

## 4. Natural Gas Statistics

### Dry Natural Gas

#### Proved Reserves

The U.S. had record-high additions to dry natural gas proved reserves in 2007, totaling 46.1 trillion cubic feet (Tcf). This was more than twice the 19.5 Tcf of dry natural gas produced in the United States during the year. Year-end 2007 total proved reserves of dry natural gas in the United States rose 13 percent above the 2006 level to 237.7 Tcf, the highest year-end volume in the 31 years EIA has published annual reserves estimates.

The reserves additions record mostly reflects rapid development of unconventional gas resources such as coalbed methane and those resources that require advanced technologies like horizontal drilling with hydraulic fracturing, including shales and low permeability (tight) formations. Total U.S. dry natural gas reserves additions replaced 237 percent of 2007 dry gas production (Figure 18).

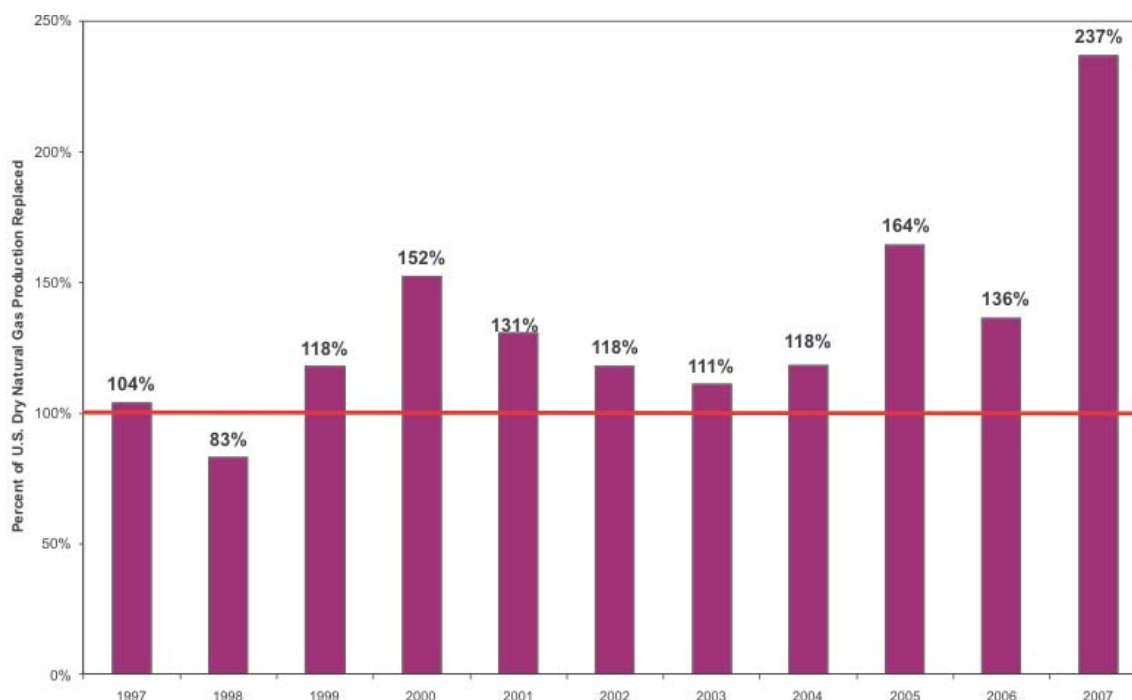
The proved reserves of dry natural gas by State are listed in Table 8 and shown on the map in Figure 19.

Eight areas accounted for 81 percent of the Nation's dry natural gas proved reserves:

Area	Percent of 2007 U.S. Dry Gas Reserves
Texas	30
Wyoming	12
Colorado	9
Oklahoma	8
New Mexico	7
Gulf of Mexico Federal Offshore	6
Alaska	5
Louisiana	4
<b>Area Subtotal</b>	<b>81</b>

Total U.S. natural gas production increased in 2007 mostly due to production increases in Texas (particularly from the Barnett Shale), Colorado, Wyoming, and Oklahoma.

Figure 18. Replacement of U.S. Dry Natural Gas Production by Reserves Additions, 1997-2007



Source: Energy Information Administration, Office of Oil and Gas.

**Table 8. Dry Natural Gas Proved Reserves, Reserves Changes, and Production, 2007**  
(billion cubic feet at 14.73 psia and 60° Fahrenheit)

State and Subdivision	Published Proved Reserves 12/31/06	Changes in Reserves During 2007							New Reservoir Discoveries in Old Fields (+)	Estimated Production (-)	Proved Reserves 12/31/07
		Adjustments (+,-)	Revision Increases (+)	Revision Decreases (-)	Sales (-)	Acquisitions (+)	Extensions (+)	New Field Discoveries (+)			
Alaska	10,245	1	2,147	112	10	6	28	0	0	388	11,917
<b>Lower 48 States</b>	<b>200,840</b>	<b>1,146</b>	<b>30,027</b>	<b>16,601</b>	<b>14,730</b>	<b>15,142</b>	<b>27,079</b>	<b>796</b>	<b>1,188</b>	<b>19,078</b>	<b>225,809</b>
Alabama	3,911	12	163	35	302	379	123	0	17	274	3,994
Arkansas	2,269	-27	321	146	298	280	1,148	0	27	269	3,305
California	2,794	33	355	273	164	231	16	0	1	253	2,740
Coastal Region Onshore	206	3	32	26	4	6	0	0	0	12	205
Los Angeles Basin Onshore	153	0	15	16	0	0	0	0	0	8	144
San Joaquin Basin Onshore	2,345	31	296	217	158	225	13	0	1	227	2,309
State Offshore	90	-1	12	14	2	0	3	0	0	6	82
Colorado	17,149	136	3,924	582	750	450	2,812	15	23	1,326	21,851
Florida	45	4	110	0	47	0	0	0	0	4	108
Kansas	3,931	79	407	221	65	63	149	0	0	361	3,982
Kentucky	2,227	37	62	152	4	6	373	0	0	80	2,469
Louisiana	10,474	192	1,011	1,104	2,303	1,651	1,247	0	134	1,257	10,045
North	6,715	70	433	424	2,065	1,242	925	0	1	553	6,344
South Onshore	3,335	110	492	587	175	358	304	0	104	618	3,323
State Offshore	424	12	86	93	63	51	18	0	29	86	378
Michigan	3,065	-45	780	210	1,043	1,238	29	0	0	184	3,630
Mississippi	813	37	53	50	24	78	146	0	1	100	954
Montana	1,057	9	92	74	41	39	81	0	1	112	1,052
New Mexico	17,934	136	2,534	2,431	570	376	585	20	10	1,349	17,245
East	3,914	82	488	413	289	218	426	20	10	462	3,994
West	14,020	54	2,046	2,018	281	158	159	0	0	887	13,251
New York	363	33	46	45	3	0	19	7	0	44	376
North Dakota	479	12	69	62	39	43	59	0	3	53	511
Ohio	975	138	144	198	0	0	39	0	0	71	1,027
Oklahoma	17,464	13	2,115	1,366	1,545	1,567	2,380	6	56	1,659	19,031
Pennsylvania	3,050	181	326	418	4	41	358	7	3	183	3,361
Texas	61,836	227	9,325	4,818	5,790	6,244	10,717	78	535	6,263	72,091
RRC District 1	1,063	-18	71	110	180	238	68	0	0	92	1,040
RRC District 2 Onshore	2,060	-167	282	218	267	309	541	1	15	301	2,255
RRC District 3 Onshore	3,050	56	470	518	606	577	277	42	68	512	2,904
RRC District 4 Onshore	8,116	53	973	840	1,813	1,386	1,020	31	209	1,172	7,963
RRC District 5	12,593	97	3,223	952	23	151	3,243	0	3	1,130	17,205
RRC District 6	9,087	107	1,780	827	221	387	1,740	0	100	896	11,257
RRC District 7B	1,471	-38	154	74	41	78	706	0	0	139	2,117
RRC District 7C	5,126	-65	351	185	1,783	1,891	349	0	3	346	5,341
RRC District 8	6,070	111	690	558	320	321	664	0	120	538	6,560
RRC District 8A	1,290	15	249	80	5	6	58	1	0	103	1,431
RRC District 9	6,218	162	536	118	45	6	1,219	0	17	519	7,476
RRC District 10	5,387	-61	532	315	486	894	809	3	0	482	6,281
State Offshore	305	-25	14	23	0	0	23	0	0	33	261
Utah	5,146	17	1,113	325	484	541	744	4	0	365	6,391
Virginia	2,302	-25	108	36	0	27	262	0	0	109	2,529
West Virginia	4,509	14	310	359	2	25	412	11	1	192	4,729
Wyoming	23,549	-6	4,832	1,818	337	647	4,666	2	0	1,825	29,710
Federal Offshore <sup>a</sup>	15,360	-62	1,815	1,864	897	1,185	657	608	368	2,731	14,439
Pacific (California)	811	-7	49	10	1	3	0	0	0	40	805
Gulf of Mexico (Louisiana) <sup>a</sup>	11,824	-16	1,430	1,429	803	991	525	304	330	2,066	11,090
Gulf of Mexico (Texas)	2,725	-39	336	425	93	191	132	304	38	625	2,544
Miscellaneous <sup>b</sup>	138	1	12	14	18	31	57	38	8	14	239
<b>U.S. Total</b>	<b>211,085</b>	<b>1,147</b>	<b>32,174</b>	<b>16,713</b>	<b>14,740</b>	<b>15,148</b>	<b>27,107</b>	<b>796</b>	<b>1,188</b>	<b>19,466</b>	<b>237,726</b>

<sup>a</sup>Indicates the estimate is associated with a sampling error (95 percent confidence interval) that exceeds 20 percent of the estimated value.

<sup>b</sup>Includes Federal offshore Alabama.

<sup>c</sup>Includes Arizona, Illinois, Indiana, Maryland, Missouri, Nebraska, Nevada, Oregon, South Dakota, and Tennessee.

Note: The production estimates in this table are based on data reported on Form EIA-23, "Annual Survey of Domestic Oil and Gas Reserves," and Form EIA-64A, "Annual Report of the Origin of Natural Gas Liquids Production." They may differ from the official Energy Information Administration production data for natural gas for 2007 contained in the *Natural Gas Annual 2007*, DOE/EIA-0131(07).

Source: Energy Information Administration, Office of Oil and Gas.

Figure 19. Dry Natural Gas Proved Reserves by Area, 2007

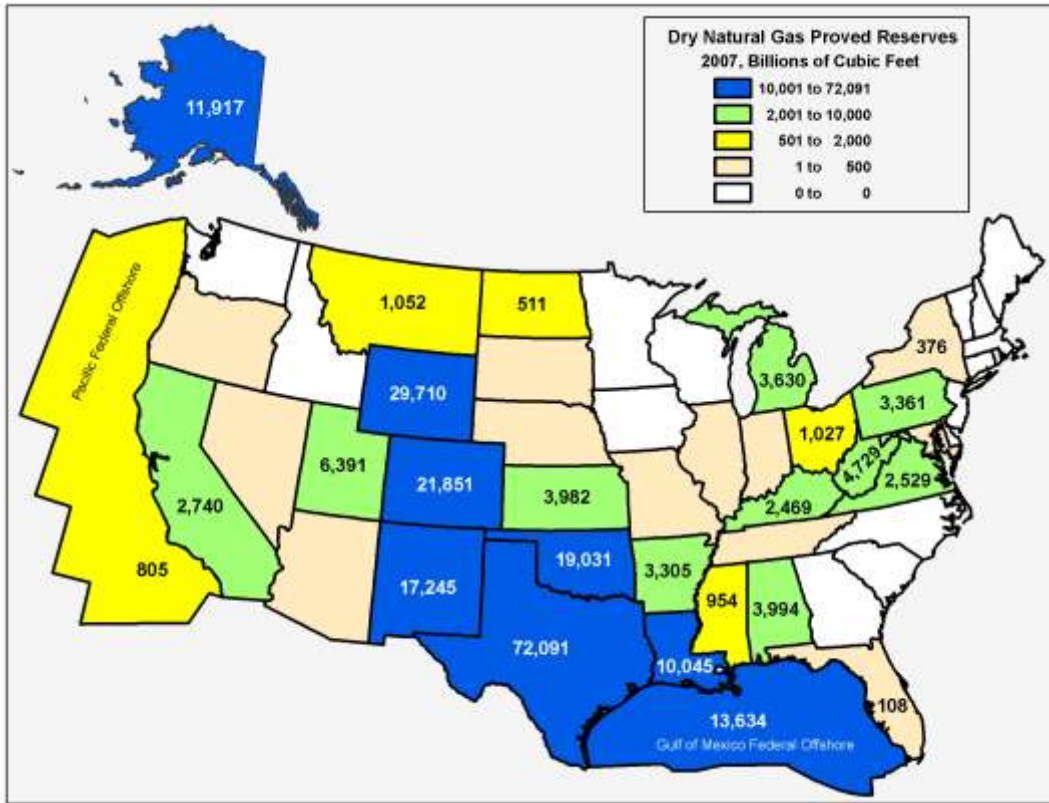
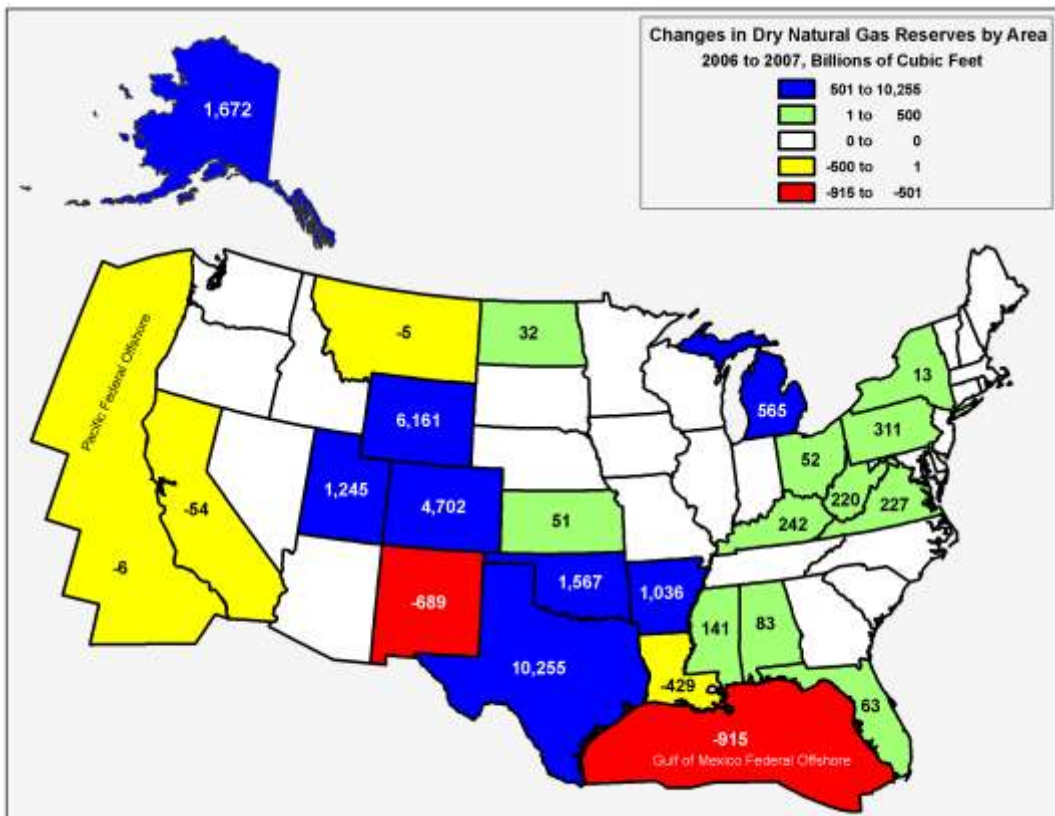


Figure 20. Changes in Dry Natural Gas Proved Reserves by Area, 2006 to 2007



Source: Energy Information Administration, Office of Oil and Gas.

Texas had the largest increase in production in 2007 (12 percent, 655 billion cubic feet), while New Mexico declined the most (5 percent, 77 billion cubic feet).

## Discussion of Reserves Changes

The following graphic portrays the beginning- and end-of-year dry natural gas proved reserves, and the components of natural gas proved reserves change during 2007, at the same volumetric scale. Note that the scale starts at 200 billion cubic feet rather than at zero.

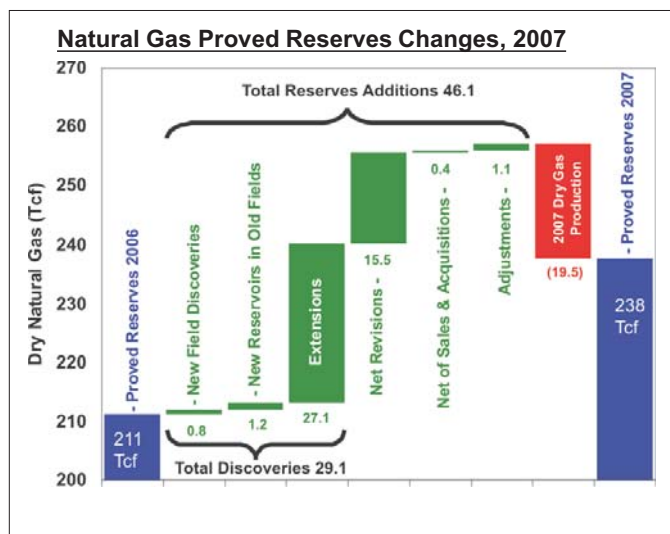


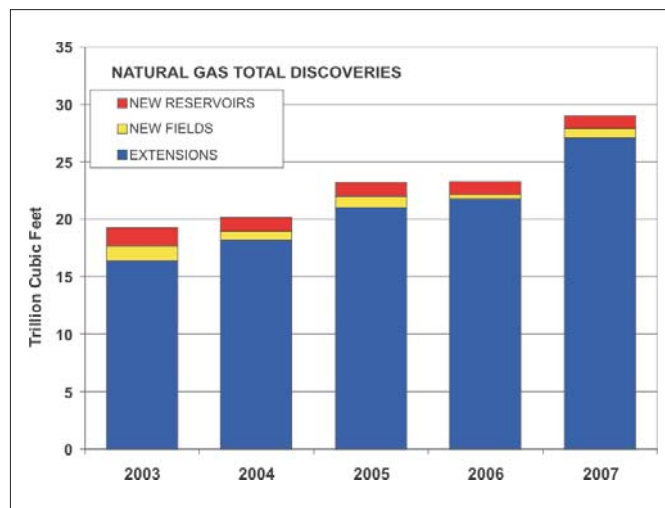
Figure 20 maps the change in dry gas proved reserves from 2006 to 2007 by area. The table below shows how the top eight areas fared, compared to the total United States:

Area	Change in U.S. Gas Reserves (billion cubic feet)
Texas	+10,255
Wyoming	+6,161
Colorado	+4,702
Alaska	+1,672
Oklahoma	+1,567
Gulf of Mexico Federal Offshore	-915
New Mexico	-689
Louisiana	-429
<b>Area Subtotal</b>	<b>+22,324</b>
<b>U.S. Total</b>	<b>+26,641</b>

Figure 4 in Chapter 2 shows the components of change in dry natural gas proved reserves for 2007 and the preceding 10 years.

## Total Discoveries

Total discoveries are those reserves attributable to field extensions, new field discoveries, and new reservoir discoveries in old fields; they result from drilling exploratory wells. The following graphic shows total discoveries by component for 2003-2007.



Total discoveries of dry natural gas reserves were 29,091 billion cubic feet in 2007, a 25 percent increase from the level reported in 2006. Seven areas reported total discoveries of dry natural gas exceeding 1 trillion cubic feet in 2007:

Area	2007 Total Discoveries (Billion cubic feet)
Texas	11,330
Wyoming	4,668
Colorado	2,850
Oklahoma	2,442
Gulf of Mexico Federal Offshore	1,633
Louisiana	1,381
Arkansas	1,175
<b>Area Subtotal</b>	<b>25,479</b>
<b>U.S. Total</b>	<b>29,091</b>

## Extensions

The largest component of total discoveries in 2007 was extensions of existing gas fields. Extensions were 27,107 billion cubic feet, 24 percent more than 2006 and 82 percent more than the prior 10-year average (14,924 billion cubic feet).



Areas with the largest extensions and their percentage of total extensions were:

Area	Percent of 2007 Extensions
Texas	40
Wyoming	17
Colorado	10
Oklahoma	9
Louisiana	5
Arkansas	4
<b>Area Subtotal</b>	<b>85</b>

## New Field Discoveries

New field discoveries were 796 billion cubic feet in 2007, 95 percent more than in 2006 (409 billion cubic feet). The areas with the largest new field discoveries were the Gulf of Mexico Federal Offshore (608 billion cubic feet, 76 percent of the total), and Texas (78 billion cubic feet, 10 percent of the total).

In the prior 10 years, U.S. operators had reported an annual average of 1,555 billion cubic feet of reserves from new field discoveries. Reserves from new field discoveries in 2007 were 51 percent of that average.

## New Reservoir Discoveries in Old Fields

New reservoir discoveries in old fields were 1,188 billion cubic feet, 3 percent more than 2006 (1,155 billion cubic feet). The areas with the largest new reservoir discoveries in old fields and their percentage of the total were: Texas (535 billion cubic feet, 45 percent), Gulf of Mexico Federal Offshore (368 billion cubic feet, 31 percent), Louisiana (134 billion cubic feet, 11 percent), and Oklahoma (56 billion cubic feet, 5 percent).

In the prior 10 years, U.S. operators had reported an annual average of 1,878 billion cubic feet of reserves from new reservoirs discovered in old fields. Reserves from new reservoirs discovered in old fields in 2007 were 63 percent of that average.

## Revisions and Adjustments

There were 32,174 billion cubic feet of revision increases, 16,713 billion cubic feet of revision decreases, and 1,147 billion cubic feet of adjustments in 2007. Net revisions and adjustments were therefore a net increase of 16,608 billion cubic feet in 2007. In the prior 10 years, U.S. operators reported an average of net revisions and adjustments of 3,639 billion cubic feet.

## Sales and Acquisitions

*Sales* represents that volume of dry natural gas proved reserves deducted from an operator's total reserves through sale or transfer of operations of an existing gas field or property to another operator (not a volume of production "sold" at the wellhead). Similarly, *Acquisitions* is that volume of proved reserves added to an operator's total reserves by purchase or transfer of operations of an existing gas field or property.

There are several reasons why sales and acquisitions volumes are not equal. Since operators have different engineering staffs and resources, or different development plans or schedules, the estimate of proved reserves for a field can change upon a change in operatorship. Timing of the transfer of operations can also impact these volumes.

There were 14,740 billion cubic feet of sales transactions between operators in 2007, and 15,148 billion cubic feet of acquisitions transactions. The net difference of 408 billion cubic feet was added to the national total of dry natural gas proved reserves.

## Production

The estimated 2007 U.S. dry natural gas production was 19,466 billion cubic feet (**Table 8**), a 5-percent increase from 2006 (18,545 billion cubic feet). Areas with the largest production and their percentage of total production were:

Area	Percent of 2007 U.S. Dry Gas Production
Texas	32
Gulf of Mexico Federal Offshore	14
Wyoming	9
Oklahoma	9
New Mexico	7
Colorado	7
Louisiana	6
<b>Area Subtotal</b>	<b>84</b>

## Wet Natural Gas

U. S. proved reserves of wet natural gas as of December 31, 2007, were 247,789 billion cubic feet, a 12-percent increase over the 2006 volume (**Table 9**). At year-end 2007, proved wet natural gas reserves for the lower 48 States had increased by 12 percent compared to 2006, and those of Alaska had increased by 16 percent.

**Table 9. Natural Gas Proved Reserves, Reserves Changes, and Production, Wet After Lease Separation, 2007** (billion cubic feet at 14.73 psia and 60° Fahrenheit)

State and Subdivision	Published Proved Reserves 12/31/06	Changes in Reserves During 2007									Proved Reserves 12/31/07
		Adjustments (+,-)	Revision Increases (+)	Revision Decreases (-)	Sales (-)	Acquisitions (+)	Extensions (+)	New Field Discoveries (+)	New Reservoir Discoveries in Old Fields (+)	Estimated Production (-)	
Alaska	10,333	2	2,168	113	11	6	28	0	0	391	12,022
<b>Lower 48 States</b>	<b>210,083</b>	<b>988</b>	<b>31,236</b>	<b>17,355</b>	<b>15,507</b>	<b>15,964</b>	<b>28,227</b>	<b>814</b>	<b>1,244</b>	<b>19,927</b>	<b>235,767</b>
Alabama	3,963	1	165	36	308	386	125	0	17	277	4,036
Arkansas	2,271	-29	321	146	298	280	1,149	0	27	269	3,306
California	2,935	35	372	288	173	243	18	0	1	264	2,879
Coastal Region Onshore	214	2	33	27	4	6	0	0	0	12	212
Los Angeles Basin Onshore	161	2	16	17	0	0	0	0	0	8	154
San Joaquin Basin Onshore	2,470	31	311	229	167	237	14	0	1	238	2,430
State Offshore	90	0	12	15	2	0	4	0	0	6	83
Colorado	17,682	100	4,037	598	772	463	2,893	15	24	1,364	22,480
Florida	50	-1	113	0	48	0	0	0	0	4	110
Kansas	4,197	82	434	236	69	68	158	0	0	386	4,248
Kentucky	2,369	5	65	160	4	6	391	0	0	84	2,588
Louisiana	10,710	216	1,042	1,138	2,343	1,685	1,275	0	139	1,294	10,292
North	6,795	88	439	430	2,095	1,260	939	0	1	560	6,437
South Onshore	3,473	117	513	612	182	373	317	0	108	644	3,463
State Offshore	442	11	90	96	66	52	19	0	30	90	392
Michigan	3,117	-47	793	213	1,061	1,259	30	0	0	187	3,691
Mississippi	816	35	54	50	24	79	147	0	1	100	958
Montana	1,069	11	94	75	41	39	82	0	1	113	1,067
New Mexico	19,104	167	2,699	2,588	615	406	636	22	11	1,445	18,397
East	4,295	95	536	454	318	240	468	22	11	508	4,387
West	14,809	72	2,163	2,134	297	166	168	0	0	937	14,010
New York	363	33	46	45	3	0	19	7	0	45	375
North Dakota	539	10	77	70	44	49	66	1	4	60	572
Ohio	975	138	144	198	0	0	39	0	0	71	1,027
Oklahoma	18,535	2	2,243	1,449	1,639	1,662	2,525	6	59	1,760	20,184
Pennsylvania	3,064	182	327	420	4	41	360	7	3	183	3,377
Texas	65,805	74	9,760	5,094	6,276	6,777	11,290	83	569	6,631	76,357
RRC District 1	1,109	-1	74	117	191	252	72	0	0	97	1,101
RRC District 2 Onshore	2,166	-163	299	231	283	327	573	1	16	319	2,386
RRC District 3 Onshore	3,278	40	503	554	648	616	296	45	73	547	3,102
RRC District 4 Onshore	8,474	68	1,018	878	1,896	1,449	1,066	33	219	1,226	8,327
RRC District 5	12,648	95	3,235	957	23	151	3,256	0	3	1,134	17,274
RRC District 6	9,481	87	1,852	860	230	403	1,811	0	104	933	11,715
RRC District 7B	1,663	-30	176	85	47	89	804	0	0	158	2,412
RRC District 7C	5,727	-15	396	209	2,012	2,134	394	0	3	390	6,028
RRC District 8	6,855	26	768	620	356	357	739	0	133	599	7,303
RRC District 8A	1,384	14	266	86	6	6	62	1	0	110	1,531
RRC District 9	6,765	50	572	126	48	6	1,302	0	18	554	7,985
RRC District 10	5,950	-71	587	348	536	987	892	3	0	532	6,932
State Offshore	305	-26	14	23	0	0	23	0	0	32	261
Utah	5,211	12	1,125	329	490	547	752	4	0	369	6,463
Virginia	2,302	-25	108	36	0	27	262	0	0	109	2,529
West Virginia	4,654	16	319	370	2	25	425	11	1	198	4,881
Wyoming	24,463	20	5,024	1,890	351	673	4,852	2	0	1,897	30,896
Federal Offshore <sup>a</sup>	15,750	-50	1,862	1,912	924	1,218	675	618	379	2,803	14,813
Pacific (California)	811	-5	48	10	1	3	0	0	0	41	805
Gulf of Mexico (Louisiana) <sup>b</sup>	12,201	1	1,477	1,476	830	1,023	543	313	341	2,135	11,458
Gulf of Mexico (Texas)	2,738	-46	337	426	93	192	132	305	38	627	2,550
Miscellaneous <sup>b</sup>	139	1	12	14	18	31	58	38	8	14	241
<b>U.S. Total</b>	<b>220,416</b>	<b>990</b>	<b>33,404</b>	<b>17,468</b>	<b>15,518</b>	<b>15,970</b>	<b>28,255</b>	<b>814</b>	<b>1,244</b>	<b>20,318</b>	<b>247,789</b>

<sup>a</sup>Includes Federal offshore Alabama.

<sup>b</sup>Includes Arizona, Illinois, Indiana, Maryland, Missouri, Nebraska, Nevada, Oregon, South Dakota, and Tennessee.

Note: The production estimates in this table are based on data reported on Form EIA-23, "Annual Survey of Domestic Oil and Gas Reserves." They may differ from the official Energy Information Administration production data for natural gas for 2007 contained in the *Natural Gas Annual 2007*, DOE/EIA-0131(07).

Source: Energy Information Administration, Office of Oil and Gas.

The volumetric differences between the estimates reported in **Table 8** (dry) and **Table 9** (wet) result from the removal of natural gas liquids at natural gas processing plants. See Appendix F for a discussion of the methodology used to generate the wet and dry natural gas reserves estimates tabulated in this report.

## Nonassociated Natural Gas

### Proved Reserves

Proved reserves of nonassociated (NA) natural gas, wet after lease separation, in the United States increased by 13 percent (24,345 billion cubic feet) in 2007 to 215,121 billion cubic feet (**Table 10**). The lower 48 States' NA wet natural gas proved reserves increased 13 percent to a level of 213,851 billion cubic feet, while Alaska had a 12 percent decline to a level of 1,270 billion cubic feet.

Seven areas accounted for 82 percent of U.S. NA wet natural gas proved reserves in 2007:

Area	Percent of 2007 U.S. NA Gas Reserves
Texas	32
Wyoming	14
Colorado	10
Oklahoma	9
New Mexico	8
Gulf of Mexico Federal Offshore	5
Louisiana	4
<b>Area Subtotal</b>	<b>82</b>

### Total Discoveries

NA wet natural gas *total discoveries* of 29,096 billion cubic feet in 2007 were 24 percent more than the 2006 total of 23,541 billion cubic feet. Areas with the most *total discoveries* of NA wet natural gas in 2007 were Texas (11,555 billion cubic feet), Wyoming (4,853 billion cubic feet), Colorado (2,752 billion cubic feet), and Oklahoma (2,487 billion cubic feet).

### Production

U.S. production of NA wet natural gas increased 5 percent from an estimated 17,092 billion cubic feet in

2006 to 18,022 billion cubic feet in 2007. The leading producing areas were Texas (33 percent of the national total), the Gulf of Mexico Federal Offshore (12 percent), Wyoming (10 percent), Oklahoma (9 percent), New Mexico (7 percent), Colorado (7 percent), and Louisiana (7 percent).

## Associated-Dissolved Natural Gas

### Proved Reserves

Proved reserves of associated-dissolved (AD) natural gas, wet after lease separation, in the United States increased 10 percent to 32,668 billion cubic feet in 2007 (**Table 11**). Proved reserves of AD wet natural gas in Alaska increased 21 percent to 10,752 billion cubic feet, and increased in the lower 48 States by 6 percent to 21,916 billion cubic feet.

The areas of the country with the largest AD wet natural gas reserves and their percentage of the total were:

Area	Percent of 2007 U.S. AD Gas Reserves
Alaska	33
Texas	23
Gulf of Mexico Federal Offshore	12
California	7
New Mexico	6
<b>Area Subtotal</b>	<b>81</b>

These areas logically correspond to the areas of the country with the largest volumes of crude oil reserves. Alaska's AD wet gas proved reserves surpassed those of Texas for the second year in a row.

### Production

U.S. production of AD wet natural gas increased 1 percent from an estimated 2,281 billion cubic feet in 2006 to 2,296 billion cubic feet in 2007. Production of AD wet natural gas in the lower 48 States was essentially unchanged (2,063 billion cubic feet in 2006 and 2,069 billion cubic feet in 2007). Alaska's AD wet gas production increased 4 percent from 218 billion cubic feet in 2006 to 227 billion cubic feet in 2007.

**Table 10. Nonassociated Natural Gas Proved Reserves, Reserves Changes, and Production, Wet After Lease Separation, 2007** (billion cubic feet at 14.73 psia and 60° Fahrenheit)

State and Subdivision	Published Proved Reserves 12/31/06	Changes in Reserves During 2007							New Reservoir Discoveries in Old Fields (+)	Estimated Production (-)	Proved Reserves 12/31/07
		Adjustments (+,-)	Revision Increases (+)	Revision Decreases (-)	Sales (-)	Acquisitions (+)	Extensions (+)	New Field Discoveries (+)			
Alaska	1,447	1	70	103	8	5	22	0	0	164	1,270
<b>Lower 48 States</b>	<b>189,329</b>	<b>713</b>	<b>27,934</b>	<b>15,561</b>	<b>14,395</b>	<b>14,615</b>	<b>27,135</b>	<b>768</b>	<b>1,171</b>	<b>17,858</b>	<b>213,851</b>
Alabama	3,945	2	153	35	303	385	125	0	17	273	4,016
Arkansas	2,227	-22	310	139	298	280	1,149	0	27	265	3,269
California	780	29	80	186	165	234	14	0	1	101	686
Coastal Region Onshore	6	0	0	5	0	0	0	0	0	0	1
Los Angeles Basin Onshore	0	0	0	0	0	0	0	0	0	0	0
San Joaquin Basin Onshore	769	28	80	180	165	234	13	0	1	99	681
State Offshore	5	1	0	1	0	0	1	0	0	2	4
Colorado	16,141	91	3,823	584	769	448	2,713	15	24	1,260	20,642
Florida	0	0	0	0	0	0	0	0	0	0	0
Kansas	4,115	74	423	221	69	68	152	0	0	377	4,165
Kentucky	2,333	5	65	158	4	6	391	0	0	84	2,554
Louisiana	10,149	201	907	1,044	2,307	1,589	1,255	0	131	1,230	9,651
North	6,705	80	432	407	2,091	1,259	937	0	1	552	6,364
South Onshore	3,058	112	412	553	150	278	299	0	101	597	2,960
State Offshore	386	9	63	84	66	52	19	0	29	81	327
Michigan	2,925	-48	791	210	1,041	1,235	30	0	0	170	3,512
Mississippi	795	33	48	49	22	70	147	0	1	95	928
Montana	874	10	34	43	13	13	64	0	1	92	848
New Mexico	17,332	129	2,445	2,425	502	284	524	22	11	1,264	16,556
East	2,605	56	307	308	205	123	356	22	11	334	2,633
West	14,727	73	2,138	2,117	297	161	168	0	0	930	13,923
New York	361	24	46	45	3	0	19	7	0	44	365
North Dakota	182	5	13	33	0	1	4	0	0	17	155
Ohio	801	92	122	65	0	0	39	0	0	63	926
Oklahoma	17,735	17	1,965	1,363	1,514	1,554	2,422	6	59	1,656	19,225
Pennsylvania	2,913	77	318	271	4	40	337	7	3	173	3,247
Texas	58,736	-11	8,776	4,523	5,819	6,142	10,912	81	562	6,029	68,827
RRC District 1	1,048	-6	51	109	187	250	71	0	0	89	1,029
RRC District 2 Onshore	2,048	-162	250	220	271	318	573	1	16	304	2,249
RRC District 3 Onshore	2,789	16	445	444	565	483	269	44	72	481	2,628
RRC District 4 Onshore	8,364	62	980	854	1,895	1,446	1,065	33	219	1,210	8,210
RRC District 5	12,591	92	3,233	951	23	151	3,256	0	3	1,128	17,224
RRC District 6	9,205	79	1,807	826	222	402	1,806	0	104	887	11,468
RRC District 7B	1,589	-35	161	77	33	86	804	0	0	145	2,350
RRC District 7C	4,531	-15	271	167	1,880	1,972	316	0	0	314	4,714
RRC District 8	3,891	14	501	423	198	188	559	0	130	395	4,267
RRC District 8A	82	14	5	11	1	2	9	0	0	12	88
RRC District 9	6,660	4	554	116	48	6	1,302	0	18	534	7,846
RRC District 10	5,634	-49	507	302	496	838	859	3	0	498	6,496
State Offshore	304	-25	11	23	0	0	23	0	0	32	258
Utah	4,894	12	1,085	326	490	543	713	4	0	340	6,095
Virginia	2,302	-25	108	36	0	27	262	0	0	109	2,529
West Virginia	4,638	16	318	370	2	25	425	11	1	197	4,865
Wyoming	24,116	34	4,852	1,860	289	653	4,851	2	0	1,828	30,531
Federal Offshore <sup>a</sup>	10,915	-46	1,240	1,561	763	987	539	575	325	2,178	10,033
Pacific (California)	55	0	0	0	0	0	0	0	0	2	53
Gulf of Mexico (Louisiana) <sup>a</sup>	8,500	1	963	1,172	674	804	410	309	294	1,628	7,807
Gulf of Mexico (Texas)	2,360	-47	277	389	89	183	129	266	31	548	2,173
Miscellaneous <sup>b</sup>	120	14	12	14	18	31	48	38	8	13	226
<b>U.S. Total</b>	<b>190,776</b>	<b>714</b>	<b>28,004</b>	<b>15,664</b>	<b>14,403</b>	<b>14,620</b>	<b>27,157</b>	<b>768</b>	<b>1,171</b>	<b>18,022</b>	<b>215,121</b>

<sup>a</sup>Includes Federal offshore Alabama.

<sup>b</sup>Includes Arizona, Illinois, Indiana, Maryland, Missouri, Nebraska, Nevada, Oregon, South Dakota, and Tennessee.

Note: The production estimates in this table are based on data reported on Form EIA-23, "Annual Survey of Domestic Oil and Gas Reserves." They may differ from the official Energy Information Administration production data for natural gas for 2007 contained in the *Natural Gas Annual 2007*, DOE/EIA-0131(07).

Source: Energy Information Administration, Office of Oil and Gas.



**Table 11. Associated-Dissolved Natural Gas Proved Reserves, Reserves Changes, and Production Wet After Lease Separation, 2007** (billion cubic feet at 14.73 psia and 60° Fahrenheit)

State and Subdivision	Published Proved Reserves 12/31/06	Changes in Reserves During 2007									Proved Reserves 12/31/07
		Adjustments (+,-)	Revision Increases (+)	Revision Decreases (-)	Sales (-)	Acquisitions (+)	Extensions (+)	New Field Discoveries (+)	New Reservoir Discoveries in Old Fields (+)	Estimated Production (-)	
Alaska	8,886	1	2,098	10	3	1	6	0	0	227	10,752
<b>Lower 48 States</b>	<b>20,754</b>	<b>275</b>	<b>3,302</b>	<b>1,794</b>	<b>1,112</b>	<b>1,349</b>	<b>1,092</b>	<b>46</b>	<b>73</b>	<b>2,069</b>	<b>21,916</b>
Alabama	18	-1	12	1	5	1	0	0	0	4	20
Arkansas	44	-7	11	7	0	0	0	0	0	4	37
California	2,155	6	292	102	8	9	4	0	0	163	2,193
Coastal Region Onshore	208	2	33	22	4	6	0	0	0	12	211
Los Angeles Basin Onshore	161	2	16	17	0	0	0	0	0	8	154
San Joaquin Basin Onshore	1,701	3	231	49	2	3	1	0	0	139	1,749
State Offshore	85	-1	12	14	2	0	3	0	0	4	79
Colorado	1,541	9	214	14	3	15	180	0	0	104	1,838
Florida	50	-1	113	0	48	0	0	0	0	4	110
Kansas	82	8	11	15	0	0	6	0	0	9	83
Kentucky	36	0	0	2	0	0	0	0	0	0	34
Louisiana	561	15	135	94	36	96	20	0	8	64	641
North	90	8	7	23	4	1	2	0	0	8	73
South Onshore	415	5	101	59	32	95	18	0	7	47	503
State Offshore	56	2	27	12	0	0	0	0	1	9	65
Michigan	192	1	2	3	20	24	0	0	0	17	179
Mississippi	21	2	6	1	2	9	0	0	0	5	30
Montana	195	1	60	32	28	26	18	0	0	21	219
New Mexico	1,772	38	254	163	113	122	112	0	0	181	1,841
East	1,690	39	229	146	113	117	112	0	0	174	1,754
West	82	-1	25	17	0	5	0	0	0	7	87
New York	2	9	0	0	0	0	0	0	0	1	10
North Dakota	357	5	64	37	44	48	62	1	4	43	417
Ohio	174	46	22	133	0	0	0	0	0	8	101
Oklahoma	800	-15	278	86	125	108	103	0	0	104	959
Pennsylvania	151	105	9	149	0	1	23	0	0	10	130
Texas	7,069	85	984	571	457	635	378	2	7	602	7,530
RRC District 1	61	5	23	8	4	2	1	0	0	8	72
RRC District 2 Onshore	118	-1	49	11	12	9	0	0	0	15	137
RRC District 3 Onshore	489	24	58	110	83	133	27	1	1	66	474
RRC District 4 Onshore	110	6	38	24	1	3	1	0	0	16	117
RRC District 5	57	3	2	6	0	0	0	0	0	6	50
RRC District 6	276	8	45	34	8	1	5	0	0	46	247
RRC District 7B	74	5	15	8	14	3	0	0	0	13	62
RRC District 7C	1,196	0	125	42	132	162	78	0	3	76	1,314
RRC District 8	2,964	12	267	197	158	169	180	0	3	204	3,036
RRC District 8A	1,302	0	261	75	5	4	53	1	0	98	1,443
RRC District 9	105	46	18	10	0	0	0	0	0	20	139
RRC District 10	316	-22	80	46	40	149	33	0	0	34	436
State Offshore	1	-1	3	0	0	0	0	0	0	0	3
Utah	317	0	40	3	0	4	39	0	0	29	368
Virginia	0	0	0	0	0	0	0	0	0	0	0
West Virginia	16	0	1	0	0	0	0	0	0	1	16
Wyoming	347	-14	172	30	62	20	1	0	0	69	365
Federal Offshore <sup>a</sup>	4,835	-4	622	351	161	231	136	43	54	625	4,780
Pacific (California)	756	-5	48	10	1	3	0	0	0	39	752
Gulf of Mexico (Louisiana) <sup>a</sup>	3,701	0	514	304	156	219	133	4	47	507	3,651
Gulf of Mexico (Texas)	378	1	60	37	4	9	3	39	7	79	377
Miscellaneous <sup>b</sup>	19	-13	0	0	0	0	10	0	0	1	15
<b>U.S. Total</b>	<b>29,640</b>	<b>276</b>	<b>5,400</b>	<b>1,804</b>	<b>1,115</b>	<b>1,350</b>	<b>1,098</b>	<b>46</b>	<b>73</b>	<b>2,296</b>	<b>32,668</b>

<sup>a</sup>Includes Federal offshore Alabama.

<sup>b</sup>Includes Arizona, Illinois, Indiana, Maryland, Missouri, Nebraska, Nevada, Oregon, South Dakota, and Tennessee.

Note: The production estimates in this table are based on data reported on Form EIA-23, "Annual Survey of Domestic Oil and Gas Reserves." They may differ from the official Energy Information Administration production data for natural gas for 2007 contained in the *Natural Gas Annual 2007*, DOE/EIA-0131(07).

Source: Energy Information Administration, Office of Oil and Gas.

The areas of the country with the largest AD wet natural gas production and their percentage of the total were:

Area	Percent of 2007 U.S. AD Gas Production
Gulf of Mexico Federal Offshore	26
Texas	26
Alaska	10
New Mexico	8
California	7
<b>Area Subtotal</b>	<b>77</b>

Again, these areas logically correspond to the areas of the country with the largest volumes of crude oil production.

## Coalbed and Shale Natural Gas

### Proved Reserves

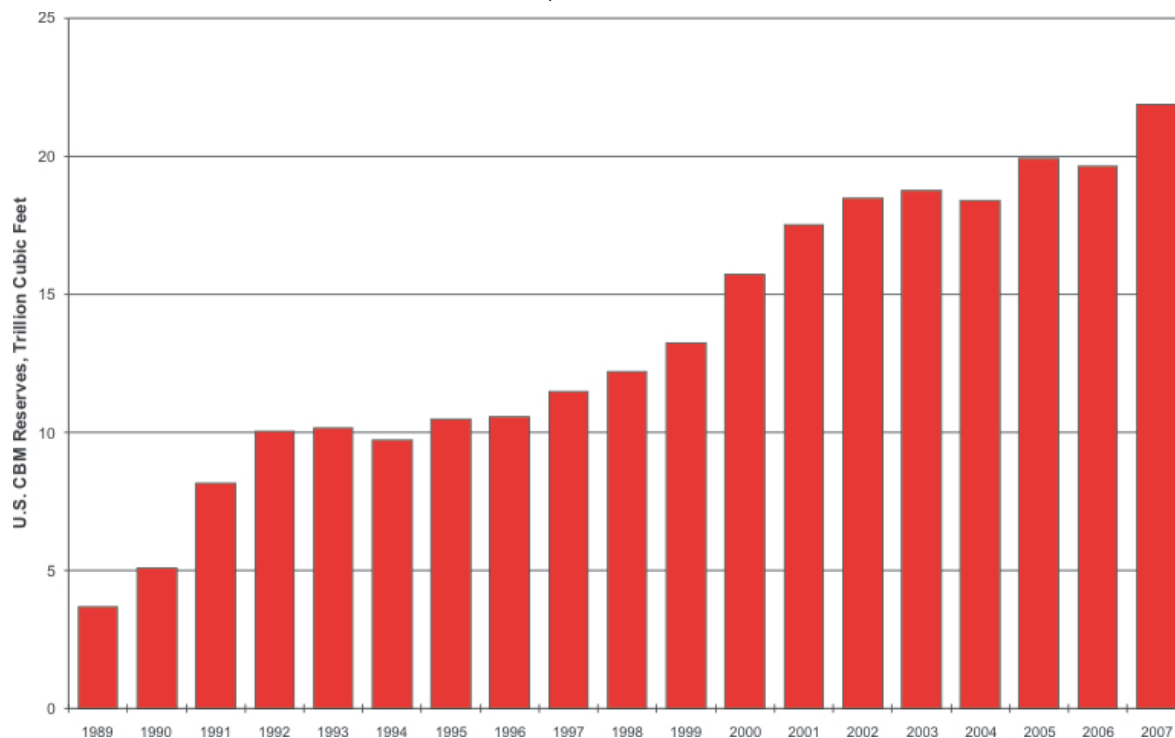
Unconventional resources are playing an increasingly important role in U.S. dry natural gas reserves and production.

Proved reserves and production from coal reservoirs increased rapidly from 1989 through 2002 before stabilizing and even dropping slightly in 2006 (**Figure 21**). However, coalbed natural gas reserves increased 11.5 percent in 2007. Coalbed proved reserves now account for about 9 percent of U.S. dry natural gas reserves. While coalbed natural gas production decreased in 2007, it still accounted for about 9 percent of U.S. dry natural gas production (**Figure 22**).

Improved technology now allows high economic returns for development of reserves in shale reservoirs at the gas prices prevalent in 2006 and 2007. As a result, proved reserves of shale gas have been rapidly increasing. EIA has collected data on proved natural gas reserves from shale reservoirs for two years. Shale gas proved reserves increased 50 percent in 2007 and are now at about 9 percent of the U.S. total (**Figure 23**).

**Table 12** lists the proved reserves and production of natural gas from two unconventional sources, coalbed and shale, as reported to EIA in 2007. The historical table of coalbed methane proved reserves and production from 1989-2007 can be found in Appendix D, Table D11.

**Figure 21. Coalbed Natural Gas Proved Reserves, 1989-2007**



Source: Energy Information Administration, Office of Oil and Gas.

**Table 12. Reported Unconventional Natural Gas Proved Reserves and Production**  
(billion cubic feet at 14.73 psia and 60° Fahrenheit)

State and Subdivision	Coalbed Reported Production	Coalbed Reported Reserves	Shale Reported Production	Shale Reported Reserves
Alaska . . . . .	0	0	0	0
Lower 48 States . . . . .	1,742	21,868	1,187	21,496
Alabama . . . . .	114	2,126	0	0
Arkansas . . . . .	WS	WS	78	1,095
California . . . . .	0	0	0	0
Colorado . . . . .	521	7,870	0	0
Florida . . . . .	0	0	0	0
Kansas . . . . .	WS	WS	0	0
Kentucky . . . . .	0	0	ES	ES
Louisiana . . . . .	WS	WS	0	0
Michigan . . . . .	0	0	123	2,830
Mississippi . . . . .	0	0	0	0
Montana . . . . .	WS	WS	WS	WS
New Mexico . . . . .	391	4,171	0	0
East . . . . .	23	390	0	0
West . . . . .	368	3,781	0	0
New York . . . . .	0	0	0	0
North Dakota . . . . .	0	0	1	18
Ohio . . . . .	ES	ES	0	0
Oklahoma . . . . .	75	1,264	3	133
Pennsylvania . . . . .	ES	ES	ES	ES
Texas . . . . .	0	0	967	17,115
RRC District 1 . . . . .	0	0	0	0
RRC District 2 Onshore . . . . .	0	0	0	0
RRC District 3 Onshore . . . . .	0	0	0	0
RRC District 4 Onshore . . . . .	0	0	0	0
RRC District 5 . . . . .	0	0	429	8,055
RRC District 6 . . . . .	0	0	0	0
RRC District 7B . . . . .	0	0	90	2,014
RRC District 7C . . . . .	0	0	0	0
RRC District 8 . . . . .	0	0	1	4
RRC District 8A . . . . .	0	0	0	0
RRC District 9 . . . . .	0	0	447	7,042
RRC District 10 . . . . .	0	0	0	0
State Offshore . . . . .	0	0	0	0
Utah . . . . .	75	922	0	0
Virginia . . . . .	84	1,948	0	0
West Virginia . . . . .	ES	ES	0	0
Wyoming . . . . .	399	2,734	0	0
Federal Offshore . . . . .	0	0	0	0
Eastern States <sup>a</sup> . . . . .	31	392	3	166
Western States <sup>b</sup> . . . . .	52	441	12	139
<b>US Total . . . . .</b>	<b>1,742</b>	<b>21,868</b>	<b>1,187</b>	<b>21,496</b>

ES=State data withheld, included in Eastern States.

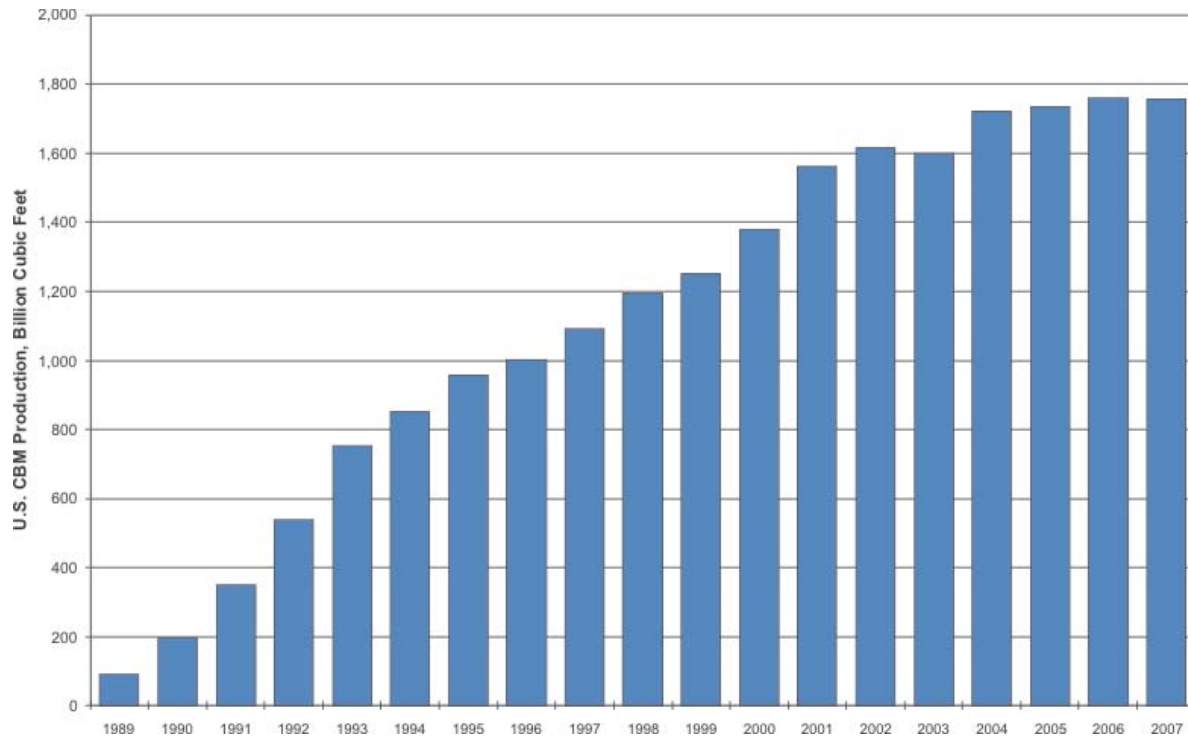
WS=State data withheld, included in Western States.

<sup>a</sup>Eastern States include Illinois, Indiana, Kentucky, Ohio, Pennsylvania, Tennessee, and West Virginia.

<sup>b</sup>Western States include Arkansas, Kansas, Louisiana, Montana, North Dakota, and South Dakota.

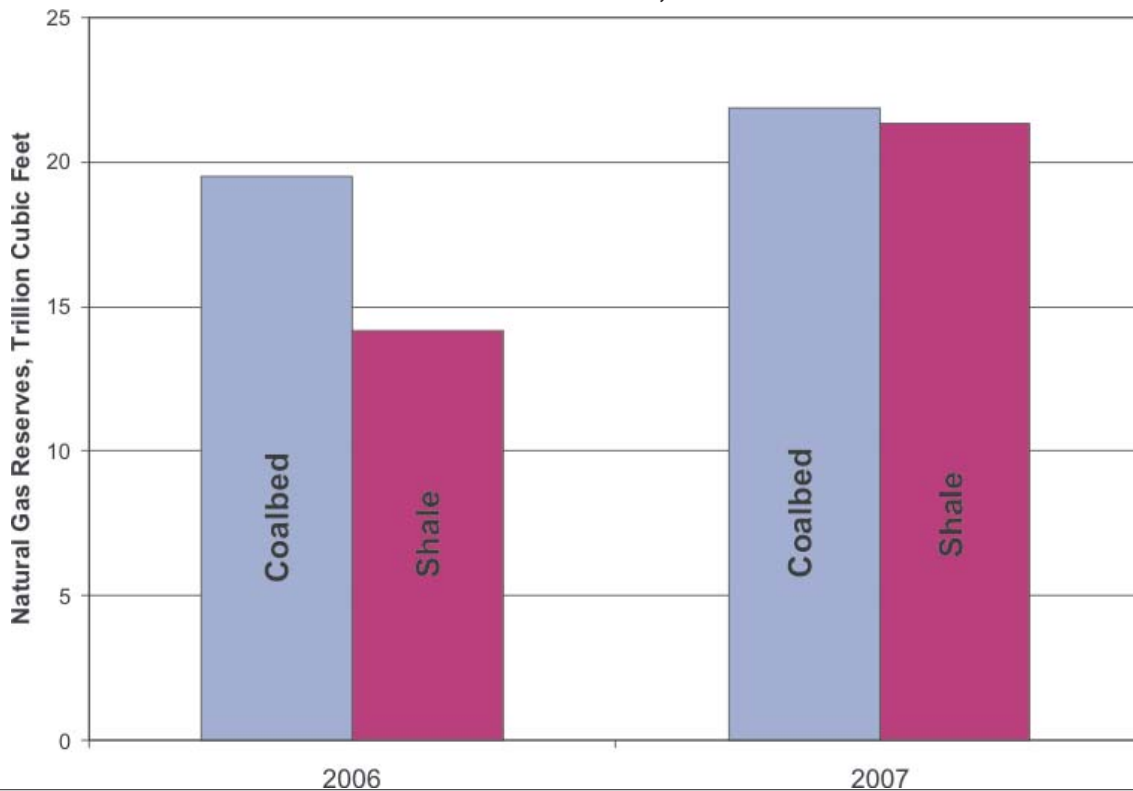
Source: Energy Information Administration, Office of Oil and Gas.

**Figure 22. Coalbed Natural Gas Production, 1989-2007**



Source: Energy Information Administration, Office of Oil and Gas.

**Figure 23. Coalbed and Shale Natural Gas Proved Reserves, 2006-2007**



Source: Energy Information Administration, Office of Oil and Gas.

## Areas of Note: Large Discoveries and Reserves Additions

The following State or area discussions summarize notable activities during the year concerning expected new field reserves, development plans, and possible production rates as reported in various trade publications. The citations do not necessarily reflect EIA's concurrence, but are considered important enough to be brought to the reader's attention.

### Texas

Texas had the largest volumetric increase in dry natural gas proved reserves in 2007 (10,255 billion cubic feet), a 17-percent increase. Production also increased 12 percent. This resulted primarily from extensions in the Newark East Field of north central Texas and natural gas fields located in the Permian Basin of west Texas.

- **Barnett Shale (Newark East Field):** In 2007, natural gas production from the Barnett Shale rose from 705 billion cubic feet in 2006 to 949 billion cubic feet. The Texas Railroad Commission maintains a website that provides updated Barnett Shale statistics {43}: <http://www.rrc.state.tx.us/barnettshale>

### Wyoming

Wyoming's dry natural gas reserves increased by 26 percent (6,161 billion cubic feet) in 2007. This resulted primarily from extensions to existing fields and nonassociated natural gas revision increases.

- **Pinedale Field:** On October 30, 2007, Ultra Petroleum announced results of its ongoing delineation drilling program in and around the Pinedale Field. Six of the 21 delineation wells planned for 2007 had sufficient production history to enable estimation of reserves. All six had reserves better than the pre-drill estimates, on average 167 percent more. The current plan is to continue this delineation effort for at least the next 5 years. (Ultra Petroleum Press Release, October 30, 2007) {44}.

### Colorado

Colorado's dry natural gas reserves increased by 27 percent (4,702 billion cubic feet) in 2007. Large coalbed

methane revision increases for the San Juan Basin Gas Area were a major portion of this increase.

## Areas of Note: Large Declines in Reserves

The following areas had large declines in dry natural gas proved reserves due to downward revisions or unreplaced production.

### Gulf of Mexico Federal Offshore

Proved dry natural gas reserves in the Gulf of Mexico Federal Offshore decreased by 6 percent (915 billion cubic feet) in 2007. Production also decreased by 2 percent from 2,738 billion cubic feet in 2006 to 2,691 billion cubic feet in 2007.

### New Mexico

New Mexico's proved dry natural gas reserves decreased by 4 percent (689 billion cubic feet) in 2007. Production in New Mexico decreased 5 percent (77 billion cubic feet) in 2007.

### Louisiana

Louisiana's proved dry natural gas reserves decreased by 4 percent (429 billion cubic feet) in 2007. Production in Louisiana decreased 4 percent (52 billion cubic feet) in 2007.

## Reserves in Nonproducing Status

Nonproducing proved natural gas reserves (wet after lease separation) of 78,094 billion cubic feet were reported in 2007, 17 percent more than the 66,714 billion cubic feet reported in 2006 (**Appendix D, Table D10**). About 34 percent of the reserves in nonproducing status were located in Texas. Wyoming had 15 percent, Colorado had 12 percent, and 9 percent were in the Gulf of Mexico Federal Offshore. Wells or reservoirs are nonproducing due to any of several operational reasons. These include awaiting well workovers, the drilling of extensions or additional development wells, installation of production or pipeline facilities, and depletion of other zones or reservoirs before recompletion in reservoirs not currently open to production (called "behind pipe" reserves).



