Appendix B
Data Sources

Note 1. Production

Monthly Data

The data in this publication are taken from survey reports collected by the Energy Information Administration (EIA), the Federal Energy Regulatory Commission (FERC), and the Office of Fossil Energy of the U.S. Department of Energy (DOE). The EIA is the independent statistical and analytical agency within the DOE. The FERC is an independent regulatory commission within the DOE that has jurisdiction primarily in the regulation of electric utilities and the interstate natural gas industry. The Office of Fossil Energy has the authority under Section 3 of the Natural Gas Act of 1938 to grant authorizations for the import and export of natural gas.

Data are collected from annual, quarterly, and monthly surveys. The primary annual report is the Form EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Disposition," a mandatory survey of all companies that deliver natural gas to consumers or that transport gas across state lines. Another annual report, Form EIA-895, "Annual Quantity and Value of Natural Gas Production Report," was completed by agencies in the 32 gas producing states through 2010. EIA obtained similar data directly from the states beginning in 2011. The EIA-895 Form collected volumes of natural gas gross withdrawals, those vented and flared, returned to formation, or used on the lease, and the volume of nonhydrocarbons removed from the produced stream. It also collected information on the value of marketed production. The Office of Fossil Energy provides monthly and quarterly files of data on imports and exports. The monthly reports include surveys of the natural gas industry, and of the electric power industry. The monthly natural gas industry surveys are: the Form EIA-191, filed by companies that operate underground storage facilities in the Lower 48 states; the Form EIA-914, filed by a sample of companies that operate wells producing natural gas; the Form EIA-857, filed by a sample of companies that deliver natural gas to consumers; and the Form EIA-910, filed by natural gas marketers in select states. The electric power industry source for both price and consumption data is Form EIA-923, "Power Plant Operations Report." Responses to all current surveys are mandatory. A description of the survey respondents, reporting requirements, and processing of the data is given on the following pages for each of the natural gas surveys. Copies of the forms and instructions are available on the EIA website. Further information about Electric Power forms can be found in Appendix C of the *Electric Power Monthly*.

Form EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Disposition"

The Form EIA-176 is mailed to all identified interstate and intrastate natural gas pipeline companies; investor and municipally owned natural gas distributors; underground natural gas storage operators; synthetic natural gas plant operators; field, well, or processing plant operators that deliver natural gas directly to consumers (including their own industrial facilities); and/or companies that transport gas across a state border through field or gathering facilities. Each company is required to file if it meets the survey specifications. The mailing in 2016

for report year 2015 totaled approximately 2,036 questionnaire packages. While final nonresponse rates vary, the rates have averaged about 1 percent in recent years.

The Form EIA-176 is a multi-line, multi-page schedule for reporting all supplies of natural gas and supplemental gaseous fuels and their disposition within the state indicated. Respondents file completed forms with EIA in Washington, DC. Data for the report year are due by March 1st. Extensions of the filing deadline for up to 30 days are granted to any respondent upon request.

All natural gas and supplemental gaseous fuels volumes are reported on a physical custody basis in thousand cubic feet (Mcf), and dollar values are reported to the nearest whole dollar. All volumes are reported at 14.73 pounds per square inch absolute pressure (psia) and 60 degrees Fahrenheit.

Data from Form EIA-176 are also published in the *Natural Gas Annual* (*NGA*) and are available from the Form EIA-176 Query system posted on the EIA website. Data reported on this form are not considered proprietary. Response to the form is mandatory.

Form EIA-895, "Monthly and Annual Quantity and Value of Natural Gas Report"

Monthly production data were collected through Form EIA-895, "Monthly and Annual Quantity and Value of Natural Gas Report," from January 1995 through December 2006. The form was designed to provide a standard reporting system, to the extent possible, for the natural gas data reported by the states. Data were not considered proprietary. All gas-producing states and the Bureau of Safety & Environmental Enforcement (and predecessor agencies) were requested to report on the Form EIA-895, a voluntary report that was used through 2010.

In 1996, an annual schedule was added to the voluntary Form EIA-895 to replace a prior annual production form. This annual schedule, designated Form EIA-895, continued to be used for collecting production data from states through 2010. In 2011, annual gas production data were obtained directly from publicly available state data.

The commercial recovery of methane from coalbeds and shale plays contributes a significant amount to the production totals in a number of states. Gross production quantities of natural gas from coalbed methane seams and shale plays (in thousand cubic feet) are obtained from PointLogic Energy. Previously, data from LCI Energy Insight (LCI) were used. In 2007-2009, an average daily production rate, available for each year, from coalbed methane and shale were used to allocate production data across months depending on the number of days in each month. For 2010 forward, monthly coalbed and shale data from LCI and, later, PointLogic Energy, were developed with the following method:

[Quarterly Daily Shale Production Rate (MMcf/day) x Number of Days in Quarter x 1000] x [Month Gross Production Volume / Quarter Gross Production Volume]

Beginning in 2010, for Pennsylvania, the quarterly shale data were also used to create a gross production monthly pattern. Data for coalbed and shale gas wells are not shown in the *Natural Gas Monthly*; however, coalbed and shale breakouts are available via the Natural Gas Navigator.

The EIA-895 also collected data on volumes returned to formation for repressuring, pressure maintenance, and cycling; quantities vented and flared; quantities of nonhydrocarbon gases removed; quantities of fuel used on lease; and marketed production as well as the monthly volume and value of marketed production. From 2011 forward, these data were obtained directly from the states or, where it was not available, estimated by EIA. The annual schedule of the EIA-895 also collected data on the number of producing gas wells, the production of natural gas including gross withdrawals from both gas and oil wells; volumes returned to formation for repressuring, pressure maintenance, and cycling; quantities vented and flared; quantities of nonhydrocarbon gases removed; quantities of fuel used on lease; marketed production; the value of marketed production; and quantity of marketed production (value based). From 2011 forward, the same items were obtained directly from the states or estimated by EIA where it was not available. From 2011 forward, the number of producing wells is from *World Oil Magazine*. All volumes are in thousand cubic feet at the states' standard pressure base and at 60 degrees Fahrenheit. All dollar values are reported in thousands.

Form EIA-914, "Monthly Natural Gas Production Report"

The Form EIA-914 is a sample survey of well operators in the Lower 48 states and 16 states or regions (Arkansas, California, Colorado, Kansas, Louisiana, Montana, North Dakota, New Mexico, Ohio, Oklahoma, Pennsylvania, Texas, Utah, West Virginia, Wyoming, and the Federal Offshore Gulf of Mexico). Current estimates of monthly production are based on this survey. The survey collects natural gas production volume information on a monthly basis, aggregated to the areas specifically requested. Two volumes are requested from respondents for each area in which they operate wells: (1) "gross withdrawals (wet)," which is the full-bore well stream gas minus lease condensate, oil, and water; and (2) "natural gas lease production," which is a measure indicating the net amount of produced gas leaving the lease to go to natural gas processing plants or directly to end-users. Estimates of gross withdrawals in a state are made from the reported gross withdrawal volumes. Marketed production is estimated from gross withdrawals using state estimates of repressuring, vented and flared, and nonhydrocarbon gases removed.

The EIA-914 survey form is an 11-page document, similar in format to other surveys in EIA's Office of Oil, Gas, and Coal Supply Statistics. The form was designed based on direct input from potential respondents during pre-survey design visits and the quality and usability of the survey instrument were established with cognitive testing conducted by survey methodologists in EIA's Statistics and Methods Group. Based on the test results, the form includes imbedded instructions, intended to help respondents complete the form without the need to refer to instructions located elsewhere.

A full description of the survey methodology may be found at the EIA-914 Methodology.

Form EIA-191, "Underground Natural Gas Storage Report"

The Form EIA-191, "Monthly Underground Natural Gas Storage Report," is completed by approximately 131 companies that operate underground facilities in the United States (prior to 2013, Alaska data were not included in the EIA-191 survey). The final monthly and annual response rates are 100 percent. The Form EIA-191 monthly schedule contains current month data on the total quantities of gas in storage, injections and withdrawals, the location (including state and county, field, reservoir) and peak day withdrawals during the

reporting period. The annual schedule contains type of facility, storage field capacity, maximum deliverability and pipelines to which each field is connected. The annual schedule for the prior year is filed with the December submission.

Collection of the survey is on a custody basis. Information requested must be provided within 20 days after the last day of each month. Twelve reports are required per calendar year. Respondents are required to indicate whether the data reported are actual or estimated. For most of the estimated filings, the actual data or necessary revisions are submitted on separate forms for each month. Actual data on natural gas injections and withdrawals from underground storage are based on metered quantities. Data on quantities of gas in storage and on storage capacity represent, in part, reservoir engineering evaluations. All volumes are reported at 14.73 psia and 60 degrees Fahrenheit.

The *Monthly Energy Review* contains data from the Form EIA-191 survey.

"Quarterly Natural Gas Import and Export Sales and Price Report"

Beginning in 1995, import and export data have been taken from the "Quarterly Natural Gas Import and Export Sales and Price Report." This report is prepared by the Office of Fossil Energy, U.S. Department of Energy, based on information submitted by all firms having authorization to import or export natural gas. The Office of Fossil Energy provides authorizations for imports or exports under Section 3 of the Natural Gas Act of 1938.

All companies are required, as a condition of their authorizations, to file monthly and quarterly reports with the Office of Fossil Energy. The data are reported at a monthly level of detail.

Form EIA-857, "Monthly Report of Natural Gas Purchases and Deliveries to Consumers"

Monthly price and volume data on gas deliveries are collected on the Form EIA-857 from a sample of respondents representing the 50 states and the District of Columbia. Response to Form EIA-857 is mandatory and data are considered proprietary. Completed forms are required to be submitted to EIA on or before the 30th day after the end of the report month.

A sample of approximately 310 natural gas companies, including interstate pipelines, intrastate pipelines, and local distribution companies, report to the survey. The sample was selected independently for each of the 50 states and the District of Columbia from a frame consisting of all respondents to Form EIA-176 who reported deliveries of natural gas to consumers in the residential, commercial, or industrial sectors. Each selected company is required to complete and file the Form EIA-857 monthly. Each month about half the responses are received by the due date although response rates by first publication of the relevant month are approximately 95 percent. When a response is extremely late, volumes are imputed, as described in Appendix C, "Statistical Considerations." When the company's submission is eventually received, the submitted data are entered into the data system and used for subsequent processing and revisions.

Form EIA-857 data are used to estimate monthly sales of natural gas (volume and price) by state and monthly deliveries of natural gas on behalf of others (volume) by state to three consumer sectors --residential,

commercial, and industrial. Data from Form EIA-857 are also used to calculate the citygate price. See Appendix C for a discussion of the sample design and estimation procedures. Monthly prices of natural gas to the electric power sector are calculated from data reported on Form EIA-923, "Electric Power Plant Operations." Data from Form EIA-857 are also used to calculate the citygate price.

Form EIA-910, "Monthly Natural Gas Marketer Survey"

The Form EIA-910, "Monthly Natural Gas Marketer Survey," collects information on natural gas sales from marketers in selected states (Florida, Georgia, Illinois, Maryland, Massachusetts, Michigan, New Jersey, New York, Ohio, Pennsylvania, West Virginia, Virginia, and the District of Columbia) that have active customer choice programs. Beginning in 2011, the EIA-910 is collected only in Georgia, New York and Ohio. These states were selected based on the percentage of natural gas sold by marketers in the residential and commercial end-use sectors. The survey collects monthly price and volume data on natural gas sold by all marketers in the selected states. A natural gas marketer is a company that competes with other companies to sell natural gas service, but relies on regulated local distribution companies to deliver the gas. The data collected on the Form EIA-910 are integrated with residential and commercial price data from the Form EIA-857 for the states where the EIA-910 data are collected as data quality becomes acceptable. Response to the EIA-910 is mandatory and data are considered proprietary.

Approximately 100 natural gas marketers currently report to the survey. Final monthly survey response rates are approximately 95 percent. Responses are filed with EIA in Washington, DC, on or before the 30th day after the end of the report month.

All natural gas volumes are reported in thousand cubic feet at 14.73 psia at 60 degrees Fahrenheit, and dollar values are reported as whole dollar.