Marginal Wells:
fuel for economic growth

2006 Report

INTERSTATE Oil&Gas COMPACT COMMISSION

About the Interstate Oil and Gas Compact Commission

The Interstate Oil and Gas Compact Commission is a multi-state government agency that promotes the conservation and efficient recovery of our nation's oil and natural gas resources while protecting health, safety and the environment.

The IOGCC consists of the governors of 37 states (30 members and seven associate states) that produce most of the oil and natural gas in the United States, as well as seven international affiliates. Chartered by Congress in 1935, the organization is the oldest and largest interstate compact in the nation.

The IOGCC assists states in balancing interests through sound regulatory practices. These interests include: maximizing domestic oil and natural gas production, minimizing the waste of irreplaceable natural resources, and protecting human and environmental health.

The IOGCC also provides an effective forum for government, industry, environmentalists and others to share information and viewpoints, allowing members to take a proactive approach to emerging technologies and environmental issues. For more information visit www.iogcc.state.ok.us or call 405-525-3556.

About the Oklahoma Commission on Marginally Producing Oil and Gas Wells

Special thanks to 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 in their lives and the state in which they live. For more information, visit www.marginalwells.com.

Introduction

The information within these pages tells an exciting story about one of America's greatest treasures. Marginal, low volume wells are the model of conservation and economic development, contributing significantly to the lifestyles of all Americans.

The Interstate Oil and Gas Compact Commission has been telling the story of these wells since the beginning of World War II – a time when conservation could not have been more important. Today, they continue to be critical suppliers of the nation's energy.

Although marginal wells are not glamorous and may receive little attention, together they provide 17 percent of oil and 9 percent of natural gas produced onshore in this country. In fact, without these wells the United States would have to increase imports by nearly 7 percent to make up for the shortage.

The increase in this year's production numbers illustrates the increasing importance of these wells. Daily marginal gas production averaged its highest in 10 years. On the oil side, smaller producing states such as New York are also experiencing dramatic increases in production.

However, the wells' influence stretches far beyond the oil and gas industry. Every dollar of marginal oil and gas production creates nearly $1.01 of economic activity. Additionally, nearly 10 jobs are dependent upon every $1 million of marginal oil and gas produced.

Marginal wells provide American energy to Americans and stand as a testament to ingenuity and conservation. The cumulative energy provided by these tiny producers touches the lives of all Americans, providing tax revenue for states, jobs for American families and energy security.

It is our hope that the numbers from this report tell this story and explain the role marginal wells continue to play in providing for the country's bright energy future.

Marginal wells are the model of conservation and economic development, contributing significantly to the lifestyles of all Americans.

research and development

Research is key to the survival of marginal wells. Unfortunately, the small, independent producers who operate these wells oftentimes do not have the means to conduct their own research.

Federal and state governments and universities play a crucial role in research and development (R&D) for fossil energy. Without continued funding of these R&D programs, new methods for producing domestic energy will remain beyond the reach of American energy producers.

Unfortunately, just when R&D is most needed, federal funding is being reduced. This year the U.S. House and Senate Appropriations Committees eliminated the appropriation for federally funded oil and natural gas R&D through the U.S. Department of Energy's Office of Fossil Energy. Such a decision will deal a serious blow to the ability of our country, particularly the small producer, to keep pace technologically.

In addition, the strategies of major multinational oil companies direct much of their R&D dollars to resources that reward shareholders. Independent producers cannot justify large R&D expenditures, and 85 percent of wells in the United States, including most marginal wells, are drilled by those independent oil and gas companies.

Moreover, the shrinking major and multinational companies have taken a toll on consortia funding for domestic university research programs, thus reducing the number of active companies able to fund academic programs by half. The result is a continuing struggle for new funding mechanisms, which has been compounded by shrinking federal petroleum R&D funding in academia.

These factors and trends predict increasing difficulty for advancing R&D in the United States. For energy R&D, especially oil and natural gas upstream R&D directed at the nation's domestic resources, the battle will be even more difficult.

Marginal oil and natural gas wells are an often overlooked, but vitally important, segment of the domestic petroleum industry. In the years ahead, R&D funding will be critical to ensuring the producers of these wells have the tools necessary to continue supplying much-needed domestic energy to the nation.

More information about the current state of R&D can be found in the 2006 IOGCC publication "Who Will Fund America's Energy Future." To order a copy of the report, log on to www.iogcc.state.ok.us.

R&D funding is critical to ensuring the producers of marginal wells have the tools necessary to continue supplying much-needed domestic energy to the nation.

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What is Marginal Oil?

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 (2.2 barrels a day, on average), there are 401,072 of these wells in the United States. Combined, these marginal wells produced more than 321 million barrels of oil in 2005.

Plugged/Abandoned Wells

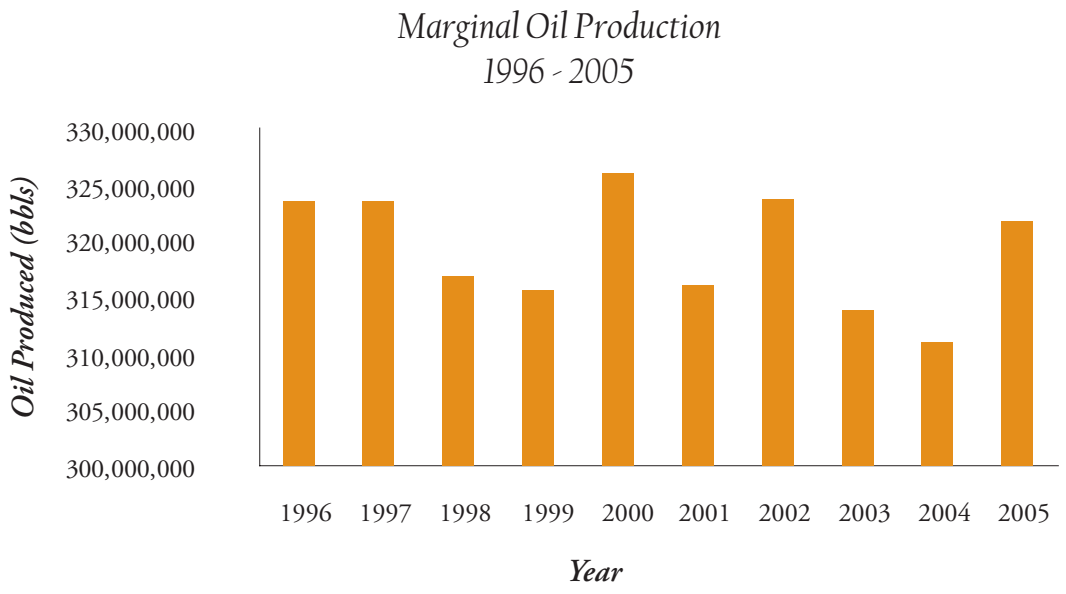
Many states have programs that allow a well to temporarily stop production. These "idle" wells are not included in the abandoned well category of this report; only wells that have been permanently plugged are included in the IOGCC's definition. Also not included in this study's abandoned well figures 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.

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

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
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
2005	**401,072**	**321,761,570**	**2.20**	**11,058**



secondary recovery

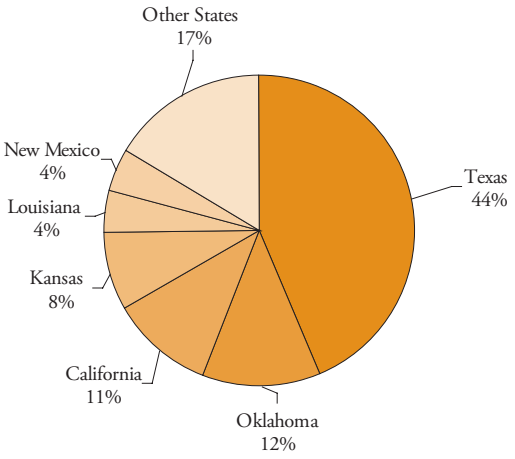
The term "secondary recovery" encompasses a variety of techniques designed to increase oil recovery from an existing well. Pressure in an underground formation pushes oil upward, allowing it to be extracted. In older wells and mature fields, this pressure has diminished over time, decreasing the flow 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, 2006

State	Estimated Secondary Oil Produced from Marginal Wells (Mbbls)	Percent of Total Marginal Production from Secondary
Alabama	797	87.4
Arkansas	417	12.6
Colorado	997	14.2
Indiana	797	50.0
Kansas	13,825	53.5
Kentucky	1,361	69.5
Nebraska	1,031	64.5
New Mexico	5,695	40.5
New York	19	9.0
Ohio	48	1.0
Oklahoma	19,344	49.2
South Dakota	35	64.8
Utah	906	56.0
West Virginia	195	15.0

u.s. state rankings

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



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

Marginal Oil Well Survey: as of

State	Number of Marginal Oil Wells	Production from Marginal Oil Wells (bbls)	Oil Wells Plugged and Abandoned	Average Daily Production Per Well
Alabama	665	911,785	1	3.76
Arizona	17	31,432	0	5.07
Arkansas	4,000	3,317,410	55	2.27
California	26,444	35,563,813	2,410	3.68
Colorado	5,982	7,001,499	105	3.21
Illinois	16,407 *	8,461,222 *	547 *	1.42
Indiana	5,364	1,594,296	22	0.81
Kansas	38,692	25,827,950	2,207	1.83
Kentucky	19,012	1,958,015	178	0.28
Louisiana	20,041	14,152,725	618 *	1.93
Michigan	2,011 *	2,657,497	52	3.62
Mississippi	1,858	895,452	40	1.32
Missouri	495	85,406	7	0.47
Montana	2,424	1,947,855	54	2.20
Nebraska	1,478	1,598,224	19	2.96
New Mexico	14,069	14,065,576	349	2.74
New York	2,553	211,292	70	0.23
North Dakota	1,416	2,217,706	25	4.29
Ohio	28,828	4,840,874	298	0.46
Oklahoma	46,798	39,318,486	1,015	2.30
Pennsylvania	16,662 *	3,652,770 *	171 *	0.60
South Dakota	27	54,169	2	5.50
Tennessee	290	235,127	15 *	2.22
Texas	124,116	139,959,142	4,722	3.09
Utah	1,163	1,618,810	37	3.81
Virginia	3	1,233	4	1.13
West Virginia	7,900	1,300,000	31	0.45
Wyoming	12,357	8,281,804	211	1.84
Totals	**401,072**	**321,761,570**	**13,265**	**2.20**

* *Estimated*

January 1, 2006

State	Total 2005 Oil Production (Mbbls)	Marginal Oil Well Reserves (Mbbls)		
		Primary	*Secondary*	*Total*
Alabama	5,159	995	1,035	2,030
Arizona	50	154	0	154
Arkansas	6,338	37,265	31,745	69,010
California	255,676	69,395	62,286	131,681
Colorado	22,918	17,396	13,669	31,065
Illinois	8,889 *	12,736	13,151	25,887
Indiana	1,594	8,824	8,512	17,336
Kansas	33,592	59,107	56,789	115,896
Kentucky	2,454	11,708	17,563	29,271
Louisiana	51,479	59,949	58,761	118,710
Michigan	5,448 *	13,157	9,908	23,065
Mississippi	17,917	10,861	10,026	20,887
Missouri	85	1,342	1,263	2,605
Montana	32,870	29,673	34,834	64,507
Nebraska	2,413	2,568	4,672	7,240
New Mexico	54,179	22,560	19,216	41,776
New York	211	1,205	117	1,322
North Dakota	35,672	24,361	23,500	47,861
Ohio	5,652	34,187	113	34,300
Oklahoma	60,939	86,472	93,678	180,150
Pennsylvania	3,653 *	8,483	11,715	20,198
South Dakota	1,469	180	173	353
Tennessee	327	194	135	329
Texas	346,351	495,958	532,634	1,028,592
Utah	16,658	1,618	3,141	4,759
Virginia	26	40	38	78
West Virginia	1,300 *	3,548	3,244	6,792
Wyoming	51,626	75,000	100,000	175,000
Totals	**1,024,945 ****	**1,088,936**	**1,111,918**	**2,200,854**

* *Estimated*

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

COMPARE: marginal wells and

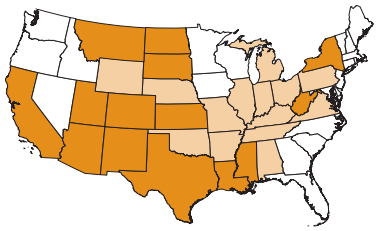
State	2002 Number of Marginal Wells	2002 Production from Marginal Wells (bbls)	2003 Number of Marginal Wells	2003 Production from Marginal Wells (bbls)
Alabama	639	1,054,118	632	1,152,351
Arizona	17	25,942	18	23,303
Arkansas	3,362	3,316,454	3,615	3,302,376
California	24,420	35,133,050	25,089	36,015,129
Colorado	5,384	4,646,241	5,334	5,442,974
Illinois	17,466 *	10,220,000 *	17,154 *	10,600,000 *
Indiana	4,956	2,021,618	5,049	1,864,883
Kansas	33,317	25,178,007	32,883	25,103,681
Kentucky	19,462	2,077,228	19,272	1,942,879
Louisiana	20,891	16,126,868	20,722	15,567,256
Michigan	3,428	1,849,850	2,578	2,500,500
Mississippi	442	490,784	437	604,800
Missouri	364	90,919	489	86,133
Montana	2,274	1,830,438	2,291	1,830,410
Nebraska	1,451	1,765,208	1,423	1,651,923
New Mexico	13,379	13,175,602	13,577	13,693,595
New York	2,758	183,095	2,763	152,967
North Dakota	1,384	2,110,860	1,394	2,288,191
Ohio	28,850	4,904,815	28,911	4,696,636
Oklahoma	56,673	47,070,879	48,657	43,703,475
Pennsylvania	15,470 *	2,233,000 *	15,758 *	2,466,000 *
South Dakota	22	34,574	24	51,461
Tennessee	424	241,036	385 *	270,827
Texas	124,551	129,017,097	123,402	128,058,395
Utah	1,049	1,449,051	1,051	1,418,563
Virginia	13	5,764	7	2,502
West Virginia	8,210	1,250,000	8,200	1,400,000 *
Wyoming	11,416	8,596,694	12,348	7,856,791
Totals	**402,072**	**316,099,192**	**393,463**	**313,748,001**

** Estimated*

marginal oil production

State	2004 Number of Marginal Wells	2004 Production from Marginal Wells (bbls)	2005 Number of Marginal Wells	2005 Production from Marginal Wells (bbls)
Alabama	669	1,141,127	665	911,785
Arizona	17	23,746	17	31,432
Arkansas	3,948	3,620,354	4,000	3,317,410
California	25,622	34,955,831	26,444	35,563,813
Colorado	5,605	6,316,308	5,982	7,001,499
Illinois	16,751 *	10,040,292 *	16,407 *	8,461,222
Indiana	5,004	1,729,606	5,364	1,594,296
Kansas	38,363	25,493,168	38,692	25,827,950
Kentucky	19,129	2,005,480	19,012	1,958,015
Louisiana	20,576	14,136,304	20,041	14,152,725
Michigan	2,306	3,055,339	2,011 *	2,657,497
Mississippi	478	678,566	1,858	895,452
Missouri	487	88,053	495	85,406
Montana	2,335	1,879,426	2,424	1,947,855
Nebraska	1,450	1,654,195	1,478	1,598,224
New Mexico	13,882	13,990,201	14,069	14,065,576
New York	2,759	171,760	2,553	211,292
North Dakota	1,392	2,205,309	1,416	2,217,706
Ohio	28,918	4,868,915	28,828	4,840,874
Oklahoma	48,250	41,427,782	46,798	39,318,486
Pennsylvania	16,061 *	3,669,959 *	16,662 *	3,652,770
South Dakota	20	35,452	27	54,169
Tennessee	390	261,984	290	235,127
Texas	121,490	126,260,710	124,116	139,959,142
Utah	1,111	1,523,025	1,163	1,618,810
Virginia	6	1,974	3	1,233
West Virginia	8,000	1,200,000	7,900	1,300,000
Wyoming	12,343	8,487,256	12,357	8,281,804
Totals	**397,362**	**310,922,122**	**401,072**	**321,761,570**

** Estimated*



Production Increase

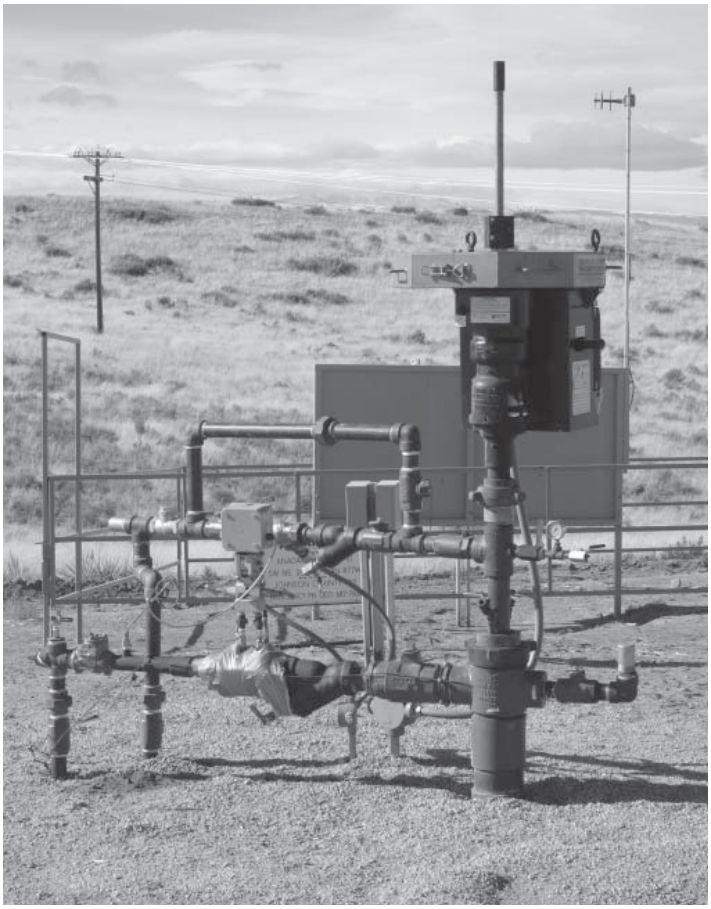
Production Decrease

No Marginal Oil Production

Marginal Oil Production Comparison: 2004 v 2005

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.



Marginal gas wells represent more than 9 percent of the total natural gas produced onshore in the lower 48 states.

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

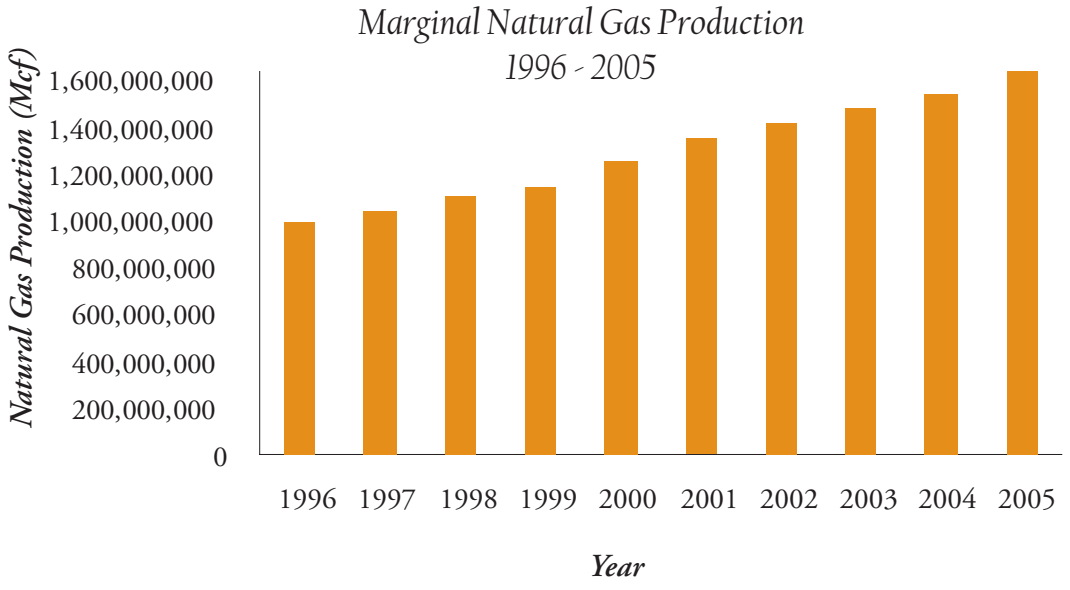
The number of gas wells in the marginal category has steadily increased during the past decade. Total production from marginal gas wells also has steadily increased, with daily production averaging its highest in 10 years.

As with marginal oil wells, "abandoned" natural gas wells are those that have been permanently plugged. Significantly, the total number of pluggings in 2005 increased for the fifth consecutive year, while demand for natural gas continues to rise.

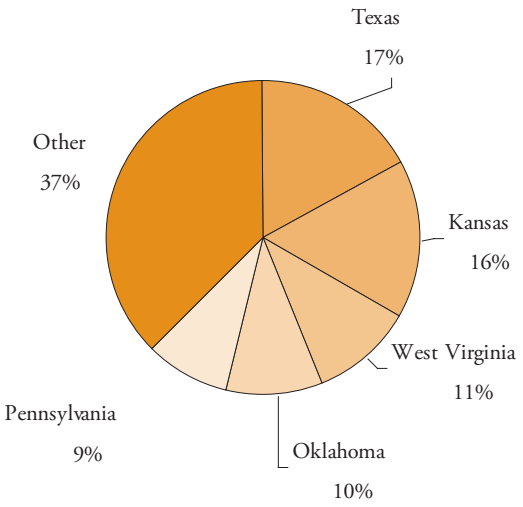
A marginal gas well produces 60 Mcf or less of natural gas per day.

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

Year	Number of Marginal Gas Wells	Marginal Gas Production (Mcf)	Pluggings/ Abandonments	Average Daily Production Per Well (Mcf)
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
2002	245,961	1,418,273,779	3,870	15.8
2003	260,563	1,478,105,524	3,883	15.5
2004	271,856	1,539,960,495	4,129	15.5
2005	**288,898**	**1,760,063,552**	**4,517**	**16.7**



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	Michigan
2	West Virginia	Kansas	Wyoming	Virginia
3	Texas	West Virginia	Oklahoma	Alabama
4	Ohio	Oklahoma	Colorado	Utah
5	Wyoming	Pennsylvania	New Mexico	Colorado
6	Oklahoma	New Mexico	Louisiana	Oklahoma
7	Kentucky	Wyoming	Kansas	New Mexico
8	Kansas	Colorado	Alabama	Arkansas
9	New Mexico	Kentucky	Utah	Arizona
10	Louisiana	Michigan	West Virginia	California
11	Colorado	Ohio	Arkansas	Texas
12	Michigan	Louisiana	Michigan	South Dakota
13	New York	Montana	Mississippi	Mississippi
14	Montana	Alabama	Pennsylvania	Tennessee
15	Alabama	Arkansas	Kentucky	Nebraska
16	Arkansas	Utah	Montana	Montana
17	Indiana	New York	Virginia	North Dakota
18	Utah	Mississippi	California	Maryland
19	Mississippi	California	Ohio	Kentucky
20	Illinois	Virginia	New York	West Virginia
21	California	Indiana	North Dakota	Louisiana
22	Tennessee	Tennessee	Indiana	Wyoming
23	Virginia	Nebraska	Tennessee	Pennsylvania
24	Nebraska	North Dakota	Nebraska	Ohio
25	North Dakota	South Dakota	South Dakota	Kansas
26	South Dakota	Illinois	Illinois	New York
27	Maryland	Maryland	Arizona	Indiana
28	Arizona	Arizona	Maryland	Illinois

Marginal Natural Gas Survey

as of January 1, 2006

State	Number of Marginal Wells	Production from Marginal Gas Wells (Mcf)	Gas Wells Plugged and Abandoned	Avg. Daily Production Per Well (Mcf)	Total 2005 Gas Production (MMcf)
Alabama	2,620 **	26,757,739 **	18 **	28.0	318,954
Arizona	2	17,212	4	23.6	233
Arkansas	2,114	18,707,824	21	24.2	181,695
California	527	4,428,540	86	23.0	87,599
Colorado	8,861	88,788,233	101	27.5	1,509,194
Illinois	551	184,000	10	0.9	347
Indiana	2,110	3,134,583	5	4.1	3,135
Kansas	15,120	283,712,000	172	5.1	380,316
Kentucky	16,618	82,323,314	58	13.6	92,623
Louisiana	10,035	42,130,824 *	333 *	11.5	1,184,330
Maryland	7	36,468	0	14.2	36
Michigan	6,003	77,388,412	84	35.3	176,429
Mississippi	1,226	9,486,746	19	21.2	174,470
Montana	4,162	27,426,557	105	18.1	91,628
Nebraska	108	720,360	0	18.3	939
New Mexico	10,858	97,358,159	272	24.6	1,353,776
New York	5,607	9,896,329	5	4.8	54,595
North Dakota	68	401,057	3	16.2	14,543
Ohio	33,355	68,267,000	520	5.6	84,135
Oklahoma	18,706	169,439,950	392	24.8	1,605,654
Pennsylvania	46,654 *	151,651,000 *	149 *	8.9	168,501 *
South Dakota	50	399,891	0	21.9	446
Tennessee	315	2,200,000	10 *	19.1	2,200
Texas	37,396	302,083,547	1,438	22.1	5,120,528
Utah	1,419	14,429,074	36	27.9	280,296
Virginia	285	3,651,691	40 *	35.1	88,893
West Virginia	40,900	186,000,000	277	12.5	203,500 *
Wyoming	23,221	89,043,042	359	10.5	1,821,365
Totals	**288,898**	**1,760,063,552**	**4,517**	**16.7**	**15,000,360 •**

** Estimated*

*** Includes natural gas from coal seams*

• This figure represents only states with marginal natural gas production; does not include production figures from states without marginal natural gas production.

COMPARE: marginal wells and

State	2002 Number of Marginal Wells	2002 Production from Marginal Wells (Mcf)	2003 Number of Marginal Wells	2003 Production from Marginal Wells (Mcf)
Alabama	1,696 **	18,139,406 **	1,931 **	20,885,970 **
Arizona	4	3,387	1	1,177
Arkansas	1,719	15,574,407	1,847 *	16,252,825
California	446	3,506,947	468	3,855,523
Colorado	6,701	60,945,434	7,342	73,077,507
Illinois	172	184,860	209	184,860
Indiana	1,545	1,309,120	2,291	1,464,372
Kansas	10,437	124,877,543	9,906	118,418,079
Kentucky	16,010	78,444,980	16,139	77,865,801
Louisiana	9,595	40,835,950	9,772	40,329,957 *
Maryland	6	13,446	7	34,943
Michigan	4,100	55,623,429	4,950	66,782,258
Mississippi	260	2,718,961	387	4,477,027
Montana	3,533	25,286,348	3,754	26,158,548
Nebraska	99	750,809	99	833,513
New Mexico	9,232	81,059,390	9,616	84,488,076
New York	5,442	10,637,283	5,723	11,518,289
North Dakota	55	449,971	67	762,017 **
Ohio	33,345	75,993,000	33,367	75,109,000 *
Oklahoma	17,676 **	153,207,218 **	20,321 **	178,200,970 **
Pennsylvania	40,830 *	131,800,000 *	42,437	133,455,545 *
South Dakota	56	396,482	56	415,523
Tennessee	401	1,586,127	310 *	1,411,060
Texas	32,200	258,983,600	33,312	268,891,683
Utah	929	9,359,853	1,099	11,928,457
Virginia	127	1,807,834	150	2,042,666 **
West Virginia	37,528	208,775,000 *	38,240	188,000,000 *
Wyoming	11,817 **	56,002,994 **	16,762 **	71,259,878 **
Totals	**245,961**	**1,418,273,779**	**260,563**	**1,478,105,524**

* *Estimated*

** *Includes natural gas from coal seams*

marginal gas production

State	2004 Number of Marginal Wells	2004 Production from Marginal Wells (Mcf)	2005 Number of Marginal Wells	2005 Production from Marginal Wells (Mcf)
Alabama	2,194 **	22,895,790 **	2,620 **	26,757,739 **
Arizona	2	10,987	2	17,212
Arkansas	1,913 *	16,923,448	2,114	18,707,824
California	490	4,247,011	527	4,428,540
Colorado	7,780	79,619,265	8,861	88,788,233
Illinois	409	184,000	551	184,000
Indiana	2,386	3,401,445	2,110	3,134,583
Kansas	8,169	101,394,727	15,120	283,712,000
Kentucky	16,495	83,777,212	16,618	82,323,314
Louisiana	9,784	44,477,263 *	10,035	42,130,824 *
Maryland	7	33,391	7	36,468
Michigan	5,396	70,864,267	6,003	77,388,412
Mississippi	548	6,345,386	1,226	9,486,746
Montana	3,926	26,484,418	4,162	27,426,557
Nebraska	102	782,502	108	720,360
New Mexico	10,142	91,910,687	10,858	97,358,159
New York	5,710	10,261,189	5,607	9,896,329
North Dakota	58	300,815	68	401,057
Ohio	33,404	72,539,000	33,355	68,267,000
Oklahoma	23,845 **	203,812,145 **	18,706 **	169,439,950 **
Pennsylvania	43,906 *	136,394,002 *	46,654 *	151,651,000 *
South Dakota	57	455,296	50	399,891
Tennessee	270	1,936,268	315	2,200,000
Texas	35,240	284,361,426	37,396	302,083,547
Utah	1,225	12,854,032	1,419	14,429,074
Virginia	228	3,050,649	285	3,651,691
West Virginia	38,500	185,000,000	40,900	186,000,000
Wyoming	19,670 **	75,643,874 **	23,221 **	89,043,042 **
Totals	**271,856**	**1,539,960,495**	**288,898**	**1,760,063,552**

* *Estimated*

** *Includes natural gas from coal seams*

ECONOMIC IMPACT

By Dan Olds, Ryder Scott Petroleum Consultant

The United States public is concerned about world oil markets in a manner reminiscent of the oil embargo of the 1970s. The cost of gasoline and natural gas for home heating are constant reminders of how our economy is dependent on hydrocarbon fuels to make our lifestyle possible. Further, there are concerns regarding our future energy security. More people are becoming aware of how the United States competes for oil supplies in a world market against countries such as China and India, where demand continues to rise.

The United States is dependent on imports from foreign countries, and some of those countries aren't friendly or are having oil problems of their own. Historically, the United States has received a large portion of its oil imports from Venezuela, but their president has made it clear that, for political reasons, he'd like to sell that oil to someone else. Mexico is another big source of our oil imports, but there are concerns that their largest offshore fields are declining at a rapid rate. Bolivia is not a factor for U.S. oil imports but their government has effectively nationalized the oil and gas industry. Russia continues to move in a direction that may effectively accomplish the same thing. Although not a significant producer, Chad is not satisfied with the contracts they made to attract oil companies to their country; now they want to re-negotiate the deal. Iran does not export oil to the United States but their actions are impacting the world oil market. Closer to home, production from Alaska's North Slope has been cut drastically while repairs are being made to aging infrastructure. Last year's hurricane damage to facilities in the Gulf of Mexico is still being repaired.

This type of political uncertainty, the disruptions to infrastructure and continued strong demand have all combined to drive oil prices, and hence gasoline prices, to record levels. Economists may argue that the prices have not kept pace with inflation and that in real terms, prices were higher back in the 1970s. But regardless of whether the price of gasoline is considered in real dollars or nominal dollars, the fact remains that $50 will not fill up the tank of most cars, and $50 is still a lot of money to most people.

Oil is not the only issue. The United States has long been producing more natural gas than oil. While oil is primarily a transportation fuel, natural gas provides a lot of home heat and electricity. The high cost of natural gas has greatly increased winter heating bills in some parts of the country. In electric generation markets, natural gas is used for peak demand, since gas fired generators can be brought on line quickly to meet demands from air conditioning on hot days. Summertime electricity brownouts and high gasoline prices have reminded people not to take the conveniences of modern life for granted.

The United States imported 72 percent of its crude oil needs in 2005 – over 13 million barrels per day. Imports have been steadily rising for years and the recent high

prices haven't seemed to change this trend. There are no near-term solutions to this dependence on imported crude, so it is important that we preserve and encourage the domestic production that we have.

Domestic oil production is about 5.1 million barrels per day. Of that, production from low rate wells, termed marginal wells, is more than 881 thousand barrels per day, accounting for more than 17 percent of domestic oil production. Using 2005's average wellhead oil price of $50.26 per barrel, that is $16 billion that was not spent on imports.

The United States also imports natural gas, although not nearly at the volume of crude oil. However, like oil, natural gas imports are rising and forecasts for continued strong demand dictate that the level of imports will continue to rise.

Historically, imports of natural gas were limited to volumes transported by pipeline from Canada and Mexico with small amounts arriving in tankers as liquefied natural gas (LNG). However, there are plans for several new LNG receiving facilities in various places around the country, and it is expected that LNG will become an important part of our energy supply.

As with oil wells, there are also marginal gas wells. Natural gas production is not as mature as oil, but still marginal gas production provided about 4.8 billion cubic feet per day last year, more than 9 percent of U.S. production.

The purpose of this report is to examine the economic impact that marginal oil and gas has in the United States. Not only is this production an important part of the energy supply and energy security of the United States, but the economic impact is material. It is also significant that a significant portion of this economic activity benefits rural America. Royalties from the production go to farmers and landowners, and local labor is necessary to maintain these wells.

This report focuses on the marginal oil and gas activity in 11 survey states. The original survey states for this report were based on the top producers of oil, with Alaska excluded because although it is a top oil producing state, there is essentially no marginal production there. When marginal gas statistics became available some years ago, the same survey states were used for consistency. Economic results for these states have been extrapolated to represent the economic impact of marginal production in the entire United States.

In 2005, marginal wells produced 17 percent of domestic oil and 9 percent of natural gas.

development of findings

Using data from the IOGCC's 2006 Marginal Well Report, Table 1 shows that the 11 survey states have more than 73 percent of the 401,072 total reported marginal oil wells in the United States. These wells produced more than 89 percent of marginal oil well production. Oil wells in the survey states averaged 2.7 barrels of oil per day (BOPD), better than the overall national average of 2.2 BOPD.

In 2005, 13,265 oil wells were plugged and abandoned, which is a substantial increase over last year's total of 11,977 oil wells plugged. With oil prices at such high levels, the increase in well abandonments is unexpected. One possible explanation is that well operators are using their cash flow to cover deferred abandonment obligations.

Looking at the marginal gas wells, Table 1 shows the 11 survey states have about 44 percent of the total 288,898 marginal gas wells in the United States. The total number of marginal gas wells in the United States again increased significantly from last year by 17,042 wells, whereas the number of marginal oil wells increased by only 3,710 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 50 percent of the marginal gas well count and nearly 29 percent of the marginal gas produced. These percentages are down slightly from last year, as operators in other states are finding it economical to maintain production in wells with higher operating costs.

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 1,760 billion cubic feet (Bcf) in 2005, more than 4.8 Bcf per day. Each well averaged 16.7 thousand cubic feet per day (MCFD). Of the total marginal gas wells, the same percentage as last year, 1.5 percent or 4,517 wells were plugged and abandoned in 2005. 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.

Oil wells in survey states averaged 2.7 barrels of oil per day (BOPD), better than the overall national average of 2.2 BOPD.

Table 1: Marginal Wells Cumulative Impact on U.S. Economy

1.1 Marginal Oil

State	Number of Marginal Oil Wells	2005 Production from Marginal Wells (Bbls.)	2005 Abandonments	2005 Average Daily Production Per Well - BOPD
California	26,444	35,563,813	2,410	3.68
Colorado	5,982	7,001,499	105	3.21
Kansas	38,692	25,827,950	2,207	1.83
Louisiana	20,041	14,152,725	618	1.93
Mississippi	1,858	895,452	40	1.32
New Mexico	14,069	14,065,576	349	2.74
North Dakota	1,416	2,217,706	25	4.29
Oklahoma	46,798	39,318,486	1,015	2.30
Texas	124,116	139,959,142	4,722	3.09
Utah	1,163	1,618,810	37	3.81
Wyoming	12,357	8,281,804	211	1.84
Subtotal	*292,936*	*288,902,963*	*11,739*	*2.70*
All Others	108,136	32,858,607	1,526	0.83
Total U.S.	**401,072**	**321,761,570**	**13,265**	**2.20**

1.2 Marginal Gas

State	Number of Marginal Gas Wells	2005 Production from Marginal Wells (MCF)	2005 Abandonments	2005 Average Daily Production Per Well - MCFD
California	527	4,428,540	86	23.0
Colorado	8,861	88,788,233	101	27.5
Kansas	15,120	283,712,000	172	51.4
Louisiana	10,035	42,130,824	333	11.5
Mississippi	1,226	9,486,746	19	21.2
New Mexico	10,858	97,358,159	272	24.6
North Dakota	68	401,057	3	16.2
Oklahoma	18,706	169,439,950	392	24.8
Texas	37,396	302,083,547	1,438	22.1
Utah	1,419	14,429,074	36	27.9
Wyoming	23,221	89,043,042	359	10.5
Subtotal	*127,437*	*1,101,301,172*	*3,211*	*23.7*
All Others	161,461	658,762,380	1,306	11.2
Total U.S.	**288,898**	**1,760,063,552**	**4,517**	**16.7**

1.3 Marginal Oil & Gas

	Number of Marginal Wells	2005 Abandonments
Subtotal	*420,373*	*14,950*
All Others	269,597	2,832
Total U.S.	**689,970**	**17,782**

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 (EIA).

These statistics show the weighted average wellhead price was $51.14 per barrel of oil, versus 2004's average of $37.83 per barrel. The average price for gas was $7.51 per Mcf, versus 2004's average of $5.41 per Mcf.

In this year's report, state-by-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 2004 data and applied to the EIA's 2005 nationwide wellhead gas price estimate of $7.51.

Production from Alaska and Federal Offshore areas (OCS) were excluded from the analysis since there is essentially no marginal production from these areas and the large volume of their production tends to skew the data. This accounts for the difference in total U.S. price as shown in this report, $7.44, and the EIA nationwide wellhead price.

Table 2: 2005 Wellhead Prices

State	Total Oil Value $ x 1,000	Total Oil Production BBL x 1,000	Weighted Average Wellhead $/BBL	Total Gas Value $ x 1,000	Total Gas Production MCF x 1,000	Weighted Average Wellhead $/MCF
California	$10,826,658	229,963	$47.08	$2,445,680	319,620	$7.65
Colorado	$1,127,156	20,117	$56.03	$7,748,235	1,098,115	$7.06
Kansas	$1,796,445	33,635	$53.41	$2,444,367	365,361	$6.69
Louisiana	$3,935,355	72,823	$54.04	$10,456,608	1,295,470	$8.07
Mississippi	$868,443	17,516	$49.58	$1,228,454	155,587	$7.90
New Mexico	$3,202,263	60,603	$52.84	$10,828,185	1,608,726	$6.73
North Dakota	$1,819,891	34,744	$52.38	$405,609	52,268	$7.76
Oklahoma	$3,352,247	61,543	$54.47	$12,549,526	1,678,692	$7.48
Texas	$20,250,872	385,144	$52.58	$41,324,951	5,233,914	$7.90
Utah	$855,691	15,852	$53.98	$2,140,318	301,599	$7.10
Wyoming	$2,322,567	50,900	$45.63	$11,062,807	1,646,897	$6.72
Subtotal	*$50,357,587*	*982,840*	*$51.24*	*$102,634,740*	*13,756,249*	*$7.46*
All Others	$4,297,298	85,992	$49.97	$4,713,784	667,248	$7.06
Total U.S. *	**$54,654,885**	**1,068,832**	**$51.14**	**$107,348,524**	**14,423,497**	**$7.44**

** Excludes Alaska and Federal Offshore production.*

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 the oil and gas wells plugged and abandoned in the survey states during 2005 would have produced oil and gas valued at $810.5 million. The total value of oil and gas lost due to abandonments during 2005 for all states was $883.4 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 U.S. DOE estimate the range is between one and two BOPD, and the equivalent rate of 10 to 20 MCFD is assumed for gas wells.

To illustrate the overall economic impact on the U.S. economy, Table 3B assumes the abandonment of all marginal wells. This shows a theoretical loss value of $23 billion for the survey states or $29.5 billion for the total United States in 2005.

If the marginal oil and gas production represented in Table 3B were indeed lost to the United States, this would represent more than 8.8 million barrels of oil and 4.8 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 $81 million.

In 2005, American Petroleum Institute (API) statistics show that we imported 4.8 billion barrels of crude oil and products. If the oil production from marginal wells active in 2005 did not exist, imports would have increased 6.7 percent to make up for the shortage. EIA statistics show that 2005's total marketed gas production was 19,145 Bcf. (Note: this figure includes federal offshore gas production.)

Marginal gas wells contributed 9.2 percent of the total production. EIA statistics also show the total of 2005 natural gas imports was 4,326 Bcf, an amount equal to 22.6 percent of natural gas production. If marginal gas wells did not exist, imports to make up the shortage would bring the level up to 31.8 percent of production.

If oil production from marginal wells active in 2005 did not exist, imports would have increased 6.7 percent to make up for the shortage.

Table 3A: Effect of 2005 Abandonments

3 A.1: Oil

State	Number of Marginal Wells	Production From Marginal Wells (Bbls.)	Wells Abandoned	Average Daily Production Per Well - BOPD
California	26,444	35,563,813	2,410	3.68
Colorado	5,982	7,001,499	105	3.21
Kansas	38,692	25,827,950	2,207	1.83
Louisiana	20,041	14,152,725	618	1.93
Mississippi	1,858	895,452	40	1.32
New Mexico	14,069	14,065,576	349	2.74
North Dakota	1,416	2,217,706	25	4.29
Oklahoma	46,798	39,318,486	1,015	2.30
Texas	124,116	139,959,142	4,722	3.09
Utah	1,163	1,618,810	37	3.81
Wyoming	12,357	8,281,804	211	1.84
Subtotal	*292,936*	*288,902,963*	*11,739*	*2.70*
All Others	108,136	32,858,607	1,526	0.83
Total U.S. *	**401,072**	**321,761,570**	**13,265**	**2.20**

State	Lost Annual Production BBLS	2005 Average $/BBL	2005 Lost Gross Revenue
California	3,241,143	$47.08	$152,593,019
Colorado	122,895	$56.03	$6,885,802
Kansas	1,473,232	$53.41	$78,685,312
Louisiana	436,425	$54.04	$23,584,382
Mississippi	19,278	$49.58	$955,791
New Mexico	348,915	$52.84	$18,436,672
North Dakota	39,154	$52.38	$2,050,908
Oklahoma	852,777	$54.47	$46,450,769
Texas	5,324,753	$52.58	$279,975,523
Utah	51,501	$53.98	$2,780,038
Wyoming	141,415	$45.63	$6,452,750
Subtotal	*12,051,488*	*$51.24*	*$617,479,803*
All Others	604,053	$49.97	$30,186,498
Total U.S. *	**12,655,541**	**$51.14**	**$647,143,004**

In 2005, the United States lost more than $883 million in revenue from marginal wells left abandoned.

3 A.2: Natural Gas

State	Number of Marginal Wells	Production From Marginal Wells (MCF)	Wells Abandoned	Average Daily Production Per Well - MCFD
California	527	4,428,540	86	23.02
Colorado	8,861	88,788,233	101	27.45
Kansas	15,120	283,712,000	172	51.41
Louisiana	10,035	42,130,824	333	11.50
Mississippi	1,226	9,486,746	19	21.20
New Mexico	10,858	97,358,159	272	24.57
North Dakota	68	401,057	3	16.16
Oklahoma	18,706	169,439,950	392	24.82
Texas	37,396	302,083,547	1,438	22.13
Utah	1,419	14,429,074	36	27.86
Wyoming	23,221	89,043,042	359	10.51
Subtotal	*127,437*	*1,101,301,172*	*3,211*	*23.68*
All Others	161,461	658,762,380	1,306	11.18
Total U.S. *	**288,898**	**1,760,063,552**	**4,517**	**16.69**

State	Lost Annual Production MCF	2005 Average $/MCF	2005 Lost Gross Revenue
California	722,684	$7.65	$5,529,859
Colorado	1,012,032	$7.06	$7,140,835
Kansas	3,227,412	$6.69	$21,592,281
Louisiana	1,398,063	$8.07	$11,284,707
Mississippi	147,021	$7.90	$1,160,823
New Mexico	2,438,886	$6.73	$16,415,912
North Dakota	17,694	$7.76	$137,306
Oklahoma	3,550,757	$7.48	$26,544,664
Texas	11,616,112	$7.90	$91,716,310
Utah	366,065	$7.10	$2,597,808
Wyoming	1,376,618	$6.72	$9,247,246
Subtotal	*25,873,344*	*$7.46*	*$193,039,827*
All Others	5,876,503	$7.06	$41,514,645
Total U.S. *	**31,749,847**	**$7.44**	**$236,301,860**

3 A.3: Oil & Gas

	Number of Marginal Wells	Wells Abandoned	2005 Lost Gross Revenue
Subtotal	*420,373*	*14,950*	*$810,519,629*
All Others	269,597	2,832	$71,701,143
Total U.S. *	**689,970**	**17,782**	**$883,444,864**

** Excludes Alaska and Federal Offshore production*

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

3 B.1: Oil

State	Number of Marginal Wells	Production From Marginal Wells (Bbls.)	Hypothetical Abandonments	Average Daily Production Per Well - BOPD
California	26,444	35,563,813	26,444	3.68
Colorado	5,982	7,001,499	5,982	3.21
Kansas	38,692	25,827,950	38,692	1.83
Louisiana	20,041	14,152,725	20,041	1.93
Mississippi	1,858	895,452	1,858	1.32
New Mexico	14,069	14,065,576	14,069	2.74
North Dakota	1,416	2,217,706	1,416	4.29
Oklahoma	46,798	39,318,486	46,798	2.30
Texas	124,116	139,959,142	124,116	3.09
Utah	1,163	1,618,810	1,163	3.81
Wyoming	12,357	8,281,804	12,357	1.84
Subtotal	*292,936*	*288,902,963*	*292,936*	*2.70*
All Others	108,136	32,858,607	108,136	0.83
Total U.S. *	**401,072**	**321,761,570**	**401,072**	**2.20**

State	Lost Annual Production Bbls	2005 Average $/Bbl	Hypothetical 2005 Lost Gross Revenue
California	35,563,813	$47.08	$1,674,344,316
Colorado	7,001,499	$56.03	$392,293,989
Kansas	25,827,950	$53.41	$1,379,470,810
Louisiana	14,152,725	$54.04	$764,813,259
Mississippi	895,452	$49.58	$44,396,510
New Mexico	14,065,576	$52.84	$743,225,036
North Dakota	2,217,706	$52.38	$116,163,440
Oklahoma	39,318,486	$54.47	$2,141,677,932
Texas	139,959,142	$52.58	$7,359,051,686
Utah	1,618,810	$53.98	$87,383,364
Wyoming	8,281,804	$45.63	$377,898,717
Subtotal	*288,902,963*	*$51.24*	*$14,802,466,426*
All Others	32,858,607	$49.97	$1,642,050,659
Total U.S. *	**321,761,570**	**$51.14**	**$16,453,326,208**

If all marginal wells were abandoned in 2005, the United States would have lost more than $29.5 billion in revenue.

3 B.2: Natural Gas

State	Number of Marginal Wells	Production From Marginal Wells (MCF)	Hypothetical Abandonments	Average Daily Production Per Well - MCFD
California	527	4,428,540	527	23.02
Colorado	8,861	88,788,233	8,861	27.45
Kansas	15,120	283,712,000	15,120	51.41
Louisiana	10,035	42,130,824	10,035	11.50
Mississippi	1,226	9,486,746	1,226	21.20
New Mexico	10,858	97,358,159	10,858	24.57
North Dakota	68	401,057	68	16.16
Oklahoma	18,706	169,439,950	18,706	24.82
Texas	37,396	302,083,547	37,396	22.13
Utah	1,419	14,429,074	1,419	27.86
Wyoming	23,221	89,043,042	23,221	10.51
Subtotal	*127,437*	*1,101,301,172*	*127,437*	*23.68*
All Others	161,461	658,762,380	161,461	11.18
Total U.S. *	**288,898**	**1,760,063,552**	**288,898**	**16.69**

States	Lost Annual Production MCF	2005 Average $/MCF	Hypothetical 2005 Lost Gross Revenue
California	4,428,540	$7.65	$33,886,462
Colorado	88,788,233	$7.06	$626,484,524
Kansas	283,712,000	$6.69	$1,898,112,133
Louisiana	42,130,824	$8.07	$340,066,165
Mississippi	9,486,746	$7.90	$74,903,660
New Mexico	97,358,159	$6.73	$655,308,729
North Dakota	401,057	$7.76	$3,112,275
Oklahoma	169,439,950	$7.48	$1,266,695,137
Texas	302,083,547	$7.90	$2,385,134,299
Utah	14,429,074	$7.10	$102,396,935
Wyoming	89,043,042	$6.72	$598,134,532
Subtotal	*1,101,301,172*	*$7.46*	*$8,216,757,301*
All Others	658,762,380	$7.06	$4,653,837,023
Total U.S. *	**1,760,063,552**	**$7.44**	**$13,099,474,008**

3 B.3: Oil & Gas

	Number of Marginal Wells	Hypothetical Abandonments	Hypothetical Gross Revenue
Subtotal	*420,373*	*420,373*	*$23,019,223,727*
All Others	269,597	269,597	$6,295,887,682
Total U.S. *	**689,970**	**689,970**	**$29,552,800,216**

** Excludes Alaska and Federal Offshore production*

RIMS II multipliers

Until 2003, 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. Since then, 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 2004. The multipliers have been re-categorized to Industry 211000, Oil and Gas Extraction. A comparison of these new factors against the old shows 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 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 dependent 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 also from secondary interrelated 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 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

Numbers from this analysis are revised multipliers based on the BEA's 1997 national and 2001 regional accounts.

direct change in household earnings or employment. They are used whenever changes in household earnings or employment are known.

As presented, they are not directly applicable for the purposes of this study. However, they represent the ratio between the industry specific multiplier and the final demand multiplier. This relationship allows the calculation of earnings and employment multipliers for the oil and gas industry alone (sixth and seventh columns), without regard to the earnings and employment levels of any secondary industries.

Table 4: 2005 RIMS II Multipliers

State	Final Demand Multipliers			Direct Effect Multipliers		Calculated O&G Industry Multipliers	
	Output	Earnings	Employment	Earnings	Employment	Earnings	Employment
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 17,782 marginal oil and gas wells plugged and abandoned in 2005 resulted in a reduction of total economic output of $1.77 billion, earnings reductions of $368 million and lost employment of 8,604 jobs.

In 2005 the oil and gas industry alone lost $154 million of earnings and 2,577 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 $58.2 billion, earnings would decrease by $11.9 billion, and 291,808 jobs would be lost. Within the oil and gas industry alone, $5.08 billion of earnings and 88,855 jobs would be lost.

Table 5A: Economic Effects of 2005's Abandonments

5A.1 Oil

State	Revenue Lost From Abandonment (Million $)	Final Demand Multipliers Output	Final Demand Multipliers Earnings	Final Demand Multipliers Employment	*Overall Effects in Final Demand* Lost Output (Million $)	Lost Earnings (Million $)	Lost Employment	Direct Effect Multipliers Earnings	Direct Effect Multipliers Employment	*Oil & Gas Industry* Lost Earnings (Million $)	Lost Employment
California	$152.593	1.9891	0.4319	9.5	$303.523	$65.905	1,453	0.1792	3.4506	$27.343	527
Colorado	$6.886	2.0627	0.4337	8.6	$14.203	$2.986	59	0.1708	1.8861	$1.176	13
Kansas	$78.685	1.9466	0.3788	14.1	$153.169	$29.806	1,110	0.1722	6.9618	$13.551	548
Louisiana	$23.584	1.8321	0.3628	8.8	$43.209	$8.556	208	0.1570	2.3275	$3.704	55
Mississippi	$0.956	1.6049	0.3035	9.3	$1.534	$0.290	9	0.1469	3.8365	$0.140	4
New Mexico	$18.437	1.6563	0.3487	10.0	$30.537	$6.429	185	0.1712	3.7421	$3.157	69
North Dakota	$2.051	1.7441	0.3538	11.0	$3.577	$0.726	23	0.1749	4.5305	$0.359	9
Oklahoma	$46.451	2.0400	0.4224	11.5	$94.760	$19.621	533	0.1768	3.1144	$8.212	145
Texas	$279.976	2.0853	0.4334	8.4	$583.833	$121.341	2,361	0.1753	1.5675	$49.072	439
Utah	$2.780	1.8940	0.4018	11.6	$5.265	$1.117	32	0.1648	3.7026	$0.458	10
Wyoming	$6.453	1.7344	0.3242	7.9	$11.192	$2.092	51	0.1709	2.6753	$1.103	17
Subtotal	*$617.480*	*2.0159*	*0.4192*	*9.8*	*$1,244.801*	*$258.869*	*6,025*	*0.1754*	*2.9700*	*$108.275*	*1,835*
All Others*	$30.187	2.0159	0.4192	9.8	$60.853	$12.654	296	0.1754	2.9700	$5.295	90
Total	**$647.143**	**2.0176**	**0.4196**	**9.8**	**$1,305.654**	**$271.524**	**6,321**	**0.1755**	**2.9700**	**$113.570**	**1,925**

5A.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* Lost Output (Million $)	Lost Earnings (Million $)	Lost Employment	Direct Effect Multipliers Earnings	Direct Effect Multipliers Employment	*Oil & Gas Industry* Lost Earnings (Million $)	Lost Employment
California	$5.530	1.9891	0.4319	9.5	$10.999	$2.388	53	0.1792	3.4506	$0.991	19
Colorado	$7.141	2.0627	0.4337	8.6	$14.729	$3.097	62	0.1708	1.8861	$1.220	13
Kansas	$21.592	1.9466	0.3788	14.1	$42.032	$8.179	305	0.1722	6.9618	$3.719	150
Louisiana	$11.285	1.8321	0.3628	8.8	$20.675	$4.094	100	0.1570	2.3275	$1.772	26
Mississippi	$1.161	1.6049	0.3035	9.3	$1.863	$0.352	11	0.1469	3.8365	$0.171	4
New Mexico	$16.416	1.6563	0.3487	10.0	$27.190	$5.724	165	0.1712	3.7421	$2.811	61
North Dakota	$0.137	1.7441	0.3538	11.0	$0.239	$0.049	2	0.1749	4.5305	$0.024	1
Oklahoma	$26.545	2.0400	0.4224	11.5	$54.151	$11.212	304	0.1768	3.1144	$4.693	83
Texas	$91.716	2.0853	0.4334	8.4	$191.256	$39.750	774	0.1753	1.5675	$16.075	144
Utah	$2.598	1.8940	0.4018	11.6	$4.920	$1.044	30	0.1648	3.7026	$0.428	10
Wyoming	$9.247	1.7344	0.3242	7.9	$16.038	$2.998	73	0.1709	2.6753	$1.580	25
Subtotal	*$193.040*	*1.9897*	*0.4192*	*9.8*	*$384.093*	*$78.888*	*1,877*	*0.1735*	*2.7800*	*$33.484*	*536*
All Others*	$41.515	1.9897	0.4192	9.8	$82.602	$17.403	407	0.1735	2.7800	$7.203	115
Total	**$236.302**	**1.9750**	**0.4196**	**9.8**	**$466.695**	**$96.291**	**2,284**	**0.1722**	**2.7600**	**$40.686**	**652**

5A.3 Oil & Gas

State	Revenue Lost From Abandonment (Million $)	Final Demand Multipliers Output	Final Demand Multipliers Earnings	Final Demand Multipliers Employment	*Overall Effect in Final Demand* Lost Output (Million $)	Lost Earnings (Million $)	Lost Employment	Direct Effect Multipliers Earnings	Direct Effect Multipliers Employment	*Oil & Gas Industry* Lost Earnings (Million $)	Lost Employment
Subtotal	*$810.520*	*2.0097*	*0.4167*	*9.8*	*$1,628.894*	*$337.757*	*7,902*	*0.1749*	*2.9261*	*$141.759*	*2,372*
All Others *	$71.701	2.0007	0.4192	9.8	$143.455	$30.057	703	0.1743	2.8600	$12.498	205
Total	**$883.445**	**2.0062**	**0.4163**	**9.7**	**$1,772.349**	**$367.814**	**8,604**	**0.1746**	**2.9167**	**$154.256**	**2,577**

** 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* Lost Output (Million $)	Lost Earnings (Million $)	Lost Employment	Direct Effect Multipliers Earnings	Direct Effect Multipliers Employment	*Oil & Gas Industry* Lost Earnings (Million $)	Lost Employment
California	$1,674.344	1.9891	0.4319	9.5	$3,330.438	$723.149	15,947	0.1792	3.4506	$300.025	5,777
Colorado	$392.294	2.0627	0.4337	8.6	$809.185	$170.138	3,388	0.1708	1.8861	$67.007	740
Kansas	$1,379.471	1.9466	0.3788	14.1	$2,685.278	$522.544	19,468	0.1722	6.9618	$237.574	9,604
Louisiana	$764.813	1.8321	0.3628	8.8	$1,401.214	$277.474	6,744	0.1570	2.3275	$120.108	1,780
Mississippi	$44.397	1.6049	0.3035	9.3	$71.252	$13.474	414	0.1469	3.8365	$6.524	170
New Mexico	$743.225	1.6563	0.3487	10.0	$1,231.004	$259.163	7,457	0.1712	3.7421	$127.271	2,781
North Dakota	$116.163	1.7441	0.3538	11.0	$202.601	$41.099	1,276	0.1749	4.5305	$20.315	526
Oklahoma	$2,141.678	2.0400	0.4224	11.5	$4,369.023	$904.645	24,561	0.1768	3.1144	$378.608	6,670
Texas	$7,359.052	2.0853	0.4334	8.4	$15,345.830	$3,189.413	62,069	0.1753	1.5675	$1,289.850	11,535
Utah	$87.383	1.8940	0.4018	11.6	$165.504	$35.111	1,012	0.1648	3.7026	$14.397	324
Wyoming	$377.899	1.7344	0.3242	7.9	$655.428	$122.515	2,989	0.1709	2.6753	$64.583	1,011
Subtotal	*$14,802.466*	*2.0447*	*0.4228*	*9.8*	*$30,266.757*	*$6,258.724*	*145,325*	*0.1774*	*2.7600*	*$2,626.262*	*40,919*
All Others *	$1,642.051	2.0447	0.4228	9.8	$3,357.501	$694.259	16,092	0.1774	2.7600	$291.300	4,532
Total	**$16,453.326**	**2.0436**	**0.4226**	**9.8**	**$33,624.258**	**$6,952.983**	**161,418**	**0.1773**	**2.7600**	**$2,917.562**	**45,451**

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* Lost Output (Million $)	Lost Earnings (Million $)	Lost Employment	Direct Effect Multipliers Earnings	Direct Effect Multipliers Employment	*Oil & Gas Industry* Lost Earnings (Million $)	Lost Employment
California	$33.886	1.9891	0.4319	9.5	$67.404	$14.636	323	0.1792	3.4506	$6.072	117
Colorado	$626.485	2.0627	0.4337	8.6	$1,292.250	$271.706	5,410	0.1708	1.8861	$107.009	1,182
Kansas	$1,898.112	1.9466	0.3788	14.1	$3,694.865	$719.005	26,787	0.1722	6.9618	$326.895	13,214
Louisiana	$340.066	1.8321	0.3628	8.8	$623.035	$123.376	2,999	0.1570	2.3275	$53.405	792
Mississippi	$74.904	1.6049	0.3035	9.3	$120.213	$22.733	698	0.1469	3.8365	$11.006	287
New Mexico	$655.309	1.6563	0.3487	10.0	$1,085.388	$228.506	6,575	0.1712	3.7421	$112.216	2,452
North Dakota	$3.112	1.7441	0.3538	11.0	$5.428	$1.101	34	0.1749	4.5305	$0.544	14
Oklahoma	$1,266.695	2.0400	0.4224	11.5	$2,584.058	$535.052	14,527	0.1768	3.1144	$223.927	3,945
Texas	$2,385.134	2.0853	0.4334	8.4	$4,973.721	$1,033.717	20,117	0.1753	1.5675	$418.052	3,739
Utah	$102.397	1.8940	0.4018	11.6	$193.940	$41.143	1,186	0.1648	3.7026	$16.871	379
Wyoming	$598.135	1.7344	0.3242	7.9	$1,037.405	$193.915	4,731	0.1709	2.6753	$102.222	1,600
Subtotal	*$8,216.757*	*1.9080*	*0.3876*	*10.1*	*$15,677.705*	*$3,184.891*	*83,387*	*0.1677*	*3.3700*	*$1,378.220*	*27,721*
All Others*	$4,653.837	1.9080	0.3876	10.1	$8,879.521	$1,803.827	47,004	0.1677	3.3700	$780.448	15,683
Total	**$13,099.474**	**1.8747**	**0.3808**	**10.0**	**$24,557.226**	**$4,988.718**	**130,391**	**0.1648**	**3.3100**	**$2,158.668**	**43,404**

5B.3 Oil & Gas

States	Revenue Lost From Abandonment (Million $)	Final Demand Multipliers Output *	Final Demand Multipliers Earnings *	Final Demand Multipliers Employment *	*Overall Effect in Final Demand* Lost Output (Million $)	Lost Earnings (Million $)	Lost Employment	Direct Effect Multipliers Earnings	Direct Effect Employment	*Oil & Gas Industry* Lost Earnings (Million $)	Lost Employment
Subtotal	*$23,019.224*	*1.9959*	*0.4103*	*9.9*	*$45,944.462*	*$9,443.615*	*228,712*	*0.1740*	*2.9818*	*$4,004.482*	*68,640*
All Others*	$6,295.888	1.9437	0.3968	10.0	$12,237.022	$2,498.086	63,096	0.1702	3.2109	$1,071.748	20,215
Total	**$29,552.800**	**1.9687**	**0.4041**	**9.9**	**$58,181.484**	**$11,941.701**	**291,808**	**0.1718**	**3.0067**	**$5,076.230**	**88,855**

** 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?

$11.9 billion

lost in earnings

291,808

hardworking Americans would lose their jobs

$58.2 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 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 stripper/marginal 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 reduction.

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 average oil and gas prices and marginal production from Table

Table 6: Production Taxes

State	Marginal Oil Severance Tax Rate	Other Taxes (Conservation, Environmental, etc.)	2005 Average Oil $/Bbl	2005 Production from Marginal Wells (Bbls)	Annual Total Marginal Oil Production Tax Revenue	2005 Lost Production Bbls	Annual Lost Marginal Oil Production Tax Revenue	Marginal Gas Severance Tax Rate
Alabama	6.00%	—	$53.26	911,785	$2,913,700	1,371	$4,382	6.00%
Alaska	15.00%	$0.034	$49.43	0	$0	0	—	10%
Arizona	3.125%	—	$0.00	31,432	$0	0	$0	3.125%
Arkansas	4.00%	$0.045	$50.86	3,317,410	$6,898,222	45,614	$94,851	$0.003
California	0.00%	$0.054	$47.08	35,563,813	$1,916,722	3,241,143	$174,682	0.00%
Colorado	0.00%	0.12%	$56.03	7,001,499	$470,753	122,895	$8,263	0.00%
Florida	5.00%	—	$0.00	0	—	0	—	$0.191
Illinois	0.00%	—	$51.20	8,461,222	$0	282,092	$0	0.00%
Indiana	1.00%	—	$51.02	1,594,296	$813,410	6,539	$3,336	1.00%
Kansas	0.00%	$0.0273	$53.41	25,827,950	$704,328	1,473,232	$40,175	0.00%
Kentucky	4.50%	—	$49.45	1,958,015	$4,357,073	18,332	$40,793	4.50%
Louisiana	3.125%	—	$54.04	14,152,725	$23,900,414	436,425	$737,012	$0.013
Maryland	0.00%	—	$0.00	0	—	0	—	7.00%
Michigan	4.00%	1%	$53.67	2,657,497	$7,131,393	68,717	$184,402	5.00%
Mississippi	6.00%	$0.044	$49.58	895,452	$2,703,190	19,278	$58,196	6.00%
Missouri	0.00%	—	$0.00	85,406	$0	1,208	$0	0.00%
Montana	9.00%	0.30%	$52.66	1,947,855	$9,539,386	43,393	$212,511	11.00%
Nebraska	2.00%	1%	$52.38	1,598,224	$2,511,449	20,546	$32,285	3.00%
Nevada	$0.05	—	$0.00	0	—	0	—	$0.001
New Mexico	7.09%	—	$52.84	14,065,576	$52,694,655	348,915	$1,307,160	8.19%
New York	0.00%	—	$54.64	211,292	$0	5,793	$0	0.00%
North Dakota	5.00%	—	$52.38	2,217,706	$5,808,172	39,154	$102,545	$0.0772
Ohio	$0.100	—	$53.47	4,840,874	$484,087	50,041	$5,004	$0.025
Oklahoma	7.195%	$0.002	$54.47	39,318,486	$154,172,364	852,777	$3,342,133	7.195%
Oregon	6.00%	—	$0.00	0	—	0	—	6.000%
Pennsylvania	0.00%	—	$54.57	3,652,770	$0	37,488	$0	0.00%
South Dakota	4.74%	—	$50.65	54,169	$130,049	4,013	$9,633	4.74%
Tennessee	3.00%	—	$0.00	235,127	$0	12,162	$0	3.00%
Texas	4.60%	$0.1906	$52.58	139,959,142	$365,196,089	5,324,753	$13,893,905	7.50%
Utah	0.00%	0.20%	$53.98	1,618,810	$174,767	51,501	$5,560	0.00%
Virginia	0.50%	—	$0.00	1,233	$0	1,644	$0	3.00%
West Virginia	5.00%	—	$53.75	1,300,000	$3,493,750	5,101	$13,710	5.00%
Wyoming	4.00%	0.06%	$45.63	8,281,804	$15,342,688	141,415	$261,982	6.00%
Total	—	—	—	321,761,570	$661,356,664	12,655,541	$20,532,520	—

6, severance taxes collected for marginal production were about $1.2 billion during 2005. Furthermore, the production loss from marginal oil and gas well abandonments in 2005 would represent a $32.9 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.

Note: Many states have different or multiple producion level cut-offs in determining marginal status. The rates shown below assume the lowest tax applicable to a marginal well producing at the lowest production level cut-off. Source: www.spee.org.

State	Other Taxes (Conservation, Environmental, etc.)	2005 Average Gas $/Mcf	2005 Production from Marginal Wells (Mcf)	Annual Total Marginal Gas Production Tax Revenue	2005 Lost Production Mcf	Annual Lost Marginal Gas Production Tax Revenue	Annual Total Marginal Production Tax Revenue	Annual Lost Marginal Production
Alabama	—	9.02	26,757,739	$14,480,785	183,832	$99,486	$17,394,485	$103,868
Alaska	$0.00008	4.63	0	$0	0	$0	$0	$0
Arizona	—	6.93	17,212	$3,730	34,424	$7,459	$3,730	$7,459
Arkansas	$0.005	7.69	18,707,824	$149,663	185,839	$1,487	$7,047,885	$96,337
California	$0.0054	7.65	4,428,540	$2,387	722,684	$389	$1,919,109	$175,072
Colorado	0.12%	7.06	88,788,233	$751,781	1,012,032	$8,569	$1,222,534	$16,832
Florida	—	9.02	0	$0	0	$0	$0	$0
Illinois	—	0.00	184,000	$0	3,339	$0	$0	$0
Indiana	—	8.53	3,134,583	$267,447	7,428	$634	$1,080,857	$3,970
Kansas	$0.0058	6.69	283,712,000	$1,654,041	3,227,412	$18,816	$2,358,369	$58,991
Kentucky	—	7.12	82,323,314	$26,389,935	287,324	$92,106	$30,747,007	$132,899
Louisiana	—	8.07	42,130,824	$547,701	1,398,063	$18,175	$24,448,115	$755,187
Maryland	—	8.46	36,468	$21,608	0	$0	$21,608	$0
Michigan	1%	5.21	77,388,412	$24,210,576	1,082,896	$282,316	$31,341,969	$466,718
Mississippi	$0.005	7.90	9,486,746	$4,541,653	147,021	$70,385	$7,244,844	$128,580
Missouri	—	0.00	0	$0	0	$0	$0	$0
Montana	0.30%	6.11	27,426,557	$18,929,689	691,924	$464,884	$28,469,076	$677,395
Nebraska	1%	4.36	720,360	$125,656	0	$0	$2,637,105	$32,285
Nevada	—	0.00	0	$0	0	$0	$0	$0
New Mexico	—	6.73	97,358,159	$53,669,785	2,438,886	$1,344,463	$106,364,440	$2,651,623
New York	—	9.45	9,896,329	$0	8,825	$0	$0	$0
North Dakota	—	7.76	401,057	$30,962	17,694	$1,366	$5,839,134	$103,911
Ohio	—	9.01	68,267,000	$1,706,675	1,064,273	$26,607	$2,190,762	$31,611
Oklahoma	$0.0001	7.48	169,439,950	$91,155,659	3,550,757	$1,909,889	$245,328,023	$5,252,021
Oregon	—	5.27	0	$0	0	$0	$0	$0
Pennsylvania	—	0.00	151,651,000	$0	484,331	$0	$0	$0
South Dakota	—	7.44	399,891	$140,932	0	$0	$270,981	$9,633
Tennessee	—	9.34	2,200,000	$616,752	69,841	$19,579	$616,752	$19,579
Texas	$0.0033	7.90	302,083,547	$179,891,917	11,616,112	$6,878,723	$545,088,006	$20,772,628
Utah	0.20%	7.10	14,429,074	$204,794	366,065	$5,196	$379,561	$10,756
Virginia	—	0.00	3,651,691	$0	512,518	$0	$0	$0
West Virginia	—	9.01	186,000,000	$83,757,133	1,259,707	$567,255	$87,250,883	$580,965
Wyoming	0.06%	6.72	89,043,042	$36,246,953	1,376,618	$560,383	$51,589,641	$822,365
Total	—	—	1,760,063,552	$539,498,212	31,749,847	$12,378,166	$1,200,854,876	$32,910,686

conclusion

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

In 2005, total domestic production, including Alaska and the federal offshore areas, was 1.87 billion barrels of oil and 19.14 trillion cubic feet of gas. Marginal oil production accounted for 322 million barrels or 17.2 percent of total oil. Marginal gas production accounted for 1.76 Tcf or 9.2 percent of total gas production.

The use of RIMS II multipliers show that every dollar of marginal oil and gas production creates an additional $1.00618 of economic activity throughout the economy, and that 9.7 jobs are dependent on every $1 million of marginal oil and gas produced. Price levels for oil and gas and foreign country political instability are such that some companies that had focused their attention on foreign ventures have either returned or are increasing their activities in the United States. The large companies have continued their merger and consolidation process. However, this will bring new opportunities for marginal production as the large companies optimize their property holdings to pay for the merger activity and sell the smaller, non-core assets. The high prices have also spurred activity in areas and formations that are low in productivity.

This year's report saw the total number of marginal wells to be up over 20,000 from last year. We should expect the level of marginal wells to grow at a faster trend, not only from natural production declines, but in recognition that producers are drilling more wells with less initial productive capacity.

The cumulative impact of marginal production over the 14 years this economic report has been prepared is summarized in Table 7 – 7.07 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 $9.7 billion of economic activity and more than 50,000 jobs.

During the past 14 years, states lost more than $221.6 million in severance taxes from abandoned marginal wells.

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

7.1 Oil

Year	No. of Marginal Wells	Marginal Well Production Million Bbls	Abandon-ments	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	15.879
2005	401,072	321.762	13,265	2.20	12.656	1,305.654	271.524	6,321	20.533
Total	**—**	**4,586.508**	**200,524**	**—**	**186.825**	**$7,118.454**	**$1,169.893**	**37,679**	**$155.188**

7.2 Gas

Year	No. of Marginal Wells	Marginal Well Production Million Bcf	Abandon-ments	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	466.695	96.291	2,284	12.378
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
2005	288,898	1,760.064	4,517	16.69	31.750	466.695	96.291	2,284	12.378
Total	**—**	**13,125.204**	**42,203**	**—**	**305.380**	**$2,126.474**	**$359.173**	**10,071**	**$54.125**

7.3 Total Oil & Gas

Year	No. of Marginal Wells	Marginal Well Production MMBOE (6:1)	Abandon-ments	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	896.692	153.795	4,616	22.997
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	23.971
2005	689,970	615.105	17,782	4.98	17.947	1,772.349	367.814	8,604	32.911
Total	**—**	**7,067.386**	**247,244**	**—**	**243.013**	**$9,711.623**	**$1,625.357**	**50,033**	**$221.692**

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 Report 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 Bureau of Economic Analysis 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 provided 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 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 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 U.S. Department of Commerce Bureau of Economic Analysis 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 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, Alaska is excluded in the IOGCC analysis. 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 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 that 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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Charlie 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.

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Oklahoma Commission on Marginally Producing Oil and Gas Wells
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abbreviations

Oil

bbls = barrels
Mbbls = one thousand barrels (1,000 barrels)
MMbls = 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.

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