

Section 3. Natural Gas

Natural gas prices are developed for the residential, commercial, industrial, transportation, and electric power sectors. Reported natural gas prices are retail prices for sales of natural gas to ultimate users.

Natural gas prices are intended to include all federal, state, and local taxes, surcharges, and adjustments billed to consumers. Although the EIA data collection form states that taxes are to be included in the reported gross revenues, it is likely that some respondents would not consider sales taxes as part of their companies' gross revenues and may not report them. As a result, consumer sales taxes may not be covered in full. For more information see *End-Use Taxes: Current EIA Practices*, page 18, <http://www.eia.gov/finance/archive/0583.pdf>.

Estimates of the amount of natural gas consumed by the residential, commercial, industrial, transportation, and electric power sectors are taken from the State Energy Data System (SEDS). Estimates for the industrial sector are adjusted to remove estimated refinery consumption and lease and plant use of natural gas, and estimates for the transportation sector are adjusted to remove pipeline fuel in each state. (See the discussion in Section 7, "Consumption Adjustments for Calculating Expenditures," at <http://www.eia.gov/state/seds/seds-technical-notes-complete.php>.)

The consumption estimates are for natural gas including supplemental gaseous fuels (SGF). SGF are introduced into or commingled with natural gas, and increase the volume available for disposition. Because SGF are mostly derived from fossil fuels, which are already accounted for, they are removed from total energy consumption in British thermal units (Btu) (see Sections 6 and 7 of the Consumption Technical Notes) to eliminate any double counting. However, because there are no reliable data to estimate the price of SGF, total energy expenditures in Btu are not adjusted to eliminate the double counting.

Residential, commercial, and industrial sectors

Physical unit prices: 1987 forward

All natural gas physical unit prices by state for the residential, commercial, and industrial sectors are taken from data collected on the Form EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Disposition." These prices are available on the U.S. Energy Information Administration's

(EIA) website at <http://www.eia.gov/naturalgas/data.php> and published in the State Summaries tables of the EIA *Natural Gas Annual*.

Physical unit prices: 1970 through 1986

All natural gas physical unit prices for the residential, commercial, and industrial sectors are calculated from value and quantity of sales data from the EIA *Natural Gas Annual* (NGA), *Historical Natural Gas Annual* (HNGA), or its predecessor report, *Natural Gas Production and Consumption*. State prices are calculated directly from the data sources as average revenue per unit of sales by natural gas utilities. Prices for each of the three sectors are calculated by dividing the value of natural gas, reported in thousands of dollars, by the quantity of natural gas sold, as reported in million cubic feet.

For 1970 through 1979, both the value and quantity of sales data from the HNGA are reported as composites for Maryland and the District of Columbia, and for Maine, New Hampshire, and Vermont. In each case, the combined prices are assigned to each of the states in the composite.

Btu prices: all years

State Btu prices for all years are calculated by using the physical unit price series and the state-level average conversion factors for sectors other than electric power. U.S. Btu prices are calculated as the average of the state Btu prices, weighted by consumption data from SEDS and adjusted for process fuel consumption in the industrial sector.

Data sources

Prices

1997 forward: EIA, *Natural Gas Annual*, State Summaries tables, also available at http://www.eia.gov/dnav/ng/ng_pri_sum_a_EPGO_PRS_DMcf_a.htm, http://www.eia.gov/dnav/ng/ng_pri_sum_a_EPGO_PCS_DMcf_a.htm, and http://www.eia.gov/dnav/ng/ng_pri_sum_a_EPGO_PIN_DMcf_a.htm.

1989 through 1996: Residential and Commercial—EIA website, at http://www.eia.gov/dnav/ng/ng_pri_sum_a_EPGO_PRS_DMcf_a.htm and http://www.eia.gov/dnav/ng/ng_pri_sum_a_EPGO_PCS_DMcf_a.htm. Industrial—EIA, *Historical Natural Gas Annual, 1930 Through 2000*, <https://www.eia.gov/naturalgas/annual/archive/>, Tables 31 and 32.

1987 and 1988: EIA, *Historical Natural Gas Annual, 1930 Through 2000*, <https://www.eia.gov/naturalgas/annual/archive/>, Table 26 (residential), Table 28 (commercial), and Table 31 (industrial).

1980 through 1986: Calculated from quantity and value data published in the EIA *Natural Gas Annual, Volume 1*, Table 11 (1980), Table 14 (1981 through 1985), and Table 15 (1986). Comparable price data are available in the EIA *Historical Natural Gas Annual, 1930 Through 2000*, Table 26 (residential), Table 28 (commercial), and Table 31 (industrial).

1970 through 1979: Calculated from quantity and value data published in the Bureau of Mines, U.S. Department of the Interior, *Natural Gas Production and Consumption*, Table 6 (1970 and 1979) and Table 7 (1971 through 1978). Comparable price data are available in the EIA *Historical Natural Gas Annual, 1930 Through 2000*, Table 26 (residential), Table 28 (commercial), and Table 31 (industrial).

Consumption

1970 forward: EIA, State Energy Data System, residential, commercial, and industrial natural gas consumption.

Conversion factors: all years

EIA, State Energy Data System, Consumption Technical Notes, Appendix B. Data also available in CSV format at https://www.eia.gov/state/seds/sep_update/use_convfac_update.csv.

Transportation sector

Physical unit prices: all years

Most of the natural gas used for transportation is consumed in pipeline operations and is discussed in Section 7, “Consumption Adjustments for Calculating Expenditures,” at <http://www.eia.gov/state/seds/seds-technical-notes-complete.php>. Data for natural gas delivered for use as vehicle fuel are available beginning in 1990. In prior years, these data are included in the commercial sector. Much of the natural gas delivered for vehicle fuel represents deliveries to fueling stations that are used primarily by fleet vehicles. Vehicle fuel prices through 2012 are available in the State Summaries tables of the EIA *Natural Gas Annual*.

For 2013 forward, vehicle fuel prices are derived by dividing vehicle fuel sales revenue by vehicle fuel sales volume extracted from the EIA Natural Gas Annual Respondent Query System. Missing prices for states shown in Table TN3.1 are assigned the state’s commercial sector prices.

Table TN3.1. Natural gas vehicle fuel price assignments from commercial sector prices, 2013 forward

State	Year
AK	2013–2018
DC	2013–2015
DE	2017, 2018
HI	2013
IA	2014–2016
ME	2013–2018
MI	2013–2015, 2017, 2018
MS	2013
NH	2013
NJ	2013
RI	2018
SD	2013–2016
VT	2013–2018
WV	2013–2018

For 1992 through 2012, missing vehicle fuel prices are assigned the average price of neighboring states as shown in Table TN3.2. The South Carolina price in 1998 is out of range and the price of natural gas used as vehicle fuel in Georgia for 1998 is assigned.

Btu prices: all years

State Btu prices for all years are calculated by using the physical unit price series and the state-level average conversion factors for sectors other than electric power. U.S. Btu prices are calculated as the average of the state Btu prices, weighted by consumption of vehicle fuel from SEDS.

Data sources

Prices

2013 forward: EIA, Natural Gas Annual Respondent Query System, http://www.eia.gov/cfapps/ngqs/ngqs.cfm?f_report=RP1, “176 Custom Report (User-defined),” Vehicle Fuel Sales Revenue and Vehicle Fuel Sales Volume.

1990 through 2012: EIA, *Natural Gas Annual*, State Summaries tables, also available at http://www.eia.gov/dnav/ng/ng_pri_sum_a_EPG0_PDV_DMcf_a.htm. Comparable price data through 1996 are available in the *Historical Natural Gas Annual 1930 Through 2000*, <https://www.eia.gov/naturalgas/annual/archive/>, Table 34.

Consumption

Table TN3.2. Natural gas vehicle fuel price assignments, 1992 through 2012

State	Year	State Prices Used
AK	1997–2012	WA
AL	2000–2005	FL, TN
	2006, 2007	FL, GA, TN
AR	2008–2011	OK, LA, MO, TN, TX
DE	1994	MD, NJ, PA
GA	1999	AL, FL, SC, TN
	2000–2005	FL, NC, SC, TN
HI	2005–2007	CA
IA	2001–2006	IL, MO, MN, WI
ID	2003–2005	MT, NV, OR, UT, WA, WY
KS	2004–2010	CO, MO, OK
KY	2004–2006	IL, IN, OH, MO, TN, VA
	2007–2012	IL, IN, MO, TN, VA
MD	2012	VA
ME	1992–2002, 2008–2012	MA
MI	2000–2006	IN, OH
	2007–2012	IN
MS	2002–2007	AR, LA, TN
	2008–2012	AL, LA, TN
NC	1996, 1997, 1999	SC, TN, VA
	1998	TN, VA
	2008	GA, SC, TN, VA
NE	1992, 1993	CO, IA, SD, WY
	1995–2000	CO, IA, KS, MO, SD, WY
	2001–2003	CO, KS, MO, WY
	2004–2006, 2008–2010	CO, MO, WY
	2007	CO, IA, MO, WY
NH	1996–2012	MA
NJ	2002	DE, NY, PA
	2007–2012	NY, PA
NM	1992, 1993, 2008	AZ, CO, OK, TX
OH	2007–2012	IN, PA
SC	1998	GA
SD	2001, 2003, 2004, 2006, 2010–2012	MN, MT, ND, WY
VT	1992–2012	MA
WV	2000–2011	MD
	2012	VA

1990 forward: EIA, State Energy Data System, natural gas vehicle consumption.

Conversion factors: all years

EIA, State Energy Data System, Consumption Technical Notes, Appendix B. Data also available in CSV format at https://www.eia.gov/state/seds/sep_update/use_convfac_update.csv

Electric power sector

Physical unit prices: 2002 forward

All natural gas physical unit prices by state for the electric power sector are taken from the State Summaries tables of the EIA *Natural Gas Annual*. Prior to 2008, where individual state prices are unavailable, they are developed by calculating the average price of all available surrounding states. From 2008 forward, the average delivered cost of natural gas to regulated electric power plants, compiled from Schedule 2 of Form EIA-923, “Power Plant Operations Report,” is used to supplement missing *Natural Gas Annual* prices. If prices from both sources are not available, the average price of all available surrounding states is used. Table TN3.3 lists the states and years where price assignments are made.

Physical unit prices: 1973, 1974, 1983 through 2001

Natural gas prices by state are reported in the EIA *Cost and Quality of Fuels for Electric Plants (C&Q)* for gas consumed at steam-electric plants only. Btu prices are taken from the C&Q, and converted from cents to dollars per million Btu.

Where individual state prices are unavailable from C&Q, they are developed from physical unit prices published in Tables 26 through 76 of the NGA (from 1997 forward), or the *Historical Natural Gas Annual, 1930 Through 2000* (HNGA, from 1987 through 1996). Physical unit prices prior to 1987 are calculated by dividing the value of natural gas, reported in thousands of dollars, by the quantity of natural gas sold, reported in million cubic feet.

Prices are not available from either C&Q or the NGA and HNGA for some years. In these cases, quantity-weighted Census division prices from C&Q are assigned. In addition, prices for Montana in 1997, Vermont in 1986, and Washington in 1986, 1987, 1990, and 1997 use quantity-weighted Census division prices from C&Q for more consistent prices than those available from the HNGA or more consistent with values in previous and later years. Table TN3.3 lists the states and years for which HNGA or C&Q Census division prices are used.

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State	Years	Price Source	State	Years	Price Source
AK	1973–1990	HNGA	NE	2008–2010	EIA-923 Sch 2 data
	2008–2010	EIA-923 Sch 2 data	NH	1973, 1974, 1987–1989	HNGA
AL	2011, 2013–2018	EIA-923 Sch 2 data		1983, 1996, 1998	C&Q, New England
AR	2011, 2013–2018	EIA-923 Sch 2 data		2003, 2004	MA, ME
AZ	2011, 2016, 2017	EIA-923 Sch 2 data		2005–2007	MA, VT
CO	2012, 2013, 2016–2018	EIA-923 Sch 2 data		2008–2018	EIA-923 Sch 2 data
CT	1974–1976	HNGA	NM	2003–2007	AZ, CO, OK, TX
	1973, 2000, 2001	C&Q, New England		2009–2012	EIA-923 Sch 2 data
	2003, 2004	MA, NY, RI	NV	2013, 2014	EIA-923 Sch 2 data
DC	2012	VA	OH	2011	EIA-923 Sch 2 data
	2016	MD	OK	2011, 2014–2018	EIA-923 Sch 2 data
DE	2003–2007, 2011	MD, NJ, RI	OR	1983, 1984, 1986, 1989, 1990	C&Q, Pacific
	2008–2010	EIA-923 Sch 2 data		2011–2018	EIA-923 Sch 2 data
	2012–2018	NJ, PA	PA	1973	HNGA
FL	2018	EIA-923 Sch 2 data	RI	1976, 1980	HNGA
IA	2008–2011	EIA-923 Sch 2 data		1999–2001	C&Q, New England
ID	1983–1986	HNGA		2014, 2016	CT, MA
	1974, 1987, 1996–2001	C&Q, Mountain	SC	1977	HNGA
	2003–2005	NV, OR, WA, WY		2003, 2004	GA, NC
	2006, 2007	NV, OR, WA		2005	GA
	2008–2014	EIA-923 Sch 2 data		2009–2017	EIA-923 Sch 2 data
IL	2011–2015	EIA-923 Sch 2 data	SD	1983–1990	HNGA
IN	2011–2017	EIA-923 Sch 2 data		1997, 1999–2001	C&Q, West North Central
KY	2003–2005	IL, IN, OH, VA, WV		2005	GA
	2007	IL, IN, OH, VA		2009, 2010	EIA-923 Sch 2 data
	2008–2018	EIA-923 Sch 2 data	TN	1976, 1980, 1981, 1983, 1988–1996	HNGA
LA	2011, 2013–2015, 2017, 2018	EIA-923 Sch 2 data		1997–2001	C&Q, East South Central
MD	1973, 1974, 1983–1985	HNGA		2003, 2004	AL, AR, GA, MS, NC, VA
	2001	C&Q, South Atlantic		2005–2007	AL, AR, GA, MS, VA
	2012	PA, VA		2008	EIA-923 Sch 2 data
ME	1997–2001	C&Q, New England	UT	1988, 1989	HNGA
	2005–2018	MA		2003–2005	AZ, CO, NV, WY
MN	2003–2007	IA, ND, WI		2006, 2007	AZ, CO, NV
	2009–2018	EIA-923 Sch 2 data		2008–2011, 2014–2016	EIA-923 Sch 2 data
MO	2003–2007	AR, IA, IL, KS, NE, OK	VA	2011, 2016	EIA-923 Sch 2 data
	2008–2018	EIA-923 Sch 2 data	VT	1983–1985, 1989, 1990	HNGA
MS	2009–2018	EIA-923 Sch 2 data		1986	C&Q, New England
MT	1997, 2006, 2007	C&Q, Mountain		2003, 2004, 2013–2018	MA, NY
	2003–2005	ND, WY	WA	1978, 1983–1985, 1988, 1989	HNGA
	2008–2018	EIA-923 Sch 2 data		1986, 1987, 1990, 1997, 1999–2001	C&Q, Pacific
NC	1983–1990	HNGA		2002	OR
	2005	GA, VA		2011–2018	EIA-923 Sch 2 data
	2006, 2007	GA, SC, VA	WI	2014–2017	EIA-923 Sch 2 data
	2009–2017	EIA-923 Sch 2 data	WV	2007	OH, MD, PA, VA
ND	1973, 1974, 1976–1986	HNGA		2011, 2013–2018	EIA-923 Sch 2 data
	2008, 2009	EIA-923 Sch 2 data	WY	2006, 2007	CO, NE
				2008–2015, 2018	EIA-923 Sch 2 data

Physical unit prices: 1980 through 1982

State-level Btu and physical unit prices for 1980 through 1982 are taken from C&Q for all reporting plants. Physical unit prices are taken directly from the data source, while Btu prices are converted from cents to dollars per million Btu. Where individual state prices are unavailable from C&Q, they are computed from value and quantity of sales data from HNGA.

Physical unit prices: 1973 through 1979

State-level prices are reported separately by C&Q for gas consumed at steam-electric plants and gas consumed at combustion turbine and internal combustion units. Weighted-average Btu prices are calculated by using the two C&Q prices and the respective gas deliveries for steam-electric and combustion use. Where individual state prices are unavailable from C&Q, they are computed from value and quantity of sales data from HNGA. For the New Hampshire price in 1977 a combined price is computed from value and quantity of sales data from the HNGA data for Maine, New Hampshire, and Vermont.

Physical unit prices: 1970 through 1972

State-level prices for 1970 through 1972 are taken from *Natural Gas Production and Consumption* and are calculated similarly to the way prices for the residential, commercial, and industrial sectors are calculated. Prices, as average revenue per unit of sales, are computed from value and quantity of sales data from the source reports. A combined price is reported for New Hampshire and Vermont for 1971 and 1972, and each of these states is assigned the combined price. State Btu prices are calculated from the physical unit prices by using the state-level electric power conversion factors.

U.S. prices: all years

U.S. Btu prices are calculated as the average of the state Btu prices, weighted by consumption data from SEDS.

Data sources

Prices

Primary sources:

2002 forward: EIA, *Natural Gas Annual*, State Summaries tables, also available at http://www.eia.gov/dnav/ng/ng_pri_sum_a_EPGO_PEU_DMcf_a.htm.

1973 through 2001: EIA, *Cost and Quality of Fuels for Electric Plants*, http://www.eia.gov/electricity/cost_quality/ (table numbers shown in Table TN3.4).

Table TN3.4. Tables from EIA Cost and Quality of Fuels for Electric Plants used as data sources, 1973 through 2001

Years	Price Data	Volume Data
1973, 1974	Table 10	Table 9
1975–1979	Table 10, 16	Table 9, 15
1980–1982	Table 48	–
1983, 1984	Table 53	–
1985–1987	Table 43	–
1988, 1989	Table 44	–
1990–1994	Table 12 (1994 edition)	–
1995–1996	Table 12 (1999 edition)	–
1997–2001	Table 12 (2001 edition)	–

[eia.gov/electricity/cost_quality/](http://www.eia.gov/electricity/cost_quality/) (table numbers shown in Table TN3.4).

Secondary sources:

2008 forward: EIA Office of Energy Production, Conversion & Delivery, data on average delivered cost of natural gas to regulated electric power plants by State from EIA-923, "Power Plant Operations Report," <https://www.eia.gov/electricity/data/eia923/>, Schedule 2.

2002 through 2007: EIA, *Cost and Quality of Fuels for Electric Power Plants*, http://www.eia.gov/electricity/cost_quality/, Table 13.

1997 through 2001: EIA, *Natural Gas Annual*, State Summaries tables, also available at http://www.eia.gov/dnav/ng/ng_pri_sum_dcu_nus_a.htm.

1990 through 1996: EIA, *Historical Natural Gas Annual 1930 Through 2000*, <https://www.eia.gov/naturalgas/annual/archive/>, Table 31 and Table 32.

1980 through 1989: EIA, *Natural Gas Annual 1992, Volume 2*, Table 23.

1976 through 1979: EIA, Energy Data Reports, *Natural Gas Production and Consumption*, Table 7 (1976 through 1978) and Table 6 (1979). Comparable price data are available in the *Historical Natural Gas Annual, 1930 Through 2000*, Table 35.

1970 through 1975: Bureau of Mines, U.S. Department of the Interior, *Natural Gas Production and Consumption*, Table 6 (1970) and Table 7 (1971 through 1975). Comparable price data are available in the *Historical Natural Gas Annual, 1930 Through 2000*, Table 35.

Consumption

1970 forward: EIA, State Energy Data System, electric power sector natural gas consumption.

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Conversion factors: all years

Btu prices that are calculated directly from *Cost and Quality of Fuels for Electric Plants* (C&Q), or from EIA-923, "Power Plant Operations Report," require no conversion factors. When data are missing from C&Q, *Natural Gas Annual* data are used to derive the prices.

Natural gas thermal conversion factors for electric power consumption are published in EIA's State Energy Data System, Consumption Technical Notes, Appendix B. The data are also available in CSV format at https://www.eia.gov/state/seds/sep_update/use_convfac_update.csv.