

2005 Report



Marginal Oil and Natural Gas: *American energy for the American dream*

Interstate Oil and Gas Compact Commission

Special thanks to the Oklahoma Commission on Marginally Producing Oil and Gas Wells

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For more information about the IOGCC or this report, visit the IOGCC Web site at www.iogcc.state.ok.us or call 405-525-3556.

Marginal Wells

producing American energy for the American dream

Energy – it is the lifeblood of our existence. Imagine waking up in the morning with no way to brew a fresh cup of coffee to prepare you for the day. From the time we wake up in the morning to when we go to bed, energy touches our lives – and oil and natural gas are key energy suppliers.

So what are marginal wells?

The Interstate Oil and Gas Compact Commission has documented the production from marginal wells since 1941, drawing attention annually to their important contribution to the nation's economy and security.

Though these wells each are tiny producers of oil and natural gas, together

Marginal wells stand as a testament to ingenuity, frugality and conservation.

they provide about 16 percent of oil and 8 percent of natural gas produced onshore in this country.

Maintained for the most part by independent operators, marginal wells produce American energy for Americans and stand as a testament to ingenuity, frugality and conservation. No other nation produces as much oil and natural gas from such a source.

Not only do marginal wells recover valuable resources that provide us with energy, they also supply our country with much needed jobs and tax revenue vital to the economy. In fact, if all marginal wells were abandoned in 2004, the country would have lost more than \$20 billion in revenue.

The numbers from this report, coupled with the thoughts of state oil and gas experts, tell the story and explain the role marginal wells play in providing for our country's energy, economic and national security.



incentives and research



Incentive programs are key factors in the development of this truly American resource. 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 tax relief for low-volume, economically marginal wells or idle wells brought back into production; petroleum information services provided to the oil and gas industry; and incentives to develop and use new technologies that increase the efficiency of extraction. Examples can be found in the IOGCC publication, *Investments in Energy Security: State Incentives to Maximize Oil and Natural Gas Recovery*.

Research is another key to the survival of marginal wells. Unfortunately, the small, independent producers who operate these small wells do not have the means to conduct their own research. Federal and state governments and universities play a crucial role in research

and development for fossil energy. Without continued funding of these research and development programs, new methods for producing domestic energy, including natural gas from coal seams, will remain beyond the reach of American energy producers.

Marginal 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, America can look first to its own backyard for answers – and that is an encouraging story.

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What is Marginal Oil?

A marginal oil well produces 10 barrels or less of oil per day.

Marginal oil is 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 marginal wells in the United States since the 1940s.

Why all the concern about such small-volume wells? While each individual well contributes only a small amount of oil (2.14 barrels a day, on average), there are 397,362 of these wells in the United States. Combined, these marginal wells produced more than 310 million barrels of oil in 2004.

Plugged/Abandoned Wells

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, contact the IOGCC.

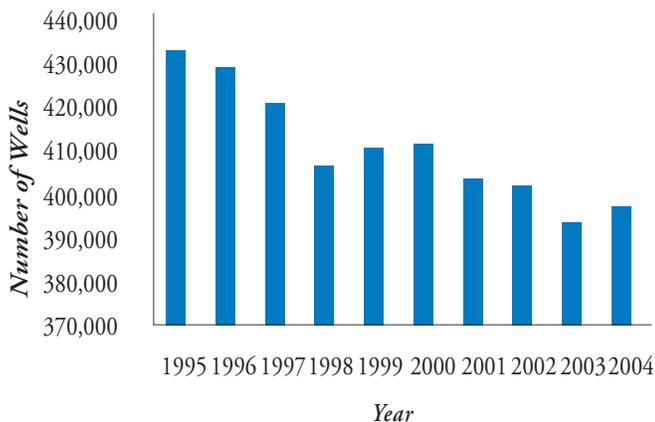


U.S. Marginal Oil Well Data – Past 10 Years

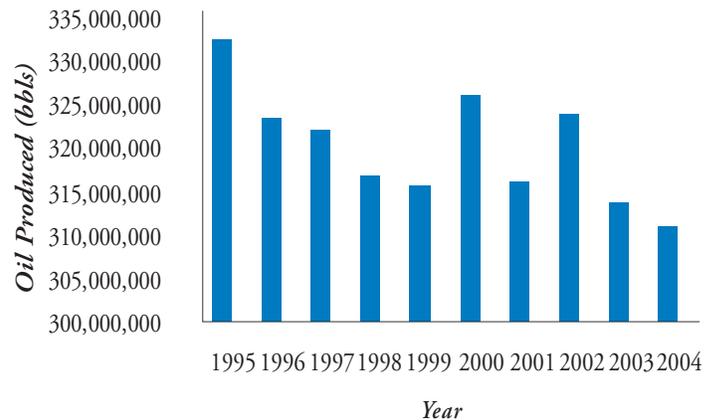
Year	Number of Marginal Oil Wells	Marginal Oil Production (bbls)	Average Daily Production Per Well (bbls)	Oil Wells Plugged/Abandoned
1995	433,048	332,288,089	2.10	16,389
1996	428,842	323,468,274	2.06	16,674
1997*	420,674	323,487,914	2.11	15,172
1998	406,380	316,870,286	2.14	13,912
1999	410,680	315,514,283	2.10	11,227
2000	411,629	325,947,181	2.16	10,718
2001	403,459	316,099,192	2.15	12,234
2002	402,072	323,776,606	2.21	13,635
2003	393,463	313,748,001	2.18	14,300
2004	397,362	310,922,122	2.14	11,977

* Revised

*Number of Marginal Oil Wells
1995 - 2004*



*Marginal Oil Production
1995 - 2004*



secondary recovery



“New Mexico, as one of the more mature petroleum provinces in the United States, has more than its share of marginal wells. Our biggest challenge is going to be to sustain and encourage production from these wells while at the same time protecting surface and groundwater resources.”

**Mark Fesmire, chairman
New Mexico Oil Conservation
Commission**

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

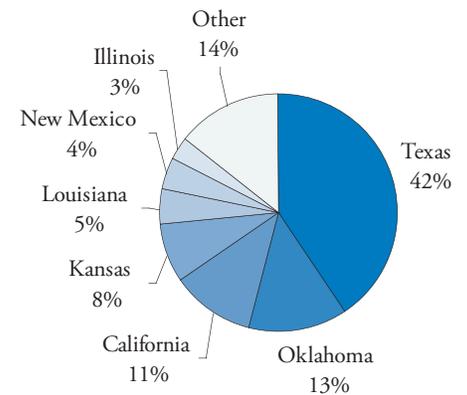
time, decreasing the flow of oil. Secondary recovery techniques permit the injection of a substance, such as water or gas, into the formation. This increases the pressure and encourages the oil to flow more easily.

Secondary Recovery of Marginal Oil as of January 1, 2005

State	Estimated Secondary Oil Production from Marginal Wells (Mbbls)	Percent of Total Marginal Well Production from Secondary Recovery
Alabama	972	85.1%
Arkansas	455	12.6%
Colorado	1,013	16.0%
Kansas	12,568	49.3%
Kentucky	1,323	66.0%
Nebraska	1,066	64.4%
New Mexico	5,639	40.3%
New York	33	19.2%
Ohio	49	1.0%
Oklahoma	20,590	49.7%
South Dakota	16	45.7%
Utah	800	52.5%
West Virginia	190	15.8%

u.s. state rankings

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



Percent of Total Marginal Oil Well Production in Survey States (bbls)

Marginal Oil Well Survey: as



“Texas is committed to maintaining the production of our marginal oil and gas wells for as long as possible. While current high prices have helped to keep our marginal wells producing at their maximum rates, our legislature passed and our Governor has just signed new legislation that would provide severance tax breaks for marginal production if prices fall below certain thresholds. The work of the IOGCC in identifying the value that marginal wells contribute to the national economy was instrumental in helping to get this legislation passed.”

**Victor Carrillo, chairman
Railroad Commission of Texas,
IOGCC second vice-chairman**

State	Number of Marginal Oil Wells	Production from Marginal Oil Wells (bbls)	Oil Wells Plugged/ Abandoned	Avg. Daily Production Per Well
Alabama	669	1,141,127	6	4.66
Arizona	17	23,746	0	3.82
Arkansas	3,948	3,620,354	51	2.51
California	25,622	34,955,831	1,558	3.73
Colorado	5,605	6,316,308	147	3.08
Illinois	16,751*	10,040,292*	547*	1.64
Indiana	5,004	1,729,606	65	0.94
Kansas	38,363	25,493,168	1,225	1.82
Kentucky	19,129	2,005,480	206	0.29
Louisiana	20,576	14,136,304	584	1.88
Michigan	2,306	3,055,339	126	3.62
Mississippi	478	678,566	55	3.88
Missouri	487	88,053	4	0.49
Montana	2,335	1,879,426	58	2.20
Nebraska	1,450	1,654,195	54	3.12
New Mexico	13,882	13,990,201	449	2.75
New York	2,759	171,760	78	0.17
North Dakota	1,392	2,205,309	44	4.33
Ohio	28,918	4,868,915	201	0.46
Oklahoma	48,250	41,427,782	619	2.35
Pennsylvania	16,061*	3,669,959*	134*	0.62
South Dakota	20	35,452	0	4.84
Tennessee	390	261,984	29*	1.84
Texas	121,490	126,260,710	5,461	2.84
Utah	1,111	1,523,025	35	3.75
Virginia	6	1,974	0	0.90
West Virginia	8,000	1,200,000	30	0.41
Wyoming	12,343	8,487,256	211	1.88
Total	397,362	310,922,122	11,977	2.14

of January 1, 2005

State	Total 2004 Oil Production (Mbbls)	Marginal Oil Well Reserves (Mbbls)		
		Primary	Secondary	Total
Alabama	4,651	1,076	1,166	2,242
Arizona	51	184	0	184
Arkansas	6,917	37,366	31,831	69,197
California	267,447	68,651	60,885	129,536
Colorado	22,422	17,263	13,032	30,295
Illinois	10,686*	12,790	13,312	26,102
Indiana	1,730	7,347	7,060	14,407
Kansas	33,857	59,017	56,703	115,720
Kentucky	2,548	3,202	7,471	10,673
Louisiana	56,897	60,350	59,475	119,825
Michigan	6,409	14,480	10,063	24,543
Mississippi	15,722	7,515	6,937	14,452
Missouri	88	1,395	1,295	2,690
Montana	24,600	28,675	34,979	63,654
Nebraska	2,507	3,106	5,622	8,728
New Mexico	56,834	22,133	18,819	40,952
New York	184	851	204	1,055
North Dakota	31,153	25,027	24,051	49,078
Ohio	5,785	46,200	153	46,353
Oklahoma	62,797	90,138	97,652	187,790
Pennsylvania	3,670	9,083	12,700	21,783
South Dakota	1,355	135	130	265
Tennessee	362	198	133	331
Texas	349,233	511,889	548,046	1,059,935
Utah	14,797	4,423	2,381	6,804
Virginia	21	49	47	96
West Virginia	1,200*	3,735	3,415	7,150
Wyoming	51,442	75,000	100,000	175,000
Total	1,035,365**	1,111,278	1,117,562	2,228,840



“In Wyoming, 88 percent of the oil wells are classified as marginal producers, and the majority of them are 75-115 years old. In addition to supplying one-sixth of our production, these wells enable hundreds of small operators to remain in business in the state.”

Don Likwartz,
State Oil & Gas supervisor
IOGCC vice-chairman

* Estimated

** Total represents only oil production from states with marginal wells

COMPARE: Marginal Wells and

2001 2002



“Marginal wells in Arizona generate 46 percent of the state’s total royalty income and tax revenue from oil production.”

Steve Rauzi,
Oil and Gas administrator
Arizona Geological Survey

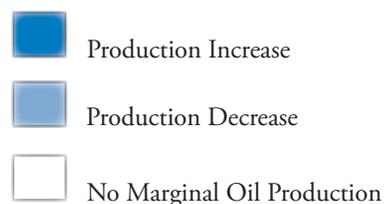
State	Number of Marginal Oil Wells	Production from Marginal Oil Wells (bbls)	Number of Marginal Oil Wells	Production from Marginal Oil Wells (bbls)
Alabama	641	1,054,118	639	1,141,083
Arizona	20	25,942	17	23,951
Arkansas	3,404	3,316,454	3,362	3,087,798
California	24,303	35,133,050	24,420	35,030,269
Colorado	7,003	4,646,241	5,384	4,643,717
Illinois	17,876*	10,220,000*	17,466*	10,720,000*
Indiana	5,034	2,021,618	4,956	1,962,078
Kansas	33,886	25,178,007	33,317	25,002,372
Kentucky	19,615	2,077,228	19,462	2,049,971
Louisiana	21,024	16,126,868	20,891	14,999,393
Michigan	2,210	1,849,850	3,428	3,397,608
Mississippi	385	490,784	442	562,190
Missouri	308	90,919	364	95,071
Montana	2,267	1,830,438	2,274	1,842,960
Nebraska	1,475	1,765,208	1,451	1,717,983
New Mexico	13,243	13,175,602	13,379	13,386,587
New York	2,876	183,095	2,758	174,766
North Dakota	1,340	2,110,860	1,384	2,263,059
Ohio	28,887	4,904,815	28,850	4,398,074
Oklahoma	55,295	47,070,879	56,673	56,299,808
Pennsylvania	15,270*	2,233,000*	15,470*	2,324,000*
South Dakota	20	34,574	22	27,345
Tennessee	288*	241,036	424	246,026
Texas	125,823	129,017,097	124,551	127,252,695
Utah	1,043	1,449,051	1,049	1,445,945
Virginia	16	5,764	13	3,428
West Virginia	8,384	1,250,000	8,210	1,248,000*
Wyoming	11,523	8,596,694	11,416	8,430,429
Total	403,459	316,099,192	402,072	323,776,606

Marginal Oil Production

2003

2004

State	Number of Marginal Oil Wells	Production from Marginal Oil Wells (bbls)	Number of Marginal Oil Wells	Production from Marginal Oil Wells (bbls)
Alabama	632	1,152,351	669	1,141,127
Arizona	18	23,303	17	23,746
Arkansas	3,615	3,302,376	3,948	3,620,354
California	25,089	36,015,129	25,622	34,955,831
Colorado	5,334	5,442,974	5,605	6,316,308
Illinois	17,154*	10,600,000*	16,751*	10,040,292*
Indiana	5,049	1,864,883	5,004	1,729,606
Kansas	32,883	25,103,681	38,363	25,493,168
Kentucky	19,272	1,942,879	19,129	2,005,480
Louisiana	20,722	15,567,256	20,576	14,136,304
Michigan	2,578	2,500,500	2,306	3,055,339
Mississippi	437	604,800	478	678,566
Missouri	489	86,133	487	88,053
Montana	2,291	1,830,410	2,335	1,879,426
Nebraska	1,423	1,651,923	1,450	1,654,195
New Mexico	13,577	13,693,595	13,882	13,990,201
New York	2,763	152,967	2,759	171,760
North Dakota	1,394	2,288,191	1,392	2,205,309
Ohio	28,911	4,696,636	28,918	4,868,915
Oklahoma	48,657	43,703,475	48,250	41,427,782
Pennsylvania	15,758*	2,466,000*	16,061*	3,669,959*
South Dakota	24	51,461	20	35,452
Tennessee	385*	270,827	390	261,984
Texas	123,402	128,058,395	121,490	126,260,710
Utah	1,051	1,418,563	1,111	1,523,025
Virginia	7	2,502	6	1,974
West Virginia	8,200	1,400,000	8,000	1,200,000
Wyoming	12,348	7,856,791	12,343	8,487,256
Total	393,463	313,748,001	397,362	310,922,122



Marginal Oil Production Comparison: 2003 v 2004

* Estimated

What is Marginal Gas?

*A marginal gas well produces
60 Mcf or less of natural
gas per day.*

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.

Marginal gas wells represent about 8 percent of the total natural gas produced in the United States.

The table on the following page indicates the status of marginal gas production over the past 10 years.

The number of gas wells in the marginal category has steadily increased during the past decade. Total production from these gas wells also has steadily increased, while average daily production remained the same in 2004.

As with marginal oil wells, “abandoned” natural gas wells are those that have

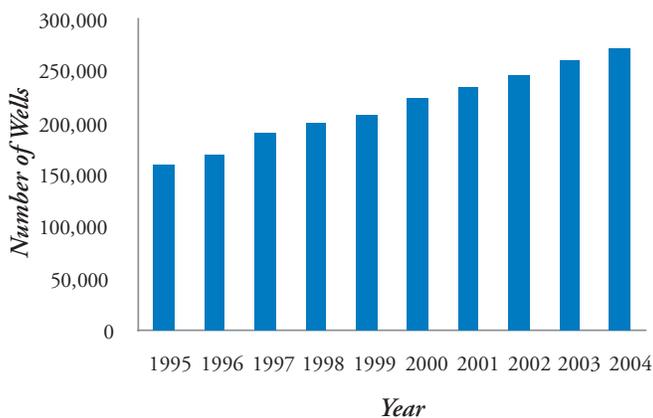
been permanently plugged. Significantly, the total number of pluggings in 2004 increased for the fourth consecutive year, while demand for natural gas continues to rise.



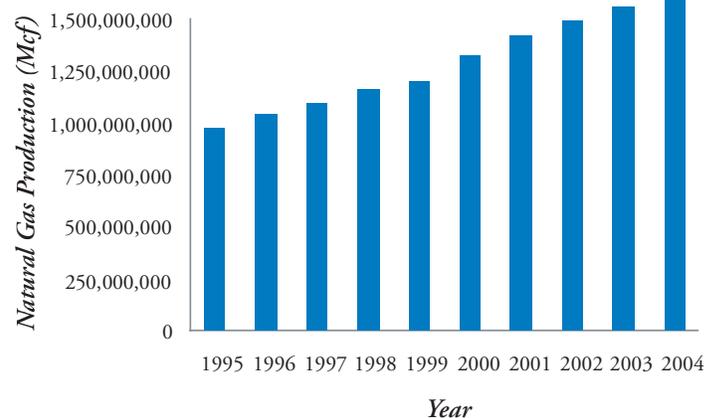
U.S. Marginal Gas Well Data – Past 10 Years

Year	Number of Marginal Gas Wells	Marginal Gas Production (Mcf)	Average Daily Production Per Well (Mcf)	Gas Wells Plugged/Abandoned
1995	159,669	925,563,034	15.9	3,189
1996	168,702	986,676,219	16.0	4,671
1997	189,756	1,042,153,002	15.0	4,661
1998	199,745	1,104,683,975	15.2	4,203
1999	207,766	1,138,979,506	15.3	3,546
2000	223,222	1,258,726,664	15.4	3,534
2001	234,507	1,353,516,378	15.8	3,600
2002	245,961	1,418,273,779	15.8	3,870
2003	260,563	1,478,105,524	15.5	3,883
2004	271,856	1,539,960,495	15.5	4,129

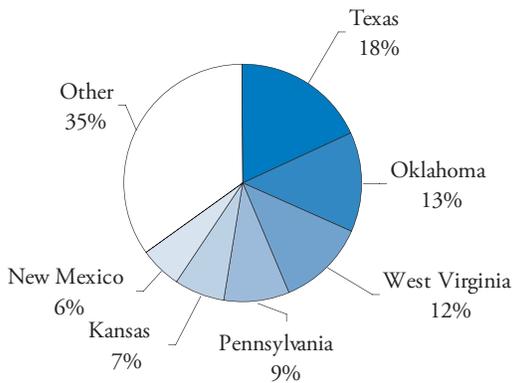
*Number of Marginal Natural Gas Wells
1995 - 2004*



*Marginal Natural Gas Production
1995 - 2004*



u.s. state rankings



Percent of Total Marginal Gas Production in Survey States (Mcf)

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

Marginal Natural Gas Survey

as of January 1, 2005

State	Number of Marginal Gas Wells	Production from Marginal Gas Wells (Mcf)	Total 2004 Gas Production (MMcf)	Avg. Daily Production Per Well	Gas Wells Plugged/ Abandoned
Alabama	2,194**	22,895,790**	340,601	28.5	23**
Arizona	2	10,987	331	15.0	0
Arkansas	1,913	16,923,448	174,217	24.2	18
California	490	4,247,011	79,823	23.7	71
Colorado	7,780	79,619,265	1,495,010	28.0	65
Illinois	409	184,000	247	1.2	7
Indiana	2,386	3,401,445	3,401	3.9	15
Kansas	8,169	101,394,727	403,805	33.9	248
Kentucky	16,495	83,777,212	94,259	13.9	57
Louisiana	9,784	44,477,263*	1,268,207	12.4	314*
Maryland	7	33,391	35	13.0	0
Michigan	5,396	70,864,267	173,730	36.0	70
Mississippi	548	6,345,386	174,470	31.6	35
Montana	3,926	26,484,418	87,293	19.6	55
Nebraska	102	782,502	1,202	21.0	1
New Mexico	10,142	91,910,687	1,349,942	24.8	303
New York	5,710	10,261,189	46,596	4.9	5
North Dakota	58	300,815	15,798	14.9	6
Ohio	33,404	72,539,000	90,301	5.9	371
Oklahoma	23,845**	203,812,145**	1,589,721	23.4	337
Pennsylvania	43,906*	136,394,002*	163,346*	8.4	172*
South Dakota	57	455,296	531	21.8	0
Tennessee	270	1,936,268	2,146	19.6	21*
Texas	35,240	284,361,426	4,925,205	22.0	1,257
Utah	1,225	12,854,032	261,679	28.7	22
Virginia	228	3,050,649	85,800	36.6	45
West Virginia	38,500	185,000,000	202,800*	13.1	305
Wyoming	19,670**	75,643,874**	1,716,457	10.5	306
Total	271,856	1,539,960,495	14,746,953•	15.5	4,129

* Estimated

** Includes natural gas from coal seams

• This figure represents only states with marginal natural gas production.

COMPARE: Marginal Wells and

2001

2002



“Every individual oil and gas well in Ohio can be looked at as a building block. The economic impact or benefit of any one of the individual 60,000 plus stripper wells in our state is insignificant. However, together they drive an industry that provides millions of dollars in landowner royalties as well as generating hundreds of millions of dollars in gross product income within the state.”

**Mike Sponsler, chief
OH Dept. of Natural Resources
Division of Mineral Resources
Management**

State	Number of Marginal Gas Wells	Production from Marginal Gas Wells (Mcf)	Number of Marginal Gas Wells	Production from Marginal Gas Wells (Mcf)
Alabama	1,562**	16,426,849**	1,696**	18,139,406**
Arizona	4	12,494	4	3,387
Arkansas	1,685	14,384,737	1,719	15,574,407
California	422	3,661,981	446	3,506,947
Colorado	9,696	117,016,679	6,701	60,945,434
Illinois	84	84,000	172	184,860
Indiana	1,533	1,063,673	1,545	1,309,120
Kansas	6,350	74,416,072	10,437	124,877,543
Kentucky	15,492	72,635,394	16,010	78,444,980
Louisiana	9,481	37,344,000	9,595	40,835,950*
Maryland	10	49,442	6	13,446
Michigan	3,423	44,411,120	4,100	55,623,429
Mississippi	237	2,040,032	260	2,718,961
Montana	3,411	24,194,551	3,533	25,286,348
Nebraska	97	779,443	99	750,809
New Mexico	8,844	78,022,278	9,232	81,059,390
New York	5,530	11,049,922	5,442	10,637,283
North Dakota	65	341,700	55	449,971
Ohio	33,306	72,905,000	33,345	75,993,000
Oklahoma	13,550	126,632,440	17,676**	153,207,218**
Pennsylvania	39,480	130,853,000	40,830*	131,800,000*
South Dakota	61	475,009	56	396,482
Tennessee	405	1,059,499	401	1,586,127
Texas	31,018	249,667,163	32,200	258,983,600
Utah	751	7,445,472	929	9,359,853
Virginia	150	2,238,136	127	1,807,834
West Virginia	37,539	221,662,000	37,528	208,775,000*
Wyoming	10,321	42,644,292	11,817**	56,002,994**
Total	234,507	1,353,516,378	245,961	1,418,273,779

Marginal Gas Production

2003

2004

State	Number of Marginal Gas Wells	Production from Marginal Gas Wells (Mcf)	Number of Marginal Gas Wells	Production from Marginal Gas Wells (Mcf)
Alabama	1,931**	20,885,970**	2,194**	22,895,790**
Arizona	1	1,177	2	10,987
Arkansas	1,847*	16,252,825	1,913	16,923,448
California	468	3,855,523	490	4,247,011
Colorado	7,342	73,077,507	7,780	79,619,265
Illinois	209	184,860	409	184,000
Indiana	2,291	1,464,372	2,386	3,401,445
Kansas	9,906	118,418,079	8,169	101,394,727
Kentucky	16,139	77,865,801	16,495	83,777,212
Louisiana	9,772	40,329,957*	9,784	44,477,263*
Maryland	7	34,943	7	33,391
Michigan	4,950	66,782,258	5,396	70,864,267
Mississippi	387	4,477,027	548	6,345,386
Montana	3,754	26,158,548	3,926	26,484,418
Nebraska	99	833,513	102	782,502
New Mexico	9,616	84,488,076	10,142	91,910,687
New York	5,723	11,518,289	5,710	10,261,189
North Dakota	67	762,017	58	300,815
Ohio	33,367	75,109,000	33,404	72,539,000
Oklahoma	20,321**	178,200,970**	23,845**	203,812,145**
Pennsylvania	42,437	133,455,545*	43,906*	136,394,002*
South Dakota	56	415,523	57	455,296
Tennessee	310*	1,411,060	270	1,936,268
Texas	33,312	268,891,683	35,240	284,361,426
Utah	1,099	11,928,457	1,225	12,854,032
Virginia	150	2,042,666	228	3,050,649
West Virginia	38,240	188,000,000	38,500	185,000,000
Wyoming	16,762**	71,259,878**	19,670**	75,643,874**
Total	260,563	1,478,105,524	271,856	1,539,960,495



“On a state level, marginal wells play an absolutely vital role in Oklahoma’s economy, collectively providing millions of dollars for schools, roads and other essential services. On a broader, national level, marginal wells are our real ‘strategic petroleum reserve.’ They are the vital energy insurance policy for America. New production techniques continue to open the doors to making such wells more productive. As a matter of policy, it is therefore vital that policy makers take steps to protect these wells.”

**Denise Bode, vice-chairman
OK Corporation Commission**

* Estimated

** Includes Natural Gas from coal seams

The Economic Impact *of Marginal*

By Dan Olds, Ryder Scott Petroleum Consultants

The purpose of this study is to encourage the better utilization of existing assets, marginal wells.

Executive Summary

Energy prices, from the consumer's perspective, have been "A Series of Unfortunate Events," with all due respect to Daniel Handler, author of the popular children's book of the same title. From the perspective of the professionals who endeavor to predict future oil and gas prices, for the last several years it has been a question of when, not if. And when is now.

Some issues for consideration:

- The situation in Iraq is such that anything resembling routine production and export operations is not likely to occur in the near term;
- The economic slowdown in Southeast Asia has not come to a standstill;
- Growth and demand are still pressuring the world energy markets;
- Saudi Arabia's ability to maintain or increase production is being questioned;
- Government actions have made investors cautious about activities in the Former Soviet Union, Venezuela, and Ecuador;
- China and India have emerged as seri-

ous competitors in the market for upstream opportunities;

- Refinery accidents have affected the U.S. market;
- Hurricane Ivan caused significant disruptions to production in 2004;
- The damage done by Hurricane Katrina has impacted offshore and onshore production, industrial ports, refineries and petrochemical facilities;
- The resulting price spike in energy prices caused the president to authorize withdrawals from the Strategic Petroleum Reserves.

It is important to note that during this time Congress passed a new energy bill. As with all energy bills (or attempts thereof) in recent times, it has been widely criticized for doing little to reduce our reliance on fossil fuels in general, imported oil in particular, and for extending incentives to industry to drill in new areas instead of promoting alternative clean or renewable fuels.

The purpose of this study is not to debate the potential of drilling in new areas or to consider alternative fuels (most

Wells in the United States

of which are better suited to electric generation rather than transportation fuels), but to encourage the better utilization of existing assets. Marginal wells have already produced most of what oil and gas they are capable. However, given the large number of marginal wells in the United States, the remainder of their potential is still significant. Currently, marginal oil wells produce almost 850 thousand barrels each day – 15.7 percent of U.S. oil production. Marginal gas wells produce 4.2 bcf per day, or 7.8 percent of U.S. production.

Not only do marginal wells contribute to domestic oil production, they help the balance of trade – \$19.9 trillion would

have been spent to import the volumes produced by marginal wells. And the revenue generated by marginal wells? There is no way to prove it, but the increase in the drilling rig count (up about 10 percent at year end 2004 from the beginning of the year) suggests that producers are reinvesting their gains to find more oil and gas. Undoubtedly, some of those rigs are working on the revenue from marginal wells. Unlike many features of the energy bill, marginal wells do not require incentives to create – they already exist or will exist as part of the natural life cycle of a producing oil or gas well. However, incentives can increase their productive life and prevent this proven source of energy from being prematurely abandoned.

\$19.9 trillion would have to be spent to import the volumes produced by marginal wells.



development of findings

Using data from the IOGCC's 2005 Marginal Well Report, Table 1 shows that the 11 survey states have 289,112 marginal oil wells, or more than 72 percent of the total reported marginal oil wells in the United States. These wells produced over 88 percent of marginal oil well production.

oil wells increased by only 3,899 wells. Our original 11 survey states were based on the largest producers of marginal oil, which excluded the Appalachian states from consideration. The Appalachian Basin accounts for about 52 percent of the marginal gas well count and over 32 percent of the marginal gas produced.

The reduction in plugging is evidence that higher prices

encourage operators' efforts to produce marginal wells.

Oil wells in the survey states averaged 2.6 barrels of oil per day (BOPD), better than the overall national average of 2.1 BOPD. In 2004, 11,977 oil wells were plugged and abandoned, which is a substantial decrease over last year's total of 14,300 oil wells plugged. Given the price increases seen in the last few years, the reduction in plugging is expected and is evidence that higher prices encourage operators' efforts to produce marginal wells.

In order to preserve the comparability of this report, the marginal 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 marginal oil to marginal gas production.

Marginal gas wells produced 1,539 billion cubic feet (Bcf) in 2004, more than 4.2 Bcf per day. Each well averaged 15.5 thousand cubic feet per day (MCFD). Of the total marginal gas wells, more than 1.5 percent, or 4,129 wells were plugged and abandoned in 2004. Given the higher prices for both oil and gas, and the growing maturity of gas production, the changes in marginal well counts and plugging activity are in line with expectations.

Looking at the marginal gas wells, Table 1 shows the 11 survey states have about 43 percent of the total 271,856 marginal gas wells in the United States. The number of marginal gas wells again increased significantly from last year by 11,293 wells, whereas the number of marginal

Table 1: Marginal Well Data

1.1 Marginal Oil

State	Number of Marginal Wells	Production from Marginal Wells (bbls)	2004 Wells Abandoned	Avg. Daily Production Per Well
California	25,622	34,955,831	1,558	3.73
Colorado	5,605	6,316,308	147	3.08
Kansas	38,363	25,493,168	1,225	1.82
Louisiana	20,576	14,136,304	584	1.88
Mississippi	478	678,566	55	3.88
New Mexico	13,882	13,990,201	449	2.75
North Dakota	1,392	2,205,309	44	4.33
Oklahoma	48,250	41,427,782	619	2.35
Texas	121,490	126,260,710	5,461	2.84
Utah	1,111	1,523,025	35	3.75
Wyoming	12,343	8,487,256	211	1.88
Subtotal	289,112	275,474,460	10,388	2.60
All others	108,250	35,447,662	1,589	0.89
Total U.S.	397,362	310,922,122	11,977	2.14

1.3 Marginal Oil & Gas

	Number of Marginal Wells	2004 Wells Abandoned
Subtotal	406,063	13,352
All others	263,155	2,754
Total U.S.	669,218	16,106

1.2 Marginal Gas

State	Number of Marginal Wells	Production from Marginal Wells (Mcf)	2004 Wells Abandoned	Avg. Daily Production Per Well
California	490	4,247,011	71	23.7
Colorado	7,780	79,619,265	65	28.0
Kansas	8,169	101,394,727	248	33.9
Louisiana	9,784	44,477,263	314	12.4
Mississippi	548	6,345,386	35	31.6
New Mexico	10,142	91,910,687	303	24.8
North Dakota	58	300,815	6	14.2
Oklahoma	23,845	203,812,145	337	23.4
Texas	35,240	284,361,426	1,257	22.0
Utah	1,225	12,854,032	22	28.7
Wyoming	19,670	75,643,874	306	10.5
Subtotal	116,951	904,966,631	2,964	21.1
All others	154,905	634,993,864	1,165	11.2
Total U.S.	271,856	1,539,960,495	4,129	15.5

wellhead prices

Wellhead prices shown in Table 2 are derived from data gathered directly from the various state agencies and the U.S. Department of Energy's Energy Information Administration.

If marginal oil and gas production were lost, the United States would have to spend \$54.9 million on imports each day.

These statistics show the weighted average wellhead price was \$37.83 per barrel of oil, versus 2003's average of \$28.53 per barrel.

This year's average price for gas was \$5.41 per Mcf, versus 2003's average of \$4.97 per Mcf.

In this year's report, state wellhead oil prices were available from the EIA, but not for natural gas. Estimates for state gas prices were determined using the ratio of state to national prices observed from the EIA's 2003 data and applied to the EIA's 2004 nationwide wellhead gas price estimate of \$5.49. Production from Alaska and Federal Offshore areas were excluded from analysis since there is essentially no marginal production from these areas and the large volume of their production tends to skew the data.

effects of abandonment

The values from Tables 1 and 2, Tables 3A and 3B show the gross value associated with marginal wells.

Assuming the average marginal well producing rates for each state, Table 3A shows oil and gas wells plugged and abandoned in the survey states during 2004 would have produced oil and gas valued at \$523 million. The total value of oil and gas lost due to abandonments during 2004 for all states was \$584 million.

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 DOE estimate the range is between one and two BOPD, and the equivalent rate of 10 to 20 MCFD is assumed for gas wells.

Table 2: 2004 Wellhead Prices

State	Total Oil Value (\$ x 1000)	Total Oil Production (bbl x 1000)	Weighted Average Wellhead (\$/bbl)	Total Gas Value (\$ x 1000)	Total Gas Production (Mcf x 1000)	Weighted Average Wellhead (\$/Mcf)
California	\$8,279,901	240,206	\$34.47	\$1,758,558	319,665	\$5.50
Colorado	\$892,277	22,097	\$40.38	\$5,139,450	1,037,121	\$4.96
Kansas	\$1,326,556	33,858	\$39.18	\$1,862,972	394,173	\$4.73
Louisiana	\$3,376,477	83,411	\$40.48	\$8,509,380	1,382,253	\$6.16
Mississippi	\$635,176	17,153	\$37.03	\$814,019	145,374	\$5.60
New Mexico	\$2,521,263	64,236	\$39.25	\$8,107,846	1,632,536	\$4.97
North Dakota	\$1,224,352	31,154	\$39.30	\$214,404	55,645	\$3.85
Oklahoma	\$2,496,955	62,502	\$39.95	\$9,153,977	1,690,818	\$5.41
Texas	\$15,239,311	392,867	\$38.79	\$30,179,833	5,337,720	\$5.65
Utah	\$575,944	14,629	\$39.37	\$1,242,522	276,969	\$4.49
Wyoming	\$1,811,827	51,619	\$35.10	\$7,171,084	1,590,756	\$4.51
Subtotal	\$38,380,039	1,013,732	\$37.86	\$74,154,046	13,863,030	\$5.35
All others	\$2,927,974	78,149	\$37.47	\$8,784,402	1,481,551	\$5.93
Total U.S.*	\$41,308,013	1,091,881	\$37.83	\$82,938,448	15,344,581	\$5.41

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

To illustrate the overall economic impact on the U.S. economy, Table 3B assumes the abandonment of all marginal wells. This shows a theoretical loss value of \$15.3 billion for the survey states or \$20.1 billion for the total United States during 2004.

If the marginal oil and gas production represented in Table 3B were indeed lost to the United States, this would represent about 849 thousand barrels of oil

and 4.2 Bcf of gas each day. Using the weighted average wellhead prices for marginal production, the daily amount that would have to be spent on imports would be \$54.9 million each day.

In 2004, American Petroleum Institute statistics show the United States imported 4.7 billion barrels of crude oil and products. If the oil production from marginal wells active in 2004 did not exist, imports would have increased 6.6 percent to make

up for the shortage. EIA statistics show that 2004's total marketed gas production was 19.795 Bcf. (This figure includes federal offshore gas production.) Marginal gas wells contributed 7.8 percent of the total production. EIA statistics also show the total of 2004 natural gas imports was 4,277 Bcf, an amount equal to 21.6 percent of natural gas production. If marginal gas wells did not exist, imports to make up the shortage would bring the level up to 29.4 percent of production.

Table 3A: Effect of 2004's Abandonment

3A.1 Oil



In 2004, the United States lost more than \$584 million in revenue from marginal wells left abandoned.

State	Number of Marginal Wells	Production from Marginal Wells (bbls)	2004 Wells Abandoned	Avg. Daily Production Per Well**
California	25,622	34,955,831	1,558	3.73
Colorado	5,605	6,316,308	147	3.08
Kansas	38,363	25,493,168	1,225	1.82
Louisiana	20,576	14,136,304	584	1.88
Mississippi	478	678,566	55	3.88
New Mexico	13,882	13,990,201	449	2.75
North Dakota	1,392	2,205,309	44	4.33
Oklahoma	48,250	41,427,782	619	2.35
Texas	121,490	126,260,710	5,461	2.84
Utah	1,111	1,523,025	35	3.75
Wyoming	12,343	8,487,256	211	1.88
Subtotal	289,112	275,474,460	10,388	2.60
All others	108,250	35,447,662	1,589	0.89
Total U.S.*	397,362	310,922,122	11,977	2.14

State	Lost Annual Production (bbls)	2004 Average \$/BBL	2004 Lost Gross Revenue
California	2,125,563	\$34.47	\$73,268,169
Colorado	165,655	\$40.38	\$6,689,156
Kansas	814,043	\$39.18	\$31,894,204
Louisiana	401,225	\$40.48	\$16,241,580
Mississippi	78,078	\$37.03	\$2,891,216
New Mexico	452,500	\$39.25	\$17,760,612
North Dakota	69,708	\$39.30	\$2,739,526
Oklahoma	531,478	\$39.95	\$21,232,532
Texas	5,675,444	\$38.79	\$220,150,487
Utah	47,980	\$39.37	\$1,888,976
Wyoming	145,087	\$35.10	\$5,092,560
Subtotal	10,506,761	\$37.86	\$397,787,476
All others	798,183	\$37.47	\$29,905,166
Total U.S.*	11,304,944	\$37.83	\$427,688,334

3A.2 Natural Gas

State	Number of Marginal Wells	Production from Marginal Wells (Mcf)	2004 Wells Abandoned	Avg. Daily Production Per Well*
California	490	4,247,011	71	23.68
Colorado	7,780	79,619,265	65	27.96
Kansas	8,169	101,394,727	248	33.91
Louisiana	9,784	44,477,263	314	12.42
Mississippi	548	6,345,386	35	31.64
New Mexico	10,142	91,910,687	303	24.76
North Dakota	58	300,815	6	14.17
Oklahoma	23,845	203,812,145	337	23.35
Texas	35,240	284,361,426	1,257	22.05
Utah	1,225	12,854,032	22	28.67
Wyoming	19,670	75,643,874	306	10.51
Subtotal	116,951	904,966,631	2,964	21.14
All others	154,905	634,993,864	1,165	11.20
Total U.S.*	271,856	1,539,960,495	4,129	15.48

State	Lost Annual Production (Mcf)	2004 Average \$/Mcf	2004 Lost Gross Revenue
California	615,383	\$5.50	\$3,385,380
Colorado	665,200	\$4.96	\$3,296,394
Kansas	3,078,209	\$4.73	\$14,548,471
Louisiana	1,427,418	\$6.16	\$8,787,425
Mississippi	405,271	\$5.60	\$2,269,312
New Mexico	2,745,902	\$4.97	\$13,637,279
North Dakota	31,119	\$3.85	\$119,903
Oklahoma	2,880,465	\$5.41	\$15,594,649
Texas	10,143,085	\$5.65	\$57,349,695
Utah	230,848	\$4.49	\$1,035,617
Wyoming	1,176,768	\$4.51	\$5,304,839
Subtotal	23,399,668	\$5.35	\$125,166,007
All others	5,578,518	\$5.93	\$33,076,103
Total U.S.*	28,978,186	\$5.41	\$156,628,960

3A.3 Oil & Gas

	Number of Marginal Wells	2004 Wells Abandoned
Subtotal	406,063	13,352
All others	263,155	2,754
Total U.S.*	669,218	16,106

	2004 Lost Gross Revenue
Subtotal	\$522,953,483
All others	\$62,981,269
Total U.S.*	\$584,317,295

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

** Average daily production measured in BOPD (Oil) or MCFD (Natural Gas)

Table 3B: Effect of Hypothetical Abandonment of All Marginal Wells

3B.1 Oil



If all marginal wells were abandoned in 2004, the United States would have lost more than \$20 billion in revenue.

State	Number of Marginal Wells	Production from Marginal Wells (bbls)	Hypothetical Abandonments	Avg. Daily Production Per Well**
California	25,622	34,955,831	25,622	3.73
Colorado	5,605	6,316,308	5,605	3.08
Kansas	38,363	25,493,168	38,363	1.82
Louisiana	20,576	14,136,304	20,576	1.88
Mississippi	478	678,566	478	3.88
New Mexico	13,882	13,990,201	13,882	2.75
North Dakota	1,392	2,205,309	1,392	4.33
Oklahoma	48,250	41,427,782	48,250	2.35
Texas	121,490	126,260,710	121,490	2.84
Utah	1,111	1,523,025	1,111	3.75
Wyoming	12,343	8,487,256	12,343	1.88
Subtotal	289,112	275,474,460	289,112	2.60
All others	108,250	35,447,662	108,250	0.89
Total U.S.*	397,362	310,922,122	397,362	2.14

State	Lost Annual Production (bbls)	2004 Average \$/BBL	2004 Hypothetical Lost Gross Revenue
California	34,955,831	\$34.47	\$1,204,927,495
Colorado	6,316,308	\$40.38	\$255,052,517
Kansas	25,493,168	\$39.18	\$998,822,322
Louisiana	14,136,304	\$40.48	\$572,237,586
Mississippi	678,566	\$37.03	\$25,127,299
New Mexico	13,990,201	\$39.25	\$549,115,389
North Dakota	2,205,309	\$39.30	\$86,668,644
Oklahoma	41,427,782	\$39.95	\$1,655,039,891
Texas	126,260,710	\$38.79	\$4,897,652,941
Utah	1,523,025	\$39.37	\$59,961,494
Wyoming	8,487,256	\$35.10	\$297,902,686
Subtotal	275,474,460	\$37.86	\$10,429,502,494
All others	35,447,662	\$37.47	\$1,328,102,079
Total U.S.*	310,922,122	\$37.83	\$11,762,797,498

3B.2 Natural Gas

State	Number of Marginal Wells	Production from Marginal Wells (Mcf)	Hypothetical Abandonments	Avg. Daily Production Per Well**
California	490	4,247,011	490	23.68
Colorado	7,780	79,619,265	7,780	27.96
Kansas	8,169	101,394,727	8,169	33.91
Louisiana	9,784	44,477,263	9,784	12.42
Mississippi	548	6,345,386	548	31.64
New Mexico	10,142	91,910,687	10,142	24.76
North Dakota	58	300,815	58	14.17
Oklahoma	23,845	203,812,145	23,845	23.35
Texas	35,240	284,361,426	35,240	22.05
Utah	1,225	12,854,032	1,225	28.67
Wyoming	19,670	75,643,874	19,670	10.51
Subtotal	116,951	904,966,631	116,951	21.14
All others	154,905	634,993,864	154,905	11.20
Total U.S.*	271,856	1,539,960,495	271,856	15.48

State	Lost Annual Production (Mcf)	2004 Average \$/Mcf	2004 Hypothetical Lost Gross Revenue
California	4,247,011	\$5.50	\$23,363,893
Colorado	79,619,265	\$4.96	\$394,552,961
Kansas	101,394,727	\$4.73	\$479,219,583
Louisiana	44,477,263	\$6.16	\$273,809,460
Mississippi	6,345,386	\$5.60	\$35,530,940
New Mexico	91,910,687	\$4.97	\$456,466,278
North Dakota	300,815	\$3.85	\$1,159,059
Oklahoma	203,812,145	\$5.41	\$1,103,425,525
Texas	284,361,426	\$5.65	\$1,607,798,922
Utah	12,854,032	\$4.49	\$57,665,026
Wyoming	75,643,874	\$4.51	\$341,000,569
Subtotal	904,966,631	\$5.35	\$4,840,712,201
All others	634,993,864	\$5.93	\$3,765,000,609
Total U.S.*	1,539,960,495	\$5.41	\$8,323,585,607

3B.3 Oil & Gas

	Number of Marginal Wells	Hypothetical Abandonments
Subtotal	406,063	406,063
All others	263,155	263,155
Total U.S.*	669,218	669,218

	Hypothetical Lost Gross Revenue (2004)
Subtotal	\$15,270,214,695
All others	\$5,093,102,688
Total U.S.*	\$20,086,383,105

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

** Average daily production measured in BOPD (Oil) or MCFD (Natural Gas)

RIMS II multipliers

Starting with last year's report for calendar year 2003, revised multipliers based on the BEA's 1997 national and 2001 regional accounts are used.

Until last year, this report was based on RIMS II multipliers provided by the Bureau of Economic Analysis (BEA) for industry number 8.0000, Crude Petroleum and Natural Gas. Starting with last year's report for calendar year 2003, revised multipliers based on the BEA's 1997 national and 2001 regional accounts are used.

The RIMS II multipliers based on this updated work were first released in May of 2004. The multipliers have been re-categorized to Industry 211000, Oil and Gas Extraction. A comparison of these new factors against the old shows that the overall multiplication effect has on average increased for output and earnings for all of the survey states. However, the employment, while up on average, is not up for all states.

The basic implication of these changes is that the economic activity generated by marginal well production has a larger

impact on the U.S. economy under the revised multipliers, assuming no change in price levels. The magnitude of that impact is dependant on the prices received for the oil and gas. The multipliers 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 marginal 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 output, earnings and employment not only within the crude petroleum and natural gas industry, but from secondary inter-related industries that are impacted in the region. Examples of these secondary sectors could be non-oilfield equipment manufacturers, local retailers and health care professionals that provide goods

and services to the oil sector and other sectors. Please refer to the Appendix for a detailed 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. These multipliers are used when 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 mul-

tiplier 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: RIMS II Multipliers

State	Final Demand Multipliers			Direct Effect Multipliers		Calculated O&G Industry Multipliers	
	<i>Output</i>	<i>Earnings</i>	<i>Employment</i>	<i>Earnings</i>	<i>Employment</i>	<i>Earnings</i>	<i>Employment</i>
California	1.9891	0.4319	9.5	2.4103	2.7602	0.1792	3.4506
Colorado	2.0627	0.4337	8.6	2.5391	4.5789	0.1708	1.8861
Kansas	1.9466	0.3788	14.1	2.1995	2.0271	0.1722	6.9618
Louisiana	1.8321	0.3628	8.8	2.3102	3.7887	0.1570	2.3275
Mississippi	1.6049	0.3035	9.3	2.0655	2.4289	0.1469	3.8365
New Mexico	1.6563	0.3487	10.0	2.0363	2.6812	0.1712	3.7421
North Dakota	1.7441	0.3538	11.0	2.0231	2.4251	0.1749	4.5305
Oklahoma	2.0400	0.4224	11.5	2.3894	3.6824	0.1768	3.1144
Texas	2.0853	0.4334	8.4	2.4727	5.3808	0.1753	1.5675
Utah	1.8940	0.4018	11.6	2.4387	3.1276	0.1648	3.7026
Wyoming	1.7344	0.3242	7.9	1.8970	2.9567	0.1709	2.6753

U.S. economic impact

Tables 5A and 5B show the economic impact of marginal oil and gas production. Using the values determined from Table 3A and the multipliers from Table 4, Table 5A shows the 16,106 marginal oil and gas wells plugged and abandoned in 2004 resulted in a reduction of total economic output of \$1.18 billion, earn-

ings reductions of \$245 million and lost employment of 5,558 jobs.

In 2004 the oil and gas industry alone lost \$102.4 million of earnings and 1,576 jobs to the marginal well abandonments of the previous year. Table 5B shows the economic impact of the

theoretical abandonment of all marginal oil and gas wells. **Economic output would decline by \$40.7 billion, earnings would decrease by \$8.4 billion and 200,213 jobs would be lost.**

Within the oil and gas industry alone, \$3.55 billion of earnings and 57,474 jobs would be lost.

Table 5A: Economic Effect of 2004's Abandonments

5A.1 Oil

State	Revenue Lost From Abandonment (Million \$)	Final Demand Multipliers Output	Final Demand Multipliers Earnings	Final Demand Multipliers Employment	<u>Overall Effect in Final Demand</u>			Direct Effect Multipliers Earnings	Direct Effect Multipliers Employment	<u>Oil & Gas Industry</u>	
					Lost Output (Million \$)	Lost Earnings (Million \$)	Lost Employment			Lost Earnings (Million \$)	Lost Employment
California	\$73.268	1.98910	0.4319	9.5	\$145.738	\$31.645	698	0.1792	3.4506	\$13.129	253
Colorado	\$6.689	2.06270	0.4337	8.6	\$13.798	\$2.901	58	0.1708	1.8861	\$1.143	13
Kansas	\$31.894	1.94660	0.3788	14.1	\$62.085	\$12.082	450	0.1722	6.9618	\$5.493	222
Louisiana	\$16.242	1.83210	0.3628	8.8	\$29.756	\$5.892	143	0.1570	2.3275	\$2.551	38
Mississippi	\$2.891	1.60490	0.3035	9.3	\$4.640	\$0.877	27	0.1469	3.8365	\$0.425	11
New Mexico	\$17.761	1.65630	0.3487	10.0	\$29.417	\$6.193	178	0.1712	3.7421	\$3.041	66
North Dakota	\$2.740	1.74410	0.3538	11.0	\$4.778	\$0.969	30	0.1749	4.5305	\$0.479	12
Oklahoma	\$21.233	2.04000	0.4224	11.5	\$43.314	\$8.969	244	0.1768	3.1144	\$3.754	66
Texas	\$220.150	2.08530	0.4334	8.4	\$459.080	\$95.413	1,857	0.1753	1.5675	\$38.587	345
Utah	\$1.889	1.89400	0.4018	11.6	\$3.578	\$0.759	22	0.1648	3.7026	\$0.311	7
Wyoming	\$5.093	1.73440	0.3242	7.9	\$8.833	\$1.651	40	0.1709	2.6753	\$0.870	14
Subtotal	\$397.787	2.02370	0.4207	9.4	\$805.016	\$167.351	3,747	0.1754	2.6300	\$69.782	1,047
All others*	\$29.905	2.02370	0.4207	9.4	\$60.519	\$12.581	281	0.1754	2.6300	\$5.245	79
Total U.S.	\$427.688	2.02380	0.4207	9.4	\$865.535	\$179.932	4,028	0.1754	2.6300	\$75.027	1,126

5A.2 Natural Gas

State	Revenue Lost From Abandonment (Million \$)	Final Demand Multipliers Output	Final Demand Multipliers Earnings	Final Demand Multipliers Employment	<u>Overall Effect in Final Demand</u>			Direct Effect Multipliers Earnings	Direct Effect Multipliers Employment	<u>Oil & Gas Industry</u>	
					Lost Output (Million \$)	Lost Earnings (Million \$)	Lost Employment			Lost Earnings (Million \$)	Lost Employment
California	\$3.385	1.98910	0.4319	9.5	\$6.734	\$1.462	32	0.1792	3.4506	\$0.607	12
Colorado	\$3.296	2.06270	0.4337	8.6	\$6.799	\$1.430	28	0.1708	1.8861	\$0.563	6
Kansas	\$14.548	1.94660	0.3788	14.1	\$28.320	\$5.511	205	0.1722	6.9618	\$2.506	101
Louisiana	\$8.787	1.83210	0.3628	8.8	\$16.099	\$3.188	77	0.1570	2.3275	\$1.380	20
Mississippi	\$2.269	1.60490	0.3035	9.3	\$3.642	\$0.689	21	0.1469	3.8365	\$0.333	9
New Mexico	\$13.637	1.65630	0.3487	10.0	\$22.587	\$4.755	137	0.1712	3.7421	\$2.335	51
North Dakota	\$0.120	1.74410	0.3538	11.0	\$0.209	\$0.042	1	0.1749	4.5305	\$0.021	1
Oklahoma	\$15.595	2.04000	0.4224	11.5	\$31.813	\$6.587	179	0.1768	3.1144	\$2.757	49
Texas	\$57.350	2.08530	0.4334	8.4	\$119.591	\$24.855	484	0.1753	1.5675	\$10.052	90
Utah	\$1.036	1.89400	0.4018	11.6	\$1.961	\$0.416	12	0.1648	3.7026	\$0.171	4
Wyoming	\$5.305	1.73440	0.3242	7.9	\$9.201	\$1.720	42	0.1709	2.6753	\$0.907	14
Subtotal	\$125.166	1.97300	0.4207	9.4	\$246.958	\$50.656	1,219	0.1728	2.8500	\$21.631	356
All others*	\$33.076	1.97300	0.4207	9.4	\$65.259	\$13.915	311	0.1728	2.8500	\$5.716	94
Total U.S.	\$156.629	1.99340	0.4207	9.4	\$312.217	\$64.571	1,530	0.1746	2.8800	\$27.346	451

5A.3 Oil & Gas

State	Revenue Lost From Abandonment (Million \$)	Final Demand Multipliers Output	Final Demand Multipliers Earnings	Final Demand Multipliers Employment	<u>Overall Effect in Final Demand</u>			Direct Effect Multipliers Earnings	Direct Effect Multipliers Employment	<u>Oil & Gas Industry</u>	
					Lost Output (Million \$)	Lost Earnings (Million \$)	Lost Employment			Lost Earnings (Million \$)	Lost Employment
Subtotal	\$522.953	2.01160	0.4169	9.5	\$1,051.974	\$218.007	4,966	0.1748	2.6838	\$91.413	1,403
All others*	\$62.981	1.99707	0.4207	9.4	\$125.778	\$26.496	592	0.1740	2.7455	\$10.961	173
Total U.S.	\$584.317	2.01560	0.4184	9.5	\$1,177.753	\$244.503	5,558	0.1752	2.6978	\$102.374	1,576

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

Table 5B: Economic Effect of Hypothetical Abandonment of All Marginal Wells

5B.1 Oil

State	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	Oil & Gas Industry	
					Lost Output (Million \$)	Lost Earnings (Million \$)	Lost Employment			Lost Earnings (Million \$)	Lost Employment
California	\$1,204.927	1.9891	0.4319	9.5	\$2,396.721	\$520.408	11,476	0.1792	3.4506	\$215.910	4,158
Colorado	\$255.053	2.0627	0.4337	8.6	\$526.097	\$110.616	2,203	0.1708	1.8861	\$43.565	481
Kansas	\$998.822	1.9466	0.3788	14.1	\$1,944.308	\$378.354	14,096	0.1722	6.9618	\$172.018	6,954
Louisiana	\$572.238	1.8321	0.3628	8.8	\$1,048.396	\$207.608	5,046	0.1570	2.3275	\$89.866	1,332
Mississippi	\$25.127	1.6049	0.3035	9.3	\$40.327	\$7.626	234	0.1469	3.8365	\$3.692	96
New Mexico	\$549.115	1.6563	0.3487	10.0	\$909.500	\$191.477	5,509	0.1712	3.7421	\$94.032	2,055
North Dakota	\$86.669	1.7441	0.3538	11.0	\$151.159	\$30.663	952	0.1749	4.5305	\$15.157	393
Oklahoma	\$1,655.040	2.0400	0.4224	11.5	\$3,376.281	\$699.089	18,980	0.1768	3.1144	\$292.579	5,154
Texas	\$4,897.653	2.0853	0.4334	8.4	\$10,213.076	\$2,122.643	41,309	0.1753	1.5675	\$858.431	7,677
Utah	\$59.961	1.8940	0.4018	11.6	\$113.567	\$24.093	694	0.1648	3.7026	\$9.879	222
Wyoming	\$297.903	1.7344	0.3242	7.9	\$516.682	\$96.580	2,356	0.1709	2.6753	\$50.912	797
Subtotal	\$10,429.502	2.0362	0.4208	9.9	\$21,236.114	\$4,389.156	102,856	0.177	2.8100	\$1,846.041	29,319
All others*	\$1,328.102	2.0362	0.4208	9.9	\$2,704.281	\$558.865	13,148	0.177	2.8100	\$235.074	3,732
Total U.S.	\$11,762.797	2.0353	0.4207	9.9	\$23,940.396	\$4,948.022	116,005	0.1769	2.8100	\$2,081.115	33,051

5B.2 Natural Gas

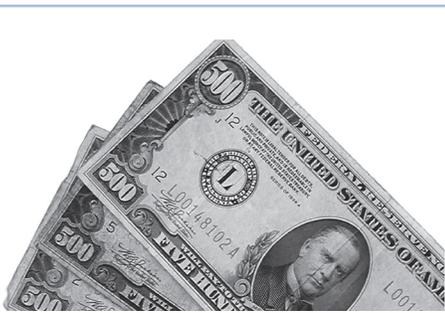
State	Revenue Lost From Abandonment (Million \$)	Final Demand Multipliers Output	Final Demand Multipliers Earnings	Final Demand Multipliers Employment	Overall Effect in Final Demand			Direct Effect Multipliers Earnings	Direct Effect Multipliers Employment	Oil & Gas Industry	
					Lost Output (Million \$)	Lost Earnings (Million \$)	Lost Employment			Lost Earnings (Million \$)	Lost Employment
California	\$23.364	1.9891	0.4319	9.5	\$46.473	\$10.091	223	0.1792	3.4506	\$4.187	81
Colorado	\$394.553	2.0627	0.4337	8.6	\$813.844	\$171.118	3,407	0.1708	1.8861	\$67.393	744
Kansas	\$479.220	1.9466	0.3788	14.1	\$932.849	\$181.528	6,763	0.1722	6.9618	\$82.532	3,336
Louisiana	\$273.809	1.8321	0.3628	8.8	\$501.646	\$99.338	2,415	0.1570	2.3275	\$43.000	637
Mississippi	\$35.531	1.6049	0.3035	9.3	\$57.024	\$10.784	331	0.1469	3.8365	\$5.221	136
New Mexico	\$456.466	1.6563	0.3487	10.0	\$756.045	\$159.170	4,580	0.1712	3.7421	\$78.166	1,708
North Dakota	\$1.159	1.7441	0.3538	11.0	\$2.022	\$0.410	13	0.1749	4.5305	\$0.203	5
Oklahoma	\$1,103.426	2.0400	0.4224	11.5	\$2,250.988	\$466.087	12,654	0.1768	3.1144	\$195.064	3,436
Texas	\$1,607.799	2.0853	0.4334	8.4	\$3,352.743	\$696.820	13,561	0.1753	1.5675	\$281.805	2,520
Utah	\$57.665	1.8940	0.4018	11.6	\$109.218	\$23.170	668	0.1648	3.7026	\$9.501	214
Wyoming	\$341.001	1.7344	0.3242	7.9	\$591.431	\$110.552	2,697	0.1709	2.6753	\$58.277	912
Subtotal	\$4,840.712	1.9448	0.3985	9.8	\$9,414.283	\$1,929.068	47,311	0.1705	2.8400	\$825.349	13,730
All others*	\$3,765.001	1.9448	0.3985	9.8	\$7,322.173	\$1,500.353	36,897	0.1705	2.8400	\$641.933	10,693
Total U.S.	\$8,323.586	2.0107	0.4120	10.1	\$16,736.456	\$3,429.420	84,208	0.1763	2.9300	\$1,467.281	24,423

5B.3 Oil & Gas

	Revenue Lost From Abandonment (Million \$)	Final Demand Multipliers Output	Final Demand Multipliers Earnings	Final Demand Multipliers Employment	<u>Overall Effect in Final Demand</u>			Direct Effect Multipliers Earnings	Direct Effect Multipliers Employment	<u>Oil & Gas Industry</u>	
					Lost Output (Million \$)	Lost Earnings (Million \$)	Lost Employment			Lost Earnings (Million \$)	Lost Employment
<i>Subtotal</i>	\$15,270.215	2.0072	0.4138	9.8	\$30,650.397	\$6,318.224	150,168	0.1749	2.8192	\$2,671.390	43,049
All others*	\$5,093.103	1.9686	0.4043	9.8	\$10,026.455	\$2,059.218	50,045	0.1722	2.8322	\$877.007	14,425
Total U.S.	\$20,086.383	2.0251	0.4171	10.0	\$40,676.852	\$8,377.442	200,213	0.1767	2.8613	\$3,548.397	57,474

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

Abandonment of All Marginal Wells: How would it affect you and the country?



\$8.4 billion

lost in earnings



200,213

*hardworking
Americans would
lose their jobs*



\$40.7 billion

*of lost economic
output*

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 oil or natural gas wells that

qualify for “stripper” or marginal status under their guidelines.

For the purposes of this report, it was assumed that all of the marginal production reported for a given state would qualify for marginal/stripper status tax reductions at the lowest level of 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

Table 6: Production Taxes

State	Marginal Oil Severance Tax Rate	Other Taxes (Conservation, Environmental, etc.)	2004 Average Oil \$/Bbl	2004 Production from Marginal Wells (Bbls)	Annual Total Marginal Oil Production Tax Revenue	2004 Lost Production Bbls	Annual Lost Marginal Oil Production Tax Revenue	Marginal Gas Severance Tax Rate
Alabama	6.00%	–	\$38.85	1,141,127	\$2,659,967	10,234	\$23,856	6.00%
Alaska	15.00%	\$0.034	\$33.17	0	\$0	0	–	10%
Arizona	3.125%	–	\$19.19	23,746	\$14,240	0	\$0	3.125%
Arkansas	4.00%	\$0.045	\$36.67	3,620,354	\$5,473,251	46,767	\$70,703	\$0.003
California	0.00%	\$0.0443	\$34.47	34,955,831	\$1,548,854	2,125,563	\$94,181	0.00%
Colorado	0.00%	0.12%	\$40.38	6,316,308	\$306,063	165,655	\$8,027	0.00%
Florida	5.00%	–	\$19.19	0	–	0	–	\$0.191
Illinois	0.00%	–	\$38.74	10,040,292	\$0	327,863	\$0	0.00%
Indiana	1.00%	–	\$38.18	1,729,606	\$660,364	22,467	\$8,578	1.00%
Kansas	0.00%	\$0.0273	\$39.18	25,493,168	\$695,199	814,043	\$22,199	0.00%
Kentucky	4.50%	–	\$36.82	2,005,480	\$3,322,880	21,597	\$35,784	4.50%
Louisiana	3.125%	–	\$40.48	14,136,304	\$17,882,425	401,225	\$507,549	\$0.013
Maryland	0.00%	–	\$0.00	0	–	0	–	7.00%
Michigan	4.00%	1%	\$39.14	3,055,339	\$5,979,298	166,944	\$326,709	5.00%
Mississippi	6.00%	\$0.044	\$37.03	678,566	\$1,537,495	78,078	\$176,908	6.00%
Missouri	0.00%	–	\$19.19	88,053	\$0	723	\$0	0.00%
Montana	9.00%	0.30%	\$38.53	1,879,426	\$6,734,528	46,684	\$167,282	11.00%
Nebraska	2.00%	1%	\$38.42	1,654,195	\$1,906,625	61,605	\$71,005	3.00%
Nevada	\$0.05	–	\$19.19	0	–	0	–	\$0.001
New Mexico	7.09%	–	\$39.25	13,990,201	\$38,932,281	452,500	\$1,259,227	8.19%
New York	0.00%	–	\$39.40	171,760	\$0	4,856	\$0	0.00%
North Dakota	5.00%	–	\$39.30	2,205,309	\$4,333,432	69,708	\$136,976	\$0.0772
Ohio	\$0.100	–	\$38.27	4,868,915	\$486,892	33,842	\$3,384	\$0.025
Oklahoma	7.195%	\$0.002	\$39.95	41,427,782	\$119,162,976	531,478	\$1,527,681	7.195%
Oregon	6.00%	–	\$0.00	0	–	0	–	6.000%
Pennsylvania	0.00%	–	\$39.48	3,669,959	\$0	30,619	\$0	0.00%
South Dakota	4.74%	–	\$38.40	35,452	\$64,528	0	\$0	4.74%
Tennessee	3.00%	–	\$19.19	261,984	\$150,825	19,481	\$11,215	3.00%
Texas	4.60%	\$0.1906	\$38.79	126,260,710	\$249,360,483	5,675,444	\$11,208,804	7.50%
Utah	0.00%	0.20%	\$39.37	1,523,025	\$119,923	47,980	\$3,778	0.00%
Virginia	0.50%	–	\$19.19	1,974	\$189	0	\$0	3.00%
West Virginia	5.00%	–	\$38.38	1,200,000	\$2,302,800	4,500	\$8,636	5.00%
Wyoming	4.00%	0.06%	\$35.10	8,487,256	\$12,094,849	145,087	\$206,758	6.00%
Total	–	–	–	310,922,122	\$475,730,368	11,304,944	\$15,879,242	–

and marginal production from Table 6, severance taxes collected for marginal production were \$859 million during 2004. Furthermore, the production loss from marginal oil and gas well abandonments in 2004 would represent a \$23.97 million loss in severance taxes assuming average marginal production rates.

Ad valorem taxes are property taxes assessed by local government entities, and a marginal 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 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 marginal 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: continued

State	Other Taxes (Conservation, Environmental, etc.)	2004 Average Gas \$/Mcf	2004 Production from Marginal Wells (Mcf)	Annual Total Marginal Gas Production Tax Revenue	2004 Lost Production Mcf	Annual Lost Marginal Gas Production Tax Revenue	Annual Total Marginal Production Tax Revenue	Annual Lost Marginal Production
Alabama	–	6.47	22,895,790	\$8,891,865	240,020	\$93,215	\$11,551,832	\$117,071
Alaska	\$0.00008	2.63	0	\$0	0	\$0	\$0	\$0
Arizona	–	4.73	10,987	\$1,623	0	\$0	\$15,863	\$0
Arkansas	\$0.005	5.64	16,923,448	\$135,388	159,238	\$1,274	\$5,608,639	\$71,977
California	\$0.0044	5.50	4,247,011	\$1,882	615,383	\$273	\$1,550,736	\$94,454
Colorado	0.12%	4.96	79,619,265	\$473,464	665,200	\$3,956	\$779,527	\$11,983
Florida	–	6.47	0	\$0	0	\$0	\$0	\$0
Illinois	–	0.00	184,000	\$0	3,149	\$0	\$0	\$0
Indiana	–	5.91	3,401,445	\$200,859	21,384	\$1,263	\$861,223	\$9,841
Kansas	\$0.0058	4.73	101,394,727	\$591,131	3,078,209	\$17,946	\$1,286,330	\$40,145
Kentucky	–	4.96	83,777,212	\$18,682,094	289,500	\$64,558	\$22,004,974	\$100,342
Louisiana	–	6.16	44,477,263	\$578,204	1,427,418	\$18,556	\$18,460,629	\$526,106
Maryland	–	4.91	33,391	\$11,481	0	\$0	\$11,481	\$0
Michigan	1%	4.38	70,864,267	\$18,610,336	919,292	\$201,187	\$24,589,634	\$527,896
Mississippi	\$0.005	5.60	6,345,386	\$2,163,583	405,271	\$138,185	\$3,701,078	\$315,093
Missouri	–	0.00	0	\$0	0	\$0	\$0	\$0
Montana	0.30%	4.07	26,484,418	\$12,184,536	371,025	\$166,164	\$18,919,064	\$333,445
Nebraska	1%	3.46	782,502	\$108,302	7,672	\$796	\$2,014,927	\$71,802
Nevada	–	0.00	0	\$0	0	\$0	\$0	\$0
New Mexico	–	4.97	91,910,687	\$37,384,588	2,745,902	\$1,116,893	\$76,316,869	\$2,376,120
New York	–	6.31	10,261,189	\$0	8,985	\$0	\$0	\$0
North Dakota	–	3.85	300,815	\$23,223	31,119	\$2,402	\$4,356,655	\$139,379
Ohio	–	6.44	72,539,000	\$1,813,475	805,651	\$20,141	\$2,300,367	\$23,526
Oklahoma	\$0.0001	5.41	203,812,145	\$79,411,848	2,880,465	\$1,122,035	\$198,574,823	\$2,649,716
Oregon	–	4.89	0	\$0	0	\$0	\$0	\$0
Pennsylvania	–	0.00	136,394,002	\$0	534,318	\$0	\$0	\$0
South Dakota	–	5.44	455,296	\$117,309	0	\$0	\$181,838	\$0
Tennessee	–	5.70	1,936,268	\$330,970	150,599	\$25,742	\$481,795	\$36,957
Texas	\$0.0033	5.65	284,361,426	\$121,532,696	10,143,085	\$4,301,227	\$370,893,179	\$15,510,031
Utah	0.20%	4.49	12,854,032	\$115,330	230,848	\$2,071	\$235,253	\$5,849
Virginia	–	0.00	3,050,649	\$0	602,102	\$0	\$189	\$0
West Virginia	–	6.44	185,000,000	\$59,569,648	1,465,584	\$471,915	\$61,872,448	\$480,551
Wyoming	0.06%	4.51	75,643,874	\$20,664,635	1,176,768	\$321,473	\$32,759,484	\$528,231
Total	–	–	1,539,960,495	\$383,598,470	28,978,186	\$8,091,272	\$859,328,837	\$23,970,514

Many states have different or multiple production level cut-offs in determining marginal status. The rates shown here assume the lowest tax applicable to a marginal well producing at the lowest production level cut-off. Source: www.spee.org. Anomalous oil price of \$19.19 shown for some minor producing states calculated due to inconsistencies between national and state data.

conclusion

The results of this study serve to quantify the economic impact of marginal oil and gas well production on the U.S. economy.

cause independent operators have been able to negotiate directly with landowners for the drilling rights on small parcels of land, the scale of economics here are smaller – operators have been able to find and develop oil and gas fields that would never be commercial in foreign countries.

When we speak of marginal production here, it should be kept in mind that the ability of operators to maintain production at marginal rates is an entrepreneurial undertaking. Operators of marginal wells have to be efficient in their operations to survive, and continued marginal production in the United States depends on policies that promote such efficiency.

The cumulative impact of marginal production over the 12 years this report has been prepared is summarized in Table 7 – 6.45 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 \$7.8 billion of economic activity and almost 41,000 jobs.

The lost output of marginal wells abandoned during the past 12 years would have represented \$7.8 billion of economic activity and almost 41,000 jobs.

In 2004, total domestic production, including Alaska and the federal offshore areas was 1.98 billion barrels of oil and 19.79 trillion cubic feet of gas. Marginal oil production accounted for 311 million barrels or 15.7 percent of total oil. Marginal gas production accounted for 1.54 Tcf or 7.8 percent of total gas production. The use of RIMS II multipliers show that every dollar of marginal oil and gas production creates an additional \$1.0156 of economic activity throughout the economy, and that 9.5 jobs are dependent on every \$1 million of marginal oil and gas produced.

Much has been reported regarding the maturity of the United States as an oil and gas producing area. Private ownership of minerals, a phenomenon that is rare in other countries, has resulted in more drilling and thus more efficient exploration of the country than perhaps any other area in the world. Be-

Table 7: Marginal Wells – Cumulative Impact on U.S. Economy

7.1 Oil

Year	No. of Marginal Wells	Marginal Well 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
2002	402,072	323.777	13,635	2.21	13.157	468.723	62.571	2,621	10.113
2003	393,463	313.748	14,300	2.18	13.844	792.388	164.696	3,783	12.534
2004	397,362	310.922	11,977	2.14	11.305	865.535	179.932	4,028	23.971
Total	–	4,264.746	187,259	–	174.170	\$5,812.800	\$898.369	31,358	\$142.747

7.2 Gas

Year	No. of Marginal Wells	Marginal Well Production Million Bcf	Abandonments	Avg. Daily Production Per Well (MCFD)	Lost Annual Production Bcf	Lost Output Million \$	Lost Earnings Million \$	Lost Employment	Lost Severance Taxes Million \$
1992	–	–	–	–	–	–	–	–	–
1993	–	–	–	–	–	–	–	–	–
1994	159,369	940.421	3,163	16.17	21.256	61.758	8.112	376	\$1.608
1995	159,669	925.563	3,189	15.87	23.053	51.853	6.771	315	1.518
1996	168,702	986.676	4,671	16.01	39.978	137.092	18.065	804	4.860
1997	189,756	1,042.153	4,661	15.72	35.839	122.772	16.192	729	3.947
1998	199,745	1,104.684	4,203	15.55	29.258	92.721	12.286	549	3.128
1999	207,766	1,138.980	3,546	15.56	24.407	80.846	10.707	481	2.799
2000	223,222	1,258.727	3,534	15.40	23.806	312.217	64.571	1,530	8.091
2001	234,507	1,353.516	3,600	15.81	24.655	397.960	53.149	909	4.716
2002	245,961	1,418.274	3,870	15.75	27.261	128.329	16.997	765	4.335
2003	260,563	1,478.106	3,883	15.54	26.889	274.231	56.033	1,329	6.745
2004	271,856	1,478.106	3,883	15.54	28.978	312.217	64.571	1,530	8.091
Total	–	13,125.204	42,203	–	305.380	\$1,971.996	\$327.453	9,317	\$49.838

7.3 Total Oil & Gas

Year	No. of Marginal Wells	Marginal Well Production MMBOE (6:1)	Abandonments	Avg. Daily Production Per Well (BOEPD)	Lost Annual Production Million 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	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	4.72	20.023	510.308	67.619	2,949	13.859
1998	606,125	500.984	18,115	4.73	16.861	309.211	41.160	1,780	9.120
1999	618,446	505.344	14,773	4.70	13.684	328.717	43.766	1,964	8.939
2000	634,851	535.735	14,252	4.73	14.090	742.214	122.076	3,863	18.710
2001	637,966	541.685	15,834	4.78	15.404	795.920	106.298	3,177	13.064
2002	648,033	560.156	17,505	4.83	17.701	597.052	79.568	3,386	14.448
2003	654,026	560.099	18,183	4.77	18.326	1,066.619	220.729	5,112	19.278
2004	669,218	557.273	15,860	4.73	16.135	1,177.753	244.503	5,558	32.062
Total	–	6,452.280	229,462	–	225.066	\$7,784.797	\$1,225.823	40,675	\$192.585

– Not Available

Note: Table 7 includes prior year statistical revisions

appendix: RIMS background

The U.S. Department of Commerce's Bureau of Economic Analysis 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 marginal well study uses these multipliers to investigate the economic impact of marginal well production on 11 states and extrapolates those findings to determine the economic impact of marginal 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 (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 pro-

vided for output, earnings and employment, considering final demand and direct effect. These multipliers plus assumptions of projects or programs introductions 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 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 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 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 marginal 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, Tex-

as, Utah and Wyoming. However, Alaska has no marginal well production reported. 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 marginal 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 significant other 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 geographically 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.

All previous editions of this report utilized RIMS II factors that were calculated from data gathered in the late 1980s. The U.S. Department of Commerce released updated RIMS II factors in April

of 2004, and these updated factors were used in this report. The old factors were aggregated into industry 8.000, Crude Petroleum and Natural Gas. The new factors are grouped into Industry 211000, Oil and Gas Extraction. The new factors are generally higher than the old factors, showing that the industry activity has a larger impact on the overall economy than what would have been calculated using the old factors.

Because of the time interval between the development of the multipliers and the possible changes in the scope of what is encompassed in the industry category, it cannot be determined to what extent the old multipliers are directly comparable with the new.

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Charles worked as director of technical services for the IOGCC beginning in 1970. In 1971 he took responsibility of assembling the data for the report and has been involved with its production each year since.

Lee began working for the IOGCC in 1954, serving as executive secretary to various Commission directors. She has assisted in the compilation of data for the Marginal Well Report since the late 1950s.

Oklahoma Commission on Marginally Producing Oil and Gas Wells

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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 (1,000,000 barrels of oil equivalent)

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)

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.

About the Interstate Oil and Gas Compact Commission

The IOGCC is the only organization of its kind and represents the governors of states that produce more than 99 percent of the domestic onshore oil and natural gas.

The organization's mission is to champion the conservation and efficient recovery of our nation's 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, visit www.iogcc.state.ok.us.

About the Oklahoma Commission on Marginally Producing Oil and Gas Wells

The Oklahoma Commission on Marginally Producing Oil and Gas Wells is an Oklahoma state agency, funded by the oil and natural gas industry, with a purpose of protecting and promoting Oklahoma production of crude oil and natural gas. The organization's purpose is to serve the operator with its technology transfer programs; to serve the state by making sure that its most vital resource is continuously produced and not prematurely abandoned; and to serve the public as an information source regarding the importance of the industry to their lives and the state in which they live. For more information, visit www.marginalwells.com.

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