

# Revisions to Monthly Natural Gas Data

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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*. These data are preliminary when initially published. This article discusses the differences that occurred between the initial (first) monthly supply and disposition data for the United States published during 1992, 1993, and 1994 and the final monthly data published for those years.

Although the utility of future estimates cannot be judged solely on the basis of the quality of past estimates, the EIA is providing information about these differences to assist users in evaluating the usefulness of preliminary National data for 1995 and subsequent years. In general, the differences between initial and final volumes tend to be small. However, when the total volume amount is small, the difference can be associated with a large percentage difference. Supplemental fuels and exports data show this characteristic. Storage data also show this characteristic because storage of natural gas is very sensitive to heating requirements, which fluctuate greatly across months. This fluctuation results in large percentage differences for off-season months and small percentage differences for other months.

The differences between initial and final prices also tend to be small. Among the price data series, well-head prices show the largest percentage differences. The EIA is presently investigating possible reasons for this occurrence, especially in 1994, and will modify the estimation procedures as appropriate.

Some of the monthly volumes and prices are estimates developed by EIA staff. Others are estimated or taken from submitted reports. A detailed discussion of the reporting methodologies for all of the monthly data is given in the Appendix to this article. This information may also be helpful to users in evaluating the utility of the data. To maintain the quality of the monthly data, the EIA conducts programs of quality assurance for data reporting. EIA staff also continuously evaluate the estimation methodologies and recommend changes as needed to improve the estimates.

The monthly numbers discussed in this article are published in Tables 1, 2, 3, and 4 of the *Natural Gas Monthly*. Each issue shows an initial number for the most current month and monthly data back through the 2 previous years. The initial estimate generally appears 2 months after the month in which the publication is issued. If reporting or estimation errors are discovered, revisions to previous months of the current year are made only if they are significant. Data for months in prior years become final after publication of the *Natural Gas Annual*.

Natural gas supply consists of dry gas production, withdrawals from storage, supplemental gaseous fuels, and imports. Natural gas disposition consists of additions to storage, exports, and total consumption. Figure FE1 is a graph of the percentage differences between final and initial marketed production values, and Figure FE2 is a graph for total consumption percentage differences.

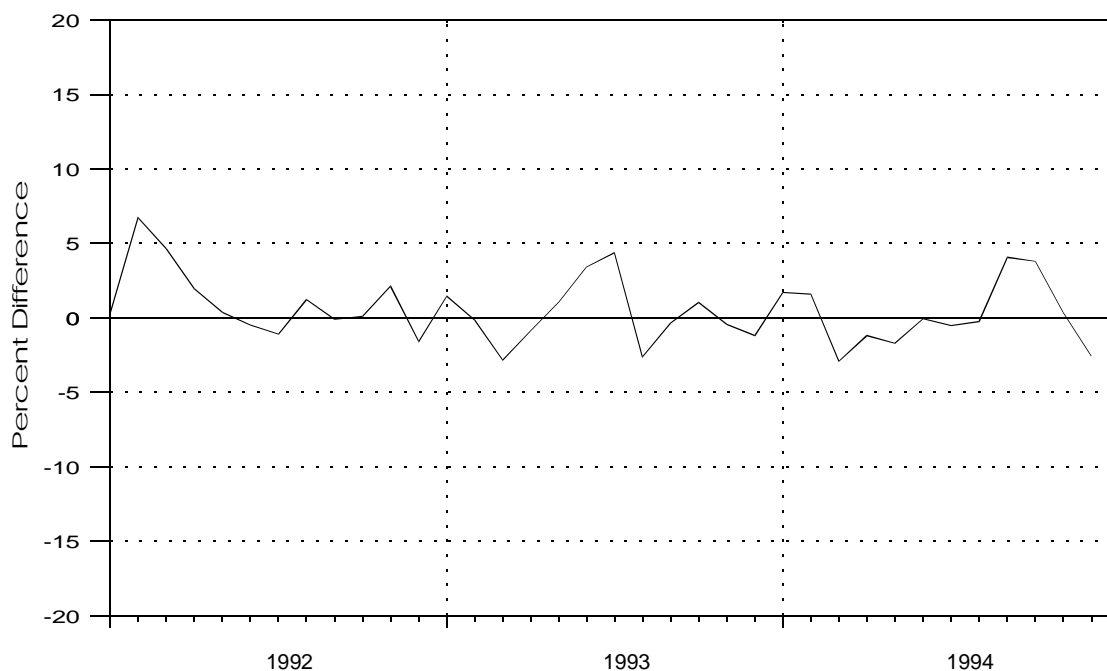
Table FE1 shows the initial and final values for natural gas supply and disposition. The percentage difference is calculated by taking the difference between the initial value and the final value, dividing it by the final value, and multiplying by 100. Positive percentage differences indicate that the initial value is larger than the final value; negative ones mean the initial value is smaller than the final value.

## Production

**Marketed Production.** Marketed production is a broad indicator of market activity in the natural gas industry. As shown in Table FE1 and Figure FE1, the differences between initial estimates and final marketed production volumes in 1992, 1993, and 1994 were generally small. Most differences were less than plus or minus 3 percent.

**Dry Gas Production.** Monthly estimates for dry gas production show a pattern similar to that for marketed production since dry production estimates are primarily driven by the marketed production estimates. As for marketed production, most differences also were less than plus or minus 3 percent.

**Figure FE1. Percent Difference Between Initial and Final Monthly Values for Marketed Production, 1992-1994**



Source: Energy Information Administration, *Natural Gas Monthly*, 1992 through 1994.

**Extraction Loss.** The extraction loss estimates are derived by using the annual ratio of extraction loss to marketed production. From September 1992 through the end of 1994, the differences between initial and final extraction loss estimates ranged from negative 7 percent to positive 7 percent.

**Supplemental Gaseous Fuels.** Supplemental gaseous fuels are the smallest component of the supply of natural gas, less than 1 percent of the total. Revisions to these data are usually small volume amounts that result in large percentage differences. With the exception of the January 1992 volume, the final volumes in 1992, 1993, and 1994 required either no adjustment or an adjustment of 1 to 2 billion cubic feet from the volumes initially reported.

### ***Storage Withdrawals and Additions***

Storage withdrawals and additions illustrate the heating season requirements that characterize the natural gas industry. During the heating season, November through March, the monthly withdrawals are large and can climb to 600 or more billion cubic feet. In the off-season, they usually drop to less than 100 billion cubic feet. Correspondingly, monthly additions are

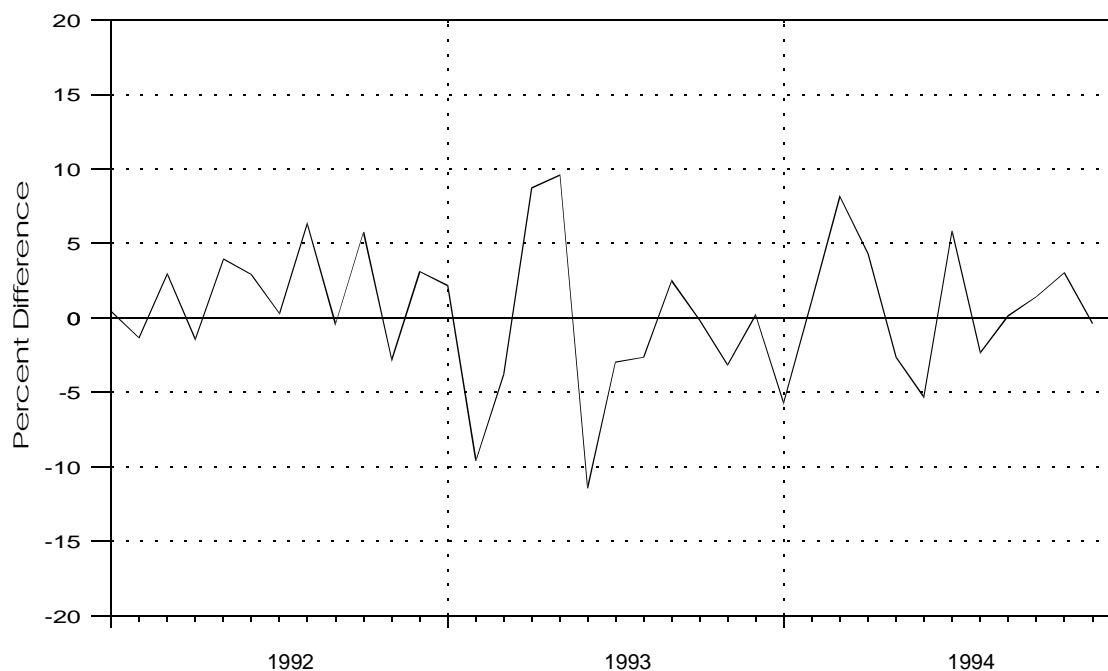
highest from April through October. Revisions to off-season withdrawals (summer months) and off-season additions (winter months) generally tend to be small volume amounts that result in large percentage differences.

Over the 3-year period, the percentage differences between initial and final storage withdrawals were smaller in nearly all of the winter months than those in the summer months. During the same period, percentage differences between initial and final additions to storage showed less variation, with a few large percentage differences in winter months.

### ***Imports and Exports***

For natural gas imports and exports data, where EIA has very limited information to make the estimates and the volume amounts are relatively small, the percentage differences tend to be large. Nearly all of the natural gas imports are pipeline imports from Canada. The methodology to estimate imports is based on the most recently available information from the National Energy Board (NEB) of Canada. The NEB provides data which are two months earlier than the month being estimated.

**Figure FE2. Percent Difference Between Initial and Final Monthly Values for Total Consumption, 1992-1994**



Source: Energy Information Administration, *Natural Gas Monthly*, 1992 through 1994.

### **Total Consumption**

Total consumption is also a broad indicator of market activity in the natural gas industry. The initial volume is estimated on the basis of an average percentage change from the previous month to the current month. (See the Reporting Methodologies Appendix for a detailed description of the estimation methodology.) The percentage differences between initial and final total consumption volumes are shown in Figure FE2. Over the 3-year period, they ranged from negative 12 percent to positive 10 percent.

### **Consumption by Sector**

The consumption sectors consist of deliveries to residential, commercial, and industrial consumers; consumption by electric utilities; consumption for lease and plant fuel; and consumption by natural gas pipelines. The percentage differences between the final and initial monthly estimates for consumption of natural gas by consumer sector are shown in Table FE3 and Figures FE3 through FE6.

### **Deliveries to Residential, Commercial, and Industrial Consumers.**

Monthly residential, commercial, and industrial consumption numbers are estimated from reported deliveries to consumers. Generally, the revisions to residential consumption estimates were very small. From 1992 through 1994, the percentage differences ranged from negative 1 percent to positive 4 percent. For commercial deliveries, the percentage differences between initial and final monthly volumes were generally larger in 1994 than they were in the previous 2 years. Across the 3-year period, the percentage differences for deliveries to industrial consumers ranged from negative 9 percent to positive 8 percent.

### **Electric Utilities.**

Monthly electric utility consumption is taken directly from reports submitted by electric utilities. Usually these data are not revised; if revisions are required, they are nearly always very small. Over the 3-year period, these percentage differences were no larger than positive or negative 1 percent.

**Table FE1. Initial Estimates and Revisions for Monthly Natural Gas Supply and Disposition in the United States, 1992-1994**  
(Volumes in Billion Cubic Feet)

Month	1992			1993			1994		
	Initial Value	Final Value	Percent Change <sup>a</sup>	Initial Value	Final Value	Percent Change <sup>a</sup>	Initial Value	Final Value	Percent Change <sup>a</sup>
<b>Marketed Production</b>									
January .....	1,669	1,663	0.4	1,672	1,648	1.5	1,714	1,685	1.7
February .....	1,566	1,467	6.7	1,479	1,481	-0.1	1,534	1,510	1.6
March .....	1,619	1,547	4.7	1,580	1,626	-2.8	1,642	1,691	-2.9
April .....	1,548	1,518	2.0	1,529	1,542	-0.8	1,588	1,607	-1.2
May .....	1,563	1,557	0.4	1,585	1,568	1.1	1,635	1,663	-1.7
June .....	1,508	1,515	-0.5	1,567	1,515	3.4	1,586	1,587	-0.1
July .....	1,547	1,564	-1.1	1,616	1,548	4.4	1,635	1,643	-0.5
August .....	1,541	1,522	1.2	1,525	1,566	-2.6	1,646	1,650	-0.2
September .....	1,507	1,508	-0.1	1,531	1,536	-0.3	1,631	1,567	4.1
October .....	1,610	1,608	0.1	1,638	1,621	1.0	1,689	1,627	3.8
November .....	1,622	1,588	2.1	1,618	1,625	-0.4	1,677	1,671	0.4
December .....	1,630	1,656	-1.6	1,686	1,706	-1.2	1,689	1,733	-2.5
<b>Extraction Loss</b>									
January .....	69	77	-10.4	75	77	-2.6	80	76	5.3
February .....	64	68	-5.9	67	69	-2.9	71	68	4.4
March .....	67	72	-6.9	71	76	-6.6	77	77	0.0
April .....	64	71	-9.9	69	72	-4.2	74	73	1.4
May .....	64	73	-12.3	71	73	-2.7	76	75	1.3
June .....	62	71	-12.7	71	71	0.0	74	72	2.8
July .....	64	73	-12.3	73	72	1.4	76	74	2.7
August .....	63	71	-11.3	71	73	-2.7	77	75	2.7
September .....	68	70	-2.9	71	72	-1.4	76	71	7.0
October .....	73	75	-2.7	76	76	0.0	79	74	6.8
November .....	73	74	-1.4	75	76	-1.3	78	76	2.6
December .....	74	77	-3.9	79	80	-1.3	79	78	1.3
<b>Dry Production</b>									
January .....	1,600	1,586	0.9	1,597	1,571	1.7	1,634	1,609	1.6
February .....	1,502	1,398	7.4	1,412	1,412	0.0	1,463	1,442	1.5
March .....	1,552	1,475	5.2	1,509	1,550	-2.6	1,565	1,614	-3.0
April .....	1,484	1,447	2.6	1,460	1,470	-0.7	1,514	1,534	-1.3
May .....	1,499	1,485	0.9	1,514	1,495	1.3	1,559	1,588	-1.8
June .....	1,446	1,444	0.1	1,496	1,444	3.6	1,512	1,515	-0.2
July .....	1,483	1,491	-0.5	1,543	1,475	4.6	1,559	1,569	-0.6
August .....	1,478	1,451	1.9	1,454	1,493	-2.6	1,569	1,576	-0.4
September .....	1,439	1,437	0.1	1,460	1,464	-0.3	1,555	1,496	3.9
October .....	1,537	1,533	0.3	1,562	1,545	1.1	1,610	1,554	3.6
November .....	1,549	1,514	2.3	1,543	1,549	-0.4	1,599	1,596	0.2
December .....	1,556	1,579	-1.5	1,607	1,627	-1.2	1,610	1,655	-2.7
<b>Withdrawals from Storage</b>									
January .....	571	624	-8.5	599	614	-2.4	755	841	-10.2
February .....	436	463	-5.8	581	591	-1.7	544	598	-9.0
March .....	369	397	-7.1	385	395	-2.5	239	243	-1.6
April .....	140	142	-1.4	109	103	5.8	68	61	11.5
May .....	50	44	13.6	25	30	-16.7	23	17	35.3
June .....	40	35	14.3	43	36	19.4	32	30	6.7
July .....	53	42	26.2	47	35	34.3	22	19	15.8
August .....	62	46	34.8	98	45	117.8	28	22	27.3
September .....	51	40	27.5	25	26	-3.8	22	14	57.1
October .....	79	70	12.9	97	103	-5.8	51	47	8.5
November .....	267	282	-5.3	315	311	1.3	193	204	-5.4
December .....	544	587	-7.3	499	510	-2.2	423	465	-9.0
<b>Supplemental Fuels</b>									
January .....	5	12	-58.3	12	13	-7.7	14	13	7.7
February .....	11	11	0.0	11	11	0.0	12	11	9.1
March .....	11	11	0.0	11	12	-8.3	11	10	10.0
April .....	10	10	0.0	10	10	0.0	10	9	11.1
May .....	9	9	0.0	8	7	14.3	10	8	25.0
June .....	8	8	0.0	9	9	0.0	9	8	12.5
July .....	8	8	0.0	9	8	12.5	10	8	25.0
August .....	9	8	12.5	9	8	12.5	9	8	12.5
September .....	9	8	12.5	9	8	12.5	10	8	25.0
October .....	10	10	0.0	10	10	0.0	10	9	11.1
November .....	11	9	22.2	12	11	9.1	11	10	10.0
December .....	12	11	9.1	13	12	8.3	13	12	8.3

See footnotes at end of table.

**Table FE1. Initial Estimates and Revisions for Monthly Natural Gas Supply and Disposition in the United States, 1992-1994**  
(Volumes in Billion Cubic Feet) -- Continued

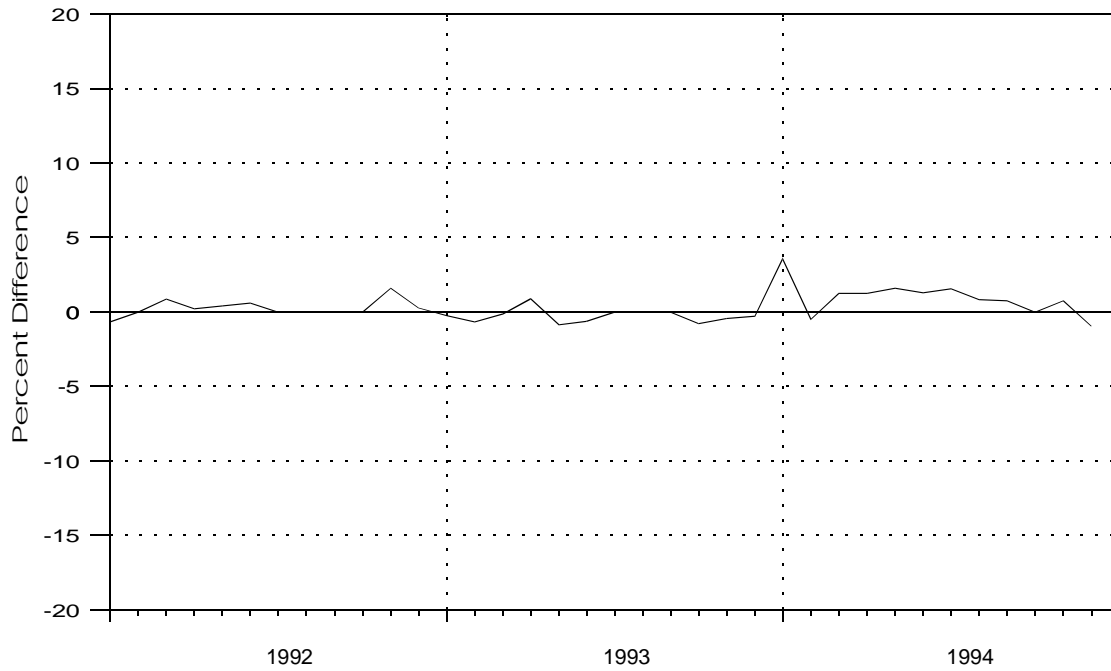
Month	1992			1993			1994		
	Initial Value	Final Value	Percent Change <sup>a</sup>	Initial Value	Final Value	Percent Change <sup>a</sup>	Initial Value	Final Value	Percent Change <sup>a</sup>
<b>Imports</b>									
January .....	135	165	-18.2	185	200	-7.5	214	241	-11.2
February .....	142	175	-18.9	174	191	-8.9	162	199	-18.6
March .....	154	180	-14.4	210	204	2.9	221	223	-0.9
April .....	177	176	0.6	176	189	-6.9	219	212	3.3
May .....	173	174	-0.6	161	171	-5.8	206	206	0.0
June .....	156	162	-3.7	193	182	6.0	210	201	4.5
July .....	163	167	-2.4	192	195	-1.5	214	221	-3.2
August .....	167	175	-4.6	165	197	-16.2	194	219	-11.4
September .....	173	166	4.2	188	194	-3.1	185	210	-11.9
October .....	179	176	1.7	183	192	-4.7	211	222	-5.0
November .....	167	210	-20.5	182	210	-13.3	207	226	-8.4
December .....	186	209	-11.0	198	225	-12.0	218	245	-11.0
<b>Additions to Storage</b>									
January .....	57	60	-5.0	48	37	29.7	46	29	58.6
February .....	53	45	17.8	30	22	36.4	47	44	6.8
March .....	73	74	-1.4	81	79	2.5	105	100	5.0
April .....	159	161	-1.2	222	216	2.8	277	294	-5.8
May .....	320	344	-7.0	448	471	-4.9	414	447	-7.4
June .....	358	384	-6.8	415	424	-2.1	374	397	-5.8
July .....	352	373	-5.6	405	398	1.8	398	429	-7.2
August .....	358	380	-5.8	419	375	11.7	361	388	-7.0
September .....	336	362	-7.2	378	391	-3.3	335	360	-6.9
October .....	261	271	-3.7	247	262	-5.7	212	229	-7.4
November .....	94	88	6.8	110	106	3.8	95	100	-5.0
December .....	56	58	-3.4	58	54	7.4	55	49	12.2
<b>Exports</b>									
January .....	12	16	-25.0	19	17	11.8	9	11	-18.2
February .....	9	14	-35.7	15	12	25.0	9	13	-30.8
March .....	10	23	-56.5	18	16	12.5	9	19	-52.6
April .....	15	18	-16.7	12	11	9.1	8	9	-11.1
May .....	10	19	-47.4	12	11	9.1	9	8	12.5
June .....	9	18	-50.0	13	11	18.2	11	13	-15.4
July .....	14	16	-12.5	15	13	15.4	11	11	0.0
August .....	18	18	0.0	13	11	18.2	11	14	-21.4
September .....	22	18	22.2	11	10	10.0	14	14	0.0
October .....	24	19	26.3	10	9	11.1	14	13	7.7
November .....	24	19	26.3	10	10	0.0	12	19	-36.8
December .....	20	19	5.3	11	10	10.0	13	18	-27.8
<b>Total Consumption</b>									
January .....	2,249	2,239	0.4	2,341	2,291	2.2	2,396	2,542	-5.7
February .....	2,004	2,031	-1.3	1,965	2,174	-9.6	2,344	2,318	1.1
March .....	1,983	1,926	3.0	2,064	2,145	-3.8	2,217	2,050	8.1
April .....	1,661	1,685	-1.4	1,830	1,683	8.7	1,713	1,642	4.3
May .....	1,474	1,418	3.9	1,427	1,302	9.6	1,365	1,402	-2.6
June .....	1,301	1,264	2.9	1,144	1,292	-11.5	1,312	1,386	-5.3
July .....	1,315	1,311	0.3	1,310	1,350	-3.0	1,462	1,381	5.9
August .....	1,344	1,264	6.3	1,332	1,368	-2.6	1,375	1,408	-2.3
September .....	1,244	1,249	-0.4	1,311	1,279	2.5	1,356	1,354	0.1
October .....	1,447	1,368	5.8	1,490	1,492	-0.1	1,490	1,469	1.4
November .....	1,625	1,672	-2.8	1,714	1,770	-3.2	1,765	1,713	3.0
December .....	2,185	2,119	3.1	2,138	2,134	0.2	2,082	2,090	-0.4

<sup>a</sup> The percent change is the initial value minus the final value, divided by the final value, multiplied by 100.

Note: The monthly volumes may not sum to total volume because the initial estimates in the early months of the year may have been revised before the annual total is first published.

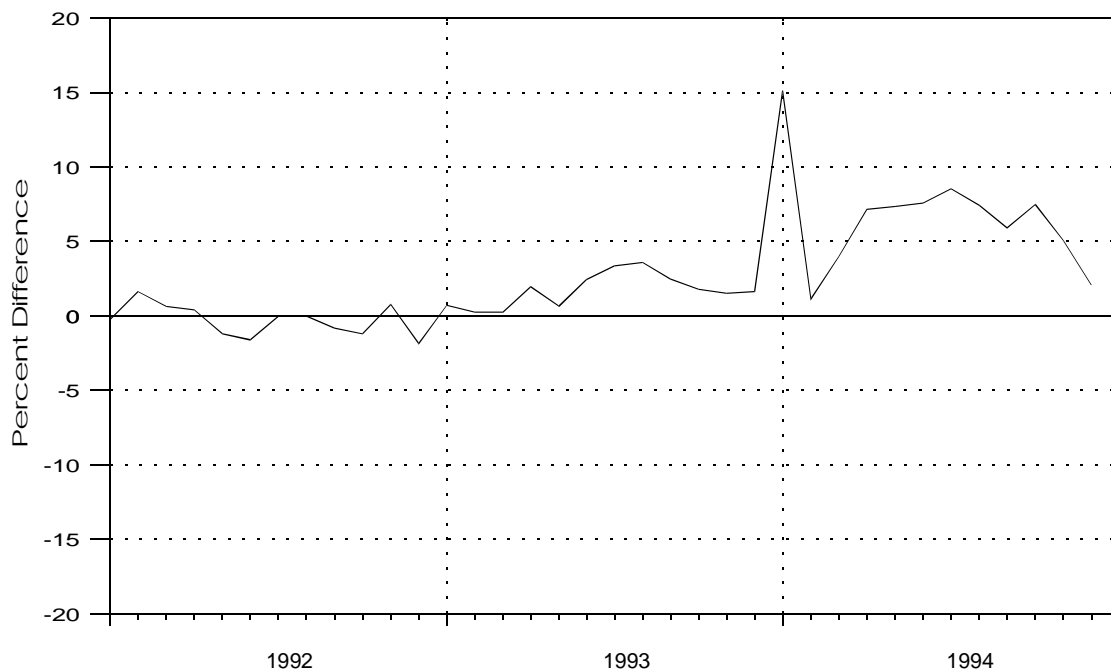
Source: Energy Information Administration, *Natural Gas Monthly*, 1992 through 1994.

**Figure FE3. Percent Difference Between Initial and Final Monthly Values for Natural Gas Delivered to Residential Consumers, 1992-1994**



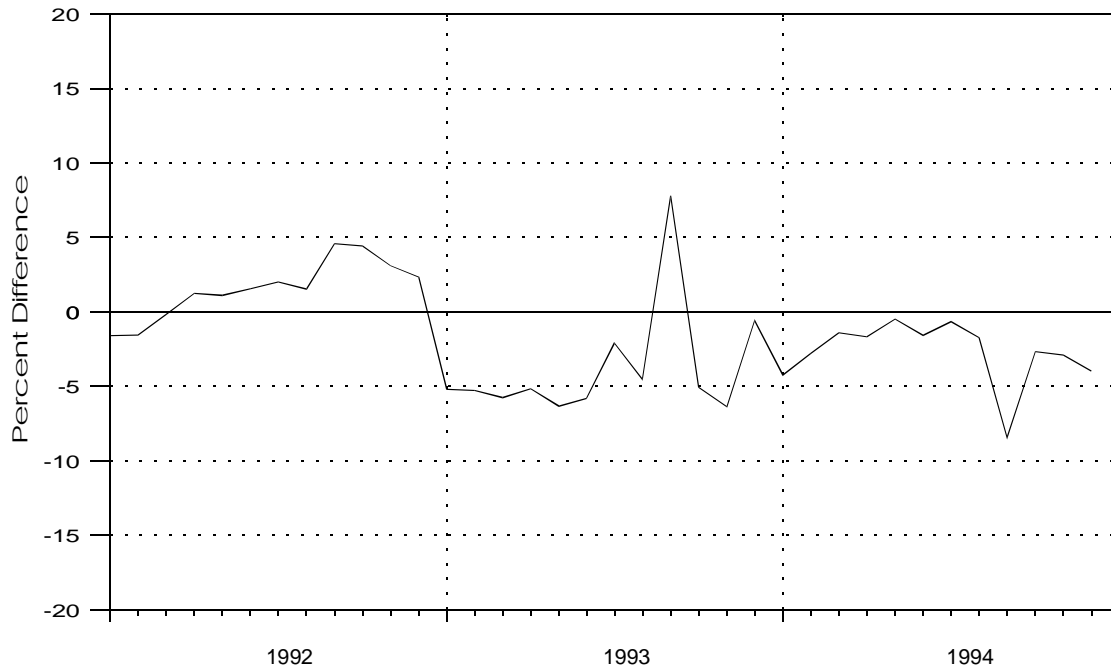
Source: Energy Information Administration, *Natural Gas Monthly*, 1992 through 1994.

**Figure FE4. Percent Difference Between Initial and Final Monthly Values for Natural Gas Delivered to Commercial Consumers, 1992-1994**



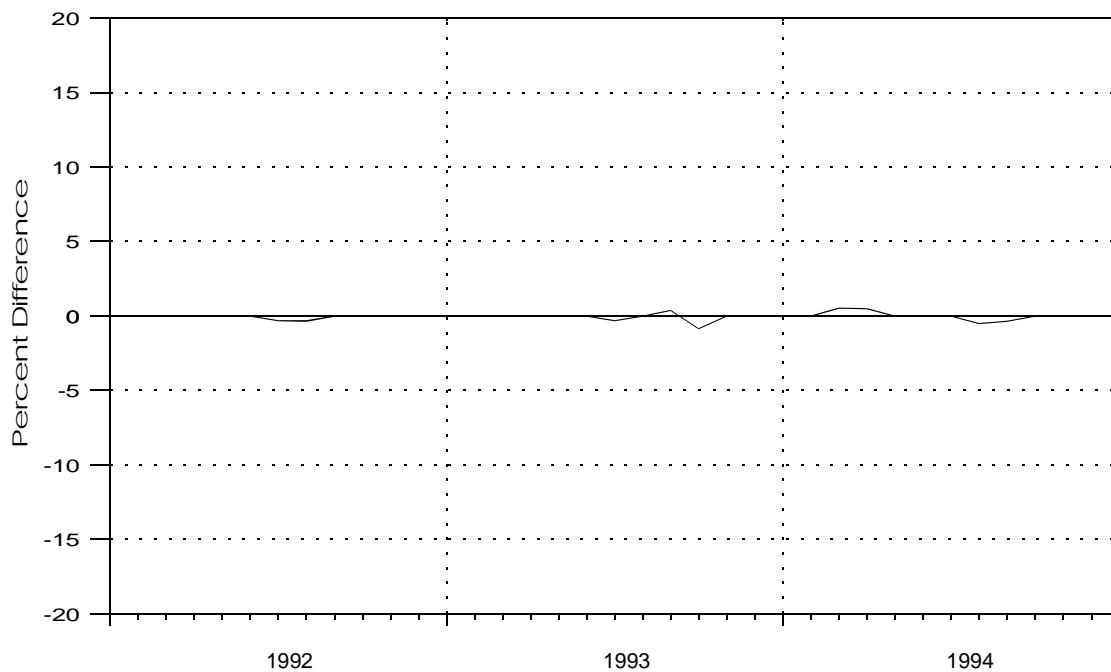
Source: Energy Information Administration, *Natural Gas Monthly*, 1992 through 1994.

**Figure FE5. Percent Difference Between Initial and Final Monthly Values for Natural Gas Delivered to Industrial Consumers, 1992-1994**



Source: Energy Information Administration, *Natural Gas Monthly*, 1992 through 1994.

**Figure FE6. Percent Difference Between Initial and Final Monthly Values for Natural Gas Delivered to Electric Utility Consumers, 1992-1994**



Source: Energy Information Administration, *Natural Gas Monthly*, 1992 through 1994.

**Table FE2. Initial Estimates and Revisions for Monthly Natural Gas Consumption  
in the United States, 1992-1994**  
(Volumes in Billion Cubic Feet)

Month	1992			1993			1994		
	Initial Value	Final Value	Percent Change <sup>a</sup>	Initial Value	Final Value	Percent Change <sup>a</sup>	Initial Value	Final Value	Percent Change <sup>a</sup>
<b>Lease and Plant Fuel</b>									
January .....	111	104	6.7	104	101	3.0	107	100	7.0
February .....	104	92	13.0	92	91	1.1	96	89	7.9
March .....	108	97	11.3	98	100	-2.0	103	100	3.0
April .....	103	95	8.4	95	95	0.0	99	95	4.2
May .....	104	97	7.2	98	97	1.0	102	98	4.1
June .....	100	95	5.3	97	93	4.3	99	93	6.5
July .....	103	98	5.1	98	95	3.2	102	96	6.3
August .....	97	95	2.1	95	97	-2.1	103	97	6.2
September .....	93	94	-1.1	96	95	1.1	102	92	10.9
October .....	100	101	-1.0	103	100	3.0	106	97	9.3
November .....	101	99	2.0	101	101	0.0	103	100	3.0
December .....	101	104	-2.9	106	106	0.0	106	104	1.9
<b>Pipeline Fuel</b>									
January .....	78	68	14.7	80	72	11.1	79	85	-7.1
February .....	72	62	16.1	75	68	10.3	69	78	-11.5
March .....	69	58	19.0	74	67	10.4	62	68	-8.8
April .....	60	51	17.6	59	52	13.5	50	54	-7.4
May .....	51	42	21.4	45	39	15.4	43	46	-6.5
June .....	45	37	21.6	45	39	15.4	42	45	-6.7
July .....	47	39	20.5	40	41	-2.4	42	45	-6.7
August .....	45	37	21.6	42	42	0.0	43	46	-6.5
September .....	45	37	21.6	40	39	2.6	39	44	-11.4
October .....	49	41	19.5	44	45	-2.2	45	48	-6.3
November .....	60	50	20.0	52	55	-5.5	52	56	-7.1
December .....	75	64	17.2	64	66	-3.0	63	69	-8.7
<b>Delivered to Consumers</b>									
<b>Residential</b>									
January .....	781	786	-0.6	829	831	-0.2	987	953	3.6
February .....	696	696	0.0	763	768	-0.7	838	842	-0.5
March .....	579	574	0.9	702	703	-0.1	639	631	1.3
April .....	432	431	0.2	454	450	0.9	397	392	1.3
May .....	252	251	0.4	230	232	-0.9	251	247	1.6
June .....	163	162	0.6	163	164	-0.6	156	154	1.3
July .....	132	132	0.0	130	130	0.0	129	127	1.6
August .....	126	126	0.0	120	120	0.0	123	122	0.8
September .....	137	137	0.0	142	142	0.0	131	130	0.8
October .....	241	241	0.0	252	254	-0.8	221	221	0.0
November .....	444	437	1.6	455	457	-0.4	394	391	0.8
December .....	719	717	0.3	703	705	-0.3	632	638	-0.9
<b>Commercial</b>									
January .....	409	410	-0.2	418	415	0.7	548	476	15.1
February .....	372	366	1.6	404	403	0.2	441	436	1.1
March .....	317	315	0.6	372	371	0.3	363	349	4.0
April .....	251	250	0.4	259	254	2.0	254	237	7.2
May .....	168	170	-1.2	153	152	0.7	175	163	7.4
June .....	123	125	-1.6	126	123	2.4	142	132	7.6
July .....	122	122	0.0	123	119	3.4	140	129	8.5
August .....	121	121	0.0	115	111	3.6	130	121	7.4
September .....	120	121	-0.8	123	120	2.5	125	118	5.9
October .....	164	166	-1.2	172	169	1.8	172	160	7.5
November .....	258	256	0.8	264	260	1.5	248	236	5.1
December .....	374	381	-1.8	369	363	1.7	345	338	2.1

See footnotes at end of table.



**Table FE2. Initial Estimates and Revisions for Monthly Natural Gas Consumption in the United States, 1992-1994**  
(Volumes in Billion Cubic Feet) -- Continued

Month	1992			1993			1994		
	Initial Value	Final Value	Percent Change <sup>a</sup>	Initial Value	Final Value	Percent Change <sup>a</sup>	Initial Value	Final Value	Percent Change <sup>a</sup>
<b>Industrial</b>									
January .....	690	701	-1.6	670	707	-5.2	726	758	-4.2
February .....	634	644	-1.6	645	681	-5.3	704	724	-2.8
March .....	673	674	-0.1	669	710	-5.8	706	716	-1.4
April .....	636	628	1.3	624	658	-5.2	649	660	-1.7
May .....	627	620	1.1	575	614	-6.4	629	632	-0.5
June .....	587	578	1.6	582	618	-5.8	632	642	-1.6
July .....	599	587	2.0	618	631	-2.1	618	622	-0.6
August .....	591	582	1.5	612	641	-4.5	629	640	-1.7
September .....	613	586	4.6	675	626	7.8	617	674	-8.5
October .....	635	608	4.4	653	688	-5.1	662	680	-2.6
November .....	661	641	3.1	644	688	-6.4	678	698	-2.9
December .....	693	677	2.4	714	718	-0.6	704	733	-4.0
<b>Electric Utility</b>									
January .....	169	169	0.0	164	164	0.0	170	170	0.0
February .....	170	170	0.0	162	162	0.0	149	149	0.0
March .....	208	208	0.0	194	194	0.0	187	186	0.5
April .....	229	229	0.0	174	174	0.0	205	204	0.5
May .....	236	236	0.0	167	167	0.0	216	216	0.0
June .....	266	266	0.0	255	255	0.0	319	319	0.0
July .....	333	334	-0.3	333	334	-0.3	362	362	0.0
August .....	302	303	-0.3	357	357	0.0	380	382	-0.5
September .....	274	274	0.0	259	258	0.4	295	296	-0.3
October .....	213	213	0.0	233	235	-0.9	264	264	0.0
November .....	189	189	0.0	208	208	0.0	231	231	0.0
December .....	176	176	0.0	174	174	0.0	208	208	0.0

<sup>a</sup> The percent change is the initial value minus the final value, divided by the final value, multiplied by 100.

Note: The monthly volumes may not sum to total volume because the initial estimates in the early months of the year may have been revised before the annual total is first published.

Source: Energy Information Administration, *Natural Gas Monthly*, 1992 through 1994.

**Lease Fuel, Plant Fuel, and Pipeline Fuel.** Lease and plant fuel account for about 6 percent of total consumption. During the 3-year period, percentage differences ranged from negative 3 percent to positive 13 percent. Pipeline fuel represents about 3 percent of total consumption. The differences between initial and final pipeline fuel monthly estimates across the 3-year period were small volume amounts.

## Average Prices

The differences between initial and final average prices for natural gas are shown in Table FE3.

### Wellhead Price

The wellhead price represents the wellhead sales price, including charges for natural gas plant liquids subsequently removed from the gas; gathering and compression

charges; and State production, severance, and/or similar charges. The estimate is prepared by using the same methodology that generates monthly price estimates for the EIA publication *Short-Term Energy Outlook*.

In 1992 and 1993, the final monthly wellhead prices were estimated from a reported annual value. Beginning in 1994, the final monthly wellhead values were taken from reported actual monthly values. The percentage differences between initial and final wellhead prices were generally larger in 1994 than those in 1992 and 1993. The EIA is investigating how the availability of actual final monthly wellhead values may be used to more effectively estimate initial values.

### City Gate Price

The city gate price is the price at the point or measuring station at which a gas distribution company receives gas from a pipeline company or transmission system.

**Table FE3. Initial Estimates and Revisions for Monthly Natural Gas Average Price in the United States, 1992-1994**  
(Prices in Dollars per Thousand Cubic Feet)

Month	1992			1993			1994		
	Initial Value	Final Value	Percent Change <sup>a</sup>	Initial Value	Final Value	Percent Change <sup>a</sup>	Initial Value	Final Value	Percent Change <sup>a</sup>
<b>Wellhead Price</b>									
January .....	1.69	1.74	-2.9	2.08	2.03	2.5	2.27	1.86	22.0
February .....	1.35	1.26	7.1	1.95	1.93	1.0	2.24	1.76	27.3
March .....	1.42	1.35	5.2	2.05	2.00	2.5	1.90	1.82	4.4
April .....	1.46	1.42	2.8	2.10	2.06	1.9	1.93	1.90	1.6
May .....	1.55	1.51	2.6	2.02	2.18	-7.3	1.83	2.00	-8.5
June .....	1.60	1.62	-1.2	2.12	1.98	7.1	1.81	1.83	-1.1
July .....	1.77	1.55	14.2	1.99	1.99	0.0	1.76	1.81	-2.8
August .....	1.84	1.84	0.0	2.07	2.04	1.5	1.70	1.90	-10.5
September .....	2.10	1.92	9.4	2.00	2.09	-4.3	1.56	1.94	-19.6
October .....	2.25	2.38	-5.5	1.99	2.02	-1.5	1.60	1.85	-13.5
November .....	2.33	2.13	9.4	2.06	2.03	1.5	1.57	1.85	-15.1
December .....	2.20	2.07	6.3	1.95	2.15	-9.3	1.77	1.98	-10.6
<b>City Gate Price</b>									
January .....	2.93	2.90	1.0	3.10	3.11	-0.3	3.11	3.04	2.3
February .....	2.75	2.70	1.9	3.00	2.94	2.0	3.25	3.26	-0.3
March .....	2.61	2.61	0.0	3.06	3.06	0.0	3.29	3.33	-1.2
April .....	2.74	2.74	0.0	3.24	3.24	0.0	3.11	3.15	-1.3
May .....	2.90	2.90	0.0	3.57	3.58	-0.3	3.13	3.17	-1.3
June .....	3.00	3.00	0.0	3.37	3.44	-2.0	3.20	3.17	0.9
July .....	2.99	3.01	-0.7	3.34	3.34	0.0	3.17	3.12	1.6
August .....	3.15	3.18	-0.9	3.35	3.35	0.0	3.18	3.15	1.0
September .....	3.26	3.23	0.9	3.52	3.54	-0.6	2.95	2.92	1.0
October .....	3.49	3.50	-0.3	3.15	3.15	0.0	2.82	2.80	0.7
November .....	3.28	3.33	-1.5	3.14	3.15	-0.3	2.83	2.84	-0.4
December .....	3.16	3.17	-0.3	3.26	3.27	-0.3	2.80	2.86	-2.1
<b>Delivered to Consumers</b>									
<b>Residential Price</b>									
January .....	5.52	5.53	-0.2	5.71	5.73	-0.3	5.75	5.93	-3.0
February .....	5.53	5.54	-0.2	5.71	5.73	-0.3	6.06	6.04	0.3
March .....	5.48	5.50	-0.4	5.67	5.67	0.0	6.18	6.30	-1.9
April .....	5.61	5.62	-0.2	5.98	6.02	-0.7	6.58	6.60	-0.3
May .....	6.14	6.15	-0.2	6.70	6.78	-1.2	7.01	6.84	2.5
June .....	6.81	6.84	-0.4	7.29	7.37	-1.1	7.59	7.66	-0.9
July .....	7.23	7.27	-0.6	7.83	7.86	-0.4	8.01	8.10	-1.1
August .....	7.39	7.45	-0.8	8.10	8.13	-0.4	8.13	8.22	-1.1
September .....	7.12	7.15	-0.4	7.74	7.75	-0.1	7.77	7.84	-0.9
October .....	6.46	6.52	-0.9	6.75	6.79	-0.6	6.86	6.86	0.0
November .....	5.98	6.02	-0.7	6.16	6.17	-0.2	6.25	6.27	-0.3
December .....	5.71	5.74	-0.5	6.07	6.07	0.0	6.02	6.06	-0.7
<b>Commercial Price</b>									
January .....	5.16	4.85	6.4	5.17	5.23	-1.1	4.94	5.50	-10.2
February .....	5.04	5.03	0.2	5.08	5.14	-1.2	5.54	5.58	-0.7
March .....	4.77	4.77	0.0	5.06	5.10	-0.8	5.60	5.67	-1.2
April .....	4.80	4.77	0.6	5.11	5.19	-1.5	5.29	5.60	-5.5
May .....	4.59	4.59	0.0	5.20	5.31	-2.1	5.41	5.47	-1.1
June .....	4.72	4.72	0.0	5.29	5.40	-2.0	5.13	5.37	-4.5
July .....	4.63	4.64	-0.2	5.03	5.15	-2.3	4.85	5.25	-7.6
August .....	4.72	4.73	-0.2	5.26	5.34	-1.5	5.31	5.31	0.0
September .....	4.69	4.69	0.0	5.26	5.35	-1.7	5.12	5.36	-4.5
October .....	4.90	4.90	0.0	5.12	5.18	-1.2	4.98	5.10	-2.4
November .....	5.15	5.12	0.6	5.13	5.21	-1.5	5.11	5.19	-1.5
December .....	5.11	5.11	0.0	5.27	5.33	-1.1	5.13	5.24	-2.1

See footnotes at end of table.

**Table FE3. Initial Estimates and Revisions for Monthly Natural Gas Average Price in the United States, 1992-1994**  
(Prices in Dollars per Thousand Cubic Feet) -- Continued

Month	1992			1993			1994		
	Initial Value	Final Value	Percent Change <sup>a</sup>	Initial Value	Final Value	Percent Change <sup>a</sup>	Initial Value	Final Value	Percent Change <sup>a</sup>
<b>Industrial Price</b>									
January .....	3.09	3.04	1.6	3.25	3.15	3.2	3.32	3.47	-4.3
February .....	2.79	2.78	0.4	3.12	3.02	3.3	3.50	3.42	2.3
March .....	2.57	2.58	-0.4	3.09	2.98	3.7	3.53	3.47	1.7
April .....	2.49	2.54	-2.0	3.13	3.04	3.0	3.10	3.00	3.3
May .....	2.41	2.44	-1.2	3.24	3.14	3.2	3.03	2.92	3.8
June .....	2.51	2.53	-0.8	3.00	2.86	4.9	2.90	2.69	7.8
July .....	2.50	2.54	-1.6	2.71	2.62	3.4	2.82	2.77	1.8
August .....	2.67	2.71	-1.5	2.86	2.76	3.6	2.74	2.67	2.6
September .....	2.79	2.82	-1.1	3.03	2.95	2.7	2.63	2.55	3.1
October .....	3.17	3.21	-1.2	2.88	2.77	4.0	2.53	2.50	1.2
November .....	3.23	3.26	-0.9	3.09	3.02	2.3	2.82	2.86	-1.4
December .....	3.34	3.38	-1.2	3.35	3.28	2.1	3.08	2.99	3.0
<b>Electric Utility Price</b>									
January .....	2.49	2.49	0.0	2.70	2.70	0.0	2.67	2.67	0.0
February .....	2.03	2.03	0.0	2.55	2.54	0.4	2.80	2.80	0.0
March .....	1.99	1.99	0.0	2.61	2.61	0.0	2.66	2.67	-0.4
April .....	2.06	2.07	-0.5	2.75	2.75	0.0	2.44	2.44	0.0
May .....	2.11	2.11	0.0	2.90	2.90	0.0	2.46	2.46	0.0
June .....	2.18	2.18	0.0	2.47	2.48	-0.4	2.25	2.25	0.0
July .....	2.15	2.13	0.9	2.46	2.45	0.4	2.28	2.27	0.4
August .....	2.42	2.42	0.0	2.60	2.60	0.0	2.13	2.16	-1.4
September .....	2.51	2.51	0.0	2.69	2.69	0.0	2.00	2.00	0.0
October .....	3.04	3.04	0.0	2.45	2.45	0.0	1.95	1.95	0.0
November .....	2.87	2.87	0.0	2.59	2.59	0.0	2.10	2.10	0.0
December .....	2.81	2.81	0.0	2.76	2.76	0.0	2.17	2.17	0.0

<sup>a</sup> The percent change is the initial value minus the final value, divided by the final value, multiplied by 100.  
Source: Energy Information Administration, *Natural Gas Monthly*, 1992 through 1994.

City gate prices are estimated from reported deliveries to consumers. Across the 3-year period, the differences between initial and final city gate prices were no larger than positive or negative 2 percent.

### **Residential, Commercial, and Industrial Prices**

Residential, commercial, and industrial natural gas prices are estimated from reported deliveries to consumers. Residential prices are the highest of all of the consuming sectors and generally show the smallest variation from year to year. Across the 3-year period, the percentage differences between initial and final residential prices were no larger than positive or negative 3 percent.

Commercial natural gas prices are associated only with onsystem sales of natural gas. During the 1993-1994 period, onsystem sales of gas to commercial consumers

represented from 79 to 84 percent of deliveries to commercial consumers. Generally, the percentage differences between initial and final commercial prices were small, although the differences in 1994 were somewhat larger than those in the previous two years.

Industrial natural gas prices are also associated only with onsystem sales of natural gas. In 1992 and 1993, onsystem sales of gas to industrials represented about 30 percent of total deliveries to industrials and in 1994, about 25 percent. The percentage differences for industrial prices ranged from negative 4 percent to positive 8 percent.

### **Electric Utility Prices**

Prices for natural gas consumption by electric utilities are taken from reports filed by the utilities. All of the percentage differences from 1992 to 1994 were no larger than positive or negative 1 percent.

## Summary

The percentage differences between the initial monthly natural gas volumes and prices and the final monthly volumes and prices generally tend to be small. Large percentage differences are usually associated with small volume amounts. The EIA continuously reviews the data series it publishes and makes revisions during the year when they are needed to significantly improve the quality of the estimates. Wellhead prices show the largest percentage differences. Beginning in 1994, actual monthly wellhead values are reported on an annual basis. EIA is investigating how the availability of these values may be used to more effectively estimate initial wellhead prices.

## Appendix: Reporting Methodologies

Table FE4 lists the methodologies for deriving the monthly data to be published initially for the components of natural gas supply and disposition. Monthly numbers are revised each year so that their totals for the 12 months will agree with the annual totals published in the *Natural Gas Annual*, and the revised monthly numbers are published in the following issue of the *Natural Gas Monthly*. In some instances, monthly data are reported on an annual survey, and the monthly estimates are revised to reflect the reported data. When monthly data are not reported, the percentage distribution across months for the monthly estimates is applied to the final annual number to derive final monthly estimates. The most current monthly natural gas data, including any revisions, are also published in the EIA report *Monthly Energy Review*.

Throughout this discussion, many sources of data and methods of estimation are referenced. Appendices A (Explanatory Notes), B (Data Sources), and C (Statistical Considerations) of the *Natural Gas Monthly* provide further information about data sources, estimation procedures, annual adjustments, and sample design. These sources may also be helpful in evaluating the monthly data.

### Marketed Production

Marketed production for the current month is estimated by the EIA from historical data. The monthly marketed production data are revised on the basis of the data reported on Form EIA-895, "Monthly Quantity of Natural Gas Report." This is a voluntary form, and data from this form become available about 2 months after the initial values are published. The respondent

—energy, tax, or conservation agencies in the natural gas-producing States—provide production data.

The EIA began using the Form EIA-895 beginning with the collection of 1995 monthly production data. Prior to 1995, voluntary reports showing monthly production data were filed with the Interstate Oil and Gas Compact Commission (IOGCC) by most of the gas-producing States, and these reports were used to adjust initial production data 2 months later.

State offices also provide the natural gas production reports filed annually with the EIA on the Form EIA-627, "Annual Quantity and Value of Natural Gas Report." Form EIA-627 respondents—energy, tax, or conservation agencies in the natural gas-producing States—provide production numbers by month and a total for the year. Data reported on this Form become the final production information. In some States, these reports are not available at the time that the EIA issues the *Natural Gas Annual*, so production data are taken from the EIA annual publication *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves*, or else EIA estimates the data on the basis of historical filings. When the data reported on Form EIA-627 are subsequently received, any necessary revisions are made, and the revised data are published in the *Natural Gas Monthly*.

### Total Consumption

Total consumption is a component of the disposition of natural gas and is an estimate based on percentage changes. An average percentage change over the previous 3 years is applied to the previous month's data to estimate a value for the current month's consumption. Consumption of natural gas fluctuates across the months of the year as residential and commercial heating requirements change due to the seasonal variation in the weather. Since the estimate for total consumption is based on an average activity over the past 3 years, it may show large revisions if the weather for the current year is markedly colder or warmer than the average weather of the previous 3 years.

To make the estimate, an average percentage change is calculated by averaging the percentage changes from the previous to current months for the corresponding time period during the previous 3 years. For example, to estimate consumption for July 1996, the percentage changes in consumption from June 1995 to July 1995, from June 1994 to July 1994, and from June 1993 to July 1993 are calculated. These three figures are then averaged, and this average change is applied to the June 1996 consumption volume to estimate July 1996 consumption. Total consumption is always replaced in the following month with an estimate based on the sum of consumption by sector.

## ***Dry Gas Production and Extraction Loss***

Extraction loss is estimated by applying the annual ratio of extraction loss to marketed production to each month's marketed production volume. The ratio is calculated by using the most recently available annual data. Dry production of natural gas is then derived by subtracting the extraction loss estimate from the marketed production estimate. Final monthly production numbers are adjusted to conform to data from the Form EIA-627, which is filed by the appropriate State agencies of the 33 gas-producing States.

## ***Storage***

Monthly natural gas storage data are reported on the Form EIA-191, "Underground Gas Storage Report," by all storage operators, including interstate pipeline storage operators. The form collects storage data by State, county, and storage field. The annual total of monthly storage volumes reported on the Form EIA-191 is compared with the annual storage volume reported on the Form EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Disposition," and all differences are resolved with the respondents.

Differences between final and initial reported storage volume data are caused primarily by two factors. First, the monthly storage volumes are taken from reports for underground facilities only, whereas the annual storage volume data also include reports for liquefied natural gas (LNG) facilities. Second, monthly respondents frequently estimate the volumes they report and sometimes revise them later. Thus, differences in storage volume data are due primarily to revisions by respondents. These data are published as reported by the respondents without any statistical estimation or adjustment by the EIA.

## ***Imports and Exports***

Initial monthly exports of natural gas are estimated on the basis of analysis of the industry and shipments of liquefied natural gas. Initial monthly import data are estimated by the same techniques, in addition to using data from the National Energy Board of Canada. From 1984 to 1992, pipeline imports of gas came only from Canada. Small amounts of gas have been imported from Mexico since late 1993.

Final monthly export and import data were reported on the Form FPC-14, "Annual Report for Importers and Exporters of Natural Gas." Although this was an annual form, it required the reporting of data by month. The Form FPC-14 was discontinued after the reporting of 1994 data.

## ***Supplemental Gaseous Fuels***

Monthly supplemental gaseous fuels are estimated from the sum of marketed production, net imports, and net withdrawals from storage. The ratio of supplemental gaseous fuels to the sum of these three components, as reported annually in the *Natural Gas Annual*, is applied to the monthly sum of these three components to calculate part of the estimate. The total estimate is the sum of this calculation and the volume of gas from coal gasification obtained from the Great Plains coal gasification plant in North Dakota. When annual data become final, the monthly supplemental gaseous fuels data are adjusted and become final.

## **Consumption by Sector**

The residential, commercial, industrial, and electric utility sectors represent about 91 percent of total annual consumption. Lease and plant fuel data represent about 6 percent of total annual consumption and are initially estimated from monthly marketed production data. Pipeline fuel represents the smallest component of annual consumption, approximately 3 percent. It is initially estimated as a percent of total consumption.

### ***Residential, Commercial, and Industrial Deliveries***

Deliveries to residential, commercial, and industrial consumers are estimated from reports on the Form EIA-857, "Monthly Report of Natural Gas Purchases and Deliveries to Consumers," a sample survey of natural gas companies that deliver gas to consumers. The sample is drawn from the respondents to the annual Form EIA-176. The sample design and estimation procedures are described in detail in "Statistical Considerations," Appendix C of the *Natural Gas Monthly*. Briefly, the sample design is stratified so that, within each State, all companies handling large amounts of gas respond to the survey, and a sample of companies handling small amounts of gas also respond. In some States where there is a small number of companies, all companies report, and the reported data are shown without any estimation adjustments.

### ***Electric Utility Consumption***

Consumption by electric utilities is reported on the Form EIA-759, "Monthly Power Plant Report," filed by electric power plant operators. No sampling or estimation procedures are needed.

## ***Lease Fuel, Plant Fuel, and Pipeline Fuel***

Monthly consumption of natural gas in lease operations and by natural gas-processing plants is initially estimated from monthly marketed production. The annual ratio of lease and plant fuel consumption to marketed production, as published in the *Natural Gas Annual*, is applied to the monthly marketed production number to calculate an estimate. The ratio is calculated from the most recently available annual data.

Since 1991, lease fuel data are reported on the Form EIA-627. The respondents—energy, tax, or conservation agencies in the natural gas-producing States—provide a distribution by month of their annual lease fuel data. If monthly lease fuel data are not available for a State from the Form EIA-627, the ratio of annual lease fuel (as reported on the Form EIA-176) to gross withdrawals is calculated for the State. This ratio is then applied to monthly gross withdrawals for the State to estimate final monthly lease fuel. Plant fuel data are reported annually on the Form EIA-64A, "Annual Report of the Origin of Natural Gas Liquids Production," beginning in 1990. A monthly distribution is not reported for plant fuel. Annual plant fuel consumption is adjusted to the monthly distribution of the estimates.

Pipeline fuel data are the smallest component of consumption. To initially estimate monthly consumption of natural gas by pipelines, the most recent annual ratio of pipeline fuel consumption to total consumption, as published in the *Natural Gas Annual*, is applied to the monthly total consumption. When annual data for pipeline fuel become final, the revised annual ratio is calculated and is applied to each month's revised total consumption number to compute final monthly pipeline fuel consumption estimates.

## **Average Prices**

### ***Wellhead Prices***

An initial estimate of the wellhead price is calculated on the basis of the statistical relationships between U.S. monthly wellhead gas prices and the monthly composite spot wellhead prices published in the *Natural Gas Week*. The estimate is prepared using the same methodology that generates monthly price estimates for the EIA publication *Short-Term Energy Outlook*.

Initial wellhead prices are adjusted the following month on the basis of the change in the production-weighted gas price from 5 States: Kansas, Mississippi, New Mexico, Oklahoma, and Texas. See Appendix A, "Explanatory Notes," of the *Natural Gas Monthly* for further discussion of wellhead values.

Final monthly wellhead prices are calculated from reports to the Form EIA-627. The wellhead value reported on the form is divided by the corresponding marketed production volume to compute the average price. See Appendix A, "Summary of Data Collection Operations and Report Methodology," of the *Natural Gas Annual* for a more detailed discussion of the reporting of wellhead values and prices.

As stated previously, respondents to the Form EIA-627 reported only annual wellhead values in 1992 and 1993. The percentage distribution of the initial estimates for wellhead values across the 12 months was applied to the annual wellhead value to estimate monthly wellhead values. These estimates were then used to calculate final monthly price estimates. In 1994, respondents reported monthly wellhead values, and actual monthly wellhead prices were calculated.

### ***City Gate Price***

The city gate price is the price at the point or measuring station at which a gas distribution company receives gas from a pipeline company or transmission system. These prices are reported monthly on the sample survey Form EIA-857, described above. City gate prices are not reported on an annual survey form. Annual prices are calculated by dividing the sum of the revenues for 12 months by the sum of the volumes for 12 months.

### ***Residential, Commercial, and Industrial Prices***

Revenues for deliveries to residential, commercial, and industrial consumers are also reported on the Form EIA-857 with their associated volume. Average prices are calculated by dividing total revenue by total volume. Monthly prices are revised to agree with data published in the *Natural Gas Annual*. Average prices for deliveries to consumers are calculated for onsystem sales only. Prices for gas delivered for the account of others are not available.

As the natural gas industry has moved toward open access, there has been an increase in the demand for the service of delivering gas for others. This type of arrangement means that someone other than the respondent to the Form EIA-857 actually owns and sells the gas. For example, a consumer contracts directly with a gas well operator to purchase gas supplies, while a pipeline or local distribution company (the Form EIA-857 respondent) provides only the transmission service. The respondents to the Form EIA-857 do not know the price of the gas that they transport for others.

In 1992 and 1993, the industrial price data represent information for about 30 percent of deliveries to industrials, and in 1994, for about 25 percent. In the commercial sector, the 1992 and 1993 price data represent information for 83 to 84 percent of deliveries and the 1994 price data, for 79 percent.

In the residential, commercial and industrial sectors, when annual data become available, the percentage distribution across months for the reported revenue is applied to the annual revenue amount to estimate monthly revenue. An average price is then calculated by using this revenue and the similarly estimated volume amounts.

### ***Electric Utility Prices***

Electric utility prices are taken from reports by the utilities on the Federal Energy Regulatory Commission (FERC) Form 423, "Monthly Report of Cost and Quality of Fuels for Electric Plants." Revenues are reported in cents per million Btu and converted to dollars per thousand cubic feet of natural gas. See the EIA annual report *Cost and Quality of Fuels for Electric Utility Plants* for more detailed information about prices of natural gas delivered to electric utilities.

**Table FE4. Methodology for Reporting Initial Monthly Natural Gas Supply and Disposition Data**

<b>Components</b>	<b>Reporting Methodology</b>
<b>Supply and Disposition</b>	
Marketed Production	Estimated from Historical Data
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
Total Consumption	Estimated from Average Historical Month-to-Month Percent Changes for the previous three years
<b>Consumption by Sector</b>	
Lease and Plant Fuel	Derived from Marketed Production
Pipeline Fuel	Derived from Total Consumption
Deliveries to Consumers	
Residential	Estimated from Survey Form EIA-857
Commercial	Estimated from Survey Form EIA-857
Industrial	Estimated from Survey Form EIA-857
Electric Utilities	Reported on Form EIA-759
<b>Average Prices</b>	
Wellhead Price	Estimated from U.S. Monthly Wellhead Gas Prices and Composite Spot Wellhead Gas Prices Published in the <i>Natural Gas Week</i>
City Gate Price	Estimated from Survey Form EIA-857
Deliveries to Consumers	
Residential	Estimated from Survey Form EIA-857
Commercial	Estimated from Survey Form EIA-857
Industrial	Estimated from Survey Form EIA-857
Electric Utilities	Reported on FERC Form 423