Transmission

A complex network of interconnected pipelines provides for the transmission and ultimate delivery of natural gas to customers in each of the lower 48 States. Flows of natural gas are primarily from the producing areas in Texas, Louisiana, Oklahoma, and offshore areas of the Gulf of Mexico toward the northeast and midwest. Imports, primarily from Canada, continue to make a significant contribution to the total gas consumption in the United States.

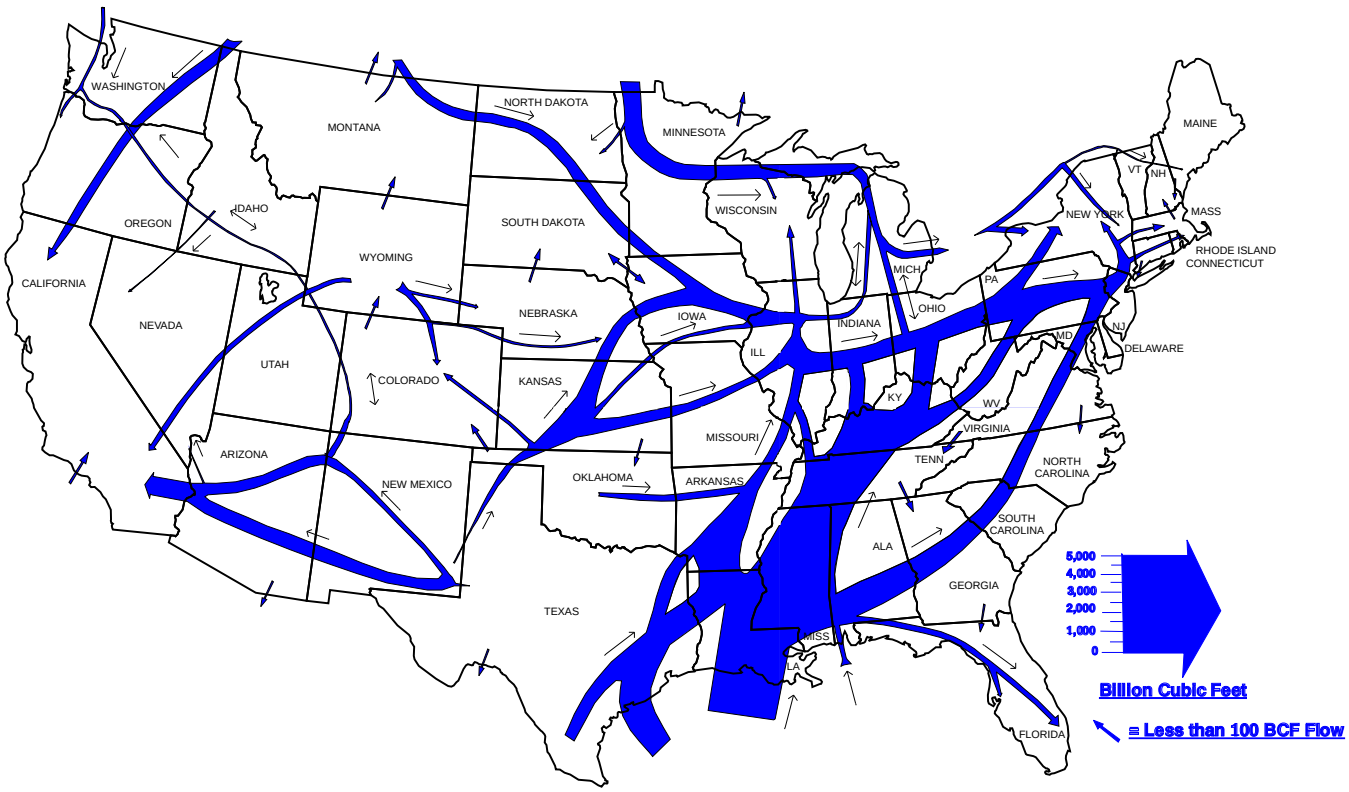
Expansion of the interstate pipeline system in 1996 added to existing capacity and increased deliverability to market centers. Further expansions projected through the turn of the century will add capacity for importing Canadian gas and improve access to deep-water production areas in the Gulf. Increased storage capacity, particularly facilities with high deliverability, and interconnections with the interstate pipeline system provide greater system flexibility for more efficient delivery of natural gas to the marketplace.

The volume of gas flowing from producing areas in New Mexico westward toward markets in California generally declined. The lower annual transmission volumes reflect decreased consumption of natural gas in the generation of electricity in California. California, which is second in the Nation for use of natural gas for generation of electricity in the United States reported a 20 percent decrease in consumption in that sector.

Flows from producing areas in Texas and Louisiana through Mississippi, Tennessee, and Kentucky to consumers in the Great Lakes area increased. These increased flows were required to meet increased demand, particularly for residential consumers in Illinois, Indiana, Michigan, and Ohio.

From the Great Lakes area eastward to consumers in Pennsylvania, New York, New Jersey, and Massachusetts, interstate flows were generally lower than in 1995. These

Figure 6. Principal Interstate Natural Gas Flow Summary, 1996



decreases were related to decreases in electric utility consumption in each State and by decreased industrial consumption in each of the States except New York. However, all of the States reported significantly increased residential and commercial consumption. In general, increased interstate movements up the eastern seaboard States helped to meet the overall increased total demand in the middle Atlantic and New England areas.

Imports and Exports

In 1996, net imports of natural gas rose for the 10th consecutive year, representing almost 13 percent of U.S. gas consumption. Exports remained at nearly the same level as one year ago. Canada continued its role as the major supplier of gas imported into the United States. However, the growth rate of U.S. imports of Canadian gas slowed as pipeline capacity utilization remained near its maximum level and capacity expansion grew only minimally. Mexico continued to become increasingly integrated into the North American natural gas market as cooperative projects among the North American nations proceeded. Spot purchases of liquefied natural gas (LNG) from the United Arab Emirates indicated that LNG transactions are becoming more flexible and responsive to changes in the world marketplace.

Trade With Canada

Pipeline imports from Canada continued to climb to a new record level of 2,883 billion cubic feet. However, the growth rate slowed to 2.4 percent in contrast to an average annual growth rate of 12 percent during the previous 9 years. The capacity of the pipelines that bring the gas across the border constrained the growth rate. Although a substantial increase in Canadian export capacity has taken place during the past 5 years, thus enabling the high growth rates experienced, current capacity is almost completely utilized.

The average price of natural gas imports from Canada rebounded to $1.96 per thousand cubic feet, a 32 percent increase over last year's 20-year record low of $1.48 per thousand cubic feet. This is the second-highest average price since 1986 after the $2.02 average price of 1993. The substantial increase in Canadian import prices follows the trend in the U.S. wellhead prices, which rose 40 percent from 1995 to 1996. (The 1995 and 1996 wellhead prices per thousand cubic feet were $1.55 and $2.17, respectively.)

Natural gas exports to Canada climbed sharply to 52 billion cubic feet, an 88-percent increase over 1995 levels, but represented a return to 1994 levels. The average price of these exports was $2.67 per thousand cubic feet, a 36-percent increase over the 1995 price. Despite the low prices for U.S. gas exports in 1995, Canadian gas was still more competitively priced. By 1996, the price of U.S. gas exports was closer to the Canadian price, which may have contributed to the increase in exports from the United States into Canada. Exports to Canada represented 34 percent of total U.S. natural gas exports during 1996.

Trade With Mexico

Exports of natural gas to Mexico fell sharply in 1996 to 33.8 billion cubic feet, the lowest level since 1990 and 45 percent less than the 1995 level. The price of exports to Mexico rebounded to $2.11 per thousand cubic feet, up 41 percent from 1995 and the highest price since 1989. The United States imported 13.9 billion cubic feet of natural gas from Mexico in 1996, more than double the amount imported during 1995. From 1984 through November 1993, the United States did not import gas from Mexico. Trade resumed in December 1993, and in each year since that time imports from Mexico have represented less than 1 percent of total U.S. natural gas imports. The evolving bilateral trade between the United States and Mexico is expected to continue. Crossborder trade reflects the circumstances of gas demand in various locations and the proximity of available infrastructure or gas supplies on either side of the border.

Liquefied Natural Gas

During 1996, the United States imported liquefied natural gas (LNG) from Algeria and the United Arab Emirates (Abu Dhabi) into Massachusetts and Louisiana and exported LNG from Alaska to Japan. LNG imports represented 1 percent of total imports, while LNG exports were 44 percent of total exports. Liquefaction makes overseas transportation possible. A 600-to-1 volume reduction is achieved by lowering the temperature of natural gas to approximately minus 260 degrees Fahrenheit.

LNG imports from Algeria rose to 35.3 billion cubic feet in 1996, nearly double the 1995 level. This dramatic increase was primarily the result of the end of curtailments, which began in August 1994. Sonatrach, the state-owned oil and gas company in Algeria, curtailed exports because of a major renovation project on that nation's liquefaction

plants. Those renovations have progressed so that the original capacities of its liquefaction plants have been restored. LNG shipments from Algeria into the United States may also rise as a result of the beginning of operations (in November 1996) on the Gazoduc Maghreb-Europe pipeline. This pipeline provides an alternative way to deliver natural gas to Spain, which has been Algeria's second-largest (France is the largest) LNG customer. The result of using this pipeline for shipments to Spain would be that more LNG export capacity from Algeria will become available.

For the first time since 1986 when LNG was imported from Indonesia, and for only the second time since LNG imports commenced, spot purchases of LNG were received from sources other than Algeria. LNG was imported into Everett, Massachusetts from the United Arab Emirates in September and December of 1996; these shipments totaled just under 5 billion cubic feet. These spot purchases indicate that LNG transactions are becoming more flexible and responsive to changes in the world marketplace. (The Special Focus article, "Worldwide Natural Gas Supply and Demand and the Outlook for Global LNG Trade," which appears in the July 1997 issue of the *Natural Gas Monthly*, discusses the potential of LNG trading across the world.)

Another factor influencing the increase in LNG imports was the significant rise in the prices of U.S. natural gas supplies. This enabled the historically higher-priced LNG to compete more successfully in the northeastern markets. The price of LNG imports from Algeria rose 17 percent to $2.70 per thousand cubic feet. The price for the shipments from the United Arab Emirates averaged $3.46 per thousand cubic feet, bringing the average LNG import price to $2.80 per thousand cubic feet.

LNG exports from Alaska to Japan rose 4 percent from 1995 to 1996 to a record 67.6 billion cubic feet. The price for these exports increased 7 percent from the previous year to $3.65 per thousand cubic feet. Total LNG exports to Japan are nearing the maximum level of volumes authorized by the U.S. Department of Energy, Office of Fossil Energy.

At present, there are two LNG import facilities in the United States that are not receiving LNG shipments. The Cove Point LNG facility in southern Maryland continues to be used to liquefy and store gas for later regasification during peak demand periods. For the present, the facility uses domestic gas, but in the long term it expects to be a receiving terminal for LNG tankers. The Elba Island LNG facility in Georgia is not scheduled for operation through 2000.

Storage

The ability of the natural gas industry to store natural gas ensures supply reliability during periods of high demand. It also enables greater system efficiency by allowing for more level production and transmission flows. Historically, the industry built up the storage supplies during periods of lower consumer demand, and withdrew from the storage inventory during periods of high demand. That pattern of injections into and withdrawals from storage continues, but the concept of what constitutes sufficient storage levels has changed. The change has resulted in lower storage levels which in turn reflect changes in the natural gas industry. These changes include the way natural gas storage is managed, technological changes in storage facilities, and the development of a more integrated transportation network.

A significant change in storage facilities has been the development of high deliverability storage, particularly salt cavern facilities. Salt cavern storage facilities usually have considerably less capacity than traditional storage sites in depleted gas and oil fields, but they can be recycled quickly and can convert from injections to withdrawals in only a few hours. This provides greater flexibility in meeting today's market demands. Flexibility has also been enhanced by the increase in the number of interconnections among pipelines within the natural gas transportation network. This has expanded the industry's ability to deliver gas. These changes in storage and transportation have succeeded in meeting high demand in the winter months without the high inventory levels of the past.

Annual 1996 totals reported by underground storage operators were 2,906 billion cubic feet of injections and 2,911 billion cubic feet of withdrawals. LNG storage operators reported additions of 73 billion cubic feet and withdrawals of 69 billion cubic feet for the year. Overall, the year-end net change in storage was 2 billion cubic feet of withdrawals. The net change in storage has fluctuated in recent years ranging from a net withdrawal of 415 billion cubic feet in 1995 to a net injection of 286 billion cubic feet in 1994.

During 1996, two additional underground storage facilities were put into operation in Oklahoma. New York, Louisiana, and Texas each added one new storage facility. Utah and Arkansas each reported discontinuation of operations in one underground storage field.

The 1995-96 heating season ended with a historically low 755 billion cubic feet of working gas in storage, 43 percent less than the ending inventory of the previous heating season. At the end of October 1996, the starting inventory for the 1996-97 heating season was only 2,800 billion cubic feet, a 7 percent drop from the previous year. However, due to a warmer than normal heating season, working gas levels at the end of March 1997 are estimated to be 985 billion cubic feet, 23 percent higher than the previous year.

Pipeline Expansions

During 1996, the United States completed 26 pipeline expansion projects. These expansion projects either added capacity directly to the interstate network, improved local intrastate service, or expanded access to producing fields or natural gas market centers. Interregional transmission saw capacity increase by 687 million cubic feet per day. While the total number of completed projects was 26 during 1996, slightly more than in 1995, the total amount of pipeline capacity added, 2,548 million cubic feet per day, was well below the previous year's 3,450 million cubic feet per day, reflecting the smaller size of the 1996 projects.

Some of the highlights of 1996 for U.S. pipeline expansions were:

- Completion of the lower section of the TransColorado pipeline system. The southern 25-mile section of this proposed 266-mile pipeline system is now capable of moving 120 million cubic feet per day from the Ignacio area of the southern Colorado San Juan Basin to the Blanco hub in northern New Mexico. The northern section of this system is expected to be completed in late 1998.

- Completion of Transwestern Pipeline Company's San Juan Basin expansion. The finish of this project has expanded capacity on the New Mexico side of the basin, thus relieving a bottleneck that has hindered the flow of production out of the area for several years. It has also improved producer access to customers located in the eastern and midwestern markets of the United States. During 1996, Transwestern also acquired the pipeline assets of Northwest Pipeline Company located between the Ignacio area of the San Juan Basin and the Blanco hub (which is operated by Transwestern). A consequence of this acquisition has been a greater integration of gathering and processing capabilities in the area and the elimination of some flow bottlenecks and production constraints.

- Completion of the MidCon/TransTexas Pipeline from the North Bob West production field in south Texas to interconnections with the interstate system and market centers in the Katy area of east Texas. The completion of this intrastate pipeline project (275 million cubic feet per day) links the largest new production area ever developed in south Texas and provides local producers access to the interstate marketplace for the disposition of their production. Production from, and linkages with, the Bob West field also figure predominantly in the proposed development of several export pipelines to Mexico over the next several years.

- Completion of two projects in the Midwest Region to add export capacity to Canada. These projects were: ANR Pipeline Company's "LINK" project (150 million cubic feet per day) and Great Lakes Gas Transmission Company's St. Clair Import Point Looping (50 million cubic feet per day). The LINK project supplies gas to a local Canadian distribution company, Niagara Gas Transmission Ltd. Of Ontario, while the St. Clair project provides increased supply security and backup at the existing export point. Both projects improve the free flow of North American gas supplies and access to markets. A slight increase in capacity into the United States from Canada (20 million cubic feet per day) occurred with the completion of Viking Gas Transmission Company's Northern Looping project from Manitoba, Canada to Minnesota.

- Completion of several multi-year projects. Northern Natural Gas Company's Iowa-Illinois expansion (107 million cubic feet per day) was finished in the latter part of the year, adding 35 million cubic feet per day in its final phase. Transcontinental Gas Pipeline Company completed the final phase of its Southeastern project covering a mainline capacity increase of 55 million cubic feet per day along its system between Alabama and North Carolina. Texas Eastern Transmission Corporation finalized its Flex-X and ITP with the completion of two local projects in Pennsylvania and added capacity on its line between Ohio and New Jersey.

While the past several years have been a comparatively slow period for pipeline expansions, between now and the turn of the century a great deal of new pipeline capability is proposed for development throughout North America. Much of the proposed new pipeline construction can be grouped into several major focus areas. The most extensive development is focused on expanding the deliverability of Canadian gas to the U.S. Midwest and Northeast and to Canadian markets. Four new pipelines and several expansions are planned, which not only would improve access to natural gas supplies in western Canada but also to production from the developing Sable Island field in eastern Canada. The second largest focus is on improving access to the increasing deep-water production in the Gulf of Mexico. Next are those projects whose objectives are to increase the flow of lower-cost supplies located in the Central United States to markets located primarily in the Midwest. Currently, the capability to do so is limited. The latter series of expansions will be competing, to some degree, with the projects slated to increase flows of western Canadian gas to the Midwest marketplace.

Table 9. Interstate Movements and Movements Across U.S. Borders of Natural Gas by State, 1996
(Million Cubic Feet)

State	State or Country From/To	Volume		
		Receipts/ Imports From	Deliveries/ Exports To	Net[a]
Alabama				
	Florida	33	469,021	-468,988
	Georgia	0	1,502,968	-1,502,968
	Kentucky	0	[b]1	-1
	Louisiana	0	[b]2	-2
	Mississippi	3,231,525	0	3,231,525
	Missouri	0	[b]2	-2
	South Carolina	0	[b]16	-16
	Tennessee	368	1,423,143	-1,422,774
	Total	3,231,927	3,395,153	-163,227
Alaska				
	Japan	0	[c]67,648	-67,648
	Total	0	67,648	-67,648
Arizona				
	California	0	700,796	-700,796
	Mexico	0	3,405	-3,405
	Nevada	0	39,836	-39,836
	New Mexico	883,918	0	883,918
	Total	883,918	744,037	139,881
Arkansas				
	Louisiana	1,909,654	197,630	1,712,023
	Mississippi	0	1,872,576	-1,872,576
	Missouri	9,614	662,786	-653,172
	Oklahoma	399,321	0	399,321
	Texas	492,373	4,300	488,073
	Total	2,810,961	2,737,292	73,669
California				
	Arizona	700,796	0	700,796
	Nevada	243,866	0	243,866
	Oregon	602,841	0	602,841
	Total	1,547,503	0	1,547,503
Colorado				
	Kansas	0	95,358	-95,358
	Nebraska	180,063	1,123	178,940
	New Mexico	0	312,064	-312,064
	Oklahoma	25,819	73,458	-47,639
	Utah	106,032	19,136	86,897
	Wyoming	432,181	249,670	182,511
	Total	744,096	750,810	-6,713
Connecticut				
	Massachusetts	2,458	0	2,458
	New York	386,469	73,343	313,126
	Rhode Island	0	181,290	-181,290
	Total	388,927	254,633	134,294
Delaware				
	Maryland	0	3,252	-3,252
	Pennsylvania	46,232	0	46,232
	Total	46,232	3,252	42,980
District of Columbia				
	Maryland	5,600	0	5,600
	Virginia	24,093	0	24,093
	Total	29,693	0	29,693

See footnotes at end of table.

Table 9. Interstate Movements and Movements Across U.S. Borders of Natural Gas by State, 1996 (Continued)
(Million Cubic Feet)

State	State or Country From/To	Volume		
		Receipts/ Imports From	Deliveries/ Exports To	Net[a]
Florida				
	Alabama	469,021	33	468,988
	Georgia	14,064	0	14,064
	Total	483,085	33	483,052
Georgia				
	Alabama	1,502,968	0	1,502,968
	Florida	0	14,064	-14,064
	South Carolina	0	1,102,769	-1,102,769
	Tennessee	0	8,129	-8,129
	Total	1,502,968	1,124,962	378,006
Idaho				
	Canada	842,114	0	842,114
	Nevada	0	48,442	-48,442
	Oregon	126,012	0	126,012
	Utah	133	0	133
	Washington	99	823,898	-823,799
	Wyoming	0	27,271	-27,271
	Total	968,358	899,611	68,746
Illinois				
	Indiana	139,099	1,289,309	-1,150,210
	Iowa	933,856	26,458	907,398
	Kentucky	454,131	0	454,131
	Missouri	1,015,520	0	1,015,520
	Wisconsin	64,724	182,980	-118,256
	Total	2,607,330	1,498,747	1,108,583
Indiana				
	Illinois	1,289,309	139,099	1,150,210
	Kentucky	988,335	0	988,335
	Michigan	0	435,460	-435,460
	Ohio	27,609	1,105,950	-1,078,341
	Total	2,305,253	1,680,509	624,743
Iowa				
	Illinois	26,458	933,856	-907,398
	Minnesota	564,359	271,648	292,711
	Missouri	245,148	0	245,148
	Nebraska	661,704	0	661,704
	South Dakota	301	569	-267
	Total	1,497,972	1,206,074	291,899
Kansas				
	Colorado	95,358	0	95,358
	Missouri	0	625,779	-625,779
	Nebraska	1,283	870,787	-869,504
	Oklahoma	1,122,386	33,373	1,089,013
	Total	1,219,027	1,529,940	-310,913
Kentucky				
	Alabama	[b]1	0	1
	Illinois	0	454,131	-454,131
	Indiana	0	988,335	-988,335
	Ohio	6,325	1,558,506	-1,552,181
	Tennessee	3,949,767	2	3,949,766
	West Virginia	0	877,741	-877,741
	Total	3,956,093	3,878,714	77,379
Louisiana				
	Alabama	[b]2	0	2
	Algeria	7,042	0	7,042
	Arkansas	197,630	1,909,654	-1,712,023

See footnotes at end of table.

Table 9. Interstate Movements and Movements Across U.S. Borders of Natural Gas by State, 1996 (Continued)
(Million Cubic Feet)

State	State or Country From/To	Volume		
		Receipts/ Imports From	Deliveries/ Exports To	Net[a]
	Mississippi	408	4,006,581	-4,006,173
	Texas	2,174,961	6,712	2,168,249
	Total	2,380,044	5,922,946	-3,542,903
Maine				
	Massachusetts	[b]19	0	19
	New Hampshire	5,888	0	5,888
	Total	5,907	0	5,907
Maryland				
	Delaware	3,252	0	3,252
	District of Columbia	0	5,600	-5,600
	Pennsylvania	43,557	639,875	-596,318
	Virginia	835,664	26,782	808,882
	Total	882,473	672,257	210,215
Massachusetts				
	Algeria	28,283	0	28,283
	Connecticut	0	2,458	-2,458
	Maine	0	[b]19	-19
	New Hampshire	0	19,498	-19,498
	New Jersey	0	[b]192	-192
	New York	326,187	0	326,187
	Rhode Island	136,456	61,757	74,699
	United Arab Emirates	[c]4,949	0	4,949
	Total	495,875	83,924	411,950
Michigan				
	Canada	29,043	586,696	-557,653
	Indiana	435,460	0	435,460
	Ohio	350,747	0	350,747
	Wisconsin	730,422	139,929	590,493
	Total	1,545,671	726,625	819,047
Minnesota				
	Canada	937,806	0	937,806
	Iowa	271,648	564,359	-292,711
	North Dakota	0	8,157	-8,157
	South Dakota	619,703	0	619,703
	Wisconsin	1,376	871,327	-869,951
	Total	1,830,533	1,443,843	386,690
Mississippi				
	Alabama	0	3,231,525	-3,231,525
	Arkansas	1,872,576	0	1,872,576
	Louisiana	4,006,581	408	4,006,173
	Tennessee	1,016	2,841,597	-2,840,582
	Total	5,880,172	6,073,530	-193,358
Missouri				
	Alabama	[b]2	0	2
	Arkansas	662,786	9,614	653,172
	Illinois	0	1,015,520	-1,015,520
	Iowa	0	245,148	-245,148
	Kansas	625,779	0	625,779
	Nebraska	248,550	0	248,550
	Oklahoma	19,674	24	19,649
	Total	1,556,791	1,270,306	286,485
Montana				
	Canada	576,511	91	576,420
	North Dakota	10,289	589,887	-579,598
	South Dakota	0	266	-266

See footnotes at end of table.

Table 9. Interstate Movements and Movements Across U.S. Borders of Natural Gas by State, 1996 (Continued)
(Million Cubic Feet)

State	State or Country From/To	Volume		
		Receipts/ Imports From	Deliveries/ Exports To	Net[a]
	Wyoming	17,159	322	16,837
	Total	603,959	590,566	13,393
Nebraska				
	Colorado	1,123	180,063	-178,940
	Iowa	0	661,704	-661,704
	Kansas	870,787	1,283	869,504
	Missouri	0	248,550	-248,550
	South Dakota	0	12,316	-12,316
	Wyoming	219,242	0	219,242
	Total	1,091,152	1,103,916	-12,764
Nevada				
	Arizona	39,836	0	39,836
	California	0	243,866	-243,866
	Idaho	48,442	0	48,442
	Utah	268,138	0	268,138
	Total	356,416	243,866	112,550
New Hampshire				
	Maine	0	5,888	-5,888
	Massachusetts	19,498	0	19,498
	Vermont	7,937	0	7,937
	Total	27,435	5,888	21,548
New Jersey				
	Massachusetts	[b]192	0	192
	New York	0	637,254	-637,254
	Pennsylvania	1,217,085	0	1,217,085
	Total	1,217,278	637,254	580,023
New Mexico				
	Arizona	0	883,918	-883,918
	Colorado	312,064	0	312,064
	Texas	4,089	568,446	-564,358
	Total	316,153	1,452,364	-1,136,212
New York				
	Canada	652,578	0	652,578
	Connecticut	73,343	386,469	-313,126
	Massachusetts	0	326,187	-326,187
	New Jersey	637,254	0	637,254
	Pennsylvania	484,157	85,916	398,241
	Total	1,847,332	798,572	1,048,760
North Carolina				
	South Carolina	965,420	0	965,420
	Virginia	5,446	744,068	-738,622
	Total	970,866	744,068	226,797
North Dakota				
	Canada	6,110	0	6,110
	Minnesota	8,157	0	8,157
	Montana	589,887	10,289	579,598
	South Dakota	0	643,401	-643,401
	Total	604,154	653,690	-49,536
Ohio				
	Indiana	1,105,950	27,609	1,078,341
	Kentucky	1,558,506	6,325	1,552,181
	Michigan	0	350,747	-350,747
	Pennsylvania	2,657	658,963	-656,306

See footnotes at end of table.

Table 9. Interstate Movements and Movements Across U.S. Borders of Natural Gas by State, 1996 (Continued)
(Million Cubic Feet)

State	State or Country From/To	Volume		
		Receipts/ Imports From	Deliveries/ Exports To	Net[a]
	West Virginia	330,287	886,116	-555,829
	Total	2,997,400	1,929,760	1,067,640
Oklahoma				
	Arkansas	0	399,321	-399,321
	Colorado	73,458	25,819	47,639
	Kansas	33,373	1,122,386	-1,089,013
	Missouri	24	19,674	-19,649
	Texas	741,733	361,630	380,104
	Total	848,589	1,928,829	-1,080,240
Oregon				
	California	0	602,841	-602,841
	Idaho	0	126,012	-126,012
	Washington	906,506	99	906,407
	Total	906,506	728,952	177,554
Pennsylvania				
	Delaware	0	46,232	-46,232
	Maryland	639,875	43,557	596,318
	New Jersey	0	1,217,085	-1,217,085
	New York	85,916	484,157	-398,241
	Ohio	658,963	2,657	656,306
	West Virginia	1,265,511	10,579	1,254,932
	Total	2,650,265	1,804,267	845,998
Rhode Island				
	Connecticut	181,290	0	181,290
	Massachusetts	61,757	136,456	-74,699
	Total	243,047	136,456	106,591
South Carolina				
	Alabama	[b]16	0	16
	Georgia	1,102,769	0	1,102,769
	North Carolina	0	965,420	-965,420
	Total	1,102,786	965,420	137,366
South Dakota				
	Iowa	569	301	267
	Minnesota	0	619,703	-619,703
	Montana	266	0	266
	Nebraska	12,316	0	12,316
	North Dakota	643,401	0	643,401
	Wyoming	0	220	-220
	Total	656,552	620,225	36,327
Tennessee				
	Alabama	1,423,143	368	1,422,774
	Georgia	8,129	0	8,129
	Kentucky	2	3,949,767	-3,949,766
	Mississippi	2,841,597	1,016	2,840,582
	Virginia	0	70	-70
	Total	4,272,871	3,951,222	321,649
Texas				
	Arkansas	4,300	492,373	-488,073
	Louisiana	6,712	2,174,961	-2,168,249
	Mexico	13,862	30,435	-16,573
	New Mexico	568,446	4,089	564,358
	Oklahoma	361,630	741,733	-380,104
	Total	954,950	3,443,591	-2,488,640

See footnotes at end of table.

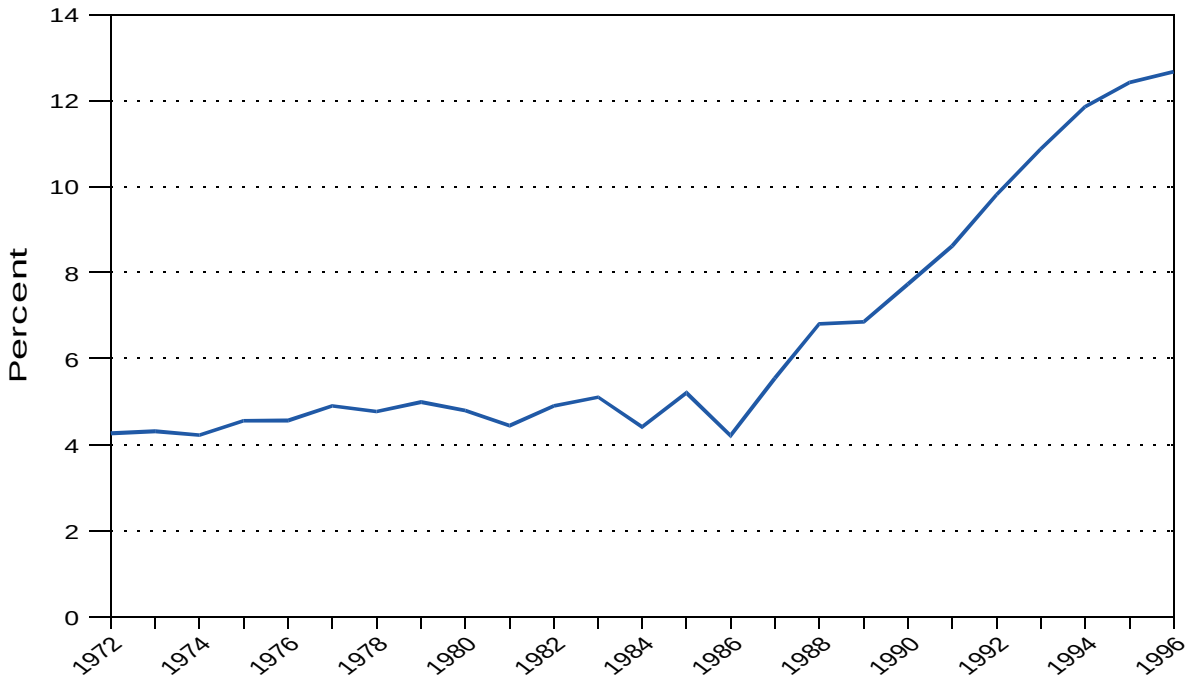
Table 9. Interstate Movements and Movements Across U.S. Borders of Natural Gas by State, 1996 (Continued)

(Million Cubic Feet)

State	State or Country From/To	Volume		
		Receipts/ Imports From	Deliveries/ Exports To	Net[a]
Utah				
	Colorado	19,136	106,032	-86,897
	Idaho	0	133	-133
	Nevada	0	268,138	-268,138
	Wyoming	400,967	16,656	384,311
	Total	420,103	390,959	29,144
Vermont				
	Canada	18,736	0	18,736
	New Hampshire	0	7,937	-7,937
	Total	18,736	7,937	10,799
Virginia				
	District of Columbia	0	24,093	-24,093
	Maryland	26,782	835,664	-808,882
	North Carolina	744,068	5,446	738,622
	Tennessee	70	0	70
	West Virginia	303,428	2,397	301,031
	Total	1,074,350	867,600	206,750
Washington				
	Canada	356,711	1,451	355,260
	Idaho	823,898	99	823,799
	Oregon	99	906,506	-906,407
	Total	1,180,708	908,055	272,652
West Virginia				
	Kentucky	877,741	0	877,741
	Ohio	886,116	330,287	555,829
	Pennsylvania	10,579	1,265,511	-1,254,932
	Virginia	2,397	303,428	-301,031
	Total	1,776,833	1,899,227	-122,393
Wisconsin				
	Illinois	182,980	64,724	118,256
	Michigan	139,929	730,422	-590,493
	Minnesota	871,327	1,376	869,951
	Total	1,194,236	796,522	397,714
Wyoming				
	Colorado	249,670	432,181	-182,511
	Idaho	27,271	0	27,271
	Montana	322	17,159	-16,837
	Nebraska	0	219,242	-219,242
	South Dakota	220	0	220
	Utah	16,656	400,967	-384,311
	Total	294,140	1,069,550	-775,410
Total Natural Gas Movements		66,427,622	63,643,603	2,784,020
Movements Across U.S. Borders		[d]3,473,745	[e]689,725	2,784,020
U.S. Interstate Movements		62,953,877	62,953,877	0

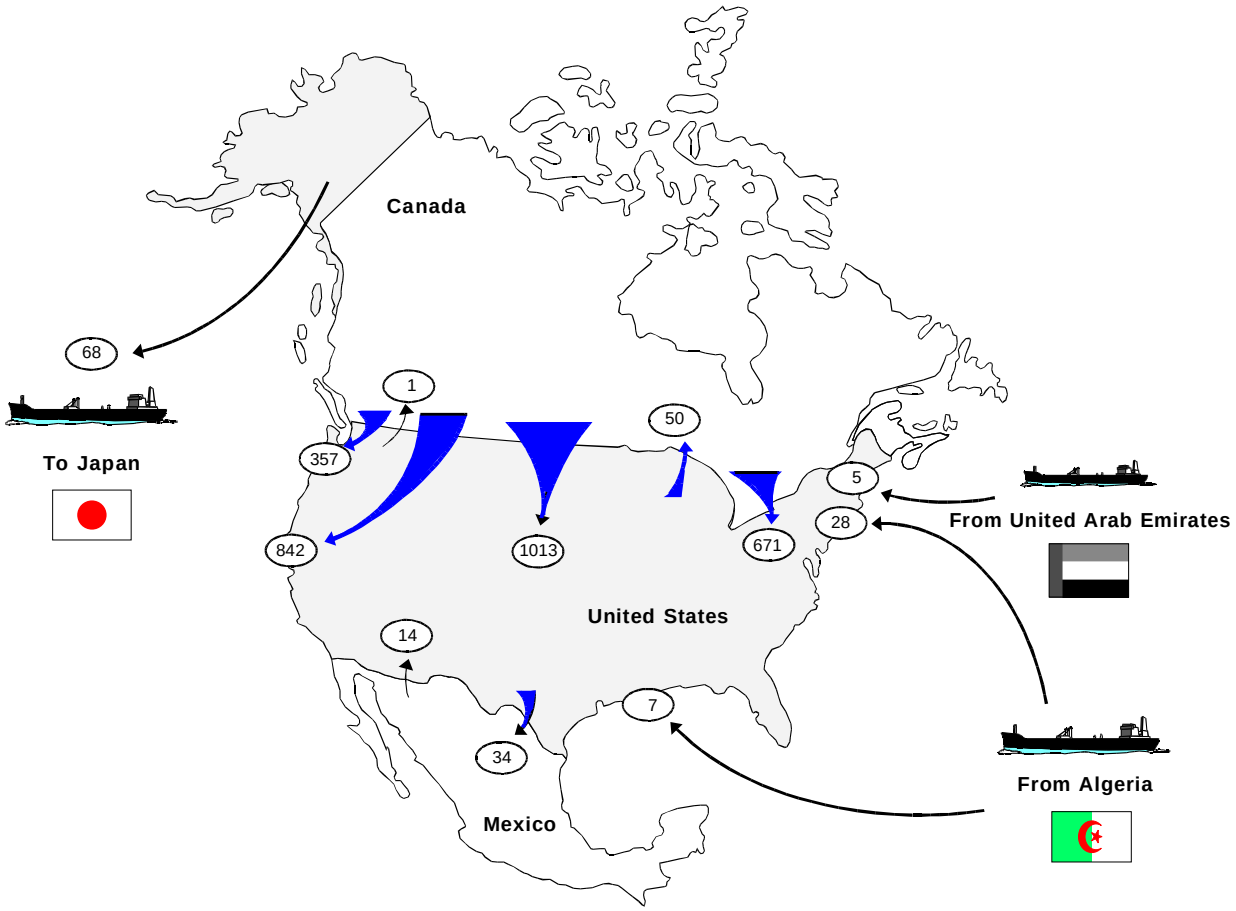
[a] Positive numbers denote net receipts; negative numbers denote net deliveries.
[b] Natural gas transported by truck either as liquefied natural gas (LNG) or compressed natural gas (CNG).
[c] LNG transported by ship.
[d] Volumes include 2,937,413 million cubic feet of imports from Mexico, Algeria, United Arab Emirates, and Canada, and 536,333 million cubic feet of intransit receipts from Canada.
[e] Volumes include 153,393 million cubic feet of exports to Japan, Mexico, and Canada, and 536,333 million cubic feet of intransit natural gas deliveries to Canada.
Note: Totals may not equal sum of components due to independent rounding.
Source: Energy Information Administration (EIA), Form EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Disposition."

Figure 7. Net Imports as a Percentage of Total Consumption of Natural Gas, 1972-1996



Sources: 1972-1975: Bureau of Mines, *Minerals Yearbook*, "Natural Gas" chapter. 1976-1978: Energy Information Administration (EIA), Energy Data Reports, *Natural Gas Annual*. 1979: EIA, *Natural Gas Production 1979*. 1980-1989: EIA, Form EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Disposition"; Form EIA-759, "Monthly Power Plant Report"; and Form FPC-14, "Annual Report for Importers and Exporters of Natural Gas"; 1990: EIA, Form EIA-176, Form EIA-759, Form FPC-14, and Form EIA-64A, "Annual Report of the Origin of Natural Gas Liquids Production"; 1991-1994: EIA, Form EIA-176, Form EIA-759, Form FPC-14, Form EIA-64A, and Form EIA-627, "Annual Quantity and Value of Natural Gas Report"; 1995: EIA, Form EIA-176, Form EIA-759, Form EIA-64A, Form EIA-627, and Office of Fossil Energy, U.S. Department of Energy, Natural Gas Imports and Exports; 1996: EIA, Form EIA-176, Form EIA-759, Form EIA-64A, Form EIA-895, "Monthly Quantity and Value of Natural Gas Report," and Office of Fossil Energy.

Figure 8. Flow of Natural Gas Imports and Exports, 1996
(Billion Cubic Feet)



Source: Office of Fossil Energy, U.S. Department of Energy, Natural Gas Imports and Exports.

Table 10. Summary of U.S. Natural Gas Imports and Exports, 1992-1996

	1992	1993	1994	1995	1996
Imports					
Volume (million cubic feet)					
Pipeline					
Canada	2,094,387	2,266,751	2,566,049	2,816,408	2,883,277
Mexico	0	1,678	7,013	6,722	13,862
Total Pipeline Imports	2,094,387	2,268,429	2,573,061	2,823,130	2,897,138
LNG					
Algeria	43,116	81,685	50,778	17,918	35,325
United Arab Emirates	0	0	0	0	4,949
Total LNG Imports	43,116	81,685	50,778	17,918	40,274
Total Imports	2,137,504	2,350,115	2,623,839	2,841,048	2,937,413
Average Price (dollars per thousand cubic feet)					
Pipeline					
Canada	1.84	2.02	1.86	1.48	1.96
Mexico	—	1.94	1.99	1.53	2.25
Total Pipeline Imports	1.84	2.02	1.86	1.48	1.96
LNG					
Algeria	2.54	2.20	2.28	2.30	2.70
United Arab Emirates	—	—	—	—	3.46
Total LNG Imports	2.54	2.20	2.28	2.30	2.80
Total Imports	1.85	2.03	1.87	1.49	1.97
Exports					
Volume (million cubic feet)					
Pipeline					
Canada	67,777	44,518	52,556	27,554	51,905
Mexico	95,973	39,676	46,500	61,283	33,840
Total Pipeline Exports	163,750	84,195	99,057	88,836	85,745
LNG					
Japan	52,532	55,989	62,682	65,283	67,648
Total Exports	216,282	140,183	161,738	154,119	153,393
Average Price (dollars per thousand cubic feet)					
Pipeline					
Canada	1.83	2.14	2.42	1.96	2.67
Mexico	1.90	2.02	1.68	1.50	2.11
Total Pipeline Exports	1.88	2.08	2.08	1.64	2.45
LNG					
Japan	3.43	3.34	3.18	3.41	3.65
Total Exports	2.25	2.59	2.50	2.39	2.97

— = Not applicable.
Notes: Totals may not equal sum of components due to independent rounding.
Sources: Energy Information Administration, Form FPC-14, "Annual Report for Importers and Exporters of Natural Gas" (1992 through 1994), and Office of Fossil Energy, U.S. Department of Energy, Natural Gas Imports and Exports (1995 and 1996).

Table 11. Additions to and Withdrawals from Gas Storage by State, 1996
(Million Cubic Feet)

State	Underground Storage			LNG Storage			Net Change in Storage
	Injections	Withdrawals	Net	Additions	Withdrawals	Net	
Alabama	3,349	2,125	1,224	979	1,282	-303	921
Arkansas	7,152	7,216	-64	0	85	-85	-150
California	104,238	155,530	-51,292	37	50	-13	-51,305
Colorado	37,808	36,804	1,004	0	0	0	1,004
Connecticut	0	0	0	2,265	1,585	680	680
Delaware	0	0	0	237	226	11	11
Georgia	0	0	0	6,523	6,712	-189	-189
Idaho	0	0	0	636	661	-25	-25
Illinois	241,129	226,020	15,109	971	1,259	-289	14,820
Indiana	27,263	25,462	1,801	4,337	4,571	-234	1,567
Iowa	61,060	59,831	1,229	5,262	3,284	1,978	3,207
Kansas	104,871	116,989	-12,118	0	0	0	-12,118
Kentucky	69,498	61,968	7,530	0	0	0	7,530
Louisiana	249,153	260,117	-10,964	7,016	7,056	-39	-11,003
Maine	0	0	0	26	22	4	4
Maryland	17,448	17,472	-24	4,881	691	4,190	4,166
Massachusetts	0	0	0	6,107	11,471	-5,364	-5,364
Michigan	503,138	471,467	31,671	0	0	0	31,671
Minnesota	1,655	1,625	30	7,990	5,861	2,128	2,158
Mississippi	88,684	75,926	12,758	0	0	0	12,758
Missouri	6,570	6,522	48	0	0	0	48
Montana	19,871	31,595	-11,725	0	0	0	-11,725
Nebraska	8,423	6,933	1,489	915	788	127	1,617
Nevada	0	0	0	180	109	72	72
New Jersey	0	0	0	5,033	3,219	1,814	1,814
New Mexico	11,953	17,290	-5,338	0	0	0	-5,338
New York	76,475	63,108	13,367	1,853	1,262	591	13,958
North Carolina	0	0	0	2,708	2,490	218	218
Ohio	198,642	187,798	10,844	0	0	0	10,844
Oklahoma	117,067	140,028	-22,961	0	0	0	-22,961
Oregon	4,416	5,199	-783	693	939	-246	-1,029
Pennsylvania	376,290	316,757	59,533	5,590	4,722	867	60,400
Rhode Island	0	0	0	850	1,603	-753	-753
South Carolina	0	0	0	976	910	65	65
South Dakota	0	0	0	0	143	-143	-143
Tennessee	0	0	0	2,809	3,985	-1,175	-1,175
Texas	305,914	369,783	-63,869	0	0	0	-63,869
Utah	32,368	45,323	-12,955	0	0	0	-12,955
Virginia	0	0	0	1,631	1,614	17	17
Washington	20,124	22,192	-2,067	2,284	2,356	-72	-2,140
West Virginia	200,612	164,768	35,844	0	0	0	35,844
Wisconsin	0	0	0	269	329	-60	-60
Wyoming	10,422	15,478	-5,056	0	0	0	-5,056
Total	2,905,592	2,911,327	-5,735	73,057	69,287	3,770	-1,965

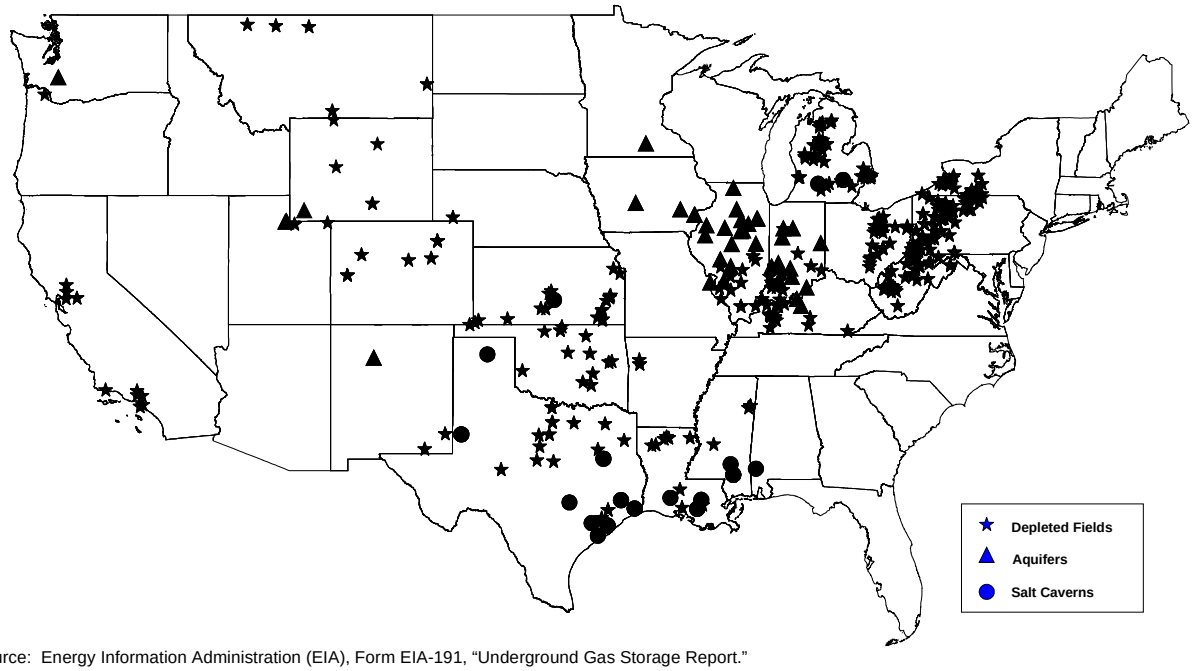
Note: Totals may not equal sum of components due to independent rounding.
Source: Energy Information Administration, Form EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Disposition."

Table 12. Underground Natural Gas Storage Capacity by State, December 31, 1996
(Capacity in Billion Cubic Feet)

State	Interstate Companies		Intrastate Companies		Independent Companies		Total		
	Number of Active Fields	Capacity	Number of Active Fields	Capacity	Number of Active Fields	Capacity	Number of Active Fields	Capacity	Percent of U.S. Capacity
Alabama	0	0	1	3	0	0	1	3	0.04
Arkansas	0	0	3	32	0	0	3	32	0.40
California	0	0	10	470	0	0	10	470	5.89
Colorado	4	66	5	34	0	0	9	100	1.25
Illinois	6	259	24	639	0	0	30	898	11.26
Indiana	6	16	22	97	0	0	28	113	1.42
Iowa	4	270	0	0	0	0	4	270	3.39
Kansas	16	279	2	6	0	0	18	285	3.57
Kentucky	6	167	18	49	0	0	24	216	2.71
Louisiana	8	530	4	25	0	0	12	555	6.95
Maryland	1	62	0	0	0	0	1	62	0.78
Michigan	30	781	18	271	0	0	48	1,052	13.19
Minnesota	0	0	1	7	0	0	1	7	0.09
Mississippi	3	121	4	13	0	0	7	134	1.68
Missouri	0	0	1	31	0	0	1	31	0.39
Montana	1	287	4	88	0	0	5	375	4.70
Nebraska	1	39	0	0	0	0	1	39	0.50
New Mexico	1	69	2	28	0	0	3	97	1.21
New York	20	164	2	10	0	0	22	174	2.18
Ohio	15	374	8	184	0	0	23	557	6.99
Oklahoma	6	213	4	58	4	124	14	395	4.95
Oregon	0	0	2	12	0	0	2	12	0.15
Pennsylvania	34	616	18	42	7	22	59	680	8.52
Texas	10	240	22	430	1	3	33	673	8.43
Utah	3	122	0	0	0	0	3	122	1.53
Washington	1	37	0	0	0	0	1	37	0.47
West Virginia	26	442	0	0	10	42	36	485	6.07
Wyoming	3	76	4	30	0	0	7	106	1.33
Total	205	5,231	179	2,557	22	192	406	7,980	100.00

Note: Totals may not equal sum of components due to independent rounding.
Source: Energy Information Administration (EIA), Form EIA-191, "Underground Gas Storage Report."

Figure 9. Locations of Existing Natural Gas Underground Storage Fields in the United States



Source: Energy Information Administration (EIA), Form EIA-191, "Underground Gas Storage Report."

Table 13. Supplemental Gas Supplies by State, 1996
(Million Cubic Feet)

State	Synthetic Natural Gas	Propane-Air	Refinery Gas	Biomass Gas	Other	Total
Alabama	0	18	0	0	0	18
Colorado	0	344	0	0	[a]6,443	6,787
Connecticut	0	48	0	0	0	48
Delaware	0	1	0	0	0	1
Georgia	0	94	0	0	0	94
Hawaii	2,761	0	0	0	0	2,761
Illinois	0	488	3,423	0	0	3,912
Indiana	0	539	0	0	[b]2,655	3,194
Iowa	0	301	0	0	0	301
Kentucky	0	45	0	0	0	45
Maine	0	61	0	0	0	61
Maryland	0	882	0	0	0	882
Massachusetts	0	426	0	0	0	426
Michigan	0	0	0	0	[c]21,848	21,848
Minnesota	0	709	0	0	0	709
Missouri	0	785	0	0	0	785
Nebraska	0	315	0	0	0	315
New Hampshire	0	147	0	0	0	147
New Jersey	0	11	5,931	832	[d]5	6,778
New York	0	218	0	1,042	0	1,259
North Dakota	55,867	0	0	0	0	55,867
Ohio	0	738	0	1,090	0	1,828
Oregon	0	2	0	0	0	2
Pennsylvania	0	266	0	0	0	266
Rhode Island	0	42	0	0	0	42
South Carolina	0	178	0	0	0	178
South Dakota	0	87	0	0	0	87
Tennessee	0	73	0	0	0	73
Vermont	0	5	0	0	0	5
Virginia	0	716	0	0	0	716
Wisconsin	10	11	0	0	0	21
Total	58,637	7,548	9,354	2,964	30,951	109,455

[a] Air injection for Btu stabilization.
[b] Coke oven gas.
[c] Blast furnace gas.
[d] Manufactured gas.
Note: Totals may not equal sum of components due to independent rounding.
Source: Energy Information Administration (EIA), Form EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Disposition."