual and hypothetical abandonment on the economy. Table 5A reports the impacts of stripper oil well abandonment, stripper gas well abandonment, and combined impacts. Revenue loss from stripper oil well abandonment is the main input to the model in the first of the Table 5A set of tables. It shows that the \$258.9 million in revenue loss translates into lost output of \$398.0 million in all industries; earnings loss, economy-wide of \$53.1 million; and an estimated reduction in employment of 2,268. Looking only at the impacts on the oil and gas industry, earnings fall by \$25.4 million and jobs fall by nearly 1,000.

The second set of tables in Table 5A reports economic impacts of stripper gas well abandonment. Revenue loss of \$100.1 million translates into economy-wide output losses of \$153.4 million; earnings losses of \$20.3 million; and employment losses of 909 jobs. Impacts on the oil and gas industry section include a \$9.8 million loss in earnings and 406 jobs. Combined losses from abandonment include a \$551.3 million loss in output; a \$73.5 million loss in earnings; and a 3,178 reduction in employment.

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

TABLE 5A

Economic Effect of 2001's Abandonment — Oil

	2001 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 \$)	FINAL DEMAND Lost Earnings (Million \$)	Lost Employment			Lost Earnings (Million \$)	Lost Employment
California	\$42.706	1.5123	0.2043	6.5	\$64.584	\$8.724	277	0.0984	2.3089	\$4.202	99
Colorado	\$2.766	1.4951	0.1995	7.6	\$4.136	\$0.552	21	0.0983	2.7365	\$0.271	7
Kansas	\$28.253	1.4982	0.1925	14.2	\$42.330	\$5.438	401	0.0984	9.1014	\$2.780	257
Louisiana	\$14.288	1.5009	0.1936	7.9	\$21.445	\$2.766	113	0.0977	3.1864	\$1.396	45
Mississippi	\$1.670	1.4499	0.1820	11.0	\$2.421	\$0.303	18	0.0941	5.7719	\$0.157	10
New Mexico	\$4.791	1.4535	0.1810	8.4	\$6.963	\$0.867	40	0.0984	3.7648	\$0.471	18
North Dakota	\$1.780	1.4431	0.1712	8.3	\$2.569	\$0.304	15	0.0951	3.7806	\$0.169	7
Oklahoma	\$14.916	1.4470	0.1850	8.9	\$21.584	\$2.759	133	0.0984	4.3585	\$1.467	65
Texas	\$123.045	1.5795	0.2150	8.5	\$194.351	\$26.454	1,046	0.0981	3.1713	\$12.071	390
Utah	\$1.004	1.4702	0.1897	8.7	\$1.476	\$0.190	6	0.0983	3.6238	\$0.098	4
Wyoming	\$1.720	1.4037	0.1636	7.2	\$2.415	\$0.281	12	0.0971	3.2216	\$0.167	5
SUBTOTAL	\$236.943	1.5374	0.2053	8.8	\$364.277	\$48.644	2,085	0.0981	3.8307	\$23.252	908
ALL OTHERS*	\$21.930	1.5359	0.2054	8.3	\$33.683	\$4.504	182	0.0981	3.4200	\$2.151	75
TOTAL	\$258.873	1.5372	0.2053	8.8	\$397.960	\$53.149	2,267	0.0981	3.7959	\$25.404	983

Economic Effect of 2001's Abandonment — Natural Gas

	2001 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 INDUSTRY	
					FINAL DEMAND Lost Output (Million \$)	FINAL DEMAND Lost Earnings (Million \$)	Lost Employment			Lost Earnings (Million \$)	Lost Employment
California	\$0.438	1.5123	0.2043	6.5	\$0.662	\$0.089	3	0.0984	2.3089	\$0.043	1
Colorado	\$1.246	1.4951	0.1995	7.6	\$1.863	\$0.248	9	0.0983	2.7365	\$0.122	3
Kansas	\$11.095	1.4982	0.1925	14.2	\$16.623	\$2.135	157	0.0984	9.1014	\$1.092	101
Louisiana	\$6.588	1.5009	0.1936	7.9	\$9.889	\$1.275	52	0.0977	3.1864	\$0.644	21
Mississippi	\$1.016	1.4499	0.1820	11.0	\$1.474	\$0.185	11	0.0941	5.7719	\$0.095	6
New Mexico	\$4.489	1.4535	0.1810	8.4	\$6.526	\$0.812	38	0.0984	3.7648	\$0.442	17
North Dakota	\$0.927	1.4431	0.1712	8.3	\$1.337	\$0.159	8	0.0951	3.7806	\$0.088	3
Oklahoma	\$10.277	1.4470	0.1850	8.9	\$14.872	\$1.901	91	0.0984	4.3585	\$1.011	45
Texas	\$41.850	1.5795	0.2150	8.5	\$66.103	\$8.997	356	0.0981	3.1713	\$4.105	133
Utah	\$0.432	1.4702	0.1897	8.7	\$0.635	\$0.082	4	0.0983	3.6238	\$0.042	1
Wyoming	\$0.501	1.4037	0.1636	7.2	\$0.703	\$0.082	4	0.0971	3.2216	\$0.049	2
SUBTOTAL	\$78.863	1.5303	0.2024	9.3	\$120.689	\$15.969	733	0.0981	4.2272	\$7.734	333
ALL OTHERS*	\$21.270	1.5359	0.2054	8.3	\$32.669	\$4.369	176	0.0981	3.4200	\$2.086	73
TOTAL	\$100.134	1.5315	0.2031	9.1	\$153.358	\$20.338	909	0.0980	4.0557	\$9.821	406

Economic Effect of 2001's Abandonment — Oil and Natural Gas

	2001 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 INDUSTRY	
					FINAL DEMAND Lost Output (Million \$)	FINAL DEMAND Lost Earnings (Million \$)	Lost Employment			Lost Earnings (Million \$)	Lost Employment
SUBTOTAL	\$315.807	1.5356	0.2045	8.9	\$484.966	\$64.613	2,819	0.0981	3.9297	\$30.987	1,241
ALL OTHERS*	\$43.201	1.5359	0.2054	8.3	\$66.352	\$8.873	358	0.0981	3.4200	\$4.238	147
TOTAL	\$359.007	1.5356	0.2046	8.8	\$551.318	\$73.486	3,177	0.0981	3.8684	\$35.225	1,388

* 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

	2001 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	\$706.525	1.5123	0.2043	6.5	\$1,168.479	\$144.343	4,592	0.0984	2.3089	\$69.522	1,631
Colorado	\$222.090	1.4951	0.1995	7.6	\$332.046	\$44.307	1,687	0.0983	2.7365	\$21.831	608
Kansas	\$593.194	1.4982	0.1925	14.2	\$888.723	\$114.189	8,423	0.0984	9.1014	\$58.370	5,399
Louisiana	\$395.269	1.5009	0.1936	7.9	\$593.260	\$76.524	3,122	0.0977	3.1864	\$38.618	1,259
Mississippi	\$10.370	1.4499	0.1820	11.0	\$15.036	\$1.887	114	0.0941	5.7719	\$0.976	60
New Mexico	\$312.525	1.4535	0.1810	8.4	\$454.255	\$56.567	2,625	0.0984	3.7648	\$30.752	1,176
North Dakota	\$49.711	1.4431	0.1712	8.3	\$71.737	\$8.510	412	0.0951	3.7806	\$4.727	188
Oklahoma	\$1,161.709	1.4470	0.1850	8.9	\$1,680.993	\$214.916	10,339	0.0984	4.3585	\$114.312	5,063
Texas	\$3,020.290	1.5795	0.2150	8.5	\$4,770.548	\$649.362	25,672	0.0981	3.1713	\$296.290	9,578
Utah	\$34.908	1.4702	0.1897	8.7	\$51.321	\$6.621	303	0.0983	3.6238	\$3.431	126
Wyoming	\$185.258	1.4037	0.1636	7.2	\$260.048	\$30.308	1,333	0.0971	3.2216	\$17.988	596
SUBTOTAL	\$6,559.626	1.5222	0.2013	8.8	\$10,186.450	\$1,347.538	58,627	0.0981	3.8385	\$656.820	25,686
ALLOTHERS*	\$772.763	1.5359	0.2054	8.3	\$1,186.887	\$158.726	6,413	0.0981	3.4200	\$75.808	2,642
TOTAL	\$7,352.410	1.5468	0.2048	8.8	\$11,373.340	\$1,506.264	65,041	0.0996	3.8530	\$732.628	28,329

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

	2001 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	\$20.565	1.5123	0.2043	6.5	\$31.102	\$4.201	134	0.0984	2.3089	\$2.023	47
Colorado	\$483.797	1.4951	0.1995	7.6	\$723.325	\$96.517	3,677	0.0983	2.7365	\$47.557	1,323
Kansas	\$267.839	1.4982	0.1925	14.2	\$401.276	\$51.559	3,803	0.0984	9.1014	\$26.355	2,437
Louisiana	\$152.860	1.5009	0.1936	7.9	\$229.427	\$29.593	1,207	0.0977	3.1864	\$14.934	487
Mississippi	\$7.778	1.4499	0.1820	11.0	\$11.277	\$1.415	85	0.0941	5.7719	\$0.732	44
New Mexico	\$294.508	1.4535	0.1810	8.4	\$428.068	\$53.306	2,473	0.0984	3.7648	\$28.979	1,108
North Dakota	\$1.469	1.4431	0.1712	8.3	\$2.119	\$0.251	12	0.0951	3.7806	\$0.139	5
Oklahoma	\$525.436	1.4470	0.1850	8.9	\$760.306	\$97.205	4,676	0.0984	4.3585	\$51.702	2,290
Texas	\$1,103.411	1.5795	0.2150	8.5	\$1,742.839	\$237.233	9,378	0.0981	3.1713	\$108.244	3,499
Utah	\$27.065	1.4702	0.1897	8.7	\$39.791	\$5.134	235	0.0983	3.6238	\$2.660	98
Wyoming	\$161.336	1.4037	0.1636	7.2	\$226.567	\$26.394	1,161	0.0971	3.2216	\$15.665	520
SUBTOTAL	\$3,042.964	1.5088	0.1978	8.8	\$4,596.002	\$602.813	26,845	0.0981	3.8943	\$298.995	11,862
ALLOTHERS*	\$2,344.095	1.5359	0.2054	8.3	\$3,600.296	\$481.477	19,455	0.0981	3.4200	\$229.955	8,016
TOTAL	\$5,387.059	1.5214	0.2012	8.6	\$8,196.298	\$1,084.290	46,301	0.0981	3.6902	\$528.951	19,879

Table 5B continued on page 26

TABLE 5B (continued)

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

	2001 Revenue Lost From Abandonment (Million \$)	Final Demand Multipliers Output*	Final Demand Multipliers Earnings*	Final Demand Multipliers Employment*	OVERALL EFFECT IN FINAL DEMAND			Direct Effect Multipliers Earnings	Direct Effect Multipliers Employment	O&G INDUSTRY	
					Lost Output (Million \$)	Lost Earnings (Million \$)	Lost Employment			Lost Earnings (Million \$)	Lost Employment
SUBTOTAL	\$9,602.590	1.5394	0.2031	8.9	\$14,782.450	\$1,950.351	85,472	0.0995	3.9103	\$955.816	37,549
ALL OTHERS*	\$3,116.859	1.5359	0.2054	8.3	\$4,787.184	\$640.202	25,869	0.0981	3.4200	\$305.876	10,659
TOTAL	\$12,739.470	1.5361	0.2033	8.7	\$19,569.630	\$2,590.554	111,342	0.0990	3.7842	\$1,261.580	48,208

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

Table 5B reports the estimated economic impacts of hypothetical total abandonment, thereby representing the impact of the stripper oil and gas industry on the economy. Total revenue loss from just stripper oil well production (Table 5B.1) would have been \$7.4 billion in 2001. Economy-wide, total output would be \$11.4 billion lower; earnings, \$1.51 billion lower; and employment, 65,000 lower. The stripper oil well component of the oil and gas industry accounts for earnings of \$732.6 million and 28,300 jobs. Stripper gas wells revenue loss of \$5.4 billion translates into \$8.2 billion in output, \$1.1 billion in earnings and 46,300 jobs. Direct industry consequences of total abandonment are estimated to be \$529 million in earnings and almost 20,000 jobs. Taken together, the combined loss of \$12.7 billion in revenue translates into \$19.6 billion in economy-wide output, \$2.6 billion in earnings, and approximately 111,000 jobs.

Severance and Ad Valorem Tax

The economic impact assessment in the previous section does not take into account the fact that the oil and gas industry contributes considerably to state government coffers through severance and other tax assessments. Approximate estimates of the impact of actual and total abandonment are provided in this section.

Many states have in recent years reduced severance tax rates for marginal wells. Various definitional guidelines are provided as to what qualifies as a stripper well. This study assumes that all stripper production qualifies for stripper status tax reduction. The lowest rates are used. Additional consideration is given to taxes levied for purposes of funding conservation, environmental, and maintenance activities. An attempt is made to include such taxes in the calculations. But, it must be mentioned that state tax legislation is always a moving target. Laws are changing constantly. Thus, the results are approximate.

Annual lost stripper oil well tax revenue owing to abandonment is \$8.4 million, rounded. This component of stripper production contributed an estimated \$283.2 million in state tax revenue in 2001. Stripper gas well abandonments would be associated with a loss in tax revenue of \$4.7 million; total abandonment, however, represents \$187.9 million in tax revenue. Combined, the stripper well industry accounts for nearly one-half billion (\$471 million) in state tax revenue.

In many states that apply the severance tax, it is in lieu of other forms of taxation, such as the *ad valorem* property tax. Still, there are many states that have overlapping jurisdictions in taxation of oil and gas extraction. It is very difficult to find data on taxation at local jurisdictional levels. Local taxation does exist in some places, but we know of no particular source of information that provides these taxation rates. Suffice it to say that this is an area of investigation that will require much more research to see whether the amount of taxes paid by this industry are accounted, in bulk, by severance taxes, or whether there are additional local levies that greatly add to the tax burden faced by this industry.

TABLE 6

SEVERANCETAXES

	Stripper Oil Severance Tax Rate	Other Taxes (Conservation, Environmental, etc.)	2001 Average Oil Price \$/bbl	2001 Production from Stripper Oil Wells (bbls)	Annual Total Stripper Oil Severance Tax Revenue	2001 Lost Production (BBLS)	Annual Lost Stripper Oil Severance Tax Revenue	Stripper Gas Severance Tax Rate	Other Taxes (Conservation, Environmental, etc.)	2001 Average Gas Price \$/Mcf	2001 Production from Stripper Gas Wells (Mcf)	Annual Total Stripper Gas Severance Tax Revenue	2001 Lost Production (Mcf)	Annual Lost Stripper Gas Severance Tax Revenue	Annual Total Stripper Severance Tax Revenue	Annual Lost Stripper Severance Tax Revenue
Alabama	4.00%		\$23.18	1,054,118	\$977,378	4,933	\$4,574	6.00%		4.45	16,426,849	\$4,385,969	368,079	\$98,277	\$5,363,347	\$102,851
Alaska	15.00%		\$18.18	0	\$0	0		10.00%		1.91	0	\$0	0	\$0	\$0	\$0
Arizona	2.00%		\$0	25,942	\$0	0	\$0	2.00%		3.95	12,494	\$987	0	\$0	\$987	\$0
Arkansas	4.00%	\$0.050	\$21.82	3,316,454	\$3,060,424	41,894	\$38,660	\$0.003		5.47	14,384,737	\$43,154	418,310	\$1,255	\$3,103,578	\$39,915
California	0.00%	\$0.0373	\$20.11	35,133,050	\$1,310,463	2,123,625	\$79,211	0.00%	\$0.0037	5.61	3,661,981	\$13,659	78,099	\$291	\$1,324,122	\$79,503
Colorado	0.00%	0.17%	\$24.82	4,646,241	\$196,043	111,462	\$4,703	0.00%	0.17%	4.13	117,016,679	\$821,574	301,714	\$2,118	\$1,017,618	\$6,821
Florida	5.00%			0		0		\$0.256			0	\$0	0	\$0	\$0	\$0
Illinois	0.00%		\$23.76	10,220,000	\$0	393,913	\$0	0.00%			84,000	\$0	10,000	\$0	\$0	\$0
Indiana	1.00%		\$23.46	2,021,618	\$474,272	37,348	\$8,762	1.00%		3.79	1,063,673	\$40,313	5,551	\$210	\$514,585	\$8,972
Kansas	0.00%	\$0.0273	\$23.56	25,178,007	\$686,604	1,199,236	\$32,703	0.00%	\$0.0058	3.60	74,416,072	\$433,846	3,082,114	\$17,969	\$1,120,450	\$50,672
Kentucky	4.50%		\$22.53	2,077,228	\$2,105,998	21,392	\$21,688	4.50%		3.34	72,635,394	\$10,917,100	281,314	\$42,282	\$13,023,097	\$63,970
Louisiana	3.125%		\$24.51	16,126,868	\$12,352,173	582,973	\$446,521	\$0.013		4.09	37,344,000	\$485,472	1,610,979	\$20,943	\$12,837,645	\$467,463
Maryland	0.00%		\$0.00	0		0		7.00%		3.87	49,442	\$13,394	0	\$0	\$13,394	\$0
Michigan	4.00%	1.00%	\$22.69	1,849,850	\$2,098,655	118,022	\$133,896	5.00%	1.00%	2.62	44,411,120	\$6,981,428	713,588	\$112,176	\$9,080,083	\$246,072
Mississippi	6.00%	\$0.044	\$21.13	490,784	\$643,810	79,035	\$103,679	6.00%	\$0.006	3.81	2,040,032	\$478,592	266,840	\$62,601	\$1,122,402	\$166,279
Missouri	0.00%		\$21.82	90,919	\$0	295	\$0	0.00%			0	\$0	0	\$0	\$0	\$0
Montana	5.00%	0.30%	\$23.16	1,830,438	\$2,246,826	109,003	\$133,799	11.00%	0.30%	3.12	24,194,551	\$8,530,031	177,327	\$62,519	\$10,776,857	\$196,317
Nebraska	2.00%	0.50%	\$23.67	1,765,208	\$1,044,562	99,330	\$58,779	3.00%	0.50%	2.50	779,443	\$68,201	16,071	\$1,406	\$1,112,763	\$60,185
Nevada	\$0.05		\$23.67	0		0		\$0.001			0	\$0	0	\$0	\$0	\$0
New Mexico	7.09%		\$23.72	13,175,602	\$22,158,042	201,967	\$339,657	7.75%		3.77	78,022,278	\$22,796,159	1,190,978	\$347,974	\$44,954,201	\$687,631
New York	0.00%		\$24.19	183,095	\$0	2,292	\$0	0.00%		3.97	11,049,922	\$0	45,958	\$0	\$0	\$0
North Dakota	5.00%		\$23.55	2,110,860	\$2,485,538	75,613	\$89,034	\$0.0772		4.30	341,700	\$26,379	215,534	\$16,639	\$2,511,917	\$105,673
Ohio	\$0.100		\$22.55	4,904,815	\$110,604	36,675	\$827	\$0.025		4.51	72,905,000	\$1,822,625	893,090	\$22,327	\$1,933,229	\$23,154
Oklahoma	7.095%		\$24.68	47,070,879	\$82,423,274	604,400	\$1,058,333	7.10%		4.15	126,632,440	\$37,285,972	2,476,575	\$729,209	\$119,709,247	\$1,787,542
Oregon	6.00%		\$0.00	0		0		6.000%		2.71	0	\$0	0	\$0	\$0	\$0
Pennsylvania	0.00%		\$24.82	2,223,000	\$0	29,247	\$0	0.00%			130,853,000	\$0	410,987	\$0	\$0	\$0
South Dakota	4.74%		\$23.89	34,574	\$39,151	0	\$0	4.74%		3.68	475,009	\$82,857	0	\$0	\$122,008	\$0
Tennessee	3.00%		\$22.55	241,036	\$163,061	37,662	\$25,478	3.00%		4.58	1,059,499	\$145,575	31,393	\$4,313	\$308,636	\$29,792
Texas	4.60%	\$0.005	\$23.41	129,017,097	\$139,610,691	5,256,127	\$5,687,707	7.50%	\$0.0033	4.41	249,667,163	\$82,660,637	9,489,896	\$3,141,946	\$222,271,327	\$8,829,654
Utah	0.00%	0.20%	\$24.09	1,449,051	\$69,815	41,679	\$2,008	0.00%	0.20%	3.63	7,445,472	\$54,054	118,969	\$864	\$123,869	\$2,872
Virginia	0.50%		\$22.35	5,764	\$644	0	\$0	3.00%			2,238,136		134,288	\$0	\$644	\$0
West Virginia	5.00%		\$22.35	1,250,000	\$1,396,875	7,455	\$8,331	5.00%			221,662,000		2,184,793		\$1,396,875	\$8,331
Wyoming	4.00%	0.06%	\$21.55	8,596,694	\$7,521,505	79,827	\$69,843	6.00%	0.06%	3.79	42,644,292	\$9,794,285	132,218	\$30,367	\$17,315,791	\$100,210
TOTAL				316,099,192	\$283,176,408	11,295,405	\$8,348,193				1,353,516,378	\$187,882,263	24,654,665	\$4,715,686	\$471,058,671	\$13,063,879

Conclusion

Following a consistent methodology, this study has quantified the economic impact of stripper well production and abandonments on the value of industry and final demand output, earnings, employment and tax receipts. Both the impacts of actual abandonments and hypothetical total abandonment have been analyzed. These results underscore the importance of stripper well production to economic well-being in the United States. Stripper oil wells produced 316 million barrels of oil in 2001, 14.9 percent of domestic production including Alaska and federal offshore. Stripper gas wells produced 1.354 trillion cubic feet of natural gas, about 10 percent of all natural gas production. In combination, oil and gas stripper wells yielded estimated gross revenues of \$12.7 billion, \$1.26 billion in earnings, and 48,200 jobs. Total, economy-wide, impacts are a multiple of the industry impacts. Overall effects on the aggregate economy are estimated to be \$19.6 billion in output, \$2.6 billion in earnings and 111,000 jobs. These figures show that the oil and gas stripper well industry is a vital component of U.S. energy production.

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	433,048	332.288	16,389	2.10	15.322	374.833	50.019	2,133	10.310
1996	428,842	323.468	16,674	2.06	16.452	497.243	66.086	2,829	13.688
1997	420,674	322.090	15,172	2.10	14.049	387.536	51.427	2,220	9.912
1998	406,380	316.870	13,912	2.14	11.984	216.490	28.874	1,231	5.992
1999	410,680	315.514	11,227	2.10	9.616	247.871	33.059	1,483	6.140
2000	411,629	325,947	10,718	2.16	10.122	429.997	57.505	2,333	10.618
2001	403,459	316,099	12,234	2.15	11.295	397.960	53.149	2,268	8.348
TOTAL		3,316.577	147,347		135.862	\$3,686.154	\$491.170	20,927	\$96.129

TABLE 7 (continued)**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	3,163	16.20	21.256	\$61.758	\$8.112	376	\$1.608
1995	159,669	926	3,189	15.90	23.053	51.853	6.771	315	1.518
1996	168,702	987	4,671	16.00	39.978	137.092	18.065	804	4.860
1997	189,756	1,042	4,661	15.00	35.839	122.772	16.192	729	3.947
1998	199,745	1,105	4,203	15.20	29.258	92.721	12.286	549	3.128
1999	207,766	1,139	3,546	15.30	24.407	80.846	10.707	4812.799	2000
223,222	1,259	3,534	15.40	23.806	136.346	18.101	7984.872	2001234,507	
1,354	3,591	15.81	24.655	153.358	20.338	910	4.716		
TOTAL		8,751	30,558		222.252	\$836.746	\$110.572	4,962	\$27.448

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	368.410	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	592,717	486.549	19,578	4.75	19.164	426.686	56.790	2,448	11.828
1996	597,544	487.914	21,345	4.73	23.115	634.335	84.151	3,633	18.548
1997	610,430	495.782	19,833	4.60	20.022	510.308	67.619	2,949	13.859
1998	606,125	500.984	18,115	4.67	16.860	309.211	41.160	1,780	9.120
1999	618,446	505.344	14,773	4.65	13.684	328.717	43.766	1,964	8.939
634,851	535.735	14,252	4.73	14.090	566.343	75.606	3,13115.490	2001	637,966
541.685	15,825	4.78	15.405	551.318	73.487	3,178	13.064		
TOTAL		4,775.030	177,905		172.904	\$4,522.900	\$601.742	25,889	\$123.577

*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.

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. Six 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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Arizona (1955)
Arkansas (1941)
California (1974)
Colorado (1935)
Florida (1945)
Illinois (1935)
Indiana (1947)
Kansas (1935)
Kentucky (1942)
Louisiana (1941)
Maryland (1959)
Michigan (1939)
Mississippi (1948)
Montana (1945)
Nebraska (1953)
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New Mexico (1935)
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North Dakota (1953)
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Oklahoma (1935)
Pennsylvania (1941)
South Dakota (1955)
Texas (1935)
Utah (1957)
Virginia (1982)
West Virginia (1945)
Wyoming (1955)

Associate States

Georgia (1946)
Idaho (1960)
Missouri (1995)
North Carolina (1971)
Oregon (1954)
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