

The Local Impact of Oil and Gas Production and Drilling in Oklahoma

Prepared for

Oklahoma Energy Resources Board

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The Local Impact of Oil and Gas Production and Drilling In Oklahoma

INTRODUCTION

This report examines the economic impact of Oklahoma's oil and gas industry at the local level.¹ While production and drilling occur in most areas of the state, the economic impact is not distributed evenly across all regions of the state. The local impacts are examined at the county level and by Oklahoma Corporation Commission District and illustrate the dispersion of oil and gas industry employment, income, drilling, and production across the state.

LOCAL PRODUCTION²

Oil and gas deposits are found throughout most of Oklahoma's 77 counties, with oil and gas production occurring in 73 counties in 2007. The bulk of the state's oil production is confined to three areas: a large block of counties stretching across much of the central and south central portion of the state; the Texas County area in the panhandle; and Osage, Creek, and Noble Counties in the north central portion of the state. The major natural gas producing areas are found in the west central portion of the state (Anadarko Basin), Texas and Beaver Counties in the panhandle, and Latimer and Pittsburg Counties in the southeast. Oklahoma ranked fifth among the states in crude oil production and third in natural gas production in 2007, producing an estimated 3.3 percent of the nation's crude and 8.2 percent of natural gas output.

Oil and gas was produced in 73 of Oklahoma's 77 counties in 2007.

Crude oil production remains largely concentrated in a small number of counties containing the state's most highly productive fields. As shown in Part A of Table 1, Carter County with over 6.5 million barrels and Stephens County at 5.7 million barrels are the two largest crude oil producing counties. Both counties are located in south central Oklahoma and account for a combined 20 percent of the crude oil production in the state. The next tier of crude oil producing

Carter and Stephens Counties in south-central Oklahoma produced a combined 20 percent of state oil output in 2007.

A second tier of major oil producing counties includes Osage, Texas, Garvin, and Grady.

counties includes Osage, Texas, Garvin, and Grady and, in order, range from slightly over 4.0 million barrels to 3.1 million barrels annually.

These four counties, together with the higher crude oil producing Carter County and Stephens County, account for 42.7 percent of the state's oil production. The top twenty producing counties account for nearly 80 percent of total state crude oil output. Map 1 illustrates the broad

geographic distribution of oil production across most of the state, as well as the relative lack of crude oil production originating in the extreme eastern edge of the state.

Part B of Table 1 shows that 24.1 percent of Oklahoma's natural gas production occurs in the top three producing counties of Roger Mills, Latimer, and Beckham, with production levels ranging from 150.7 billion cubic feet to 115.4 billion cubic feet. The top ten gas producing counties account for 55.4 percent, and the top twenty counties nearly 80 percent, of the natural gas production in Oklahoma. With the exception of Latimer County and Pittsburg County in the southeast, natural gas production is heavily concentrated in western Oklahoma. Map 2 illustrates the location of natural gas production throughout Oklahoma in 2007.

Natural gas production is heavily concentrated in western Oklahoma and in Latimer and Pittsburg Counties in the southeast.

Table 1. Rankings of Oil and Gas Production by County (2007)

A. Crude Oil Barrels (bbls)					B. Natural Gas Thousand Cubic Feet (mcf)					C. Barrel of Oil Equivalent Production (1 Barrel = 6 mcf)				
Rank	County	Production	% of Total	Cumulative % of Total	Rank	County	Production	% of Total	Cumulative % of Total	Rank	County	Equivalent Production	% of Total	Cumulative % of Total
1	Carter	6,500,846	10.7%	10.7%	1	Roger Mills	150,871,435	9.2%	9.2%	1	Roger Mills	25,811,222	7.7%	7.7%
2	Stephens	5,682,209	9.4%	20.1%	2	Latimer	125,081,453	7.6%	16.8%	2	Latimer	20,846,909	6.2%	13.9%
3	Osage	4,075,340	6.7%	26.8%	3	Beckham	115,365,436	7.0%	23.8%	3	Beckham	19,934,646	6.0%	19.9%
4	Texas	3,396,226	5.6%	32.3%	4	Caddo	102,595,691	6.2%	30.1%	4	Caddo	18,945,740	5.7%	25.6%
5	Garvin	3,158,830	5.2%	37.5%	5	Pittsburg	90,691,051	5.5%	35.6%	5	Grady	16,231,884	4.9%	30.4%
6	Grady	3,104,366	5.1%	42.7%	6	Grady	78,765,105	4.8%	40.4%	6	Pittsburg	15,117,091	4.5%	34.9%
7	Pontotoc	2,356,558	3.9%	46.5%	7	Washita	78,342,894	4.8%	45.1%	7	Stephens	14,450,809	4.3%	39.2%
8	Creek	2,194,847	3.6%	50.1%	8	Custer	58,778,929	3.6%	48.7%	8	Washita	13,838,346	4.1%	43.4%
9	Oklahoma	2,057,917	3.4%	53.5%	9	Stephens	52,611,597	3.2%	51.9%	9	Texas	12,128,829	3.6%	47.0%
10	Caddo	1,846,458	3.0%	56.6%	10	Texas	52,395,618	3.2%	55.1%	10	Custer	10,420,120	3.1%	50.1%
11	Seminole	1,845,821	3.0%	59.6%	11	Woodward	49,960,746	3.0%	58.1%	11	Major	9,466,423	2.8%	52.9%
12	Major	1,594,340	2.6%	62.2%	12	Major	47,232,495	2.9%	61.0%	12	Woodward	8,674,184	2.6%	55.5%
13	Ellis	1,364,631	2.2%	64.5%	13	Beaver	44,142,273	2.7%	63.7%	13	Carter	8,655,550	2.6%	58.1%
14	Pottawatomie	1,291,312	2.1%	66.6%	14	Canadian	40,713,013	2.5%	66.2%	14	Beaver	8,548,345	2.6%	60.7%
15	Lincoln	1,251,431	2.1%	68.7%	15	Ellis	38,219,235	2.3%	68.5%	15	Ellis	7,734,504	2.3%	63.0%
16	Beaver	1,191,299	2.0%	70.6%	16	Le Flore	35,044,758	2.1%	70.6%	16	Canadian	7,687,984	2.3%	65.3%
17	Noble	1,191,019	2.0%	72.6%	17	Blaine	32,790,648	2.0%	72.6%	17	Garvin	7,567,894	2.3%	67.6%
18	Woods	1,189,688	2.0%	74.5%	18	Haskell	32,551,818	2.0%	74.6%	18	Woods	6,014,963	1.8%	69.3%
19	McClain	1,157,254	1.9%	76.4%	19	Coal	32,353,153	2.0%	76.6%	19	Osage	5,939,118	1.8%	71.1%
20	Kingfisher	1,105,737	1.8%	78.3%	20	Woods	28,951,647	1.8%	78.3%	20	Le Flore	5,840,793	1.7%	72.9%
21	Kay	959,480	1.6%	79.8%	21	Hughes	28,939,949	1.8%	80.1%	21	Blaine	5,764,422	1.7%	74.6%
22	Canadian	902,482	1.5%	81.3%	22	Dewey	27,603,688	1.7%	81.8%	22	Coal	5,560,592	1.7%	76.3%
23	Washita	781,197	1.3%	82.6%	23	Garvin	26,454,383	1.6%	83.4%	23	Haskell	5,425,488	1.6%	77.9%
24	Beckham	707,073	1.2%	83.8%	24	Kingfisher	25,564,924	1.6%	85.0%	24	Kingfisher	5,366,558	1.6%	79.5%
25	Roger Mills	665,983	1.1%	84.9%	25	Harper	20,940,443	1.3%	86.2%	25	Hughes	5,130,405	1.5%	81.0%
26	Custer	623,632	1.0%	85.9%	26	Lincoln	18,662,462	1.1%	87.4%	26	Dewey	5,079,736	1.5%	82.5%
27	Payne	596,566	1.0%	86.9%	27	Atoka	16,283,717	1.0%	88.4%	27	Seminole	4,426,656	1.3%	83.9%
28	Garfield	511,217	0.8%	87.7%	28	Seminole	15,485,007	0.9%	89.3%	28	Lincoln	4,361,841	1.3%	85.2%
29	Logan	510,749	0.8%	88.6%	29	McClain	13,604,389	0.8%	90.1%	29	Oklahoma	4,066,137	1.2%	86.4%
30	Cleveland	493,642	0.8%	89.4%	30	Carter	12,928,223	0.8%	90.9%	30	Harper	3,719,187	1.1%	87.5%
31	Dewey	479,121	0.8%	90.2%	31	Garfield	12,852,161	0.8%	91.7%	31	McClain	3,424,652	1.0%	88.5%
32	Love	435,388	0.7%	90.9%	32	Oklahoma	12,049,320	0.7%	92.4%	32	Creek	2,859,889	0.9%	89.4%
33	Grant	426,243	0.7%	91.6%	33	Pushmataha	11,559,853	0.7%	93.1%	33	Atoka	2,724,382	0.8%	90.2%
34	Pawnee	395,417	0.7%	92.2%	34	Osage	11,182,666	0.7%	93.8%	34	Garfield	2,653,244	0.8%	91.0%
35	Okmulgee	389,538	0.6%	92.9%	35	Logan	10,625,833	0.6%	94.5%	35	Pottawatomie	2,652,467	0.8%	91.8%
36	Jefferson	365,328	0.6%	93.5%	36	McIntosh	9,099,586	0.6%	95.0%	36	Pontotoc	2,474,189	0.7%	92.5%
37	Okfuskee	349,843	0.6%	94.1%	37	Pottawatomie	8,166,927	0.5%	95.5%	37	Logan	2,281,721	0.7%	93.2%
38	Woodward	347,393	0.6%	94.6%	38	Grant	7,814,826	0.5%	96.0%	38	Noble	2,075,820	0.6%	93.8%
39	Alfalfa	342,634	0.6%	95.2%	39	Nowata	6,604,879	0.4%	96.4%	39	Pushmataha	1,926,803	0.6%	94.4%
40	Hughes	307,080	0.5%	95.7%	40	Washington	6,018,129	0.4%	96.8%	40	Grant	1,728,714	0.5%	94.9%
41	Blaine	299,314	0.5%	96.2%	41	Noble	5,308,804	0.3%	97.1%	41	McIntosh	1,531,766	0.5%	95.4%
42	Tulsa	285,570	0.5%	96.7%	42	Cimarron	5,298,026	0.3%	97.4%	42	Payne	1,394,565	0.4%	95.8%
43	Washington	268,150	0.4%	97.1%	43	Payne	4,787,995	0.3%	97.7%	43	Kay	1,357,409	0.4%	96.2%
44	Murray	254,924	0.4%	97.5%	44	Alfalfa	4,594,184	0.3%	98.0%	44	Washington	1,271,172	0.4%	96.6%
45	Harper	229,113	0.4%	97.9%	45	Marshall	4,048,359	0.2%	98.2%	45	Nowata	1,257,028	0.4%	96.9%
46	Marshall	180,701	0.3%	98.2%	46	Creek	3,990,254	0.2%	98.5%	46	Alfalfa	1,108,331	0.3%	97.3%
47	Coal	168,400	0.3%	98.5%	47	Comanche	3,422,789	0.2%	98.7%	47	Cimarron	984,263	0.3%	97.6%
48	Nowata	156,215	0.3%	98.7%	48	Sequoyah	2,788,013	0.2%	98.8%	48	Marshall	855,428	0.3%	97.8%
49	Comanche	119,076	0.2%	98.9%	49	Okfuskee	2,783,040	0.2%	99.0%	49	Okfuskee	813,683	0.2%	98.1%
50	Cotton	115,512	0.2%	99.1%	50	Kay	2,387,571	0.1%	99.1%	50	Love	755,460	0.2%	98.3%

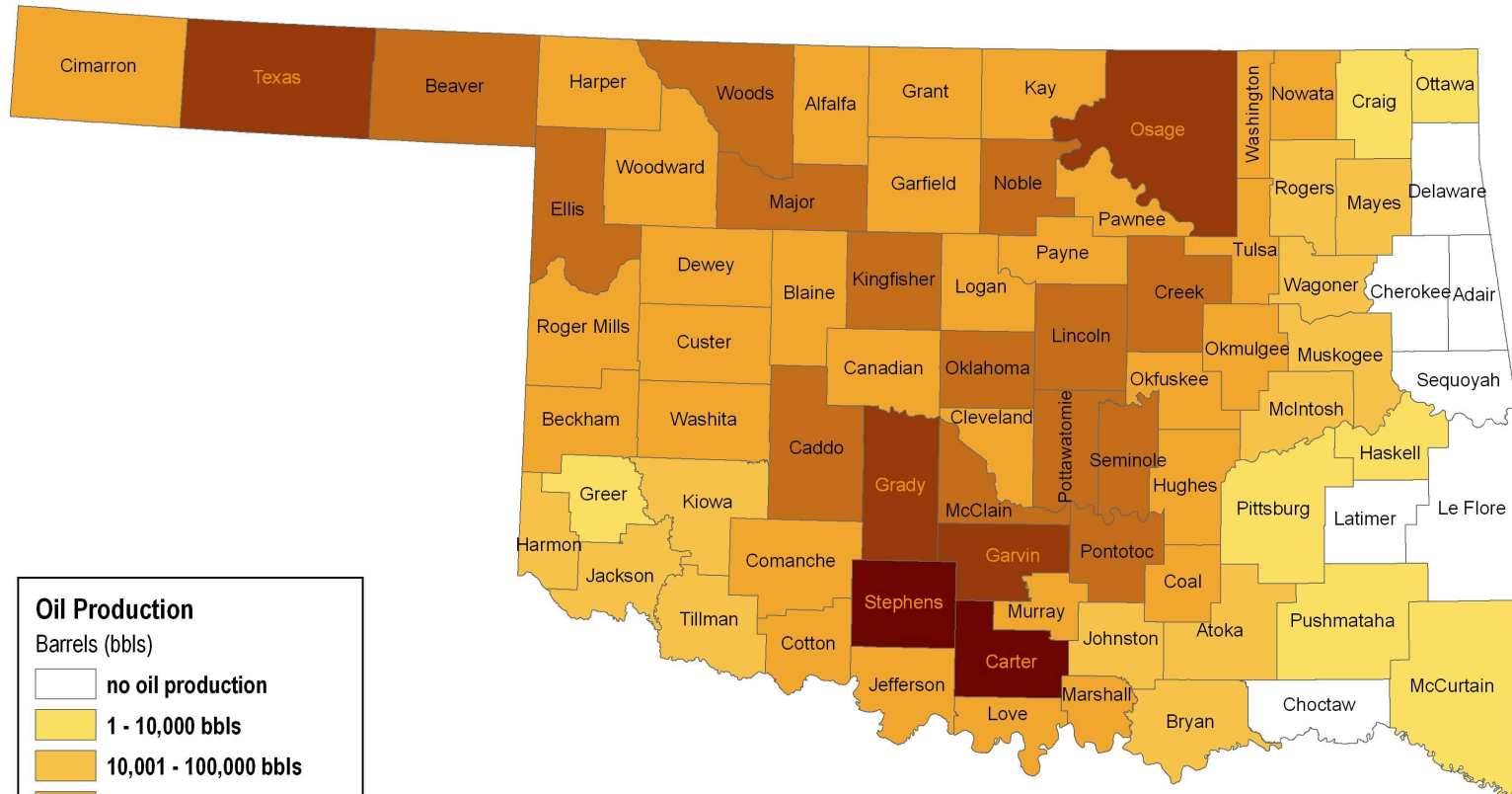
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Table 1. (Continued) Rankings of Oil and Gas Production by County (2007)

A. Crude Oil Barrels (bbls)					B. Natural Gas Thousand Cubic Feet (mcf)					C. Barrel of Oil Equivalent Production (1 Barrel = 6 mcf)				
Rank	County	Production	% of Total	Cumulative % of Total	Rank	County	Production	% of Total	Cumulative % of Total	Rank	County	Equivalent Production (bbls)	% of Total	Cumulative % of Total
51	Cimarron	101,259	0.2%	99.3%	51	Bryan	2,250,440	0.1%	99.3%	51	Cleveland	723,111	0.2%	98.5%
52	Bryan	80,606	0.1%	99.4%	52	Kiowa	1,964,516	0.1%	99.4%	52	Comanche	689,541	0.2%	98.7%
53	Jackson	78,404	0.1%	99.5%	53	Love	1,920,432	0.1%	99.5%	53	Okmulgee	656,982	0.2%	98.9%
54	Tillman	59,253	0.1%	99.6%	54	Okmulgee	1,604,661	0.1%	99.6%	54	Pawnee	474,838	0.1%	99.0%
55	Muskogee	58,775	0.1%	99.7%	55	Rogers	1,596,424	0.1%	99.7%	55	Sequoyah	464,669	0.1%	99.2%
56	Wagoner	36,085	0.1%	99.8%	56	Cleveland	1,376,814	0.1%	99.8%	56	Bryan	455,679	0.1%	99.3%
57	Rogers	26,232	0.0%	99.8%	57	Pontotoc	705,784	0.0%	99.8%	57	Jefferson	367,114	0.1%	99.4%
58	Kiowa	19,885	0.0%	99.9%	58	Craig	625,261	0.0%	99.9%	58	Tulsa	366,410	0.1%	99.5%
59	Mayes	18,790	0.0%	99.9%	59	Tulsa	485,041	0.0%	99.9%	59	Kiowa	347,304	0.1%	99.6%
60	Johnston	17,150	0.0%	99.9%	60	Pawnee	476,527	0.0%	99.9%	60	Rogers	292,303	0.1%	99.7%
61	McIntosh	15,168	0.0%	100.0%	61	Muskogee	335,707	0.0%	100.0%	61	Murray	259,197	0.1%	99.8%
62	Harmon	13,260	0.0%	100.0%	62	Wagoner	217,053	0.0%	100.0%	62	Cotton	128,338	0.0%	99.8%
63	Atoka	10,429	0.0%	100.0%	63	Greer	159,122	0.0%	100.0%	63	Muskogee	114,726	0.0%	99.9%
64	Pittsburg	1,916	0.0%	100.0%	64	Johnston	134,161	0.0%	100.0%	64	Craig	105,326	0.0%	99.9%
65	Greer	1,398	0.0%	100.0%	65	Cotton	76,956	0.0%	100.0%	65	Jackson	81,379	0.0%	99.9%
66	Craig	1116	0.0%	100.0%	66	Murray	25,638	0.0%	100.0%	66	Wagoner	72,261	0.0%	100.0%
67	Haskell	185	0.0%	100.0%	67	Jackson	17,852	0.0%	100.0%	67	Tillman	59,253	0.0%	100.0%
68	Pushmataha	161	0.0%	100.0%	68	Jefferson	10,716	0.0%	100.0%	68	Johnston	39,510	0.0%	100.0%
69	Ottawa	117	0.0%	100.0%		Adair	-77	0.0%	100.0%	69	Greer	27,918	0.0%	100.0%
70	McCurtain	99	0.0%	100.0%		Cherokee	0	0.0%	100.0%	70	Mayes	18,790	0.0%	100.0%
	Adair	-1,061	0.0%	100.0%		Choctaw	0	0.0%	100.0%	71	Harmon	13,260	0.0%	100.0%
	Cherokee	0	0.0%	100.0%		Delaware	0	0.0%	100.0%	72	Ottawa	117	0.0%	100.0%
	Choctaw	0	0.0%	100.0%		Harmon	0	0.0%	100.0%	73	McCurtain	99	0.0%	100.0%
	Delaware	0	0.0%	100.0%		McCurtain	0	0.0%	100.0%		Adair	-1,074	0.0%	100.0%
	Latimer	0	0.0%	100.0%		Mayes	0	0.0%	100.0%		Cherokee	0	0.0%	100.0%
	Le Flore	0	0.0%	100.0%		Ottawa	0	0.0%	100.0%		Choctaw	0	0.0%	100.0%
	Sequoyah	0	0.0%	100.0%		Tillman	0	0.0%	100.0%		Delaware	0	0.0%	100.0%
Statewide		60,762,337			Statewide		1,643,292,423			Statewide		334,644,408		

Source: Oklahoma Corporation Commission

Map 1. Oklahoma Crude Oil Production (2007)

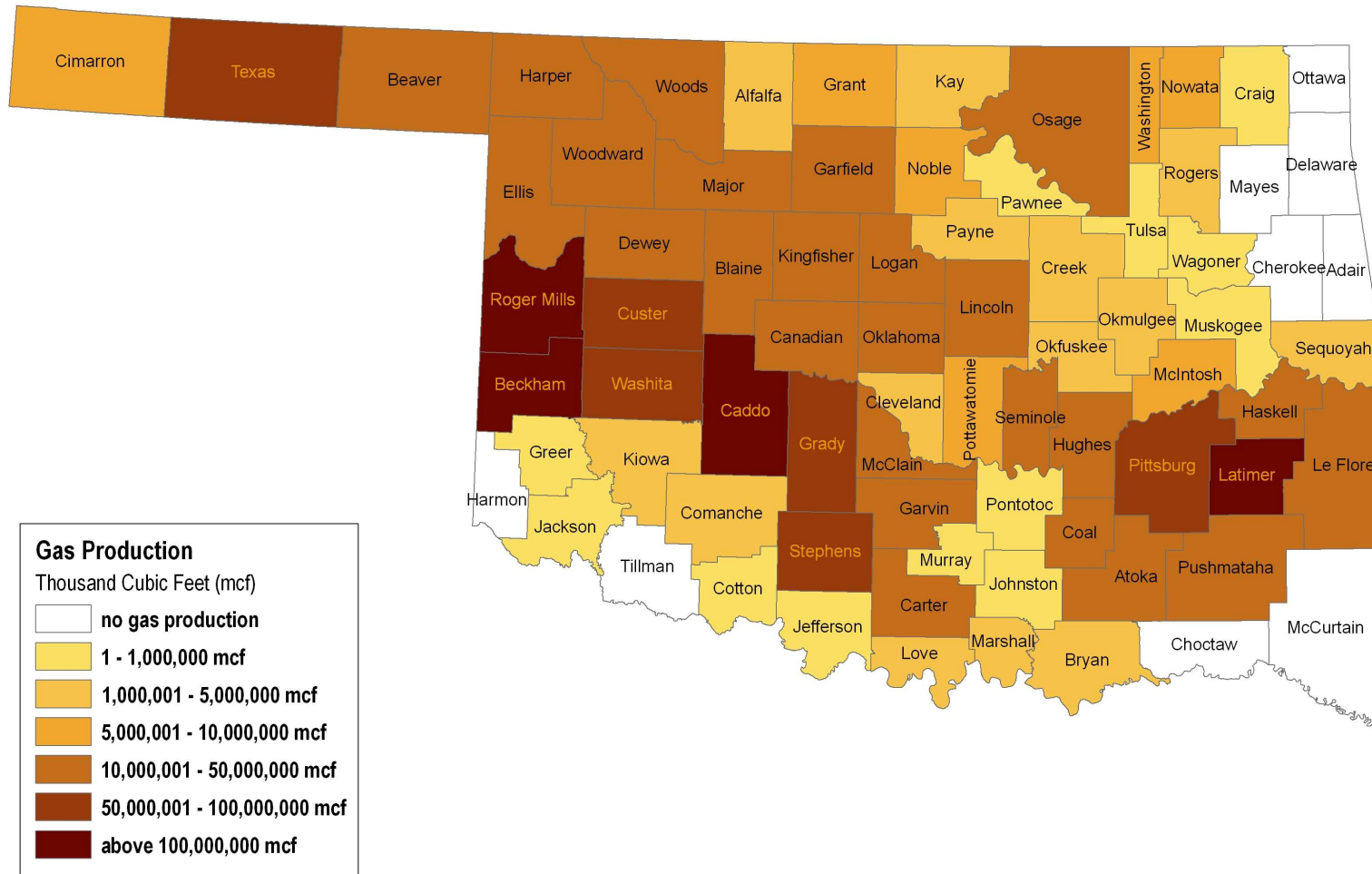


Oil Production

Barrels (bbls)

- no oil production
- 1 - 10,000 bbls
- 10,001 - 100,000 bbls
- 100,001 - 1,000,000 bbls
- 1,000,001 - 3,000,000 bbls
- 3,000,001 - 5,000,000 bbls
- more than 5,000,000 bbls

Map 2. Oklahoma Natural Gas Production (2007)



Few counties are large producers of both crude oil and natural gas. Caddo and Grady Counties stand out, with Grady ranked sixth in crude oil and seventh in natural gas production and Caddo tenth in crude oil production and fourth in natural gas. Converting natural gas to its crude oil equivalent, as shown in Part C of Table 1, allows the ranking of counties by combined crude oil and natural gas production. Natural gas production is converted to barrels of crude oil using the conversion ratio of 6,000 cubic feet (6 mcf) of natural gas per barrel of oil. Map 3 illustrates the statewide distribution of oil equivalent production of crude oil and natural gas by county.

On an equivalent basis, 50.3 percent of crude oil and natural gas production occurs in ten counties. All ten of these counties are likewise ranked as the top ten natural gas producing counties. First and second ranked crude oil producing Carter and Stephens Counties ranked twelfth and seventh, respectively, in equivalent production. By contrast, the three top natural gas producing counties, Roger Mills, Latimer, and Beckham, are also the three top oil equivalent producing counties.

On an oil-equivalent basis, more than 50% of the state's oil and gas production is concentrated in ten counties.

These ten counties are also ranked as the top ten natural gas producing counties.

Table 2 displays crude oil and gas production trends over the ten year period 1997 to 2007. Total state crude production fell 27.5 percent in the period to 60.5 million barrels, a reduction of 22.9 million barrels. Crude oil production declined markedly in most counties in the period, with Texas County the only county among the top ten crude oil producing counties to show an increase in production. Production rose in Texas County by 334,000 barrels, which equates to an 11.4 percent increase. The largest production increase over the decade totaled 470,000 barrels and occurred in Ellis County. Carter and Stephens Counties, the top two crude oil producing counties each had a sharp decline in production compared to the 1997 levels. Production in Carter County declined by 4.2 million barrels (39.5 percent reduction) and in Stephens County by 2.1 million barrels (27.3 percent reduction). Production rose in only 16 counties in the period with the overall increase insignificant in all but Texas County.

Oklahoma continues to rank among the major natural gas producing states, ranking third in natural gas production with 1.62 trillion cubic feet in preliminary 2007 data. The decline in production seen in the crude producing counties since 1997 is not typical of most gas producing

counties. Table 2 details county-level production of natural gas and highlights the growing importance of natural gas relative to crude oil within the state. In the ten year period, natural gas production rose in 32 counties and declined in 37. When comparing natural gas production among the top three producing counties in 2007 (i.e., Roger Mills, Latimer, and Beckham Counties), an increase occurred only in Beckham County where production rose by 49 billion cubic feet, a 73.7 percent increase. Natural gas production in Roger Mills and Latimer Counties declined slightly by 9.4 billion cubic feet (5.9 percent) and 5.8 billion cubic feet (4.4 percent decrease), respectively.

Natural gas production increased in 32 counties and declined in 37 counties in the past decade.

Map 3. Oklahoma Barrel of Oil Equivalent Production (2007)

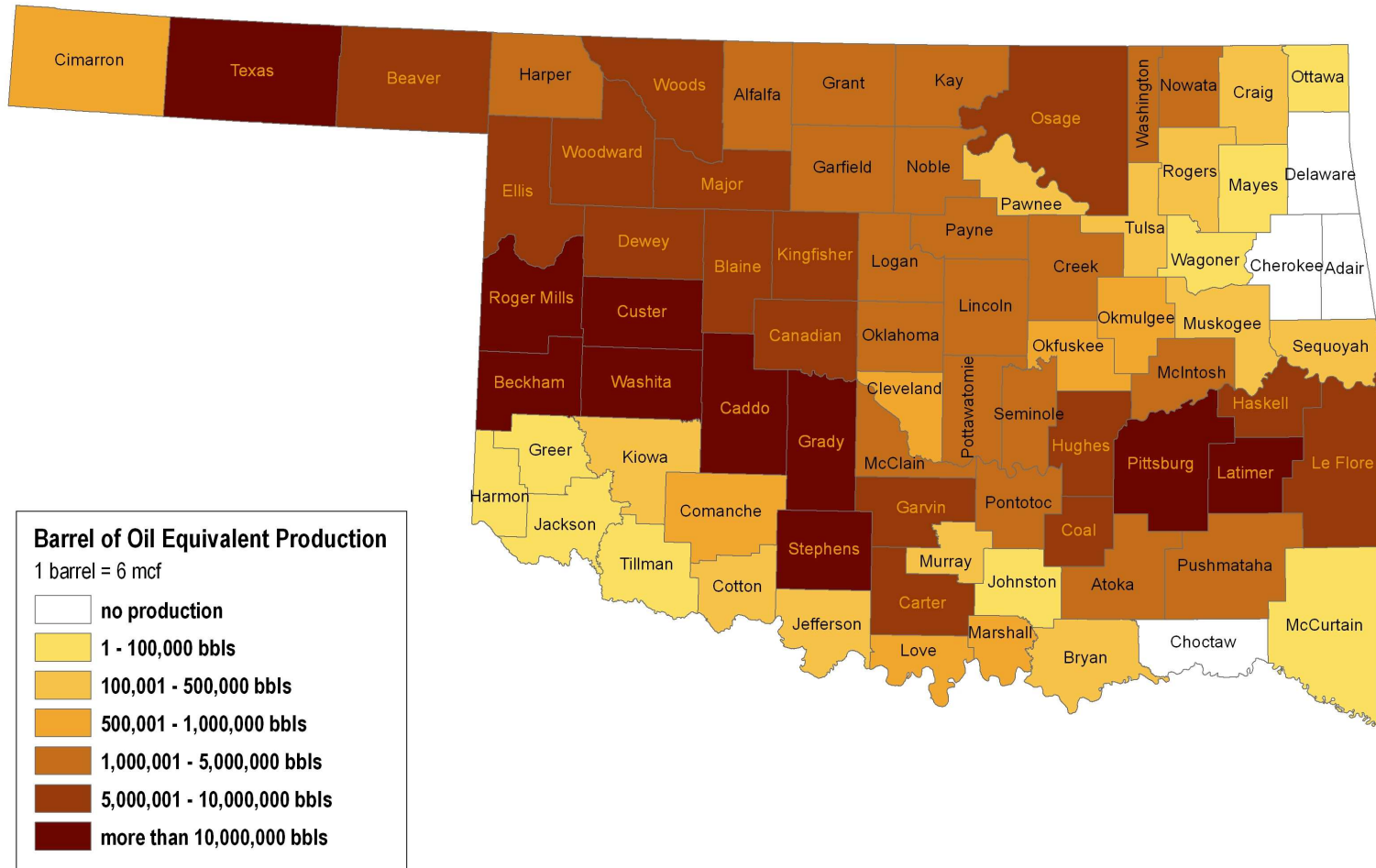


Table 2. Change in Crude Oil and Natural Gas Production (1997 to 2007)

Crude Oil (Barrels)					Natural Gas (mcf)				
County	1997	2007	Period Change	Period % Change	County	1997	2007	Period Change	Period % Change
Ellis	893,144	1,364,631	471,487	52.8%	Beckham	66,400,944	115,365,436	48,964,492	73.7%
Texas	2,931,416	3,396,226	464,810	15.9%	Coal	5,660,265	32,353,153	26,692,888	471.6%
Washita	509,196	781,197	272,001	53.4%	Hughes	8,908,592	28,939,949	20,031,357	224.9%
Beckham	504,099	707,073	202,974	40.3%	Woodward	29,943,389	49,960,746	20,017,357	66.9%
Jefferson	205,729	365,328	159,599	77.6%	Atoka	1,970,368	16,283,717	14,313,349	726.4%
Woodward	238,538	347,393	108,855	45.6%	Seminole	1,504,513	15,485,007	13,980,494	929.2%
Woods	1,118,364	1,189,688	71,324	6.4%	Pushmataha	0	11,559,853	11,559,853	nm
Bryan	59,991	80,606	20,615	34.4%	Lincoln	8,939,105	18,662,462	9,723,357	108.8%
Johnston	15	17,150	17,135	nm	Haskell	23,898,432	32,551,818	8,653,386	36.2%
McIntosh	1,087	15,168	14,081	1295.4%	Osage	2,557,449	11,182,666	8,625,217	337.3%
Atoka	1,023	10,429	9,406	919.5%	Le Flore	26,515,298	35,044,758	8,529,460	32.2%
Tillman	56,701	59,253	2,552	4.5%	Pottawatomie	936,310	8,166,927	7,230,617	772.2%
Harmon	10,983	13,260	2,277	20.7%	McIntosh	2,945,678	9,099,586	6,153,908	208.9%
Pittsburg	450	1,916	1,466	325.8%	Nowata	951,007	6,604,879	5,653,872	594.5%
Haskell	0	185	185	0.0%	Washita	73,960,403	78,342,894	4,382,491	5.9%
Pushmataha	0	161	161	0.0%	Washington	1,870,810	6,018,129	4,147,319	221.7%
Ottawa	0	117	117	0.0%	Grant	3,758,847	7,814,826	4,055,979	107.9%
McCurtain	0	99	99	0.0%	Woods	26,538,355	28,951,647	2,413,292	9.1%
Cherokee	0	0	0	0.0%	Caddo	100,199,057	102,595,691	2,396,634	2.4%
Choctaw	0	0	0	0.0%	Payne	3,026,594	4,787,995	1,761,401	58.2%
Delaware	0	0	0	0.0%	Rogers	193,618	1,596,424	1,402,806	724.5%
Latimer	0	0	0	0.0%	Cimarron	4,048,545	5,298,026	1,249,481	30.9%
Le Flore	0	0	0	0.0%	Noble	4,070,498	5,308,804	1,238,306	30.4%
Sequoyah	165	0	-165	-100.0%	Creek	3,289,650	3,990,254	700,604	21.3%
Adair	0	-1,061	-1,061	nm	Craig	318	625,261	624,943	nm
Craig	2,210	1,116	-1,094	-49.5%	Kay	1,861,287	2,387,571	526,284	28.3%
Coal	171,157	168,400	-2,757	-1.6%	Logan	10,107,504	10,625,833	518,329	5.1%
Greer	5,859	1,398	-4,461	-76.1%	Pontotoc	414,372	705,784	291,412	70.3%
Mayes	29,266	18,790	-10,476	-35.8%	Wagoner	31,010	217,053	186,043	599.9%
Kay	981,467	959,480	-21,987	-2.2%	Johnston	4,557	134,161	129,604	2844.1%
Rogers	52,088	26,232	-25,856	-49.6%	Cotton	38,435	76,956	38,521	100.2%
Muskogee	86,058	58,775	-27,283	-31.7%	Jackson	0	17,852	17,852	nm
Beaver	1,220,804	1,191,299	-29,505	-2.4%	Greer	150,991	159,122	8,131	5.4%
Wagoner	68,513	36,085	-32,428	-47.3%	Cherokee	0	0	0	0.0%
Kiowa	55,963	19,885	-36,078	-64.5%	Choctaw	0	0	0	0.0%
Marshall	223,327	180,701	-42,626	-19.1%	Delaware	0	0	0	0.0%
Harper	292,559	229,113	-63,446	-21.7%	Harmon	0	0	0	0.0%
Cimarron	171,025	101,259	-69,766	-40.8%	McCurtain	0	0	0	0.0%
Cotton	203,776	115,512	-88,264	-43.3%	Ottawa	0	0	0	0.0%
Nowata	246,158	156,215	-89,943	-36.5%	Tillman	0	0	0	0.0%
Comanche	209,919	119,076	-90,843	-43.3%	Mayes	65	0	-65	-100.0%
Washington	370,048	268,150	-101,898	-27.5%	Adair	0	-77	-77	nm
Jackson	184,619	78,404	-106,215	-57.5%	Murray	37,011	25,638	-11,373	-30.7%
Lincoln	1,373,395	1,251,431	-121,964	-8.9%	Bryan	2,265,667	2,250,440	-15,227	-0.7%
Tulsa	411,413	285,570	-125,843	-30.6%	Jefferson	43,312	10,716	-32,596	-75.3%
Noble	1,339,237	1,191,019	-148,218	-11.1%	Tulsa	705,809	485,041	-220,768	-31.3%
Love	585,572	435,388	-150,184	-25.6%	Muskogee	694,244	335,707	-358,537	-51.6%
Okmulgee	542,090	389,538	-152,552	-28.1%	Stephens	52,993,643	52,611,597	-382,046	-0.7%
Hughes	481,130	307,080	-174,050	-36.2%	Pawnee	876,048	476,527	-399,521	-45.6%
Blaine	515,282	299,314	-215,968	-41.9%	Okmulgee	2,137,218	1,604,661	-532,557	-24.9%
Roger Mills	899,524	665,983	-233,541	-26.0%	Okfuskee	3,673,546	2,783,040	-890,506	-24.2%
McClain	1,396,832	1,157,254	-239,578	-17.2%	Marshall	5,370,877	4,048,359	-1,322,518	-24.6%
Oklahoma	2,299,916	2,057,917	-241,999	-10.5%	Cleveland	2,823,176	1,376,814	-1,446,362	-51.2%

Continued

Table 2. (Continued) Change in Crude Oil and Natural Gas Production (1997 to 2007)									
Crude Oil (Barrels)					Natural Gas (mcf)				
County	1997	2007	Period Change	Period % Change	County	1997	2007	Period Change	Period % Change
Dewey	759,158	479,121	-280,037	-36.9%	Love	3,758,918	1,920,432	-1,838,486	-48.9%
Pawnee	685,492	395,417	-290,075	-42.3%	Pittsburg	92,546,177	90,691,051	-1,855,126	-2.0%
Custer	916,798	623,632	-293,166	-32.0%	Ellis	40,366,630	38,219,235	-2,147,395	-5.3%
Okfuskee	683,874	349,843	-334,031	-48.8%	Comanche	5,749,515	3,422,789	-2,326,726	-40.5%
Murray	605,911	254,924	-350,987	-57.9%	Kiowa	5,778,849	1,964,516	-3,814,333	-66.0%
Logan	873,902	510,749	-363,153	-41.6%	Sequoyah	6,886,154	2,788,013	-4,098,141	-59.5%
Garfield	922,976	511,217	-411,759	-44.6%	Alfalfa	9,042,070	4,594,184	-4,447,886	-49.2%
Grant	868,572	426,243	-442,329	-50.9%	Carter	18,304,638	12,928,223	-5,376,415	-29.4%
Cleveland	956,008	493,642	-462,366	-48.4%	McClain	19,041,662	13,604,389	-5,437,273	-28.6%
Seminole	2,380,337	1,845,821	-534,516	-22.5%	Latimer	130,636,192	125,081,453	-5,554,739	-4.3%
Payne	1,134,637	596,566	-538,071	-47.4%	Oklahoma	18,063,210	12,049,320	-6,013,890	-33.3%
Osage	4,662,758	4,075,340	-587,418	-12.6%	Roger Mills	160,077,829	150,871,435	-9,206,394	-5.8%
Kingfisher	1,743,888	1,105,737	-638,151	-36.6%	Garfield	22,800,006	12,852,161	-9,947,845	-43.6%
Pontotoc	3,110,126	2,356,558	-753,568	-24.2%	Major	58,459,081	47,232,495	-11,226,586	-19.2%
Canadian	1,681,897	902,482	-779,415	-46.3%	Kingfisher	37,764,800	25,564,924	-12,199,876	-32.3%
Creek	3,001,567	2,194,847	-806,720	-26.9%	Dewey	40,335,640	27,603,688	-12,731,952	-31.6%
Alfalfa	1,155,099	342,634	-812,465	-70.3%	Garvin	41,889,171	26,454,383	-15,434,788	-36.8%
Caddo	2,688,459	1,846,458	-842,001	-31.3%	Canadian	57,143,855	40,713,013	-16,430,842	-28.8%
Garvin	4,397,540	3,158,830	-1,238,710	-28.2%	Harper	38,918,473	20,940,443	-17,978,030	-46.2%
Major	2,849,101	1,594,340	-1,254,761	-44.0%	Blaine	53,436,260	32,790,648	-20,645,612	-38.6%
Pottawatomie	2,795,132	1,291,312	-1,503,820	-53.8%	Beaver	68,258,991	44,142,273	-24,116,718	-35.3%
Stephens	7,679,064	5,682,209	-1,996,855	-26.0%	Grady	104,954,497	78,765,105	-26,189,392	-25.0%
Grady	5,201,090	3,104,366	-2,096,724	-40.3%	Custer	86,740,781	58,778,929	-27,961,852	-32.2%
Carter	10,741,654	6,500,846	-4,240,808	-39.5%	Texas	105,922,068	52,395,618	-53,526,450	-50.5%
Statewide	83,445,148	60,762,337	-22,682,811	-27.2%	Statewide	1,713,192,284	1,643,292,423	-69,899,861	-4.1%

Source: Oklahoma Corporation Commission

DRILLING AND EXPLORATION ACTIVITY

In order to examine changes in drilling activity over time, well completions by type (oil, gas, dry, and total) are compared for the years 1997 and 2007 in Table 3. Completions are generally higher in 2007 relative to 1997 and reflect the more attractive drilling environment presented by historically high energy prices. Total well completions in 2007 numbered 3,517, with a 91.7 percent success ratio, compared to 1,628 in 1997, with an 89 percent ratio. In 2007, 16 counties had a 100 percent success ratio, 37 counties fell at the 90th percentile or above, and 10 fell between the 80th and 50th percentiles. The average well depth statewide was slightly deeper between the two years, increasing from 7,133 feet to 7,687 feet over the ten year period. In 2007, the number of counties above the state average well depth was 20. The high average depth in many of these counties reflects an increased emphasis on deep gas exploration.

In 2007, the top eight counties accounted for 38 percent of the 3,517 total oil and gas wells completed statewide:

Woods (230)
Woodward (212)
Pittsburg (176)
Major (168)
Roger Mills (153)
Hughes (147)
Stephens (134)
Texas (128)

Maps 4-6 further illustrate the statewide distribution of well completions by type in 2007. Map 4 illustrates total well completions, while Maps 5 and 6 detail oil and gas well completions, respectively. The top eight counties accounted for 38 percent of total well completions statewide: Woods (230), Woodward (212), Pittsburg (176), Major (168), Roger Mills (153), Hughes (147), Stephens (134), and Texas (128). In the high crude oil producing Carter County, 111 wells were crude oil, 11 were natural gas, and 11 were dry. The second highest number of crude oil completions occurred in Stephens County, which had only 134 total wells with 78 being crude oil wells, 45 gas wells, and 11 dry wells. Though natural gas wells continue to dominate the overall drilling numbers, the past three years indicate resurgence in the number of oil wells completed statewide, increasing from 472 in 1997 to 941 in 2007.

Most gas well completions by county in 2007:

Woodward (182)
Woods (169)
Pittsburg (162)
Roger Mills (132)
Hughes (123)
Major (109)
Coal (107)

The total number of gas wells completed more than doubled from 975 in 1997 to 2,285 in 2007. Woodward's 182

gas well completions led all counties in 2007. Six other counties produced more than 100 natural gas well completions in 2007, including Woods (169), Pittsburg (162), Roger Mills (132), Hughes (123), Major (109), and Coal (107). Among the top drilling counties, Coal and Hughes Counties are relatively new gas exploration areas of the state. Among the top three natural gas producing counties, Roger Mills County showed the largest net gain of 64 natural gas wells, increasing from 58 wells in 1997 to 132 in 2007.

Table 4 illustrates the year-to-year fluctuations in both gas and oil well completions in the 1997 to 2007 period. Increases in gas well completions are most prevalent following the surge in natural gas prices in 2000. The change from year to year, however, varies widely with some historically important natural gas producing counties rising and others declining. The relatively new gas fields in Coal and Hughes Counties in southeastern Oklahoma are expanding rapidly. Yearly well completions were heavy in five of the top six crude oil producing counties, the exception being Osage County with no completions. Even within these oil producing counties, the change from year to year shows more declining than rising well completions in the prior decade.

232 gas wells were completed in the relatively new shale fields in Coal and Hughes Counties in southeastern Oklahoma in 2007.

Table 3. Well Completions by County (1997 and 2007)

County	1997								2007								Period Change in Total Wells
	Oil	Gas	Dry	Total Wells	Total Depth (feet)	Avg. Depth	Success Ratio		Oil	Gas	Dry	Total Wells	Total Depth (feet)	Avg. Depth	Success Ratio		
Adair	0	0	0	0	0	0	0.0%		0	0	0	0	0	0	0.0%		0
Alfalfa	4	2	4	10	58,340	5,834	60.0%		7	11	2	20	132,846	6,642	90.0%		10
Atoka	0	4	0	4	24,836	6,209	100.0%			36	2	38	452,282	11,902	94.7%		34
Beaver	6	47	3	56	391,944	6,999	94.6%		6	57	7	70	525,025	7,500	90.0%		14
Beckham	3	21	3	27	328,266	12,158	88.9%		2	84	8	94	1,215,284	12,929	91.5%		67
Blaine	4	37	4	45	374,940	8,332	91.1%		4	22	6	32	315,072	9,846	81.3%		-13
Bryan	0	0	0	0	0	0	0.0%		1	8	1	10	64,886	6,489	90.0%		10
Caddo	14	42	5	61	731,878	11,998	91.8%		15	49	7	71	1,058,520	14,909	90.1%		10
Canadian	4	13	3	20	195,180	9,759	85.0%		8	61	2	71	777,113	10,945	97.2%		51
Carter	66	3	12	81	318,087	3,927	85.2%		111	11	1	123	540,959	4,398	99.2%		42
Cherokee	0	0	0	0	0	0	0.0%		0	0	0	0	0	0	0.0%		0
Choctaw	0	0	0	0	0	0	0.0%		0	0	0	0	0	0	0.0%		0
Cimarron	1	2	1	4	16,192	4,048	75.0%		0	2	6	8	36,922	4,615	25.0%		4
Cleveland	7	1	1	9	59,067	6,563	88.9%		5		6	11	81,654	7,423	45.5%		2
Coal	1	3	0	4	30,160	7,540	100.0%			107	3	110	1,250,601	11,369	97.3%		106
Comanche	2	4	4	10	61,780	6,178	60.0%		1	5	2	8	102,023	12,753	75.0%		-2
Cotton	0	0	0	0	0	0	0.0%		0	0	0	0	0	0	0.0%		0
Craig	0	0	0	0	0	0	0.0%		3	0	0	3	1,163	388	100.0%		3
Creek	17	2	7	26	77,116	2,966	73.1%		11	13	1	25	69,157	2,766	96.0%		-1
Custer	0	40	2	42	541,338	12,889	95.2%		6	36	2	44	566,929	12,885	95.5%		2
Delaware	0	0	0	0	0	0	0.0%		0	0	0	0	0	0	0.0%		0
Dewey	5	22	3	30	310,290	10,343	90.0%		7	12	3	22	246,683	11,213	86.4%		-8
Ellis	6	42	1	49	433,111	8,839	98.0%		32	49	13	94	1,001,820	10,658	86.2%		45
Garfield	7	11	1	19	107,825	5,675	94.7%		18	18	5	41	240,092	5,856	87.8%		22
Garvin	39	6	4	49	389,501	7,949	91.8%		41	13	7	61	490,858	8,047	88.5%		12
Grady	20	31	9	60	678,780	11,313	85.0%		20	47	6	73	903,478	12,376	91.8%		13
Grant	3	6	4	13	59,241	4,557	69.2%		9	27	9	45	232,005	5,156	80.0%		32
Greer	0	2	1	3	4,524	1,508	66.7%		1	4	0	5	12,759	2,552	100.0%		2
Harmon	0	0	0	0	0	0	0.0%		3	0	1	4	33,392	8,348	75.0%		4
Harper	5	30	0	35	257,285	7,351	100.0%		10	39	8	57	381,028	6,685	86.0%		22
Haskell	0	27	0	27	93,420	3,460	100.0%			29	2	31	153,917	4,965	93.5%		4
Hughes	4	9	2	15	49,560	3,304	86.7%		2	123	17	142	1,069,556	7,532	88.0%		127
Jackson	1	0	0	1	8,452	8,452	100.0%		2	1	2	5	26,171	5,234	60.0%		4
Jefferson	2	0	0	2	18,594	9,297	100.0%		3	0	1	4	13,639	3,410	75.0%		2
Johnston	0	0	0	0	0	0	0.0%		2	0	0	2	14,589	7,295	100.0%		2
Kay	5	5	3	13	33,280	2,560	76.9%		60	8	6	74	332,546	4,494	91.9%		61
Kingfisher	7	19	6	32	275,328	8,604	81.3%		19	20	4	43	389,067	9,048	90.7%		11
Kiowa	1	8	0	9	69,660	7,740	100.0%		0	2	2	4	33,088	8,272	50.0%		-5
Latimer	0	44	1	45	441,900	9,820	97.8%		0	76	1	77	740,455	9,616	98.7%		32
Le Flore	0	17	0	17	85,935	5,055	100.0%		0	69	2	71	499,265	7,032	97.2%		54
Lincoln	10	1	6	17	74,069	4,357	64.7%		9	44	3	56	358,116	6,395	94.6%		39
Logan	14	12	6	32	181,408	5,669	81.3%		20	6	3	29	180,848	6,236	89.7%		-3
Love	4	4	0	8	51,336	6,417	100.0%		5	0	0	5	33,124	6,625	100.0%		-3
McClain	5	3	1	9	97,209	10,801	88.9%		23	4	6	33	298,611	9,049	81.8%		24
McCurtain	0	0	0	0	0	0	0.0%		0	0	0	0	0	0	0.0%		0
McIntosh	0	15	0	15	35,505	2,367	100.0%		0	42	8	50	196,053	3,921	84.0%		35
Major	33	57	1	91	765,856	8,416	98.9%		51	109	4	164	1,372,635	8,370	97.6%		73
Marshall	0	0	0	0	0	0	0.0%		9	12	3	24	154,007	6,417	87.5%		24
Mayes	0	0	0	0	0	0	0.0%		0	0	0	0	0	0	0.0%		0
Murray	0	0	1	1	3,020	3,020	0.0%		2	0	1	3	14,256	4,752	66.7%		2
Muskogee	0	0	0	0	0	0	0.0%		5	0	1	6	10,354	1,726	83.3%		6
Noble	30	14	13	57	167,010	2,930	77.2%		50	17	6	73	270,746	3,709	91.8%		16

Continued

Table 3. (Continued) Well Completions by County (1997 and 2007)

County	1997							2007							Period Change in Total Wells
	Oil	Gas	Dry	Total Wells	Total Depth (feet)	Avg. Depth	Success Ratio	Oil	Gas	Dry	Total Wells	Total Depth (feet)	Avg. Depth	Success Ratio	
Nowata	1	13	0	14	16,632	1,188	100.0%	7	49	5	61	75,003	1,230	91.8%	47
Okfuskee	20	7	1	28	87,332	3,119	96.4%	12	11	4	27	131,060	4,854	85.2%	-1
Oklahoma	10	8	7	25	155,650	6,226	72.0%	10	8	5	23	151,757	6,598	78.3%	-2
Okmulgee	3	5	1	9	17,703	1,967	88.9%	24	9	3	36	73,185	2,033	91.7%	27
Osage	0	0	0	0	0	0	0.0%	0	0	0	0	0	0	0.0%	0
Ottawa	0	0	0	0	0	0	0.0%	0	0	0	0	0	0	0.0%	0
Pawnee	0	0	0	0	0	0	0.0%	5	0	3	8	27,937	3,492	62.5%	8
Payne	15	3	7	25	99,000	3,960	72.0%	13	5	2	20	82,370	4,119	90.0%	-5
Pittsburg	0	53	2	55	303,270	5,514	96.4%	0	162	8	170	1,257,115	7,395	95.3%	115
Pontotoc	4	2	2	8	9,768	1,221	75.0%	9	0	0	9	31,339	3,482	100.0%	1
Pottawatomie	7	0	4	11	51,106	4,646	63.6%	5	4	5	14	86,659	6,190	64.3%	3
Pushmataha	0	0	0	0	0	0	0.0%	0	2	1	3	20,108	6,703	66.7%	3
Roger Mills	1	58	0	59	783,225	13,275	100.0%	7	132	8	147	1,983,854	13,496	94.6%	88
Rogers	0	6	1	7	8,617	1,231	0.0%	2	21	5	28	32,541	1,162	82.1%	21
Seminole	18	1	8	27	112,968	4,184	70.4%	34	22	3	59	317,693	5,385	94.9%	32
Sequoyah	0	8	0	8	32,744	4,093	100.0%	0	7	1	8	29,800	3,725	87.5%	0
Stephens	23	22	4	49	374,458	7,642	91.8%	78	45	11	134	993,229	7,412	91.8%	85
Texas	22	69	11	102	545,700	5,350	89.2%	56	47	25	128	769,045	6,008	80.5%	26
Tillman	0	0	0	0	0	0	0.0%	3	0	1	4	22,382	5,596	75.0%	4
Tulsa	0	5	0	5	6,860	1,372	100.0%	4	22	0	26	41,806	1,608	100.0%	21
Wagoner	1	0	0	1	1,490	1,490	100.0%	5	15	3	23	30,709	1,335	87.0%	22
Washington	5	5	13	23	30,291	1,317	43.5%	12	48	4	64	91,754	1,434	93.8%	41
Washita	1	32	0	33	434,511	13,167	100.0%	5	52	3	60	906,332	15,106	95.0%	27
Woods	5	27	5	37	238,021	6,433	86.5%	57	169	2	228	1,522,463	6,677	99.1%	191
Woodward	6	45	3	54	402,732	7,458	94.4%	10	182	9	201	1,447,552	7,202	95.5%	147
Statewide	472	975	181	1,628	11,613,301	7,133	88.9%	941	2,285	291	3,517	27,019,286	7,687	91.7%	1,889

Source: Oklahoma Corporation Commission

Table 4. Total Well Completions by County (1997 to 2007)

Total Well Completions												Annual Change in Well Completions											
												1997 to 1998	1998 to 1999	1999 to 2000	2000 to 2001	2001 to 2002	2002 to 2003	2003 to 2004	2004 to 2005	2005 to 2006	2006 to 2007		
County	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	County	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	
Adair	0	0	0	0	0	0	0	0	0	0	0	Adair	0	0	0	0	0	0	0	0	0	0	
Alfalfa	10	5	3	12	11	13	6	8	12	25	20	Alfalfa	-5	-2	9	-1	2	-7	2	4	13	-5	
Atoka	4	2	0	2	5	0	0	3	4	18	38	Atoka	-2	-2	2	3	-5	0	3	1	14	20	
Beaver	56	59	89	123	193	126	79	76	81	90	70	Beaver	3	30	34	70	-67	-47	-3	5	9	-20	
Beckham	27	21	21	41	48	43	56	51	115	131	94	Beckham	-6	0	20	7	-5	13	-5	64	16	-37	
Blaine	45	42	52	54	72	53	43	40	56	43	32	Blaine	-3	10	2	18	-19	-10	-3	16	-13	-11	
Bryan	0	3	0	0	7	2	2	6	2	10	10	Bryan	3	-3	0	7	-5	0	4	-4	8	0	
Caddo	61	54	27	43	56	49	64	68	92	88	71	Caddo	-7	-27	16	13	-7	15	4	24	-4	-17	
Canadian	20	51	33	44	73	66	43	57	70	77	71	Canadian	31	-18	11	29	-7	-23	14	13	7	-6	
Carter	81	54	36	51	80	54	27	36	66	72	123	Carter	-27	-18	15	29	-26	-27	9	30	6	51	
Cherokee	0	0	0	0	0	0	0	0	0	0	0	Cherokee	0	0	0	0	0	0	0	0	0	0	
Choctaw	0	0	0	0	0	0	0	0	0	0	0	Choctaw	0	0	0	0	0	0	0	0	0	0	
Cimarron	4	5	10	11	7	5	4	8	12	26	8	Cimarron	1	5	1	-4	-2	-1	4	4	14	-18	
Cleveland	9	1	2	2	6	3	1	6	7	5	11	Cleveland	-8	1	0	4	-3	-2	5	1	-2	6	
Coal	4	10	4	13	13	25	21	10	21	46	110	Coal	6	-6	9	0	12	-4	-11	11	25	64	
Comanche	10	4	6	5	6	8	5	3	5	2	8	Comanche	-6	2	-1	1	2	-3	-2	2	-3	6	
Cotton	0	2	0	1	0	1	0	2	0	2	0	Cotton	2	-2	1	-1	1	-1	2	-2	2	-2	
Craig	0	3	2	2	21	25	11	6	2	0	3	Craig	3	-1	0	19	4	-14	-5	-4	-2	3	
Creek	26	20	8	15	12	11	9	8	20	26	25	Creek	-6	-12	7	-3	-1	-2	-1	12	6	-1	
Custer	42	64	44	55	42	61	60	48	48	50	44	Custer	22	-20	11	-13	19	-1	-12	0	2	-6	
Delaware	0	0	0	0	0	0	0	0	0	0	0	Delaware	0	0	0	0	0	0	0	0	0	0	
Dewey	30	47	50	56	59	45	52	33	41	27	22	Dewey	17	3	6	3	-14	7	-19	8	-14	-5	
Ellis	49	45	35	56	65	48	63	43	57	81	94	Ellis	-4	-10	21	9	-17	15	-20	14	24	13	
Garfield	19	26	10	30	40	15	13	9	11	27	41	Garfield	7	-16	20	10	-25	-2	-4	2	16	14	
Garvin	49	64	24	60	85	39	57	41	49	83	61	Garvin	15	-40	36	25	-46	18	-16	8	34	-22	
Grady	60	89	65	91	124	82	54	49	85	102	73	Grady	29	-24	26	33	-42	-28	-5	36	17	-29	
Grant	13	19	10	12	20	30	42	24	26	51	45	Grant	6	-9	2	8	10	12	-18	2	25	-6	
Greer	3	0	0	0	0	0	0	0	0	3	5	Greer	-3	0	0	0	0	0	0	0	3	2	
Harmon	0	0	0	0	0	0	0	0	0	1	4	Harmon	0	0	0	0	0	0	0	0	1	3	
Harper	35	26	32	52	55	38	38	27	27	34	57	Harper	-9	6	20	3	-17	0	-11	0	7	23	
Haskell	27	23	72	87	109	82	124	91	79	82	31	Haskell	-4	49	15	22	-27	42	-33	-12	3	-51	
Hughes	15	19	18	21	32	29	30	19	70	77	142	Hughes	4	-1	3	11	-3	1	-11	51	7	65	
Jackson	1	2	1	0	1	0	2	1	0	0	5	Jackson	1	-1	-1	1	-1	2	-1	-1	0	5	
Jefferson	2	1	0	0	0	5	8	11	13	14	4	Jefferson	-1	-1	0	0	5	3	3	2	1	-10	
Johnston	0	1	0	1	0	1	0	0	0	3	2	Johnston	1	-1	1	-1	1	-1	0	0	3	-1	
Kay	13	18	13	16	12	10	6	10	28	25	74	Kay	5	-5	3	-4	-2	-4	4	18	-3	49	
Kingfisher	32	20	16	19	17	14	21	21	36	47	43	Kingfisher	-12	-4	3	-2	-3	7	0	15	11	-4	
Kiowa	9	9	13	5	1	1	0	3	6	1	4	Kiowa	0	4	-8	-4	0	-1	3	3	-5	3	
Latimer	45	63	47	88	97	55	61	59	88	102	77	Latimer	18	-16	41	9	-42	6	-2	29	14	-25	
Le Flore	17	18	18	34	76	50	71	36	86	105	71	Le Flore	1	0	16	42	-26	21	-35	50	19	-34	
Lincoln	17	35	62	97	76	38	25	21	27	38	56	Lincoln	18	27	35	-21	-38	-13	-4	6	11	18	
Logan	32	23	33	51	71	46	41	36	24	27	29	Logan	-9	10	18	20	-25	-5	-5	-12	3	2	
Love	8	5	6	10	7	10	4	2	7	3	5	Love	-3	1	4	-3	3	-6	-2	5	-4	2	
McClain	9	29	6	23	20	18	13	15	33	36	33	McClain	20	-23	17	-3	-2	-5	2	18	3	-3	
McCurtain	0	0	0	0	0	0	0	0	0	0	0	McCurtain	0	0	0	0	0	0	0	0	0	0	
McIntosh	15	21	32	32	38	43	34	29	47	88	50	McIntosh	6	11	0	6	5	-9	-5	18	41	-38	
Major	91	78	62	95	123	84	42	61	89	99	164	Major	-13	-16	33	28	-39	-42	19	28	10	65	
Marshall	0	2	1	2	5	4	7	3	5	15	24	Marshall	2	-1	1	3	-1	3	-4	2	10	9	
Mayes	0	0	0	0	0	0	0	0	0	0	0	Mayes	0	0	0	0	0	0	0	0	0	0	
Murray	1	2	3	3	1	4	2	1	4	5	3	Murray	1	1	0	-2	3	-2	-1	3	1	-2	
Muskogee	0	0	1	1	3	3	5	2	6	10	6	Muskogee	0	1	0	2	0	2	-3	4	4	-4	
Noble	57	49	32	55	62	46	41	38	61	79	73	Noble	-8	-17	23	7	-16	-5	-3	23	18	-6	
Nowata	14	38	45	61	53	50	68	41	78	143	61	Nowata	24	7	16	-8	-3	18	-27	37	65	-82	

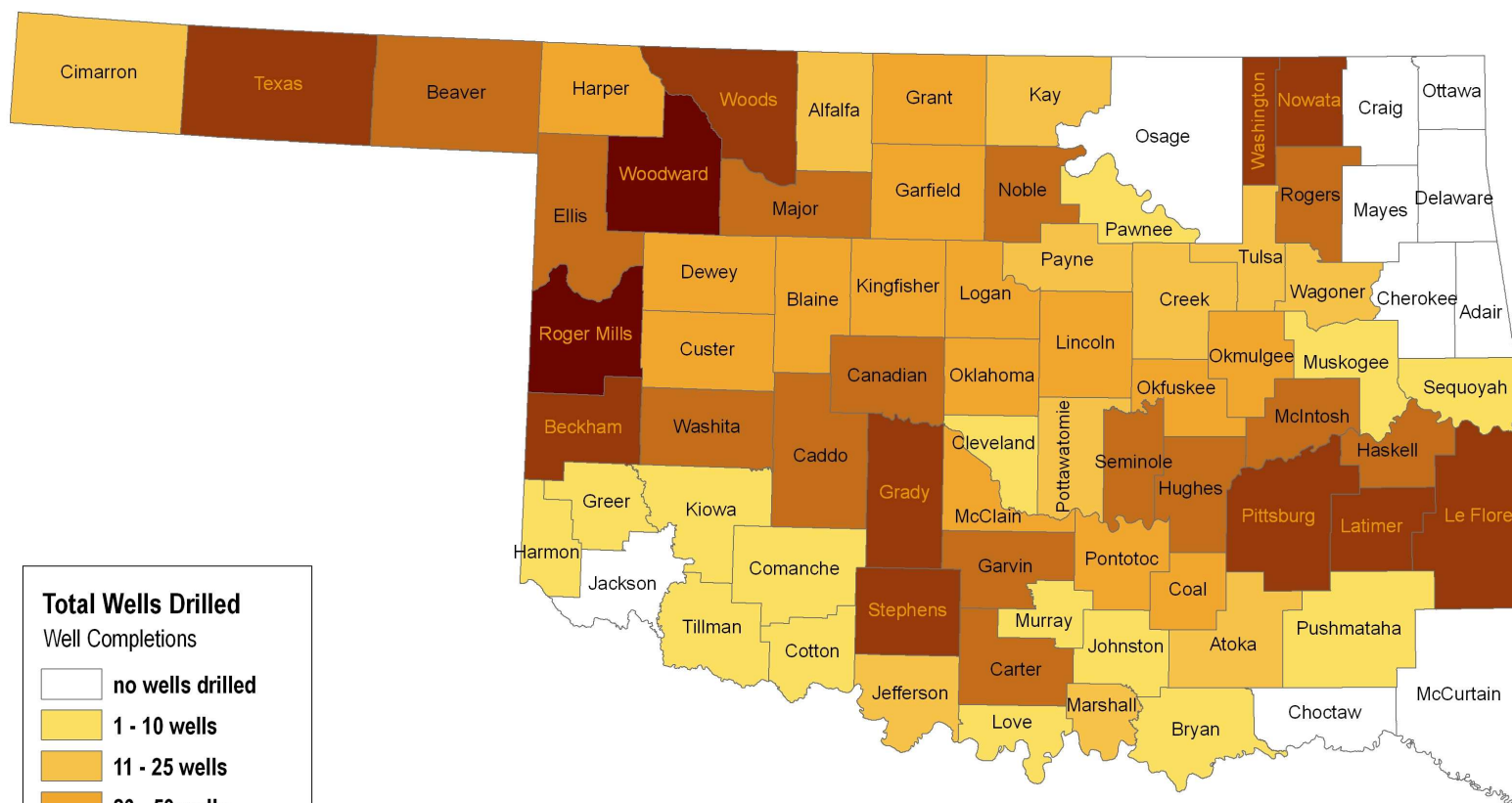
Continued

Table 4. (Continued) Total Well Completions by County (1997 to 2007)

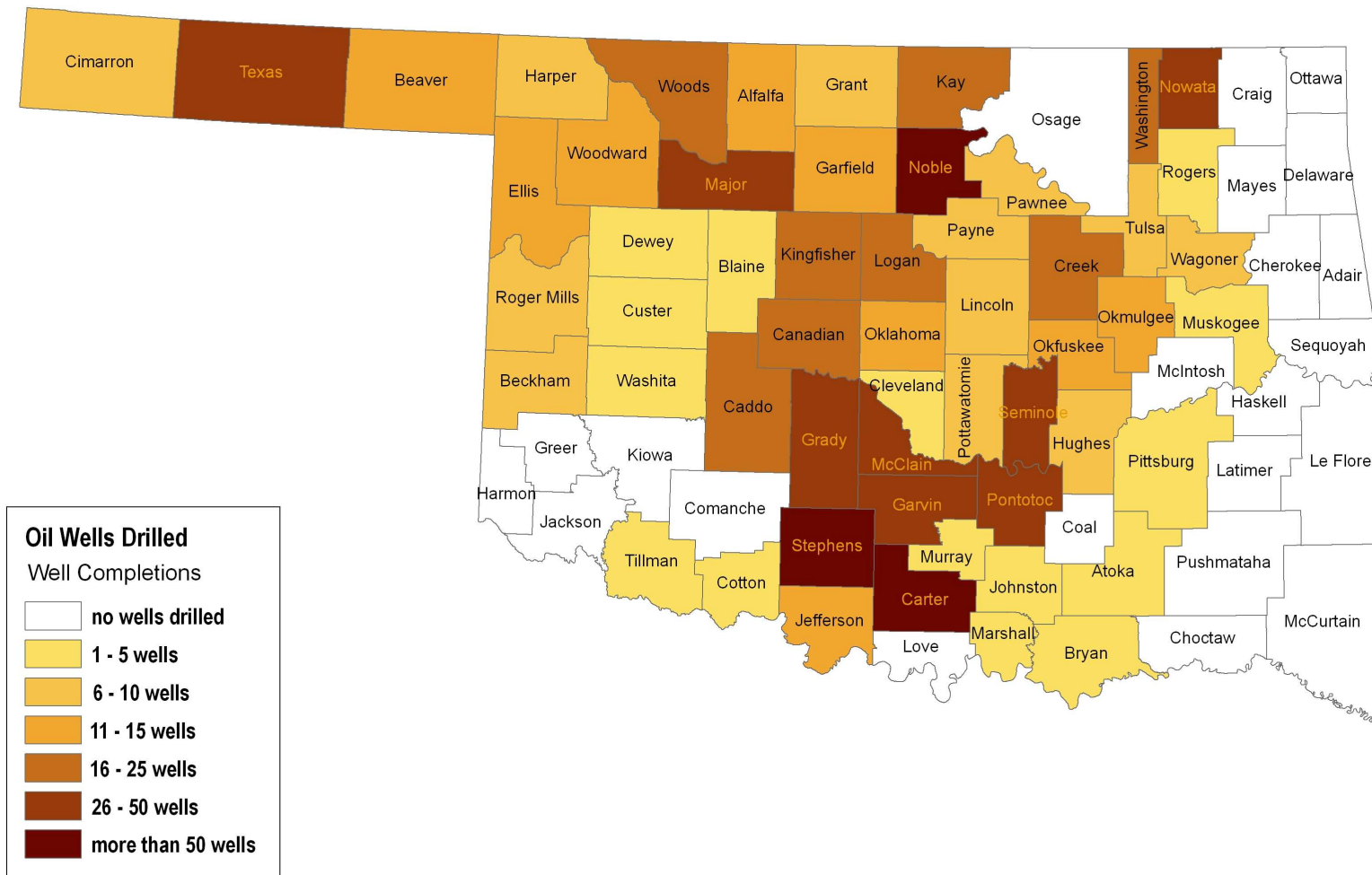
Total Well Completions												Annual Change in Well Completions											
												1997 to 1998	1998 to 1999	1999 to 2000	2000 to 2001	2001 to 2002	2002 to 2003	2003 to 2004	2004 to 2005	2005 to 2006	2006 to 2007		
County	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	County	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	
Okfuskee	28	14	18	18	36	16	10	9	9	26	27	Okfuskee	-14	4	0	18	-20	-6	-1	0	17	1	
Oklahoma	25	18	10	20	21	25	15	9	23	27	23	Oklahoma	-7	-8	10	1	4	-10	-6	14	4	-4	
Okmulgee	9	7	3	15	15	20	22	8	15	31	36	Okmulgee	-2	-4	12	0	5	2	-14	7	16	5	
Osage	0	0	0	0	0	0	0	0	0	0	0	Osage	0	0	0	0	0	0	0	0	0	0	
Ottawa	0	0	0	0	0	0	0	0	0	0	0	Ottawa	0	0	0	0	0	0	0	0	0	0	
Pawnee	0	0	0	3	2	0	4	2	4	6	8	Pawnee	0	0	3	-1	-2	4	-2	2	2	2	
Payne	25	21	6	17	15	19	19	15	20	17	20	Payne	-4	-15	11	-2	4	0	-4	5	-3	3	
Pittsburg	55	74	87	126	176	118	156	161	181	196	170	Pittsburg	19	13	39	50	-58	38	5	20	15	-26	
Pontotoc	8	19	13	9	12	21	46	34	47	34	9	Pontotoc	11	-6	-4	3	9	25	-12	13	-13	-25	
Pottawatomie	11	11	5	11	14	16	15	29	24	25	14	Pottawatomie	0	-6	6	3	2	-1	14	-5	1	-11	
Pushmataha	0	0	1	7	11	1	0	0	2	6	3	Pushmataha	0	1	6	4	-10	-1	0	2	4	-3	
Roger Mills	59	64	40	54	86	87	101	107	216	216	147	Roger Mills	5	-24	14	32	1	14	6	109	0	-69	
Rogers	7	10	4	8	23	13	18	19	39	55	28	Rogers	3	-6	4	15	-10	5	1	20	16	-27	
Seminole	27	20	25	48	62	16	22	32	37	56	59	Seminole	-7	5	23	14	-46	6	10	5	19	3	
Sequoyah	8	12	9	6	10	7	3	1	3	8	8	Sequoyah	4	-3	-3	4	-3	-4	-2	2	5	0	
Stephens	49	54	35	65	121	115	55	113	167	143	134	Stephens	5	-19	30	56	-6	-60	58	54	-24	-9	
Texas	102	132	105	141	172	188	137	149	138	158	128	Texas	30	-27	36	31	16	-51	12	-11	20	-30	
Tillman	0	0	0	0	0	5	1	4	5	2	4	Tillman	0	0	0	0	5	-4	3	1	-3	2	
Tulsa	5	57	32	4	7	4	4	9	4	18	26	Tulsa	52	-25	-28	3	-3	0	5	-5	14	8	
Wagoner	1	6	1	1	1	0	1	0	1	26	23	Wagoner	5	-5	0	0	-1	1	-1	1	25	-3	
Washington	23	18	11	6	35	24	59	47	138	162	64	Washington	-5	-7	-5	29	-11	35	-12	91	24	-98	
Washita	33	30	40	48	63	38	43	56	54	59	60	Washita	-3	10	8	15	-25	5	13	-2	5	1	
Woods	37	36	54	46	69	81	55	76	94	118	228	Woods	-1	18	-8	23	12	-26	21	18	24	110	
Woodward	54	44	58	82	124	92	102	116	207	214	201	Woodward	-10	14	24	42	-32	10	14	91	7	-13	
Statewide	1,628	1,819	1,601	2,267	2,979	2,341	2,243	2,158	3,124	3,722	3,517	Statewide	191	-218	666	712	-638	-98	-85	966	598	-205	

Source: Oklahoma Corporation Commission

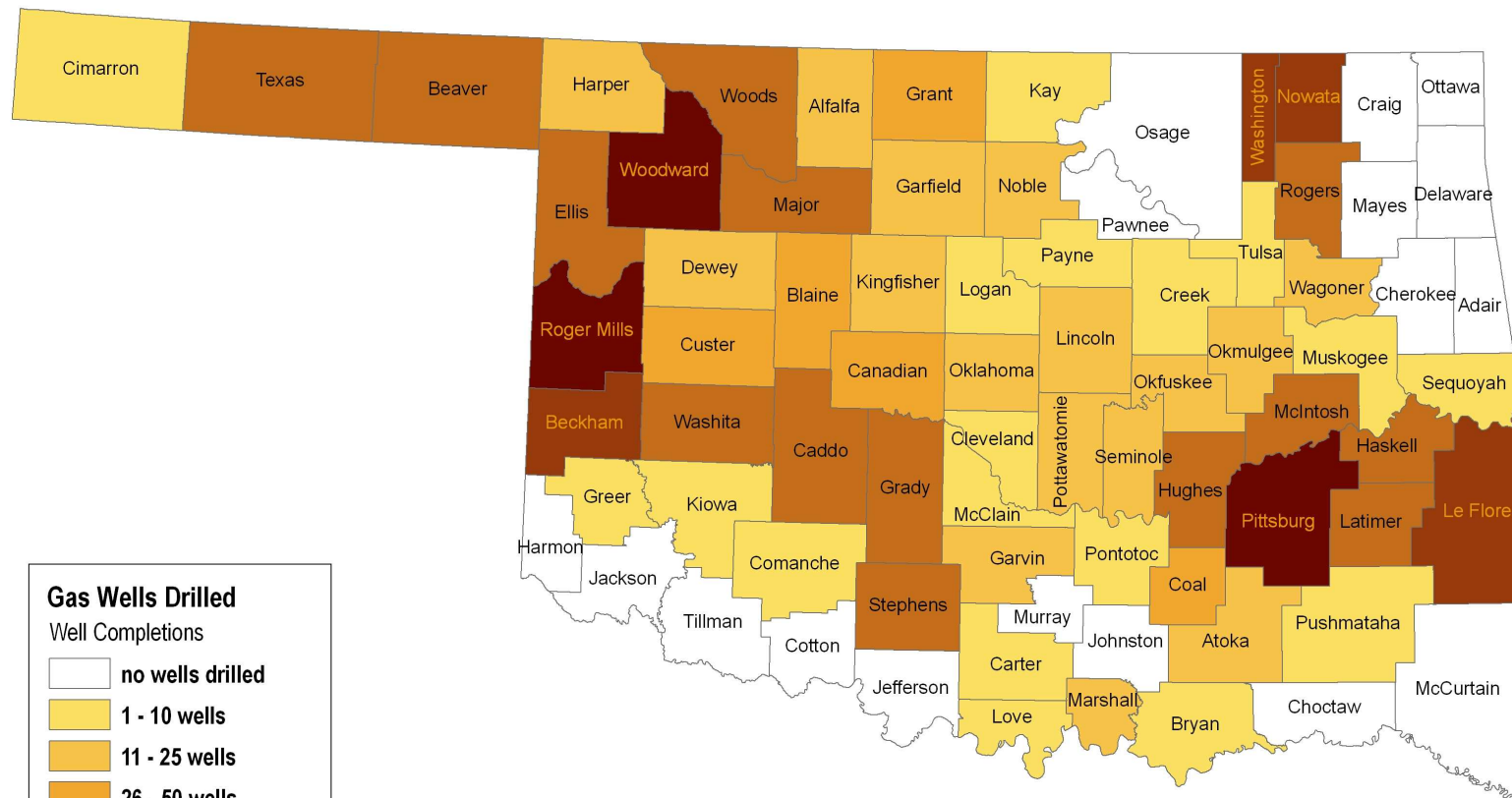
Map 4. Oklahoma Total Wells Drilled (2007)



Map 5. Oklahoma Oil Wells Drilled (2007)



Map 6. Oklahoma Gas Wells Drilled (2007)



EMPLOYMENT AND EARNINGS

County-level employment and income generated by the oil and gas industry in 2007 is detailed in Table 5. The state's oil and gas firms employed more than 76,000 self-employed and wage and salary workers earning \$8.9 billion in income. The greatest share of the state's oil and gas-related employment and income is concentrated in Oklahoma County (ranked first) and Tulsa County (ranked second). Oklahoma County currently has significantly more employment and income from oil and gas relative to Tulsa County, reflecting both a more diminished role for the energy industry in Tulsa the past two decades and the emerging presence of independent energy companies headquartered in Oklahoma City. The large presence of oil and gas firms in Washington, Stephens, and Woodward counties rank them third, fourth, and fifth, respectively. Oil and gas industry corporate headquarters and regional offices are heavily concentrated in Oklahoma County and Tulsa County, corporate offices are located in Washington and Stephens Counties, and a drilling boom continues to drive employment growth in Woodward County. Administrative, professional, and technical staff is housed at the corporate facilities and refinery, which accounts for four of the top five counties having a high share of the state's oil and gas industry employment and income.

The state's oil and gas firms employed more than 76,000 self-employed and wage and salary workers earning \$8.9 billion in income in 2007.

This observation is illustrated further in Table 6 where the top ranking counties in terms of employment and income are compared to the top two in crude oil production (Carter and Stephens), and top three in natural gas production (Roger Mills, Latimer, and Beckham). From the cross comparisons, only Stephens County ranks in the top ten on all four factors of comparison (i.e., employment, income, crude oil production, and natural gas production), implying large numbers of professional and technical employees as well as production and drilling employees. The data for Tulsa County indicates mostly professional employees in the corporate sector and a relative lack of oil and gas production. On the other hand, employment and income are attributed to production and drilling activities in Beckham, Carter, Latimer, and

The greatest share of the oil and gas-related employment and income is concentrated in Oklahoma and Tulsa Counties.

Roger Mills Counties. By employment, the remaining top ten counties are as follows: Canadian (6th), Carter (7th), Garfield (8th), Cleveland (9th), and Beckham (10th).

Table 6. Comparison of Employment and Income to Production by Selected Counties (2007)								
	Rank and Percent Share of State Total							
County	Employment		Labor Income		Crude Oil Production		Natural Gas Production	
Oklahoma County	1 st	24.9%	1 st	37.2%	9 th	3.4%	33 rd	0.7%
Tulsa County	2 nd	13.2%	2 nd	30.4%	42 nd	0.5%	59 th	< 0.1%
Washington County	3 rd	5.3%	3 rd	4.2%	43 rd	0.4%	40 th	0.4%
Stephens County	4 th	3.9%	5 th	3.0%	2 nd	9.2%	9 th	3.2%
Carter County	7 th	2.9%	7 th	1.6%	1 st	10.7%	31 st	0.8%
Kay County	11 th	2.1%	4 th	3.5%	21 st	1.6%	50 th	0.1%
Roger Mills County	76 th	< 0.1%	74 th	< 0.1%	25 th	1.1%	1 st	9.3%
Latimer County	48 th	0.3%	30 th	0.2%	--	--	2 nd	7.7%
Beckham County	10 th	2.2%	8 th	1.5%	24 th	1.2%	3 rd	7.1%

Source: Oklahoma Corporation Commission, Bureau of Economic Analysis, Oklahoma State Econometric Model

The large presence of oil and gas firms in Washington, Stephens, and Woodward Counties ranks them third, fourth, and fifth, respectively, in the number of oil and gas jobs.

Table 5. Mining Industry Employment and Labor Income (2007)

Employment and Income			Ranked by Employment				Ranked by Income			
County	Employment	Labor Income	County	Rank	Employment	Labor Income	County	Rank	Employment	Labor Income
Adair	230	\$6,402,000	Oklahoma	1	18,997	\$3,302,690,000	Oklahoma	1	18,997	\$3,302,690,000
Alfalfa	86	4,347,000	Tulsa	2	10,048	2,704,017,000	Tulsa	2	10,048	2,704,017,000
Atoka	183	6,067,000	Washington	3	4,066	372,841,000	Washington	3	4,066	372,841,000
Beaver	426	16,329,000	Stephens	4	2,940	267,583,000	Kay	4	1,612	315,223,000
Beckham	1702	133,396,000	Woodward	5	2,467	144,132,000	Stephens	5	2,940	267,583,000
Blaine	388	20,169,000	Canadian	6	2,302	118,344,000	Woodward	6	2,467	144,132,000
Bryan	145	2,865,000	Carter	7	2,175	139,748,000	Carter	7	2,175	139,748,000
Caddo	292	10,977,000	Garfield	8	1,957	107,661,000	Beckham	8	1,702	133,396,000
Canadian	2302	118,344,000	Cleveland	9	1,859	61,920,000	Canadian	9	2,302	118,344,000
Carter	2175	139,748,000	Beckham	10	1,702	133,396,000	Garfield	10	1,957	107,661,000
Cherokee	348	13,778,000	Kay	11	1,612	315,223,000	Garvin	11	1,569	93,913,000
Choctaw	136	5,566,000	Garvin	12	1,569	93,913,000	Osage	12	1,364	77,707,000
Cimarron	37	358,000	Payne	13	1,435	76,258,000	Payne	13	1,435	76,258,000
Cleveland	1859	61,920,000	Kingfisher	14	1,403	57,172,000	Cleveland	14	1,859	61,920,000
Coal	69	2,483,000	Osage	15	1,364	77,707,000	Seminole	15	1,224	59,363,000
Comanche	288	9,067,000	Logan	16	1,256	30,207,000	Kingfisher	16	1,403	57,172,000
Cotton	48	1,852,000	Seminole	17	1,224	59,363,000	Custer	17	904	48,731,000
Craig	181	12,588,000	Custer	18	904	48,731,000	Le Flore	18	747	45,126,000
Creek	854	32,116,000	Creek	19	854	32,116,000	Pottawatomie	19	755	38,648,000
Custer	904	48,731,000	Pittsburg	20	774	36,469,000	McCurtain	20	691	37,987,000
Delaware	374	16,929,000	Pottawatomie	21	755	38,648,000	Pittsburg	21	774	36,469,000
Dewey	98	5,784,000	Le Flore	22	747	45,126,000	Grady	22	742	33,723,000
Ellis	100	3,564,000	Grady	23	742	33,723,000	Creek	23	854	32,116,000
Garfield	1957	107,661,000	McCurtain	24	691	37,987,000	Logan	24	1,256	30,207,000
Garvin	1569	93,913,000	Pontotoc	25	679	29,481,000	Pontotoc	25	679	29,481,000
Grady	742	33,723,000	Okmulgee	26	559	17,549,000	McClain	26	529	25,658,000
Grant	168	7,010,000	Rogers	27	556	22,903,000	Major	27	321	24,735,000
Greer	33	1,422,000	McClain	28	529	25,658,000	Noble	28	289	24,444,000
Harmon	4	105,000	Haskell	29	441	15,830,000	Rogers	29	556	22,903,000
Harper	94	4,054,000	Lincoln	30	433	17,996,000	Latimer	30	235	21,396,000
Haskell	441	15,830,000	Beaver	31	426	16,329,000	Blaine	31	388	20,169,000
Hughes	307	7,462,000	Murray	32	395	14,866,000	Washita	32	358	19,005,000
Jackson	257	8,685,000	Blaine	33	388	20,169,000	Lincoln	33	433	17,996,000
Jefferson	86	3,435,000	Delaware	34	374	16,929,000	Okmulgee	34	559	17,549,000
Johnston	276	14,344,000	Washita	35	358	19,005,000	Delaware	35	374	16,929,000
Kay	1612	315,223,000	Cherokee	36	348	13,778,000	Beaver	36	426	16,329,000
Kingfisher	1403	57,172,000	Woods	37	347	8,156,000	Haskell	37	441	15,830,000
Kiowa	204	9,651,000	Sequoyah	38	322	11,074,000	Murray	38	395	14,866,000
Latimer	235	21,396,000	Major	39	321	24,735,000	Pawnee	39	244	14,818,000
Le Flore	747	45,126,000	Hughes	40	307	7,462,000	Johnston	40	276	14,344,000
Lincoln	433	17,996,000	Caddo	41	292	10,977,000	Cherokee	41	348	13,778,000
Logan	1256	30,207,000	Noble	42	289	24,444,000	Craig	42	181	12,588,000
Love	91	3,763,000	Comanche	43	288	9,067,000	Okfuskee	43	193	12,166,000
McClain	529	25,658,000	Johnston	44	276	14,344,000	Ottawa	44	83	11,449,000
McCurtain	691	37,987,000	Texas	45	259	9,325,000	Sequoyah	45	322	11,074,000
McIntosh	118	3,382,000	Jackson	46	257	8,685,000	Caddo	46	292	10,977,000
Major	321	24,735,000	Pawnee	47	244	14,818,000	Mayes	47	229	10,306,000
Marshall	178	9,584,000	Latimer	48	235	21,396,000	Kiowa	48	204	9,651,000
Mayes	229	10,306,000	Adair	49	230	6,402,000	Marshall	49	178	9,584,000
Murray	395	14,866,000	Mayes	50	229	10,306,000	Texas	50	259	9,325,000
Muskogee	227	5,717,000	Muskogee	51	227	5,717,000	Comanche	51	288	9,067,000
Noble	289	24,444,000	Kiowa	52	204	9,651,000	Jackson	52	257	8,685,000
Nowata	130	3,294,000	Okfuskee	53	193	12,166,000	Woods	53	347	8,156,000
Okfuskee	193	12,166,000	Atoka	54	183	6,067,000	Hughes	54	307	7,462,000

Continued

Table 5. (Continued) Mining Industry Employment and Labor Income (2007)

Employment and Income			Ranked by Employment				Ranked by Income			
County	Employment	Labor Income	County	Rank	Employment	Labor Income	County	Rank	Employment	Labor Income
Oklahoma	18997	3,302,690,000	Craig	55	181	12,588,000	Grant	55	168	7,010,000
Okmulgee	559	17,549,000	Marshall	56	178	9,584,000	Adair	56	230	6,402,000
Osage	1364	77,707,000	Grant	57	168	7,010,000	Tillman	57	120	6,098,000
Ottawa	83	11,449,000	Pushmataha	58	155	4,207,000	Atoka	58	183	6,067,000
Pawnee	244	14,818,000	Bryan	59	145	2,865,000	Dewey	59	98	5,784,000
Payne	1435	76,258,000	Choctaw	60	136	5,566,000	Muskogee	60	227	5,717,000
Pittsburg	774	36,469,000	Nowata	61	130	3,294,000	Choctaw	61	136	5,566,000
Pontotoc	679	29,481,000	Tillman	62	120	6,098,000	Alfalfa	62	86	4,347,000
Pottawatomie	755	38,648,000	McIntosh	63	118	3,382,000	Pushmataha	63	155	4,207,000
Pushmataha	155	4,207,000	Ellis	64	100	3,564,000	Harper	64	94	4,054,000
Roger Mills	31	1,569,000	Dewey	65	98	5,784,000	Wagoner	65	74	4,002,000
Rogers	556	22,903,000	Harper	66	94	4,054,000	Love	66	91	3,763,000
Seminole	1224	59,363,000	Love	67	91	3,763,000	Ellis	67	100	3,564,000
Sequoyah	322	11,074,000	Alfalfa	68	86	4,347,000	Jefferson	68	86	3,435,000
Stephens	2940	267,583,000	Jefferson	69	86	3,435,000	McIntosh	69	118	3,382,000
Texas	259	9,325,000	Ottawa	70	83	11,449,000	Nowata	70	130	3,294,000
Tillman	120	6,098,000	Wagoner	71	74	4,002,000	Bryan	71	145	2,865,000
Tulsa	10048	2,704,017,000	Coal	72	69	2,483,000	Coal	72	69	2,483,000
Wagoner	74	4,002,000	Cotton	73	48	1,852,000	Cotton	73	48	1,852,000
Washington	4066	372,841,000	Cimarron	74	37	358,000	Roger Mills	74	31	1,569,000
Washita	358	19,005,000	Greer	75	33	1,422,000	Greer	75	33	1,422,000
Woods	347	8,156,000	Roger Mills	76	31	1,569,000	Cimarron	76	37	358,000
Woodward	2467	144,132,000	Harmon	77	4	105,000	Harmon	77	4	105,000
Statewide	76,297	\$8,883,041,000								

Source: Bureau of Economic Analysis, Oklahoma State Econometric Model, IMPLAN Input-Output Model

Production, Employment, and Income by Corporation Commission District

The local economic impacts of oil and gas activities are evaluated for each of the four Oklahoma Corporation Commission Districts. The Districts conveniently divide the state into approximately four equal quadrants. The counties within each District's boundaries are identified in Map 7, and summary statistics for employment, income, production, and drilling by District are in Tables 7 through 10. As shown in Tables 7 and 8, oil and gas industry employment and income is predominantly found in Districts 1 and 2, while production occurs largely in Districts 2, 3, and 4.

Table 7. Employment and Income by OCC District (2007)

OCC District	Employment	Labor Income
1 (NE)	23,529	3,772,503,000
2 (NW)	31,641	3,914,337,000
3 (SW)	13,692	844,867,000
4 (SE)	7,435	351,334,000
Statewide	76,297	\$8,883,041,000

Source: Oklahoma Corporation Commission (OCC), Bureau of Economic Analysis, Oklahoma State Econometric Model, IMPLAN Input-Output Model

Table 8. Oil and Gas Production by OCC District (2007)

OCC District	Crude Oil Production (bbls)	Natural Gas Production (mcf)
1 (NE)	12,253,470	67,066,397
2 (NW)	17,338,978	671,399,444
3 (SW)	24,894,303	489,642,553
4 (SE)	6,275,586	415,184,029
Statewide	60,762,337	1,643,292,423

Source: Oklahoma Corporation Commission (OCC)

District 1 encompasses the northeastern portion of the state, including Tulsa and Washington Counties, which accounts for its large share of employment and income. District 1 ranks second in employment and income from oil and gas activities, third in crude oil production, and fourth in natural gas production, in 2007. District 2 encompasses the northwestern portion of the state and is first in income and employment, second in crude oil production, and first in natural gas production. Oklahoma County, the top ranked county in oil and gas employment and wage and salary income, is in its boundaries. Texas County (4th in

crude oil production, 10th in natural gas production) is also in District 2. Among the other top ten natural gas producing counties in District 2 are Roger Mills (1st) and Custer (8th).

District 3 covers the southwestern portion of the state and ranks third in 2007 employment and income. However, it ranks first in crude oil and second in natural gas production. Carter County and Stephens County, first and second ranked, respectively, in crude oil production are located in District 3. Among the other top ten crude oil producing counties in District 3 are Garvin (5th), Grady (6th), and Caddo (10th). Top ten ranking natural gas producing counties in District 3 are Beckham (3rd), Caddo (4th), Washita (6th), Grady (7th), and Stephens (9th). District 4 covers the southeastern portion of the state and is fourth in oil and gas employment and income, fourth in crude oil production, and third in natural gas production. Latimer County, the second largest producer of natural gas, is located in District 4.

Table 9. Well Completions by OCC District (2007)							
OCC District	Completions				Total Footage	Avg. Depth (feet)	Success Ratio
	Oil	Gas	Dry	Total			
1 (NE)	222	262	46	530	1,628,446	3,073	91.3%
2 (NW)	337	1,007	123	1,467	12,272,755	8,366	91.6%
3 (SW)	320	317	65	702	6,779,759	9,658	90.7%
4 (SE)	62	699	57	818	6,338,325	7,749	93.0%
Total	941	2,285	291	3,517	27,019,286	7,687	91.7%

Source: Oklahoma Corporation Commission (OCC)

Table 9 summarizes well completions in 2007 within each District while Table 10 provides historical data on total well completions. District 1 (northeast) is fourth in well completions both in 2007 and historically and shows a roughly equal mix between natural gas and crude oil well completions. District 2 (northwest) historically is the most active in total well completions among the four districts, totaling 1,467 wells with an average depth of just over 3,000 feet in 2007. In District 2, 3 natural gas wells were completed for every crude oil well, with an average depth of nearly 8,400 feet. District 3 (southwest) ranks second in well completions historically, but is third in the 2007 rankings. There is a relative balance among the number of crude oil and gas wells completed in District 3. The region also has the deepest wells

The deepest wells are typically drilled in the gas fields of southwest Oklahoma. Wells completed in the southwest region in 2007 had an average depth of nearly 9,700 feet.

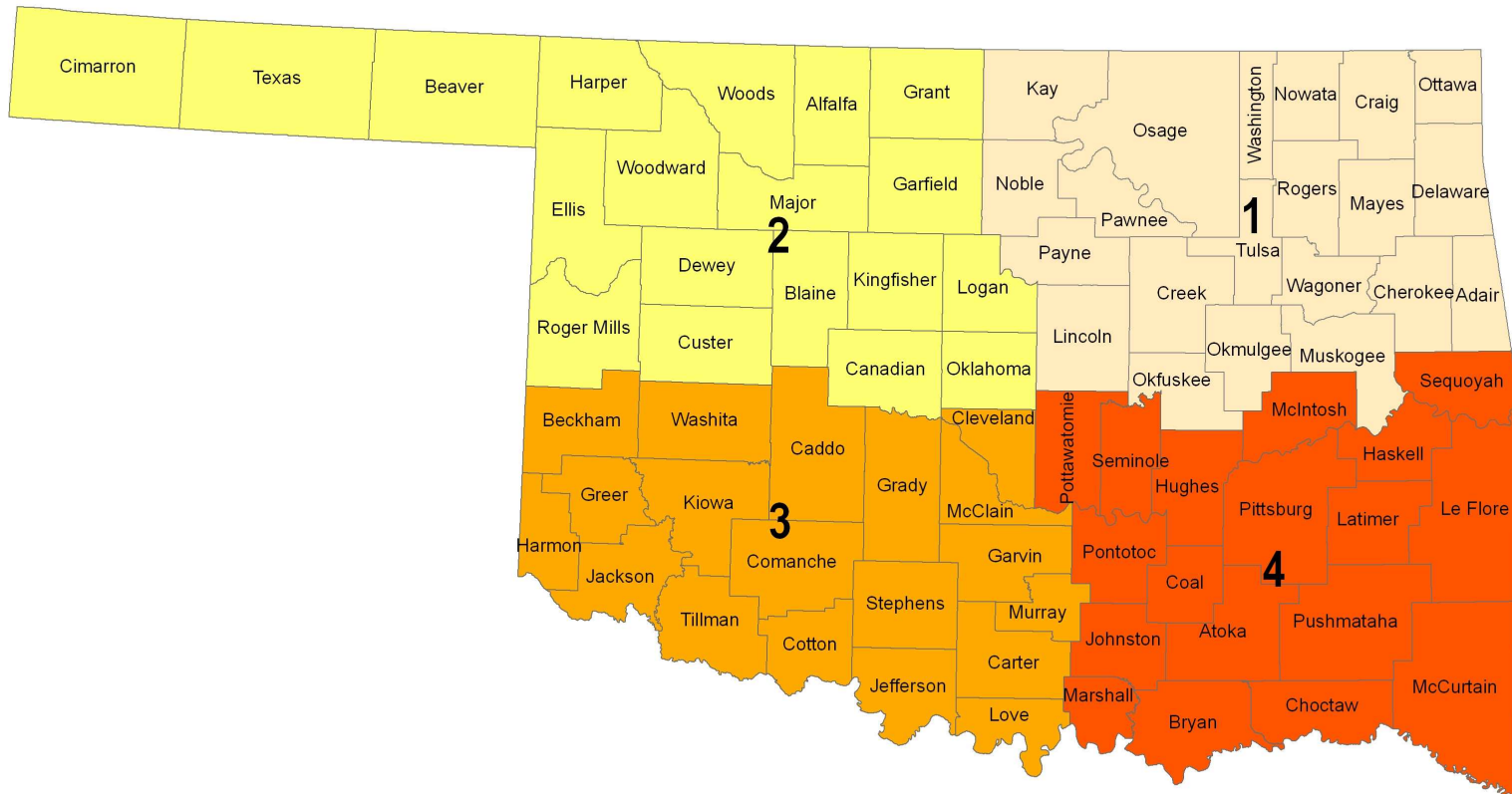
at an average depth of 9,700 feet, reflecting the presence of deep gas.

District 4 (southeast) is second in well completions and shows more than 10 natural gas wells completed for every crude oil well in 2007. The success ratio in District 4 is highest at 93 percent.

Table 10. Annual Well Completions by OCC District											
OCC District	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
1 (NE)	225	296	238	319	373	279	302	235	452	662	530
2 (NW)	755	804	746	1,013	1,320	1,117	957	948	1,268	1,437	1,467
3 (SW)	412	421	285	448	619	475	392	462	708	752	702
4 (SE)	236	298	332	487	667	470	592	513	696	871	818
Total	1,628	1,819	1,601	2,267	2,979	2,341	2,243	2,158	3,124	3,722	3,517

Source: Oklahoma Corporation Commission (OCC)

Map 7. Oklahoma Corporation Commission Districts



LOCAL ECONOMIC IMPACT

Input-output models were constructed for each of the four Oklahoma Corporation Commission districts in order to estimate the economic impact of the oil and gas industry within these broad regions of the state.³ The economic impact is measured in terms of employment and income rather than production level due to the disparity between location of production and employment; that is, oil and gas industry employees may not reside in the same county in which they work.

The economic impacts are described by the following three measures from economic impact analysis:⁴

- direct effect – the employment and income generated directly within the Oklahoma oil and gas industry;
- indirect effect – the employment and income generated as a result of state oil and gas firms doing business with firms in other industries within the state;
- induced effect – the economic activity generated by new household spending resulting from compensation generated from the direct and indirect effects.

The three effects provide a convenient way to describe the multiplier, or ripple, effects that occur as the oil and gas industry engages in drilling and production (direct effect), then impacts those firms that support and supply the oil and gas sector (indirect effect), and then finally affects the broader regional economy as worker's incomes and spending patterns are affected (induced effect).

The estimated impact of the oil and gas industry on employment and labor income (i.e., employee compensation and self employment income) within each District is summarized in Table 11. The estimated direct, indirect, and induced effects are shown separately for both production and drilling activities. Production employment is made up of primarily administrative and clerical workers, while drilling employment is mainly field workers.

Oklahoma oil and gas workers earned \$8.9 billion in compensation in 2007, which supported an additional \$8.9 billion in compensation for other workers statewide through spillover effects.

The direct economic impact in District 1 (northeast, including Tulsa) is measured as 25,302 production workers and 2,030 drilling workers earning \$3.59 billion and \$101.8 million, respectively. The indirect and induced effects support an estimated 84,264 jobs (i.e., 77,931 jobs from production activities and 6,333 from drilling) with a combined payroll of \$2.9 billion (i.e., \$2.66 billion production related and \$240.3 million drilling). Direct production jobs combined with jobs created through the indirect and induced effects make up 13.5 percent of employment and 18.0 percent of income in District 1. Jobs related to drilling activities made up 1.0 percent of District 1 employment and 0.9 percent of income. District 1 showed the second largest total economic impact among the four Districts in terms of earnings generated from oil and gas production at \$6.6 billion.

District 2, which covers the northwestern portion of the state, including Oklahoma County, showed the greatest impact in terms of jobs. Direct production jobs along with indirect and induced employment comprise 21.2 percent of total employment and 23.4 percent of income within the district. Drilling activities as a percent of total district employment and income were 2.8 percent and 2.5 percent, respectively. The direct economic impact in District 2 is measured as 29,648 production workers earning \$3.95 billion dollars and 4,709 drilling workers earning \$292.1 million. The indirect and induced effects support an additional 119,353 jobs (i.e., 103,767 from production activities and 15,586 from drilling) statewide with a combined payroll of \$3.59 billion (\$3.04 billion production related and \$549.2 million drilling). District 3 ranks third in overall impact from oil and gas activity with 22,923 direct, indirect, and induced jobs generating annual labor income of \$882.0 million from production and \$48.1 million from drilling. District 3 is in the southwestern portion of the state and includes the top oil producing Carter County and Stephens County. Oil and gas production activities make up 6.6 percent of overall employment and 7.6 percent of income in the District. Drilling activities contributed 0.5 percent of overall employment and 0.4 percent of income.

Production and drilling activities had the smallest economic impact in District 4, the southeastern portion of the state. The direct, indirect, and induced effects account for 12,303 total jobs with annual pay of \$491.3 million. Production related employment contributes 4.3 percent of the District's overall jobs and drilling at 1.5 percent. Across all districts, production related activities have a much larger impact than drilling. Production jobs contribute through multiplier effects approximately 12.8 percent of all jobs across the regions and 16.4 percent of

income, while drilling jobs contribute 1.6 percent of jobs and 1.5 percent of labor income. The state's oil and gas firms directly hire an estimated 76,297 workers (67,988 in production and 8,299 in drilling) earning \$8.88 billion in labor income (\$8.4 billion in production and \$468.8 million in drilling). These jobs support an estimated 224,235 additional jobs paying labor income of \$6.97 billion. Across the four regions, production and drilling activities support an estimated 300,532 jobs and \$15.8 billion in labor income statewide.

Table 11. Regional Economic Impact of Oil and Gas Production and Drilling (2007)

Total (Production + Drilling) Impact											
Employment						Labor Income (\$million)					
OCC District	Direct	Indirect	Induced	Total Impact	% of District Earnings	OCC District	Direct	Indirect	Induced	Total Impact	% of District Earnings
1	27,332	24,006	60,258	111,596	13.5%	1	3,695.1	1,496.5	1,402.8	6,594.4	18.0%
2	34,356	34,782	84,571	153,709	21.2%	2	4,242.0	1,823.7	1,766.9	7,832.6	23.4%
3	9,716	4,345	8,863	22,923	7.0%	3	637.6	149.5	143.0	930.1	8.0%
4	4,893	3,197	4,213	12,303	5.7%	4	308.3	114.7	68.0	491.0	7.6%
Total	76,297	66,330	157,905	300,532	14.4%	Total	\$8,883.0	\$3,584.4	\$3,380.7	\$15,848.1	18.0%

Production Impact											
Employment						Labor Income (\$million)					
OCC District	Direct	Indirect	Induced	Total Impact	% of District Earnings	OCC District	Direct	Indirect	Induced	Total Impact	% of District Earnings
1	25,302	20,495	57,436	103,234	12.5%	1	3,593.2	1,329.5	1,329.5	6,252.2	17.0%
2	29,648	26,683	77,084	133,415	18.4%	2	3,949.9	1,461.5	1,580.0	6,991.3	20.9%
3	9,242	3,697	8,503	21,442	6.6%	3	616.8	129.5	135.7	882.0	7.6%
4	3,806	1,827	3,463	9,096	4.3%	4	254.3	76.3	53.4	384.0	6.0%
Total	67,998	52,701	146,486	267,186	12.8%	Total	\$8,414.2	\$2,996.8	\$3,098.6	\$14,509.6	16.4%

Drilling Impact											
Employment						Labor Income (\$million)					
OCC District	Direct	Indirect	Induced	Total Impact	% of District Earnings	OCC District	Direct	Indirect	Induced	Total Impact	% of District Earnings
1	2,030	3,511	2,821	8,363	1.0%	1	101.8	167.0	73.3	342.2	0.9%
2	4,709	8,099	7,487	20,295	2.8%	2	292.1	362.2	187.0	841.3	2.5%
3	473	648	360	1,481	0.5%	3	20.8	20.0	7.3	48.1	0.4%
4	1,087	1,370	750	3,207	1.5%	4	54.0	38.4	14.6	107.0	1.7%
Total	8,299	13,629	11,418	33,346	1.6%	Total	\$468.8	\$587.6	\$282.2	\$1,338.6	1.5%

Source: Bureau of Economic Analysis, IMPLAN Input-Output Model, OSU Center for Applied Economic Research, Oklahoma Corporation Commission (OCC)

SUMMARY OF THE LOCAL ECONOMIC IMPACT

Oklahoma oil and gas production occurs statewide, but production remains concentrated in a small number of counties. For crude oil, 78.2 percent of production occurs in 20 counties with the highest county among the group producing over 6.5 million barrels and the lowest at around 1.1 million barrels in 2007. The top ten counties account for more than half (56.4 percent) of total state crude production. Two counties (Carter and Stephens) in the south central portion of the state produce 20.0 percent of total state crude oil.

For natural gas, three counties produce 24.1 percent of the state total; one county is in the northwest (Roger Mills), one in the southwest (Beckham), and the other in the southeast (Latimer). Natural gas production overall is concentrated in the western half of the state and a few counties in the southeast. The top 20 counties in total produce 78.5 percent of the state's total natural gas, with the highest producing over 150 billion cubic feet and the lowest at 29 billion cubic feet.

Most Oklahoma counties experienced a steady decline in total oil and gas production over the decade 1997 to 2007. More counties showed an increase in natural gas production than in crude oil production. The statewide decline in crude oil production (27.5 percent reduction) in the period was more than five times the decline for natural gas (5.2 percent reduction) on a relative basis. Drilling activity across Oklahoma also reflects the increased emphasis on natural gas production. Gas wells represented almost two-thirds of total well completions in 2007, outnumbering oil well completions by 2.5 to 1 statewide. Drilling activity was highest in District 2 (northwest), with natural gas wells outnumbering crude oil wells by 3 to 1. Despite production occurring across most areas of the state, both employment and income are highly concentrated in Oklahoma and Tulsa Counties. Together, they accounted for 38 percent of state oil and gas industry employment and 68 percent of labor income in 2007. In these counties, oil and gas employment and income is heavily weighted by professional and technical workers employed within the headquarters and regional offices of oil and gas firms rather than production and technical workers in the field.

The economic impact of oil and gas drilling and production differs greatly among the four Oklahoma Corporation Commission Districts. District 1 and District 2 showed a larger economic impact than Districts 3 and 4. District 1 encompasses the northeast quadrant of the state, which includes Tulsa County, and has the smallest combined production of crude oil and

natural gas. However, it showed the second largest economic impact from employment (111,596 jobs) and earnings (\$6.6 billion) among the four Districts. District 2 covers the northwest quadrant of the state, including Oklahoma County, and has the largest employment impact (153,709 jobs) and the largest total income impact (\$7.8 billion). The greatest amount of drilling activity is in District 2, along with the second largest crude oil production level and largest natural gas production level.

District 3, the southwest quadrant of the state, is the largest crude oil producer and second largest natural gas producer. The economic impacts, measured through employment and income related to oil and gas production, trail behind Districts 1 and 2. However oil and gas production and drilling in the District supports 22,923 jobs paying \$930.1 million in 2007. District 4 encompasses the southeast quadrant of the state and showed the lowest crude oil production and the third highest natural gas production. The smallest total employment (12,303 jobs) and income (\$491.0 million) impacts are shown in this District.

In total, through direct, indirect, and induced impacts, production and drilling activities support an estimated 300,532 jobs and \$15.8 billion in labor income statewide, or 14.4 percent of total employment and 18.0 percent of state labor income. Production jobs contribute approximately 12.8 percent of all jobs statewide and 16.4 percent of labor income through multiplier effects, while drilling jobs contribute 1.6 percent of jobs and 1.5 percent of income.

NOTES

¹ For an analysis of the economic impact of the oil and gas industry at the state level, see Mark C. Snead, “The Economic Impact of Oil and Gas Production and Drilling on the Oklahoma Economy.” Sep. 2008. Center for Applied Economic Research, Oklahoma State University.

² Throughout the report, the production of both crude oil and condensate will be referred to simply as crude oil; the production of both natural and casinghead gas will be referred to simply as natural gas. Condensate refers to the hydrocarbon liquid recovered from natural gas wells, while casinghead gas is the natural gas extracted along with crude oil from oil wells.

³ The reported economic impacts are generated from four county-level IMPLAN input-output models that are aggregated to correspond to the four Oklahoma Corporation Commission Districts shown in Map 4. Because the state is divided into four regions, the sum of the estimated impacts across the four regions will be less than the total multiplier impacts expected for a state model comprising all four regions. For details, refer to IMPLAN Professional: User's guide, analysis guide, data guide. Minnesota IMPLAN Group, 1998. Stillwater, MN.

⁴ Caution must be exercised when using input-output multipliers to estimate the total economic activity “supported” by an existing industry or firm. Input-output multipliers are intended to predict the change in region-wide economic activity that results from an incremental change in a given industry within a regional economy.