

4. Natural Gas Statistics

Dry Natural Gas

Proved Reserves

The United States had 186,946 billion cubic feet of dry natural gas reserves as of December 31, 2002, a 2 percent increase over the 2001 level (**Table 8**). All natural gas proved reserves data shown in this report exclude natural gas held in underground storage.

Reserves additions replaced 118 percent of production (**Figure 18**), however, gas production declined 2 percent in 2002. Sharp production declines in the Gulf of Mexico were partially offset by large production increases in the Rocky Mountain States.

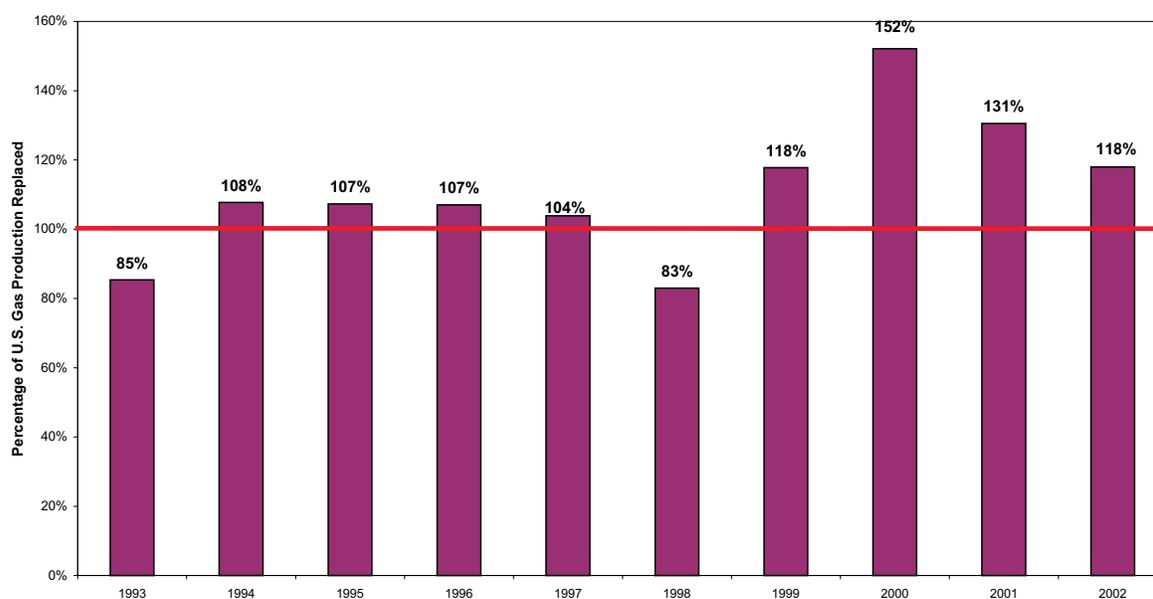
In 2002, the Rocky Mountain States and Texas dominated gas reserves additions. These additions highlight a shift from conventional gas fields to unconventional gas fields, i.e., tight sands, shales, and coalbeds. As measured by proved reserves, 11 of the top 20 natural gas fields of 2002 are located in Rocky Mountain states.

Additions to dry gas reserves in 2002 were 22,839 billion cubic feet, 12 percent less than in 2001. U.S. total discoveries of dry natural gas reserves were 17,795 billion cubic feet in 2002, down 22 percent from 2001 (22,758 billion cubic feet).

Proved reserves by State are shown on the map in **Figure 19**. Six areas account for 72 percent of the Nation's dry natural gas proved reserves:

Area	Percent of U.S. Gas Reserves
Texas	24
Gulf of Mexico Federal Offshore	13
Wyoming	11
New Mexico	9
Oklahoma	8
Colorado	7
Area Total	72

Figure 18. Replacement of U.S. Dry Natural Gas Production by Reserves Additions, 1993-2002.



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

Table 8. Dry Natural Gas Proved Reserves, Reserves Changes, and Production, 2002
(Billion Cubic Feet at 14.73 psia and 60° Fahrenheit)

State and Subdivision	Published Proved Reserves 12/31/01	Changes in Reserves During 2002									Proved Reserves 12/31/02
		Adjustments (+,-)	Revision Increases (+)	Revision Decreases (-)	Sales (-)	Acquisitions (+)	Extensions (+)	New Field Discoveries (+)	New Reservoir Discoveries in Old Fields (+)	Estimated Production (-)	
Alaska	8,800	35	141	118	13	13	62	0	8	460	8,468
Lower 48 States	174,660	3,692	20,114	19,200	10,153	10,533	14,707	1,332	1,686	18,893	178,478
Alabama	3,915	72	130	155	6	0	289	0	4	365	3,884
Arkansas	1,616	27	114	107	66	80	111	24	8	157	1,650
California	2,681	29	202	127	49	48	93	0	5	291	2,591
Coastal Region Onshore	177	2	21	4	3	5	3	0	0	11	190
Los Angeles Basin Onshore	187	0	24	6	0	0	11	0	0	9	207
San Joaquin Basin Onshore	2,232	29	146	114	46	35	79	0	5	264	2,102
State Offshore	85	-2	11	3	0	8	0	0	0	7	92
Colorado	12,527	202	2,029	962	1,059	891	1,222	1	1	964	13,888
Florida	84	9	5	3	0	0	0	0	0	4	91
Kansas	5,101	210	436	350	43	22	71	5	2	471	4,983
Kentucky	1,860	-24	377	383	2	66	92	0	0	79	1,907
Louisiana	9,811	72	1,206	1,853	594	686	647	68	255	1,338	8,960
North	3,881	90	587	293	229	254	317	9	24	395	4,245
South Onshore	5,185	1	558	1,278	362	416	288	49	188	821	4,224
State Offshore	745	-19	61	282	3	16	42	10	43	122	491
Michigan	2,976	82	383	276	35	71	287	8	0	242	3,254
Mississippi	661	81	89	75	29	33	54	1	27	98	744
Montana	898	58	40	109	10	6	96	4	0	77	906
New Mexico	17,414	199	2,262	2,239	1,029	1,052	1,161	6	18	1,524	17,320
East	3,518	98	1,271	1,047	144	159	279	6	18	526	3,632
West	13,896	101	991	1,192	885	893	882	0	0	998	13,688
New York	^a 318	-23	63	22	23	21	13	3	0	35	315
North Dakota	443	18	79	20	46	42	8	0	0	53	471
Ohio	970	148	186	139	19	2	53	2	1	87	1,117
Oklahoma	13,558	904	2,159	1,513	767	845	1,186	14	18	1,518	14,886
Pennsylvania	1,775	206	330	151	5	6	170	0	18	133	2,216
Texas	43,527	765	4,734	4,904	3,889	4,249	4,404	84	365	5,038	44,297
RRC District 1	1,018	28	91	47	242	264	31	0	0	98	1,045
RRC District 2 Onshore	1,801	21	222	245	124	139	203	2	51	288	1,782
RRC District 3 Onshore	3,770	43	460	567	493	449	462	6	42	588	3,584
RRC District 4 Onshore	9,956	91	1,218	1,655	1,389	1,319	1,159	53	115	1,398	9,469
RRC District 5	4,231	57	539	785	374	467	800	5	39	377	4,602
RRC District 6	6,128	148	342	342	289	289	566	0	38	624	6,256
RRC District 7B	252	147	54	42	108	15	0	0	1	59	260
RRC District 7C	3,320	-25	391	224	388	548	399	0	8	327	3,702
RRC District 8	5,255	86	745	548	209	206	326	2	22	524	5,361
RRC District 8A	1,085	46	99	77	17	26	15	0	0	93	1,084
RRC District 9	2,289	231	167	43	51	229	312	1	0	258	2,877
RRC District 10	3,955	-106	365	262	203	294	129	2	1	337	3,838
State Offshore	467	-2	41	67	2	4	2	13	48	67	437
Utah	4,579	13	207	490	978	720	368	0	2	286	4,135
Virginia	1,752	1	127	166	0	0	34	0	0	75	1,673
West Virginia	2,678	423	445	250	1	0	255	0	4	194	3,360
Wyoming	18,398	164	1,295	1,161	772	850	3,069	15	57	1,388	20,527
Federal Offshore ^b	27,036	53	3,210	3,744	731	839	1,012	1,097	901	4,469	25,204
Pacific (California)	540	-1	35	23	0	0	10	0	0	46	515
Gulf of Mexico (Louisiana) ^b	19,721	26	1,843	2,343	415	543	864	889	799	3,427	18,500
Gulf of Mexico (Texas)	6,775	28	1,332	1,378	316	296	138	208	102	996	6,189
Miscellaneous ^c	82	3	6	1	0	4	12	0	0	7	99
U.S. Total	183,460	3,727	20,255	19,318	10,166	10,546	14,769	1,332	1,694	19,353	186,946

^aIndicates the estimate is associated with a sampling error (95 percent confidence interval) that exceeds 20 percent of the estimated value.

^bIncludes Federal offshore Alabama.

^cIncludes 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 2002 contained in the *Natural Gas Annual 2002*, DOE/EIA-0131(02).

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

Figure 19. Dry Natural Gas Proved Reserves by Area, 2002

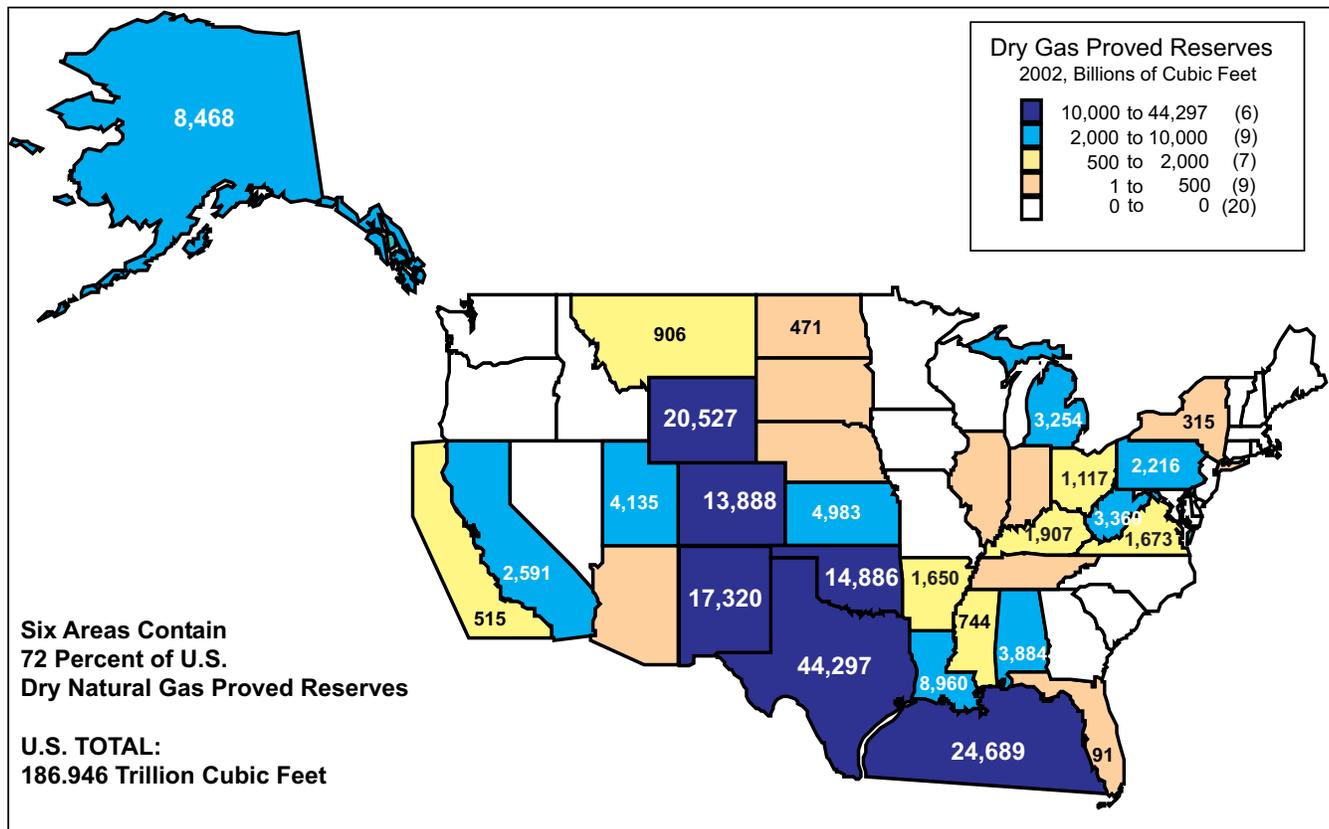
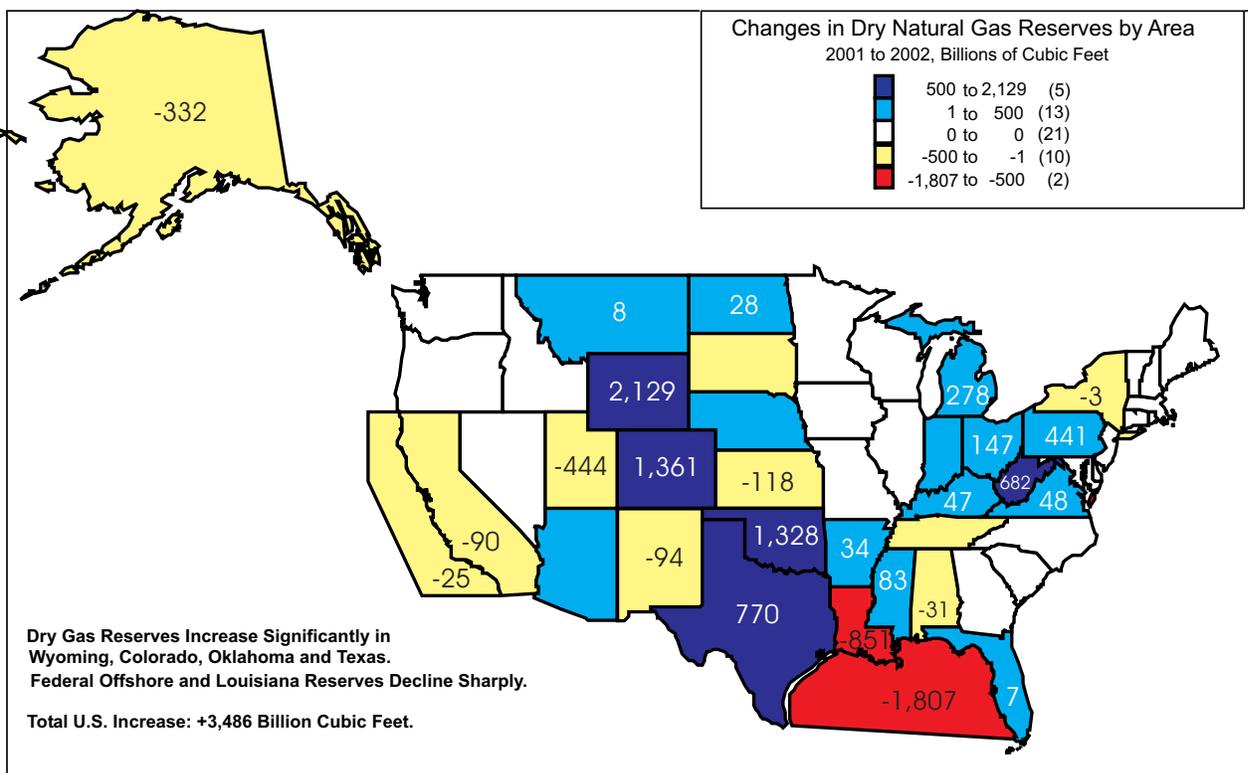


Figure 20. Changes in Dry Natural Gas Proved Reserves by Area, 2001 to 2002



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

Discussion of Reserves Changes

Figure 20 maps the change in dry gas proved reserves from 2001 to 2002 by area. Here's how the top six areas fared, compared to the total United States:

Area	Change in U.S. Gas Reserves (billion cubic feet)
Texas	+770
Gulf of Mexico Federal Offshore	-1,807
Wyoming	+2,129
New Mexico	-94
Oklahoma	+1,328
Colorado	+1,361
Area Total	+3,687
U.S. Total	+3,486

Figure 4 in Chapter 2 shows the components of change in dry natural gas proved reserves for 2002 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. Total discoveries of dry natural gas reserves were 17,795 billion cubic feet in 2002, a 22 percent decrease from the level reported in 2001. About 27 percent of the total discoveries were in Texas, 18 percent were in Wyoming, 17 percent were in the Gulf of Mexico Federal Offshore, 7 percent were in Colorado, and 7 percent were in New Mexico.

The largest component of total discoveries in 2002 were extensions of existing gas fields. Extensions were 14,769 billion cubic feet, 10 percent less than 2001 and 65 percent more than the prior 10-year average (8,931 billion cubic feet). Areas with the largest extensions and their percentage of total extensions were:

- Texas had 4,044 billion cubic feet of extensions (30 percent of the total)
- Wyoming had 3,069 billion cubic feet (21 percent)
- Colorado had 1,222 billion cubic feet (8 percent)
- Oklahoma had 1,186 billion cubic feet (8 percent).

New field discoveries were 1,332 billion cubic feet in 2002—63 percent less than in 2001. The areas with the largest new field discoveries were the Gulf of Mexico Federal Offshore (with 1,097 billion cubic feet of new

field discoveries, 82 percent of the total), Texas (84 billion cubic feet, 6 percent), and Louisiana (68 billion cubic feet, 5 percent). In the prior 10 years, U.S. operators reported an average of 1,744 billion cubic feet of reserves from new field discoveries per year. Reserves from new field discoveries in 2002 were 24 percent less than that average.

New reservoir discoveries in old fields were 1,694 billion cubic feet, 40 percent less than 2001. Among the areas with the largest new reservoir discoveries in old fields and their percentage of the total were:

- Gulf of Mexico Federal Offshore (901 billion cubic feet, 53 percent)
- Texas (365 billion cubic feet, 22 percent)
- Louisiana (255 billion cubic feet, 15 percent).

In the prior 10 years, U.S. operators reported an average of 2,454 billion cubic feet of reserves from new reservoirs discovered in old fields per year. Reserves from new reservoirs discovered in old fields in 2002 were 69 percent of that average.

Revisions and Adjustments

There were 20,255 billion cubic feet of revision increases, 19,318 billion cubic feet of revision decreases, and 3,727 billion cubic feet of adjustments in 2002. Combined, there were 4,664 billion cubic feet of net revisions and adjustments in 2002, excluding reserves additions from net sales and acquisitions. This is 28 percent less than the average volume of net revisions and adjustments of the prior 10 years (6,466 billion cubic feet).

Sales and Acquisitions

Sales represents that volume of dry natural gas proved reserves deducted from an operator's total by selling or transferring operations in existing gas fields to another operator (not a volume of production "sold" at the wellhead). Similarly, acquisitions are that volume of proved reserves added to an operator's total by purchase or operations transfer in existing gas fields.

In 2002, there were 10,166 billion cubic feet of sales transactions between operators, and 10,546 billion cubic feet of acquisitions. The net difference was 380 billion cubic feet of dry natural gas reserves.

Table 9. Natural Gas Proved Reserves, Reserves Changes, and Production, Wet After Lease Separation, 2002 (Billion Cubic Feet at 14.73 psia and 60° Fahrenheit)

State and Subdivision	Published Proved Reserves 12/31/01	Changes in Reserves During 2002									Proved Reserves 12/31/02
		Adjustments (+,-)	Revision Increases (+)	Revision Decreases (-)	Sales (-)	Acquisitions (+)	Extensions (+)	New Field Discoveries (+)	New Reservoir Discoveries in Old Fields (+)	Estimated Production (-)	
Alaska	8,901	1	142	119	13	13	62	0	8	462	8,533
Lower 48 States	182,842	4,005	21,098	20,083	10,652	11,080	15,406	1,374	1,744	19,786	187,028
Alabama	3,958	66	133	157	6	0	293	0	4	369	3,922
Arkansas	1,619	29	114	107	66	80	111	24	8	158	1,654
California	2,763	60	209	131	51	49	96	0	5	304	2,696
Coastal Region Onshore	185	2	21	4	3	5	3	0	0	12	197
Los Angeles Basin Onshore	195	2	25	5	0	0	11	0	0	10	218
San Joaquin Basin Onshore	2,298	59	152	119	48	36	82	0	5	275	2,190
State Offshore	85	-3	11	3	0	8	0	0	0	7	91
Colorado	12,949	202	2,096	994	1,094	921	1,263	1	1	997	14,348
Florida	96	9	5	3	0	0	0	0	0	5	102
Kansas	5,460	219	466	374	46	24	76	5	2	503	5,329
Kentucky	1,950	-25	395	402	2	69	96	1	0	83	1,999
Louisiana	10,040	116	1,236	1,918	610	706	664	71	265	1,380	9,190
North	3,927	78	593	295	231	256	320	9	24	398	4,283
South Onshore	5,341	54	580	1,329	376	433	300	51	196	855	4,395
State Offshore	772	-16	63	294	3	17	44	11	45	127	512
Michigan	3,032	79	390	281	36	72	293	8	0	246	3,311
Mississippi	663	81	89	76	28	33	55	1	27	99	746
Montana	907	57	41	110	10	6	97	4	0	78	914
New Mexico	18,559	203	2,449	2,415	1,092	1,118	1,239	6	20	1,634	18,453
East	3,919	75	1,404	1,157	159	176	308	6	20	581	4,011
West	14,640	128	1,045	1,258	933	942	931	0	0	1,053	14,442
New York	^a 318	-23	63	22	23	21	13	3	0	35	315 ^a
North Dakota	495	18	88	22	51	46	9	0	0	59	524
Ohio	971	147	186	139	18	2	53	2	1	87 ^a	1,118 ^a
Oklahoma	14,366	937	2,285	1,601	811	894	1,255	15	19	1,606	15,753
Pennsylvania	1,782	206	331	151	5	6	171	0	18	133	2,225
Texas	46,462	998	5,075	5,198	4,134	4,532	4,672	88	381	5,385	47,491
RRC District 1	1,066	26	96	48	252	276	33	0	0	103	1,094
RRC District 2 Onshore	1,863	48	232	257	131	146	212	3	53	302	1,867
RRC District 3 Onshore	3,943	130	491	606	526	480	492	6	44	628	3,826
RRC District 4 Onshore	10,345	117	1,268	1,724	1,446	1,374	1,207	56	120	1,456	9,861
RRC District 5	4,289	47	545	793	378	472	809	5	39	382	4,653
RRC District 6	6,429	153	359	359	302	303	593	0	40	655	6,561
RRC District 7B	290	162	61	48	123	17	0	0	1	66	294
RRC District 7C	3,757	-48	440	252	436	617	448	0	9	368	4,167
RRC District 8	6,007	27	841	619	237	232	369	2	26	592	6,056
RRC District 8A	1,190	28	106	82	19	28	16	0	0	100	1,167
RRC District 9	2,552	262	186	48	56	255	347	1	0	289	3,210
RRC District 10	4,263	49	409	294	226	328	144	2	1	377	4,299
State Offshore	468	-3	41	68	2	4	2	13	48	67	436
Utah	4,753	-6	214	507	1011	745	380	0	2	296	4,274
Virginia	1,752	1	127	166	0	0	34	0	0	75	1,673
West Virginia	2,825	404	463	260	1	0	265	0	4	202	3,498
Wyoming	19,399	71	1,358	1,217	810	892	3,218	16	60	1,456	21,531
Federal Offshore ^b	27,640	153	3,280	3,831	747	860	1,041	1,129	927	4,590	25,862
Pacific (California)	540	-1	35	23	0	0	10	0	0	46	515
Gulf of Mexico (Louisiana) ^b	20,290	109	1,904	2,420	428	561	893	919	825	3,540	19,113
Gulf of Mexico (Texas)	6,810	45	1,341	1,388	319	299	138	210	102	1,004	6,234
Miscellaneous ^c	83	3	5	1	0	4	12	0	0	6	100
U.S. Total	191,743	4,006	21,240	20,202	10,665	11,093	15,468	1,374	1,752	20,248	195,561

^aIndicates the estimate is associated with a sampling error (95 percent confidence interval) that exceeds 20 percent of the estimated value.

^bIncludes Federal offshore Alabama.

^cIncludes 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 2002 contained in the *Natural Gas Annual 2002*, DOE/EIA-0131(02).

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

Table 10. Nonassociated Natural Gas Proved Reserves, Reserves Changes, and Production, Wet After Lease Separation, 2002 (Billion Cubic Feet at 14.73 psia and 60° Fahrenheit)

State and Subdivision	Published Proved Reserves 12/31/01	Changes in Reserves During 2002									Proved Reserves 12/31/02
		Adjustments (+,-)	Revision Increases (+)	Revision Decreases (-)	Sales (-)	Acquisitions (+)	Extensions (+)	New Field Discoveries (+)	New Reservoir Discoveries in Old Fields (+)	Estimated Production (-)	
Alaska	2,309	1	58	77	13	13	62	0	4	200	2,157
Lower 48 States	159,612	3,504	17,595	17,488	9,588	10,172	14,554	1,145	1,417	17,060	163,863
Alabama	3,931	63	126	156	1	0	291	0	2	365	3,891
Arkansas	1,589	25	104	106	64	78	111	24	8	153	1,616
California	842	32	64	58	47	36	10	0	5	88	796
Coastal Region Onshore	0	0	0	0	0	0	0	0	0	0	0
Los Angeles Basin Onshore	1	-1	0	0	0	0	0	0	0	0	0
San Joaquin Basin Onshore	836	34	61	58	47	36	10	0	5	87	790
State Offshore	5	-1	3	0	0	0	0	0	0	1	6
Colorado	11,924	213	1,929	986	1,091	921	1,254	0	1	914	13,251
Florida	0	0	0	0	0	0	0	0	0	0	0
Kansas	5,355	219	452	327	45	23	75	5	1	495	5,263
Kentucky	1,925	-25	395	402	2	69	96	1	0	83	1,974
Louisiana	9,245	139	1,113	1,723	591	669	627	69	255	1,283	8,520
North	3,759	89	564	267	228	247	304	9	24	377	4,124
South Onshore	4,859	53	503	1,216	360	405	285	49	187	797	3,968
State Offshore	627	-3	46	240	3	17	38	11	44	109	428
Michigan	2,873	60	311	248	24	49	286	8	0	218	3,097
Mississippi	637	76	83	71	21	24	52	0	27	94	713
Montana	822	49	34	96	2	0	83	0	0	70	820
New Mexico	17,112	176	2,124	2,252	975	993	1,176	5	9	1,397	16,971
East	2,571	51	1,095	1,000	71	80	246	5	9	354	2,632
West	14,541	125	1,029	1,252	904	913	930	0	0	1,043	14,339
New York	311	-21	63	18	22	21	13	3	0	35	315
North Dakota	225	-2	7	2	4	0	0	0	0	15	209
Ohio	631	110	130	67	2	2	28	0	0	60	772
Oklahoma	13,256	762	2,076	1,414	664	766	1,204	13	19	1,442	14,576
Pennsylvania	1,614	215	324	128	1	6	167	0	18	127	2,088
Texas	40,376	806	3,960	4,630	3,775	4,289	4,358	85	362	4,727	41,104
RRC District 1	1,024	25	87	45	249	270	32	0	0	97	1,047
RRC District 2 Onshore	1,798	44	206	244	128	140	207	3	52	281	1,797
RRC District 3 Onshore	3,411	102	376	514	508	469	372	6	36	531	3,219
RRC District 4 Onshore	10,206	118	1,225	1,699	1,440	1,372	1,192	56	120	1,439	9,711
RRC District 5	4,206	46	540	775	378	472	806	5	39	373	4,588
RRC District 6	6,016	145	311	340	286	298	590	0	38	611	6,161
RRC District 7B	203	73	48	37	2	4	0	0	1	53	237
RRC District 7C	3,123	-60	244	190	404	591	407	0	5	286	3,430
RRC District 8	3,405	18	343	412	102	99	269	0	25	361	3,284
RRC District 8A	82	23	19	13	0	0	6	0	0	16	101
RRC District 9	2,428	244	158	34	52	252	342	1	0	269	3,070
RRC District 10	4,008	31	363	260	224	318	135	1	1	345	4,028
State Offshore	466	-3	40	67	2	4	0	13	45	65	431
Utah	4,450	-9	141	483	1,007	730	366	0	2	275	3,915
Virginia	1,752	1	127	166	0	0	34	0	0	75	1,673
West Virginia	2,777	402	460	229	1	0	265	0	4	201	3,477
Wyoming	18,911	59	1,113	1,162	556	691	3,214	15	60	1,375	20,970
Federal Offshore ^a	18,990	152	2,455	2,763	693	801	832	917	644	3,563	17,772
Pacific (California)	50	0	7	0	0	0	2	0	0	3	56
Gulf of Mexico (Louisiana) ^a	13,536	117	1,349	1,724	377	511	692	801	542	2,698	12,749
Gulf of Mexico (Texas)	5,404	35	1,099	1,039	316	290	138	116	102	862	4,967
Miscellaneous ^b	64	2	4	1	0	4	12	0	0	5	80
U.S. Total	161,921	3,505	17,653	17,565	9,601	10,185	14,616	1,145	1,421	17,260	166,020

^aIncludes Federal offshore Alabama.

^bIncludes 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 2002 contained in the *Natural Gas Annual 2002*, DOE/EIA-0131(02).

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, 2002 (Billion Cubic Feet at 14.73 psia and 60° Fahrenheit)

State and Subdivision	Published Proved Reserves 12/31/01	Changes in Reserves During 2002									Proved Reserves 12/31/02
		Adjustments (+,-)	Revision Increases (+)	Revision Decreases (-)	Sales (-)	Acquisitions (+)	Extensions (+)	New Field Discoveries (+)	New Reservoir Discoveries in Old Fields (+)	Estimated Production (-)	
Alaska	6,592	0	84	42	0	0	0	0	4	262	6,376
Lower 48 States	23,232	499	3,503	2,595	1,064	908	852	229	327	2,726	23,165
Alabama	26	4	7	1	5	0	2	0	2	4	31
Arkansas	30	4	10	1	2	2	0	0	0	5	38
California	1,922	27	145	73	4	13	86	0	0	216	1,900
Coastal Region Onshore	185	2	21	4	3	5	3	0	0	12	197
Los Angeles Basin Onshore	194	3	25	5	0	0	11	0	0	10	218
San Joaquin Basin Onshore	1,463	24	91	61	1	0	72	0	0	188	1,400
State Offshore	80	-2	8	3	0	8	0	0	0	6	85
Colorado	1,025	-11	167	8	3	0	9	1	0	83	1,097
Florida	96	9	5	3	0	0	0	0	0	5	102
Kansas	105	0	14	47	1	1	1	0	1	8	66
Kentucky	25	0	0	0	0	0	0	0	0	0	25
Louisiana	796	-24	123	195	19	37	37	2	10	97	670
North	168	-11	29	28	3	9	16	0	0	21	159
South Onshore	483	0	77	113	16	28	15	2	9	58	427
State Offshore	145	-13	17	54	0	0	6	0	1	18	84
Michigan	159	19	79	33	12	23	7	0	0	28	214
Mississippi	26	5	6	5	7	9	3	1	0	5	33
Montana	85	8	7	14	8	6	14	4	0	8	94
New Mexico	1,447	27	325	163	117	125	63	1	11	237	1,482
East	1,348	24	309	157	88	96	62	1	11	227	1,379
West	99	3	16	6	29	29	1	0	0	10	103
New York	7	-2	0	4	1	0	0	0	0	0	0
North Dakota	270	20	81	20	47	46	9	0	0	44	315
Ohio	340	37	56	72	16	0	25	2	1	27	346
Oklahoma	1,109	176	209	187	147	128	51	2	0	164	1,177
Pennsylvania	168	-9	7	23	4	0	4	0	0	6	137
Texas	6,089	189	1,115	568	359	243	314	3	19	658	6,387
RRC District 1	43	0	9	3	3	6	1	0	0	6	47
RRC District 2 Onshore	65	4	26	13	3	6	5	0	1	21	70
RRC District 3 Onshore	533	27	115	92	18	11	120	0	8	97	607
RRC District 4 Onshore	140	-2	43	25	6	2	15	0	0	17	150
RRC District 5	83	1	5	18	0	0	3	0	0	9	65
RRC District 6	412	9	48	19	16	5	3	0	2	44	400
RRC District 7B	88	88	13	11	121	13	0	0	0	13	57
RRC District 7C	634	12	196	62	32	26	41	0	4	82	737
RRC District 8	2,602	9	498	207	135	133	100	2	1	231	2,772
RRC District 8A	1,108	5	87	69	19	28	10	0	0	84	1,066
RRC District 9	124	18	28	14	4	3	5	0	0	20	140
RRC District 10	255	18	46	34	2	10	9	1	0	32	271
State Offshore	2	0	1	1	0	0	2	0	3	2	5
Utah	303	3	73	24	4	15	14	0	0	21	359
Virginia	0	0	0	0	0	0	0	0	0	0	0
West Virginia	48	2	3	31	0	0	0	0	0	1	21
Wyoming	488	12	245	55	254	201	4	1	0	81	561
Federal Offshore ^a	8,649	2	825	1,068	54	59	209	212	283	1,027	8,090
Pacific (California)	490	-1	28	23	0	0	8	0	0	43	459
Gulf of Mexico (Louisiana) ^a	6,753	-7	555	696	51	50	201	118	283	842	6,364
Gulf of Mexico (Texas)	1,406	10	242	349	3	9	0	94	0	142	1,267
Miscellaneous ^b	19	1	1	0	0	0	0	0	0	1	20
U.S. Total	29,824	499	3,587	2,637	1,064	908	852	229	331	2,988	29,541

^aIncludes Federal offshore Alabama.

^bIncludes 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 2002 contained in the *Natural Gas Annual 2002*, DOE/EIA-0131(02).

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

Production

The estimated 2002 U.S. dry natural gas production was 19,353 billion cubic feet, a decrease of 2 percent from 2001 (**Table 8**). Areas with the largest production and their percentage of total production were:

- Texas produced 5,038 billion cubic feet (BCF) of dry natural gas (26 percent of the total)
- Gulf of Mexico Federal Offshore produced 4,423 BCF (23 percent)
- New Mexico produced 1,524 BCF (8 percent)
- Oklahoma produced 1,518 BCF (8 percent)
- Wyoming produced 1,388 BCF (7 percent)
- Louisiana produced 1,338 BCF (7 percent).

In 2002, Wyoming's reported dry natural gas production exceeded that of Louisiana for the first time.

Wet Natural Gas

U. S. proved reserves of wet natural gas as of December 31, 2002 were 195,561 billion cubic feet, a 2 percent increase from the volume reported in 2001 (**Table 9**). At year-end 2002, proved wet natural gas reserves for the lower 48 States had increased by 2 percent compared to 2001, while those of Alaska had decreased by 4 percent.

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. A discussion of the methodology used to generate wet and dry natural gas reserves tables in this report appears in Appendix F.

Nonassociated Natural Gas

Proved Reserves

Proved reserves of nonassociated (NA) natural gas, wet after lease separation, in the United States increased by 3 percent (4,099 billion cubic feet) in 2002 to 166,020 billion cubic feet (**Table 10**). The lower 48 States' NA wet natural gas proved reserves increased 3 percent to a level of 163,863 billion cubic feet, while Alaska had a 7 percent decline to a level of 2,157 billion cubic feet. Those States with the largest increases in NA wet natural gas reserves were Wyoming, Colorado, Oklahoma, and Texas.

Total Discoveries

NA wet natural gas *total discoveries* of 17,182 billion cubic feet in 2002 decreased 17 percent compared to 2001's total of 20,785 billion cubic feet. Areas with the most *total discoveries* in 2002 were Texas (4,805 billion cubic feet), Wyoming (3,289 billion cubic feet), the Gulf of Mexico Federal Offshore (2,391 billion cubic feet), Colorado (1,255 billion cubic feet), and Oklahoma (1,236 billion cubic feet).

Production

U.S. production of NA wet natural gas decreased 1 percent from an estimated 17,451 billion cubic feet in 2001 to 17,260 billion cubic feet in 2002. The five leading producing areas were: Texas (27 percent), the Gulf of Mexico Federal Offshore (21 percent), Oklahoma (8 percent), New Mexico (8 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 declined 1 percent to 29,541 billion cubic feet in 2002 (**Table 11**). Proved reserves of AD wet natural gas in the lower 48 States decreased less than 1 percent (-67 billion cubic feet) to 23,165 billion cubic feet, and in Alaska declined 3 percent (-216 billion cubic feet) to 6,376 billion cubic feet in 2002. The areas of the country with the largest AD wet natural gas reserves and their percentage of the total were:

- Gulf of Mexico Federal Offshore (26 percent)
- Texas (22 percent)
- Alaska (22 percent)
- California (6 percent)
- New Mexico (5 percent).

These areas logically correspond to the areas of the country with the largest volumes of crude oil reserves.

Production

U.S. production of AD wet natural gas decreased slightly from an estimated 3,193 billion cubic feet in 2001 to 2,988 billion cubic feet in 2002 (**Table 11**). Production of AD wet natural gas in the lower 48 States

decreased from 2,940 billion cubic feet to 2,726 billion cubic feet in 2002, a decline of 7 percent. The areas of the country with the largest AD wet natural gas production and their percentage of the total were:

- Gulf of Mexico Federal Offshore (33 percent)
- Texas (22 percent)
- Alaska (9 percent)
- New Mexico (8 percent)
- California (7 percent).

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

Coalbed Methane

Proved Reserves

In 2002, proved reserves of coalbed methane increased to 18,491 billion cubic feet, a 5 percent increase from the 2001 level (17,531 billion cubic feet). Coalbed methane accounted for 10 percent of all 2002 dry natural gas reserves (**Table 12**). EIA estimates that the 2002 proved gas reserves of fields identified as having coalbed methane are now more than quadruple the volume reported in 1989 (**Figure 21**). Five States (Colorado, New Mexico, Wyoming, Utah, and Alabama) currently have the majority (89 percent) of U.S. Coalbed methane proved reserves. Estimates of proved coalbed methane reserves increased 7 percent in Colorado, 1 percent in New Mexico, 3 percent in Wyoming, 2 percent in Utah, and 10 percent in Alabama in 2002.

Table 12. Coalbed Methane Proved Reserves and Production, 1989–2002
(Billion Cubic Feet at 14.73 psia and 60° Fahrenheit)

Year	Alabama	Colorado	New Mexico	Utah	Wyoming	Eastern States ^a	Western States ^b	Others ^c	United States
Reserves									
1989	537	1,117	2,022	NA	NA	NA	NA	0	3,676
1990	1,224	1,320	2,510	NA	NA	NA	NA	33	5,087
1991	1,714	2,076	4,206	NA	NA	NA	NA	167	8,163
1992	1,968	2,716	4,724	NA	NA	NA	NA	626	10,034
1993	1,237	3,107	4,775	NA	NA	NA	NA	1,065	10,184
1994	976	2,913	4,137	NA	NA	NA	NA	1,686	9,712
1995	972	3,461	4,299	NA	NA	NA	NA	1,767	10,499
1996	823	3,711	4,180	NA	NA	NA	NA	1,852	10,566
1997	1,077	3,890	4,351	NA	NA	NA	NA	2,144	11,462
1998	1,029	4,211	4,232	NA	NA	NA	NA	2,707	12,179
1999	1,060	4,826	4,080	NA	NA	NA	NA	3,263	13,229
2000	1,241	5,617	4,278	1,592	1,540	1,399	41	--	15,708
2001	1,162	6,252	4,324	1,685	2,297	1,453	358	--	17,531
2002	1,283	6,691	4,380	1,725	2,371	1,488	553	--	18,491
Production									
1989	23	12	56	NA	NA	NA	NA	0	91
1990	36	26	133	NA	NA	NA	NA	1	196
1991	68	48	229	NA	NA	NA	NA	3	348
1992	89	82	358	NA	NA	NA	NA	10	539
1993	103	125	486	NA	NA	NA	NA	18	752
1994	108	179	530	NA	NA	NA	NA	34	851
1995	109	226	574	NA	NA	NA	NA	47	956
1996	98	274	575	NA	NA	NA	NA	56	1,003
1997	111	312	597	NA	NA	NA	NA	70	1,090
1998	123	401	571	NA	NA	NA	NA	99	1,194
1999	108	432	582	NA	NA	NA	NA	130	1,252
2000	109	451	550	74	133	58	4	--	1,379
2001	111	490	517	83	278	69	14	--	1,562
2002	117	520	471	103	302	68	33	--	1,614

^aIncludes Ohio, Pennsylvania, Virginia, and West Virginia.

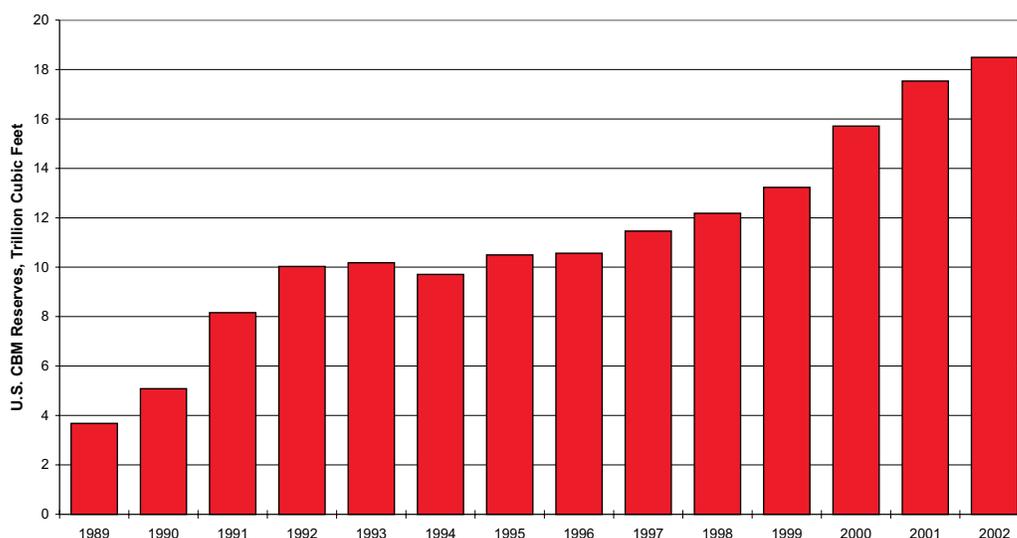
^bIncludes Arkansas, Kansas, Montana, and Oklahoma.

^cIncludes Oklahoma, Pennsylvania, Utah, Virginia, West Virginia, and Wyoming; these states are individually listed or grouped in Eastern States and Western States for 2000-2002.

NA = Not applicable.

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

Figure 21. Coalbed Methane Proved Reserves, 1989-2002



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

Production

U.S. coalbed methane production grew by 3 percent in 2002 to 1,614 billion cubic feet. It accounted for 8 percent of U.S. dry gas production.

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 extracted from various trade publications and company reports. The citations do not necessarily reflect EIA's concurrence, but are considered important enough to be brought to the reader's attention.

Wyoming

Wyoming's dry natural gas reserves increased by 2,129 billion cubic feet in 2002, the largest increase of any State. This was the result of development in the Pinedale and Jonah fields, and in coalbed methane fields located in the Powder River Basin.

- **Pinedale Anticline:** On March 4, 2003, Williams announced that its midstream business has been selected by Shell Exploration & Production Company affiliates to process incremental natural gas produced by Shell from the Pinedale Anticline in southwestern Wyoming. Williams plans to add a fourth cryogenic processing train at Williams' gas plant in Opal, Wyoming. The new cryogenic turbo expander plant will have a processing capacity of 350 MMcf/d and be capable of extracting more than 7,000 barrels per day of natural gas liquids. This project will boost Opal's overall processing capacity from 750 MMcf/d to more than 1.1 billion cubic feet per day, with the ability to recover in excess of 50,000 barrels per day of NGL products.{41}
- **Powder River Basin:** This basin is located in northeastern Wyoming and southeastern Montana. Western Gas Resources, Inc. experienced double-digit net production growth from the Powder River Basin coalbed methane play for the fifth straight year in 2002, with an increase of 33 percent over 2001 to an average of 118 MMcf/d net. Western participated in 909 gross wells in 2002 and experienced a 98 percent success rate. Western plans to drill 845 gross wells during 2003 and anticipates increasing net

production five to ten percent compared to 2002 as they transition from the relatively mature Wyodak coal on the eastern side of the basin to the more prolific Big George coal to the west. The Big George coal is located on Federal lands and is deeper, thicker, and at higher pressure than the Wyodak coal. As a result, reserves and production rates from a Big George coal well are expected to be higher. Wells within the Big George coal are expected to take twelve to twenty-four months to dewater versus six to nine months for a typical Wyodak well.^{42}

Colorado

Colorado had a net increase of 1,361 billion cubic feet of dry natural gas proved reserves in 2002. This was primarily from development of the Mamm Creek Field in the Piceance Basin (northwestern Colorado).

In 2002, EnCana added production and reserves in the Piceance Basin. This multi-zone, tight gas region is one of EnCana's leading growth engines, and it is early in its life. Wells typically intersect 3,000 feet of gas-charged, multi-formation reservoir. With an inventory of more than 1,000 known well locations, the area has great potential.^{43}

Development of coalbed methane fields and gas fields within the San Juan, Piceance, and Raton Basins continued. Coalbed methane fields now account for about half of Colorado's dry gas production.

Oklahoma

Oklahoma had a 10 percent increase in dry natural gas proved reserves in 2002 (+1,328 billion cubic feet). Production increased 2 percent (+37 billion cubic feet).

Areas of Note: Large Reserves Declines

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 5 percent (-1,807 billion cubic feet) in 2002. Production decreased 10 percent from 4,913 billion cubic feet in 2001 to 4,423 billion cubic feet in 2002.

Louisiana

Louisiana's proved dry natural gas reserves decreased by 9 percent (-851 billion cubic feet) in 2002. Production in Louisiana decreased 10 percent (-141 billion cubic feet) in 2002.

Utah

Utah's proved dry natural gas reserves decreased by 10 percent (-444 billion cubic feet) in 2002. Production in Utah decreased 1 percent (-2 billion cubic feet) in 2002.

Reserves in Nonproducing Status

Nonproducing proved natural gas reserves (wet after lease separation) of 49,974 billion cubic feet were reported in 2002, 6 percent less than the 52,948 billion cubic feet reported in 2001 (**Appendix D, Table D10**). About 25 percent of the reserves in nonproducing status are located in Texas. Another 24 percent are in the Gulf of Mexico Federal Offshore, as most new deepwater reserves are in the nonproducing category. Wells or reservoirs are nonproducing due to any of several operational reasons. These include:

- waiting for well workovers
- waiting for additional development or replacement wells to be drilled
- production or pipeline facilities not yet installed
- awaiting depletion of other zones or reservoirs before recompletion in reservoirs not currently open to production (called "behind pipe" reserves).