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# Benefits and Opportunities of Natural Gas Use, Transportation, and Production



## Pennsylvania

### Economic Impacts of Natural Gas

There were 178,100 jobs in Pennsylvania related to natural gas. These jobs represented 3.1 percent of total state jobs. The top three sectors with the greatest number of jobs were support activities for oil and gas, freight trucking, and crude petroleum and natural gas extraction. The contribution to the Pennsylvania economy in terms of direct, indirect, and induced value added in 2015 was \$24.5 billion, of which \$11.1 billion was related to the end use segment, \$8.16 billion was from the infrastructure segment, and \$5.21 billion was from the production segment.

### Natural Gas Consumers

In 2015, Pennsylvania consumed 1.07 Tcf of natural gas in all sectors. There were a total of 2.98 million customers. The value of natural gas delivered to consumers was \$5.65 billion.

Pennsylvania has 2.74 million residential customers who consumed 236 Bcf in 2015. Average consumption was 86 Mcf per household. Residential demand was 76 percent for space heating, 16 percent for water heating, 3 percent for cooking, and 5 percent for other uses.

Pennsylvania had 242,000 commercial customers who consumed 152 Bcf in 2015. Average consumption per commercial customer was 629 Mcf. Commercial demand was 54 percent for space heating, 16 percent for water heating, 5 percent for cooking, and 25 percent for other uses.

There are 4,932 industrial customers of natural gas in Pennsylvania who consumed 241 Bcf in 2015. Average consumption per industrial customer was 49 MMcf. The top industries for gas consumption were Primary Metals (331), Chemicals (325), Petroleum and Coal Products (324), Paper (322), and Food (311) representing 72 percent of industrial demand.

Pennsylvania has 69 power plants consuming natural gas. In 2015, gas consumed was 439 Bcf, representing 28 percent of power generation in the state. Average consumption per customer was 6,366 MMcf.

### Natural Gas Infrastructure

In 2015, Pennsylvania had 21,940 producing oil wells and 68,536 producing gas wells. There were 26,536 miles of gas gathering lines and 11 gas processing plants in the state with a capacity of 754 MMcf/d. In addition, there were 9,899 miles of gas pipelines, 24 miles of crude oil pipelines, 1,141 miles of NGL pipelines, 1,956 miles of product pipelines, and no CO2 pipelines. There were 47,954 miles of gas distribution mains and 28,711 miles of service lines. There were 49 natural gas storage sites in the state with a working gas capacity of 426 Bcf.

### Natural Gas and Oil Production

In 2015, Pennsylvania produced 4.76 Tcf of dry natural gas, 24 million barrels of gas plant liquids, 4.9 million barrels of lease condensate, and 2.1 million barrels of crude. Pennsylvania is the location of most of the Appalachian Marcellus shale gas and NGL production, which has surged over the past decades and the Marcellus is by far the largest U.S. gas play. The Marcellus is characterized by prolific wells and excellent economics. The rapid growth of the play placed a strain on transport and processing capacity out of the region, but large midstream

investments for natural gas have been made and more are planned. A large effort has been underway to find domestic and export markets for large volumes of natural gas liquids such as ethane and propane. Several major gas pipelines have been reversed to allow transport out of the region. In April of 2017, about 33 rigs were active in the state.

## Exhibit 7-40: Pennsylvania State Factsheet

Pennsylvania			Employment (# of Workers)			Labor Income (\$ million)			Value Added (\$ million)		
Summary	Segment	Category	Direct & Indirect	Induced	Total	Direct & Indirect	Induced	Total	Direct & Indirect	Induced	Total
	End-Use	Power Generation	6,026	10,366	16,392	452	509	961	2,517	911	3,429
		Industrial	11,172	21,497	32,669	809	1,042	1,850	3,146	1,898	5,044
		Residential/ Commercial	6,729	8,527	15,256	471	452	923	1,528	770	2,298
		Export	2,314	2,052	4,366	162	102	264	178	183	361
		Transportation	19	15	34	1	1	1	3	1	4
	Infrastructure	Processing	4,581	4,481	9,061	352	223	576	637	409	1,046
		Pipelines	13,144	11,429	24,573	1,041	590	1,630	2,533	1,048	3,581
		Distribution	13,459	11,503	24,962	1,097	613	1,711	2,392	1,042	3,435
		Wholesalers, Marketers, Other	378	325	702	30	17	48	69	30	99
	Production	Natural Gas/ NGLs	31,161	18,925	50,086	2,529	889	3,418	3,523	1,686	5,210
	All Segments	Grand Total	88,982	89,120	178,102	6,944	4,438	11,381	16,527	7,979	24,506

Jobs by Top Industries	Rank	NAICS	Industry Sector	Direct and Indirect Jobs
	1	213112	Support Activities for Oil & Gas Operations	5,780
	2	4841	Freight Truck	4,945
	3	211111	Crude Petroleum & Natural Gas Extraction	4,526
	4	221210	Natural Gas Distribution	4,202
	5	237120	Oil & Gas Pipeline Construction	4,056
	6	325	Chemical Manufacturing	3,809
	7	331210	Iron & Steel Pipe & Tube Manufacturing	1,797
	8	811310	Industrial Equip. & Machinery Repair & Maint.	1,770
	9	486210	Pipeline Transportation of Natural Gas	1,504
	10	213111	Drilling Oil & Gas Wells	1,209

Customers	Sector	Customer Count	Consumption Volume (MMcf/ year)	Value of Natural Gas Delivered to Customers (\$million)
	Residential Sector	2,735,796	235,635	\$2,529
	Commercial Sector	241,682	152,079	\$1,171
	Industrial Sector	4,932	241,287	\$884
	Transportation	73	439	\$4
	Power Sector	69	439,248	\$1,063
	All Sectors	2,982,552	1,068,687	\$5,652

Infrastructure	Gas Distribution Main (miles)	Gas Distribution Services (miles)	Gas Gathering (miles)	Gas Pipelines (miles)	Crude Oil Pipelines (miles)	NGL Pipelines (miles)	Oil Product Pipelines (miles)	CO2 Pipelines (miles)
	47,954	28,711	26,536	9,899	24	1,141	1,956	0

Production	Product	Annual Production
	Dry Natural Gas (mmcf)	4,759,441
	Gas Plant Liquids (barrels)	23,501,000
	Lease Condensate (barrels)	4,869,408
	Crude Oil (barrels)	2,123,592
	Annual Value Counted Toward Natural Gas Value Chain (\$million)	\$6,879
	Annual Value of All Produced Oil, Gas, NGLs (\$million)	\$6,962

Wells	Well Type	Operating Wells	New Wells Drilled
	Oil Wells	21,940	284
	Gas Wells	68,536	1,061
	All Wells	90,476	1,345

Annual 2015 Data for Pennsylvania  
Natural Gas Value Chain Basis