

# Appendix A

## Explanatory Notes

The Energy Information Administration (EIA) publishes monthly data for the supply and disposition of natural gas in the United States in the *Natural Gas Monthly (NGM)*. The information in this Appendix is provided to assist users in understanding the monthly data. Table A1 lists the methodologies for deriving the data to be published for the most recent months shown in Tables 1-3. The following explanatory notes describe sources for all *NGM* tables.

### Note 1. Production

#### *Annual Data*

Natural gas production data are collected from 32 gas-producing States on the voluntary Form EIA-895 "Monthly Quantity and Value of Natural Gas Report." The form requests data on gross withdrawals, gas vented and flared, repressuring, nonhydrocarbon

**Table A1. Methodology for Most Recent Monthly Natural Gas Supply and Disposition Data of Table 1-3**

Components	Reporting Methodology
<b>Supply and Disposition</b>	
Marketed Production	Derived from the Short-Term Energy Outlook
Extraction Loss	Derived from Marketed Production
Dry Production	Marketed Production minus Extraction Loss
Withdrawals from Storage	Reported on Form EIA-191
Supplemental Gaseous Fuels	Derived from supply estimates and coal gasification information
Imports	Estimated from National Energy Board of Canada information and liquefied natural gas information
Additions to Storage	Reported on Form EIA-191
Exports	Estimated from industry trends and liquefied natural gas information
Current-Month Consumption	Reported on Form EIA-857, Form EIA-906, and other sources below.
<b>Consumption by Sector</b>	
Lease and Plant Fuel	Derived from Marketed Production
Pipeline and Distribution Use	Derived from Deliveries to Consumers
Residential	Estimated from sample data reported on Form EIA-857
Commercial	Estimated from sample data reported on Form EIA-857
Industrial	Estimated from sample data reported on Form EIA-857
Electric Power	Estimated from sample data reported on Form EIA-906
Vehicle Fuel	Derived from annual estimates provided by the Coal, Nuclear and Renewable Fuels Division of EIA

gases removed, fuel used on leases, marketed production (wet), and extraction loss. The U.S. Minerals Management Service (MMS) also supplies data on the quantity and value of natural gas production from the federal waters of the Gulf of Mexico.

### *Monthly Data*

State marketed production data are derived from State data submissions, State and MMS websites reporting natural gas production, and EIA estimates. State marketed production data for a particular month are estimated if data are unavailable at the time of publication. For most States, the data are estimated based on final monthly data reported on the Form EIA-895 for the previous year. Monthly State estimates for nonhydrocarbon gas removed, gas used for repressuring, and gas vented and flared are based on the ratio of the item to gross withdrawals as reported on the annual EIA-895. These ratios are applied to the monthly estimates for gross withdrawals to calculate figures for nonhydrocarbon gases removed, gas used for repressuring, and gas vented and flared. Current monthly estimates for gross withdrawals are calculated from final monthly data filed on Form EIA-895 for the previous year, if necessary. The Reserves and Production Division of the Office of Oil and Gas, EIA, provides estimates of marketed production for the States of Texas, Louisiana, and Oklahoma.

All monthly data are considered preliminary until after publication of the *Natural Gas Annual (NGA)* for the year in which the report month falls. Volumetric data are converted, as necessary, to a standard 14.73 psia pressure base. Data are revised as Table 7 monthly data are updated. Final monthly data are the sums of monthly data reported on the Form EIA-895 annual schedule.

## **Note 2. Nonhydrocarbon Gases Removed**

### *Annual Data*

Data on nonhydrocarbon gases removed from marketed production—carbon dioxide, helium, hydrogen sulfide, and nitrogen—are reported by State agencies on Form EIA-895. Nine of the 32 producing States reported data on nonhydrocarbon gases removed during 2002. These 9 States accounted for 36 percent of total 2002 gross withdrawals. The State of Missouri has reported zero gross withdrawals since 1997.

### *Monthly Data*

All monthly data are considered preliminary until after publication of the *NGA* for the year in which the

report month falls. Monthly State estimates of nonhydrocarbon gases removed are prepared by EIA based on annual data reported on Form EIA-895, if necessary. Each State's annual percentage of nonhydrocarbon gases removed to gross withdrawals reported is applied to the States monthly gross withdrawal data to produce an estimate of nonhydrocarbon gases removed.

For States not supplying monthly data on the annual schedule of the EIA-895, final monthly data are calculated by allocating the final annual volume to the months in the same proportion as the preliminary monthly data.

## **Note 3. Extraction Loss**

### *Annual Data*

Extraction loss data are calculated from data reported on Form EIA-64A, "Annual Report of the Origin of Natural Gas Liquids Production". For a fuller discussion, see the *NGA*.

### *Monthly Data*

Preliminary data are estimated based on extraction loss as an annual percentage of marketed production. This percentage is applied to each month's marketed production to estimate monthly extraction loss.

Monthly data are revised after the publication of the *NGA*. Final monthly data are estimated by allocating annual extraction loss data to each month based on its total natural gas marketed production.

## **Note 4. Supplemental Gaseous Fuels**

### *Annual Data*

Annual data on supplemental gas fuel supply are reported on Form EIA-176 "Annual Report of Natural and Supplemental Gas Supply and Disposition."

### *Monthly Data*

All monthly data are considered preliminary until after the publication of the *NGA* for the year in which the report month falls. Monthly estimates are based on the annual ratio of supplemental gaseous fuels to the sum of dry gas production, net imports, and net withdrawals from storage. This ratio is applied to the monthly sum of these three elements to compute a monthly supplemental gaseous fuels figure.

Monthly data are revised after publication of the *NGA*. Final monthly data are estimated based on the revised annual ratio of supplemental gaseous fuels to

the sum of dry gas production, net imports, and net withdrawals from storage. This revised ratio is applied to the revised monthly sum of these three supply elements to compute final monthly data.

## Note 5. Imports and Exports

### *Annual Data and Final Monthly Data*

Annual and final monthly data are supplied by the Office of Fossil Energy, U.S. Department of Energy, "Natural Gas Imports and Exports", which requires monthly data to be reported each quarter for the calendar year.

### *Monthly Data - Imports*

Preliminary monthly import data are based on data from the National Energy Board of Canada and responses to informal industry contacts and EIA estimates. Preliminary data are revised after the publication of the NGA.

### *Monthly Data - Exports*

Preliminary monthly export data are based on historical data from the Office of Fossil Energy, U.S. Department of Energy, "Natural Gas Imports and Exports", informal industry contacts, and information gathered from natural gas industry trade publications. Preliminary monthly data are revised after publication of the NGA.

## Note 6. Natural Gas Storage

Note that final monthly and annual storage levels, additions, and withdrawal data shown in Table 2 include both underground and liquefied natural gas (LNG) storage.

### *Annual Data*

Preliminary annual data on additions and withdrawals from underground storage facilities are the sum of the monthly data from the EIA-191. Final annual data are adjusted to data in the EIA-176.

Annual data on LNG additions and withdrawals are from the EIA-176.

### *Monthly Data*

Preliminary and final monthly data on underground storage levels, additions, and withdrawals are from the EIA-191. All operators of underground storage fields complete the survey.

Estimates of monthly LNG additions and withdrawals are calculated by applying the proportion of each

month's net injections to underground storage during the injection season to annual LNG additions and the proportion of each month's net withdrawals from underground storage during the withdrawal season to annual LNG withdrawals.

There are three principal types of underground storage facilities in operation in the United States today: salt caverns (caverns hollowed out in salt "bed" or "dome" formations), depleted fields (depleted reservoirs in oil and/or gas fields), and aquifer reservoirs (water-only reservoirs conditioned to hold natural gas). A storage facility's daily deliverability or withdrawal capability is the amount of gas that can be withdrawn from it in a 24-hour period. Salt cavern storage facilities generally have high deliverability because all of the working gas in a given facility can be withdrawn in a relatively short period of time. (A typical salt cavern cycle is 10 days to deplete working gas, and 20 days to refill working gas.) By contrast, depleted field and aquifer reservoirs are designed and operated to withdraw all working gas over the course of an entire heating season (about 150 days). Further, while both traditional and salt cavern facilities can be switched from withdrawal to injection operations during the heating season, this is usually more quickly and easily done in salt cavern facilities, reflecting their greater operational flexibility.

## Note 7. Consumption

### *Annual Data*

All annual data are from the NGA. Total consumption is the sum of the components of consumption listed below. Monthly data are revised after publication of the NGA.

### *Monthly Data*

All monthly data are considered preliminary until after publication of the NGA.

### *Residential, Commercial, and Industrial Sector Consumption*

Preliminary estimates of monthly deliveries of natural gas to residential, commercial, and industrial consumers in 50 States are based on data reported on Form EIA-857 "Monthly Report of Natural Gas Purchases and Deliveries." See Appendix C, "Statistical Considerations," for a detailed explanation of sample selection and estimation procedures. Monthly data for a given year are revised after the publication of the NGA to correct for any sampling error. Final monthly data are estimated by allocating annual consumption data from the Form EIA-176 to each month in proportion to monthly volumes reported in Form EIA-857.

### *Vehicle Fuel Use*

Monthly U.S. total estimates of natural gas (compressed or liquefied) used as vehicle fuel are derived from an annual estimate of vehicle fuel use provided by the Coal, Nuclear, and Renewable Fuels Division of EIA. Monthly State level vehicle fuel data are not available.

### *Electric Power Sector Consumption*

Monthly estimates of deliveries of natural gas to electric power producers are derived from data submitted by the sample of electric power producers reporting monthly on Form EIA-906, "Power Plant Report." The estimates reported in the *NGM* represent gas delivered to electricity-only plants (utility and nonutility power producers) and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public. For a discussion of these estimates, see the *Electric Power Monthly*.

### *Pipeline and Distribution Use*

Preliminary monthly estimates are based on the pipeline fuel consumption as an annual percentage of total consumption from the previous years Form EIA-176. This percentage is applied to each months total consumption figure to compute the monthly estimate.

Monthly data are revised after the publication of the *NGA*. Final monthly data are based on the revised annual ratio of pipeline fuel consumption to total consumption from the Form EIA-176. This ratio is applied to each months revised total consumption figure to compute final monthly pipeline fuel consumption estimates.

### *Lease and Plant Fuel Consumption*

Preliminary monthly data are estimated based on lease and plant fuel consumption as an annual percentage of marketed production. This percentage is applied to each months marketed production figure to compute estimated lease and plant fuel consumption.

Monthly data are revised after publication of the *NGA*. Final monthly plant fuel data are based on a revised annual ratio of plant fuel consumption to marketed production from Form EIA-176. This ratio is applied to each months revised marketed production figure to compute final monthly plant fuel consumption estimates. Final monthly lease data are collected on the Form EIA-895 and estimates from the Form EIA-176. See the *NGA* for a complete discussion of this process.

### **Note 8. Balancing Item**

The balancing item category represents the difference between the sum of the components of natural gas supply and the sum of the components of natural gas disposition. These differences may be due to data reporting problems or to issues in survey coverage. Preliminary monthly data in the balancing item category are calculated by subtracting dry gas production, withdrawals from storage, supplemental gaseous fuels, and imports from total disposition. The balancing item may reflect problems in any of the surveys comprising natural gas supply or disposition.

Reporting problems include differences due to the net result of conversions of flow data metered at varying temperatures and pressure bases and converted to a standard temperature and pressure base; the effect of variations in company accounting and billing practices; differences between billing cycles and calendar periods; and imbalances resulting from the merger of data reporting systems, which vary in scope, format, definitions, and type of respondents. Survey coverage problems include incomplete survey frames or problems in sampling design.

Annual data are from the *NGA*. For an explanation of the methodology used in calculating the annual balancing item, see the *NGA*.

### **Note 9. Average Price of Deliveries to Consumers**

For most States, price data are representative of prices for gas sold and delivered to residential, commercial, and industrial consumers by local distribution companies. In the States of Georgia, Maryland, New York, Ohio, and Pennsylvania, the residential and commercial sector prices reported in the *NGM* include data on prices of gas sold to customers in those sectors by energy marketers. These latter data are collected on Form EIA-910, "Monthly Natural Gas Marketer Survey." Except for these States, none of the prices reflect average prices of natural gas transported to consumers for the account of third parties or Aspot-market@ prices. Table 25 indicates the percentage of total deliveries included in commercial and industrial price estimates.

Prices of natural gas delivered to electric utilities are derived from data reported on Form FERC-423, "Monthly Report of Cost and Quality of Fuels for Electric Plants" as reported in the *Electric Power Monthly*. Data on the price of natural gas delivered to other electric power producers are not available.

## Note 10. Average Wellhead Price

### *Annual Data*

Form EIA-895 requests State agencies to report the quantity and value of marketed production. When complete data are unavailable, the form instructs the State agency to report the available aggregate value and the quantity of marketed production associated with this value. A number of States reported volumes of production and associated values for other than marketed production. In addition, information for several States that were unable to provide data was obtained from Form EIA-176. It should be noted that Form EIA-176 reports a fraction of State production. The imputed average value of marketed production in each State is calculated by dividing the States reported aggregate value by its associated production. This unit price is then applied to the quantity of the States marketed production to derive the imputed aggregate value of marketed production.

### *Monthly Data*

Preliminary values for the monthly U.S. natural gas wellhead price are estimated from the New York Mercantile Exchange (NYMEX) futures final settlement price for near-month delivery at the Henry Hub, and reported cash market prices at 5 major trading hubs: Henry Hub, LA; Carthage, TX; Katy, TX; Waha, TX; and Blanco, NM. The NYMEX price is publicly available and is reported in numerous trade publications, including NGI's Daily Gas Price Index (published by Intelligence Press, Inc.). The cash market prices are published in another trade publication, Natural Gas Week (Energy Intelligence Group, Inc.), and they reflect the spot delivered-to-pipeline, volume-weighted average prices for natural gas bought and sold at the specified trading hubs.

Prices include processing, gathering, and transportation fees to the hubs. The estimated wellhead prices are derived with a statistical procedure based on analysis of monthly time series data for the period 1995 through 2000. The preliminary estimates are replaced when annual survey data become available, usually about 10 months after the end of the report year.

Final monthly data are provided through the Form EIA-895, which requests State agencies to report monthly values of marketed production. Details of the monthly collection match those described in the preceding section on annual data. Preliminary monthly gas price data are replaced by these final monthly data.

## Note 11. Heating Degree-Days

Degree-days are relative measurements of outdoor air temperature. Heating degree-days are deviations of the mean daily temperature below 65 degrees Fahrenheit. A weather station recording a mean daily temperature of 40 degrees Fahrenheit would report 25 heating degree-days. There are several degree-day databases maintained by the National Oceanic and Atmospheric Administration. The information published in the NGM, is developed by the National Weather Service Climate Analysis Center, Camp Springs, Maryland.

The data are available weekly with monthly summaries and are based on mean daily temperatures recorded at about 200 major weather stations around the Country. The temperature information recorded at these weather stations is used to calculate Statewide degree-day averages weighted by gas home customers. The State figures are then aggregated into Census Divisions and into the national average.