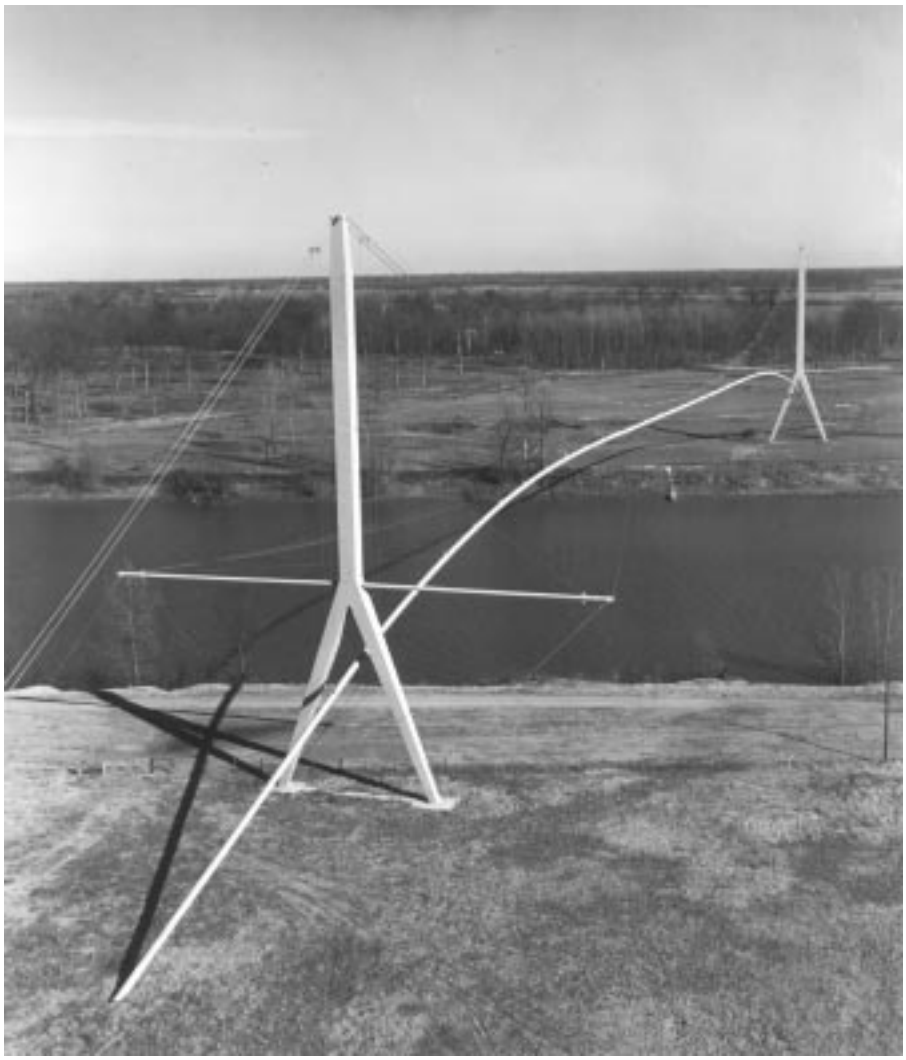
Appendix B

Metric and Thermal Conversion Tables



An overhead pipeline crossing on the White River near Newport, Arkansas.

Appendix B

Metric and Thermal Conversion Tables

Metric Conversions

Table B1 presents Summary Statistics for Natural Gas in the United States for 1994 through 1998 in metric units of measure. Volumes are shown in cubic meters instead of cubic feet. Prices are shown in dollars per thousand cubic meters instead of dollars per thousand cubic feet. The data in this table have been converted from the data that appear in Table 1 of this report.

Thermal Conversions

Table B2 presents the thermal (Btu) conversion factors and the converted data for natural gas supply and disposition from 1994 through 1998. A brief documentation for the thermal conversion factors follows:

- *Marketed Production*. The conversion factor is calculated by adding the total heat content of dry production to the total heat content of extraction loss and dividing the resulting sum by the total quantity of dry production and extraction loss (see below).
- *Extraction Loss*. The conversion factor is obtained from Appendix A of this publication.
- *Dry Production*. The conversion factor is assumed to be the same as the thermal conversion factors for consumption (see below).
- *Receipts at U.S. Borders*. The conversion factor for 1994 imports was obtained from the discontinued Form FPC-14, "Annual Report for Importers and Exporters of Natural Gas." The 1994 conversion factor has been applied to volumes reported through 1998. Intransit receipts are assumed to have the same average heat content as imports.
- *Withdrawals from Storage*. Both underground and LNG storage withdrawals are assumed to have the same heat content as consumption (see below).
- *Supplemental Gas Supplies*. This conversion factor is assumed to be the same as that for consumption (see below).
- *Balancing Item*. This conversion factor is calculated by subtracting the total heat content of all other items of supply from the heat content of total disposition (from Table B2) and dividing the difference by the balancing item quantity.
- *Consumption*. The thermal conversion factor for total consumption (lease fuel, plant fuel, pipeline fuel, and deliveries to consumers) is the average heat content for deliveries to end users as reported on Form EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Disposition." Average heat content of electric utility consumption is obtained from EIA's *Electric Power Annual*. The factor for nonutility consumption is calculated by subtracting the total heat content of electric utility consumption from the heat content of total consumption and dividing the difference by the quantity of nonutility consumption (total consumption less electric utility consumption).
- *Deliveries at U.S. Borders*. The conversion factor for 1994 exports was obtained from the discontinued Form FPC-14. The 1994 conversion factor has been applied to volumes reported through 1998. Intransit deliveries are assumed to have the same average heat content as exports.
- *Additions to Storage*. Additions to both underground and LNG storage are assumed to have the same heat content as consumption (see above).

Table B1. Summary Statistics for Natural Gas in the United States, Metric Equivalents, 1994-1998

	1994	1995	1996	1997	1998
Reserves (billion cubic meters)					
Estimated Proved Reserves (dry) as of December 31	4,639	4,676	4,714	4,735	NA
Number of Gas and Gas Condensate Wells					
Producing at End of Year	291,773	298,541	301,811	R310,971	316,373
Production (million cubic meters)					
Gross Withdrawals					
From Gas Wells	491,327	489,373	R502,265	505,287	497,205
From Oil Wells	176,404	182,972	R180,554	180,340	180,254
Total	**667,731**	**672,345**	**R682,819**	**685,627**	**677,459**
Repressuring	-91,482	-100,950	R-99,413	-98,869	-97,221
Nonhydrocarbon Gases Removed	-11,672	-10,998	-14,680	R-16,953	-17,308
Wet After Lease Separation	564,577	560,396	R568,726	R569,804	562,930
Vented and Flared	-6,466	-8,035	-7,705	R-7,259	-6,630
Marketed Production	558,112	552,362	R561,020	R562,545	556,300
Extraction Loss	-25,160	-25,706	-27,133	-27,291	-26,555
Total Dry Production	**532,952**	**526,656**	**R533,888**	**R535,255**	**529,745**
Supply (million cubic meters)					
Dry Production	532,952	526,656	R533,888	R535,255	529,745
Receipts at U.S. Borders					
Imports	74,299	80,450	83,178	84,786	89,256
Intransit Receipts	13,812	13,946	15,187	15,518	13,637
Withdrawals from Storage					
Underground Storage	71,023	84,217	82,440	79,974	67,319
LNG Storage	2,002	1,428	1,962	1,969	1,539
Supplemental Gas Supplies	3,138	3,123	3,099	2,921	2,894
Balancing Item	-11,768	-6,513	R6,148	R1,728	-944
Total Supply	**685,458**	**703,307**	**R725,902**	**R722,149**	**703,446**
Disposition (million cubic meters)					
Consumption	586,377	611,096	R622,025	R621,800	602,074
Deliveries at U.S. Borders					
Exports	4,580	4,364	4,344	4,446	4,503
Intransit Deliveries	13,380	13,946	15,187	14,629	13,010
Additions to Storage					
Underground Storage	79,182	72,658	82,277	79,296	82,220
LNG Storage	1,939	1,243	2,069	1,978	1,639
Total Disposition	**685,458**	**703,307**	**R725,902**	**R722,149**	**703,446**
Consumption (million cubic meters)					
Lease Fuel	19,817	22,436	R22,643	R21,983	21,413
Pipeline Fuel	19,407	19,831	20,146	R21,279	17,995
Plant Fuel	12,003	12,115	12,744	12,088	11,364
Delivered to Consumers					
Residential	137,272	137,346	148,420	141,125	128,000
Commercial	81,978	85,831	89,432	R91,036	84,936
Industrial	231,265	242,947	251,182	R250,107	245,964
Vehicle Fuel	49	76	83	125	144
Electric Utilities	84,587	90,515	77,376	R84,057	92,258
Total Delivered to Consumers	**535,150**	**556,714**	**566,493**	**R566,451**	**551,302**
Total Consumption	**586,377**	**611,096**	**R622,025**	**R621,800**	**602,074**
Delivered for the Account of Others (million cubic meters)					
Residential	1,199	1,282	1,392	1,728	2,977
Commercial	16,963	19,996	20,011	R26,599	28,041
Industrial	173,099	184,551	202,519	R205,947	207,827
Electric Utilities	59,242	59,757	52,995	54,719	60,962

See footnotes at end of table.

Table B1. Summary Statistics for Natural Gas in the United States, Metric Equivalents, 1994-1998 (Continued)

	1994	1995	1996	1997	1998
Firm Deliveries (million cubic meters)					
Residential	137,167	137,234	148,270	141,020	127,927
Commercial	72,477	75,051	79,271	R78,016	71,830
Industrial	134,055	145,550	152,584	R149,961	152,377
Electric Utilities	44,762	49,808	42,670	40,943	49,518
Vehicle Fuel	38	69	76	118	136
Interruptible Deliveries (million cubic meters)					
Residential	105	112	150	105	73
Commercial	9,501	10,779	10,160	R13,020	13,106
Industrial	97,210	97,397	98,599	R100,146	93,587
Electric Utilities	34,276	32,504	28,011	33,347	33,471
Vehicle Fuel	11	6	7	7	8
Number of Consumers					
Residential	53,392,557	54,322,179	55,263,673	56,186,958	57,321,746
Commercial	4,533,905	4,636,500	4,720,227	R4,761,409	5,044,497
Industrial	202,940	209,398	206,049	R238,961	231,438
Average Annual Consumption per Consumer (thousand cubic meters)					
Residential	3	3	3	3	2
Commercial	18	19	19	R19	17
Industrial	1,140	1,160	1,219	R1,047	1,063
Average Prices for Natural Gas (dollars per thousand cubic meters)					
Wellhead (Marketed Production)	65.33	54.74	76.63	81.93	68.51
Imports	66.04	52.62	69.57	76.63	69.57
Exports	88.29	84.40	104.88	106.65	86.52
Pipeline Fuel	60.03	52.62	80.16	80.87	70.98
City Gate	108.42	98.17	115.48	129.25	108.42
Delivered to Consumers					
Residential	226.37	214.01	223.89	245.08	240.85
Commercial	192.11	178.34	190.70	R204.83	193.52
Industrial	107.71	95.70	120.78	126.78	110.89
Vehicle Fuel	145.14	140.55	153.27	156.80	162.09
Electric Utilities	80.52	71.34	95.00	R98.17	84.76

R = Revised data.
NA = Not available.

Notes: Beginning in 1987, prices for gas delivered to consumers are calculated using only on-system sales data. No imputations are made for prices of gas delivered for the account of others. In previous years, prices were calculated using reported values and values imputed for gas delivered for the account of others. The United States includes the 50 States and the District of Columbia. Totals may not equal sum of components due to independent rounding. Beginning in 1996, consumption of natural gas for agricultural use was classified as industrial use. In 1995 and earlier years, agricultural use was classified as commercial use.

Sources: Energy Information Administration (EIA), Form EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Disposition"; Form EIA-627, "Annual Quantity and Value of Natural Gas Report" (1994 and 1995); Form EIA-895, "Monthly Quantity and Value of Natural Gas Report" (1996 through 1998); Form EIA-857, "Monthly Report of Natural Gas Purchases and Deliveries to Consumers"; Form EIA-816, "Monthly Natural Gas Liquids Report"; Form EIA-64A, "Annual Report of the Origin of Natural Gas Liquids Production"; Form EIA-759, "Monthly Power Plant Report"; Form FERC-423, "Monthly Report of Cost and Quality of Fuels for Electric Plants"; Form EIA-191, "Underground Gas Storage Report"; Form FPC-14, "Annual Report for Importers and Exporters of Natural Gas" (1994); Office of Fossil Energy, U.S. Department of Energy, Natural Gas Imports and Exports (1995 through 1998); *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves, Annual Reports*, DOE/EIA-0216; and the U.S. Minerals Management Service.

Table B2. Thermal Conversion Factors and Data, 1994-1998

	1994	1995	1996	1997	1998
Conversion Factor (Btu per cubic foot)					
Production					
Marketed	1,105	1,106	1,109	1,107	1,110
Extraction Loss	2,735	2,730	2,721	2,704	2,694
Total Dry Production	**1,028**	**1,027**	**1,027**	**1,026**	**1,031**
Supply					
Dry Production	1,028	1,027	1,027	1,026	1,031
Receipts at U.S. Borders					
Imports	1,022	1,021	1,022	1,023	1,023
Intransit Receipts	1,022	1,021	1,022	1,023	1,023
Withdrawals from Storage					
Underground Storage	1,028	1,027	1,027	1,026	1,031
LNG Storage	1,028	1,027	1,027	1,026	1,031
Supplemental Gas Supplies	1,028	1,027	1,027	1,026	1,031
Balancing Item	937	988	[R]1,056	[R]1,029	547
Total Supply	**NA**	**NA**	**NA**	**NA**	**NA**
Disposition					
Consumption	1,028	1,027	1,027	1,026	1,031
(Electric Utility)	(1,022)	(1,025)	(1,024)	(1,019)	(1,022)
(Non-Utility)	(1,029)	(1,027)	(1,027)	(1,027)	(1,033)
Deliveries at U.S. Borders					
Exports	1,011	1,011	1,011	1,011	1,011
Intransit Deliveries	1,011	1,011	1,011	1,011	1,011
Additions to Storage					
Underground Storage	1,028	1,027	1,027	1,026	1,031
LNG Storage	1,028	1,027	1,027	1,026	1,031
Total Disposition	**NA**	**NA**	**NA**	**NA**	**NA**
Summary Data (billion Btu)					
Production					
Marketed	21,702,261	21,579,527	[R]21,970,606	[R]21,999,810	21,814,020
Extraction Loss	-2,430,350	-2,478,684	-2,607,484	-2,606,015	-2,526,324
Total Dry Production	**19,271,911**	**19,100,844**	**[R]19,363,122**	**[R]19,393,794**	**19,287,696**
Supply					
Dry Production	19,271,911	19,100,844	[R]19,363,122	[R]19,393,794	19,287,696
Receipts at U.S. Borders					
Imports	2,682,436	2,901,166	3,002,256	3,063,489	3,225,082
Intransit Receipts	498,653	502,902	548,172	560,686	492,737
Withdrawals from Storage					
Underground Storage	2,561,187	3,054,402	2,989,933	2,897,675	2,451,042
LNG Storage	72,668	51,808	71,157	71,324	56,050
Supplemental Gas Supplies	113,929	113,268	112,410	105,835	105,357
Balancing Item	-277,959	-227,156	[R]229,205	[R]82,357	-18,217
Total Supply	**24,922,825**	**25,497,233**	**[R]26,316,256**	**[R]26,175,161**	**25,599,748**
Disposition					
Consumption	21,336,624	22,163,343	[R]22,559,714	[R]22,549,125	21,921,145
(Electric Utility)	(3,052,864)	(3,276,420)	(2,798,076)	[R](3,024,854)	(3,329,731)
(Non-Utility)	(18,283,760)	(18,886,922)	[R](19,761,638)	[R](19,524,271)	(18,591,414)
Deliveries at U.S. Borders					
Exports	163,522	155,799	155,115	158,783	160,770
Intransit Deliveries	477,710	497,849	542,354	522,469	464,555
Additions to Storage					
Underground Storage	2,874,574	2,635,161	2,984,043	2,873,102	2,993,596
LNG Storage	70,395	45,082	75,029	71,681	59,681
Total Disposition	**24,922,825**	**25,497,233**	**[R]26,316,256**	**[R]26,175,161**	**25,599,748**

[R] = Revised data.
NA = Not available.
Notes: See accompanying text for conversion factor documentation. Items appearing in parentheses are subsets of other items for which data are shown in this table and are not involved in the summing of supply and disposition. Totals may not equal sum of components due to independent rounding.
Sources: Energy Information Administration (EIA), Form EIA-627, "Annual Quantity and Value of Natural Gas Report" (1994 and 1995); Form EIA-895, "Monthly Quantity and Value of Natural Gas Report" (1996 through 1998); Form EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Disposition"; Form EIA-64A, "Annual Report of the Origin of Natural Gas Liquids Production"; Form FPC-14, "Annual Report for Importers and Exporters of Natural Gas" (1994); Office of Fossil Energy, U.S. Department of Energy, Natural Gas Imports and Exports (1995 through 1998); Forms EIA-191/FERC-8, "Underground Gas Storage Report"; and Form EIA-767, "Steam-Electric Plant Operating and Design Report."