

Section 7. Consumption Adjustments for Calculating Expenditures

Expenditures developed in the EIA State Energy Data System (SEDS) are calculated by multiplying the price estimates by the SEDS consumption estimates. The consumption estimates are adjusted to remove process fuel, intermediate petroleum products, electricity exports, and other consumption that has no direct fuel costs, i.e., hydroelectric, geothermal, wind, solar and photovoltaic energy sources, and some wood and waste.

Almost all aspects of energy production, processing, and distribution consume energy as an inherent part of those activities. SEDS industrial and transportation sector consumption estimates include energy consumed in the process of providing energy to the end-use consumer and are called “process fuel.” Familiar examples include energy sources used in drilling for oil and gas and transporting natural gas and petroleum by pipeline. Another “process fuel” is the energy used in generating and delivering electricity to end users. Energy products that are subsequently incorporated into another energy product for end-use consumption are called “intermediate products.” Motor gasoline blending components are familiar examples of intermediate products that are consumed as part of the finished motor gasoline sold at service stations and other outlets.

Process fuel and intermediate products are not purchased by the end user and, therefore, do not have prices. Although the end user does not consume either process fuel or intermediate products directly, he does pay for them, because the cost to the processor or distributor is passed on to the end user in the price of the final end-user product. If their use was left in the consumption estimates and was assigned prices, the expenditures would be counted twice, first as paid by the “processor” (producer, processor, or transporter) and again as included in the price to the end user.

Some renewable energy sources are not purchased. These include hydroelectric, geothermal, wind, photovoltaic, and solar thermal energy. The consumption of these sources, which are measured in SEDS as kilowatthours of electricity produced, are not included in the State energy expenditure estimates since there are no “fuel costs” involved. Wood and waste can be purchased or obtained at no cost. Wood consumption estimates in the residential sector, and wood and waste in the commercial and industrial sectors are adjusted in SEDS to remove estimated quantities that were obtained at no cost.

To estimate energy expenditures in the price and expenditure tables, the consumption of process fuel, intermediate products, and some of the renewable energy sources are subtracted from the end-use sector in which they are included in SEDS, either the residential, commercial, industrial, or transportation sector, and there are no prices associated with them.

Process fuel consumption adjustments include:

1. Fuel (petroleum, natural gas, steam coal) and electricity consumed at refineries
2. Crude oil lease, plant, and pipeline fuel
3. Natural gas lease and plant fuel
4. Natural gas pipeline fuel
5. Electrical system energy losses (i.e., energy consumed in the generation, transmission, and distribution of electricity).

Intermediate product consumption adjustments include:

1. Aviation gasoline blending components
2. Motor gasoline blending components
3. Natural gasoline (1970 through 1983)
4. Pentanes plus (1984 forward)
5. Plant condensate (1970 through 1983)

6. Unfinished oils
7. Unfractionated stream (1970 through 1983).

Starting in 1984, natural gasoline (including isopentane) and plant condensate are reported together as the new product, pentanes plus, and the components of unfractionated stream are reported separately under liquefied petroleum gases.

Renewable energy consumption adjustments include:

1. Photovoltaic and solar thermal energy in the residential (including commercial) sector and electric power sector;
2. Geothermal energy in the residential, commercial, industrial, and electric power sectors;
3. Electricity generated from hydropower in the commercial, industrial, and electric power sectors; and
4. Electricity generated from wind energy in the electric power sector; and
5. Estimated portions of wood consumed in the residential sector, and wood and waste in the commercial and industrial sectors that were obtained at no cost.

Table TN55 shows the quantities of energy, by State, removed from SEDS consumption to calculate expenditures for 2006. Table TN56 shows the adjustments made to SEDS national consumption estimates for 1970 through 2007 to derive the net consumption data used to calculate expenditures.

State adjustment estimates from 1970 forward are available in the SEDS Internet data file, http://www.eia.doe.gov/emeu/states/sep_fuel/html/csv/fuel_adjust_consum.csv.

Adjustment Procedures

Hydroelectricity, Geothermal, Wind, Photovoltaic, and Solar Thermal Energy. Electricity generated from hydropower and geothermal, wind, photovoltaic, and solar thermal energy has no fuel cost. Operation and maintenance costs associated with these energy sources are included indirectly in the prices of the electricity sold by power producers. Therefore, use of these renewable sources for electricity generation is removed from the expenditure calculations. Direct use of

geothermal and solar energy also has no fuel cost and is omitted from SEDS energy expenditure calculations.

Residential Wood. Some residential wood is purchased and some acquired at no cost. Based on responses to the Form EIA-457, “1980 Residential Energy Consumption Survey,” Census division percentages of wood purchased were developed and applied to the residential wood consumption in each State in the divisions in 1970 through 1989. Based on responses to the Form EIA-457, “1993 Residential Energy Consumption Survey,” Census region percentages were developed and applied to the residential wood consumption of the States in each region in 1990 forward.

Commercial Wood and Waste. Some commercial wood and waste is purchased and some acquired at no cost. Conventional commercial wood acquired at no cost was estimated using the same percentages used for the residential sector. Wood and waste acquired at no cost by commercial combined heat-and-power facilities was estimated using the U.S. annual average percentages of wood and percentages of waste acquired at no cost by the electric power sector.

Industrial Wood and Waste. The cost of wood and waste products used for energy vary widely from more expensive woods to free industrial waste products. Industrial consumption is broken into two segments, manufacturing industries and combined heat and power (CHP) facilities in order to estimate quantities received at no cost.

Adjustments to manufacturing wood and waste consumption in 1994 forward are based on information gathered on the Form EIA-846, “1994 Manufacturing Energy Survey (MECS).” Adjustments to manufacturing consumption in 1980 through 1993 are based on information gathered on the Form EIA-846, “1991 Manufacturing Energy Survey.” Adjustments to industrial wood and waste consumption in 1970 through 1979 are based on the 1980 average ratios for each State. The 1991 and 1994 MECS report the quantities consumed and quantities purchased of five types of wood and waste in each of four (MECS 1991) or five (MECS 1994) SIC categories of industries. The two quantity series are used to calculate SIC category average percentages of wood and waste obtained at no cost. These percentages are applied to the estimated consumption in those SIC categories in each State to estimate the State’s manufacturing uncosted wood and waste.

Table TN55. Energy Consumption Adjustments for Calculating Expenditures by State, 2006
(Billion Btu)

State	Refinery Use							Total
	Distillate Fuel Oil	Residual Fuel Oil	LPG	Other Petroleum ^a	Natural Gas ^b	Coal	Electricity ^c	
AK	138	—	23	35,836	32,406	—	230	68,632
AL	84	1	2	13,458	22,422	—	11,031	46,997
AR	105	—	2	11,207	11,971	—	5,470	28,754
AZ	—	—	—	173	—	—	—	173
CA	873	533	3,406	267,996	85,240	—	9,428	367,476
CO	—	1	39	11,689	12,893	—	2,152	26,774
CT	—	—	—	385	—	—	—	385
DC	—	—	—	—	—	—	—	—
DE	3	829	43	26,192	1,567	14	397	29,043
FL	—	—	—	1,464	—	—	—	1,464
GA	—	—	—	2,823	—	—	—	2,823
HI	29	4,258	206	16,271	3	—	720	21,487
IA	—	—	—	1,003	—	—	—	1,003
ID	—	—	—	—	—	—	—	—
IL	39	42	515	115,157	15,702	8	4,727	136,191
IN	28	218	82	56,641	16,990	14	5,212	79,185
KS	26	147	17	37,356	8,207	1	1,206	46,959
KY	24	28	257	32,283	7,386	4	4,615	44,597
LA	76	2	120	406,368	134,315	—	8,323	549,205
MA	—	—	—	802	—	—	—	802
MD	—	—	—	162	—	—	—	162
ME	—	—	—	—	—	—	—	—
MI	14	174	148	15,185	13,330	5	3,588	32,444
MN	25	94	161	42,310	6,703	3	2,385	51,680
MO	—	—	—	562	—	—	—	562
MS	43	—	3	42,309	13,734	—	4,777	60,866
MT	—	161	4	22,665	2,593	—	808	26,232
NC	—	—	—	3,458	—	—	—	3,458
ND	18	22	35	7,884	1,190	10	344	9,503
NE	—	—	—	112	—	—	—	112
NH	—	—	—	—	—	—	—	—
NJ	14	639	62	96,219	6,341	1	1,451	104,726
NM	33	—	1	15,805	12,944	—	2,074	30,857
NV	212	11	206	191	1,577	—	2,519	4,717
NY	—	—	—	2,633	—	—	—	2,633
OH	28	319	227	67,403	19,081	5	5,880	92,942
OK	18	58	436	58,514	15,468	2	1,580	76,075
OR	—	—	—	129	—	—	—	129
PA	44	2,326	868	104,116	18,692	326	6,138	132,509
RI	—	—	—	—	—	—	—	—
SC	—	—	—	3,089	—	—	—	3,089
SD	—	—	—	—	—	—	—	—
TN	16	42	51	26,213	6,137	8	3,587	36,055
TX	305	3	871	626,254	212,211	—	31,830	871,474
UT	—	410	5	21,064	4,331	—	1,426	27,237
VA	42	1,533	166	11,015	7,113	272	2,433	22,573
VT	—	—	—	—	—	—	—	—
WA	233	39	1,451	74,086	8,038	—	4,070	87,917
WI	26	151	114	5,324	7,652	4	2,661	15,933
WV	32	458	48	6,340	4,284	141	1,782	13,084
WY	—	189	6	19,423	5,733	—	1,428	26,778
US	2,528	12,687	9,575	2,309,566	716,253	817	134,272	3,185,698

See footnotes at end of table.

Table TN55. Energy Consumption Adjustments for Calculating Expenditures by State, 2006 (Continued)
(Billion Btu)

State	Residential		Commercial		Industrial					Transportation	Electrical System Energy Losses	Total
	Geothermal and Solar/PV ^d	Wood	Geothermal and Hydro-electricity	Wood and Waste	Crude Oil Lease, Plant, and Pipeline Fuel	Natural Gas Lease and Plant Fuel	Hydro-electricity	Geothermal	Wood and Waste	Natural Gas Pipeline Fuel		
AK	50	1,593	38	246	—	257,163	—	—	22	2,826	48,575	379,146
AL	129	3,547	—	549	—	18,608	—	38	17,325	15,312	669,029	771,534
AR	506	1,485	—	246	—	1,925	—	19	7,982	10,973	344,084	395,975
AZ	3,314	3,602	52	572	—	24	—	209	745	20,870	540,466	570,027
CA	19,523	22,543	755	5,022	—	36,014	—	1,287	12,198	7,088	1,940,133	2,412,038
CO	409	2,990	227	463	—	56,218	—	230	187	13,224	366,940	467,661
CT	860	2,622	—	406	—	—	—	—	3,480	3,319	233,719	244,791
DC	1	490	—	76	—	—	—	—	—	476	84,084	85,126
DE	206	620	—	96	—	—	—	—	49	19	85,251	115,285
FL	34,213	3,176	1,247	608	—	1,735	—	—	15,360	12,247	1,683,826	1,753,876
GA	465	6,047	7	935	—	—	231	19	15,877	6,264	994,819	1,027,490
HI	1,769	—	6	607	—	—	380	2	840	2	76,911	102,005
IA	240	3,540	487	761	—	—	—	—	18,483	12,374	319,743	356,631
ID	76	864	596	134	—	—	—	—	2,958	6,809	167,938	180,230
IL	2,013	11,605	—	1,796	—	49	—	—	11,649	9,966	1,050,994	1,224,264
IN	1,940	6,063	487	1,884	—	110	—	—	14,801	6,421	779,603	890,493
KS	103	3,259	508	504	—	21,657	—	—	2,361	25,985	293,289	394,624
KY	934	3,164	508	489	—	4,299	—	—	4,421	6,700	654,758	719,870
LA	539	2,328	508	360	—	176,623	—	—	15,604	49,807	571,564	1,366,576
MA	261	4,961	533	1,006	—	—	33	—	3,088	1,500	412,067	424,250
MD	361	3,869	—	873	—	—	—	—	3,795	2,427	466,098	477,584
ME	157	1,239	—	596	—	—	7,725	—	9,319	572	90,638	110,247
MI	2,494	10,082	500	2,563	—	16,387	319	—	9,287	25,992	796,965	897,034
MN	698	5,981	—	1,063	—	—	956	—	10,692	20,674	492,635	584,379
MO	207	7,040	—	1,089	—	—	—	—	4,582	2,456	605,116	621,052
MS	27	2,102	528	325	—	6,712	—	—	3,485	22,504	346,302	442,888
MT	65	663	155	103	—	5,781	—	64	1,387	7,722	101,928	144,099
NC	666	6,459	119	999	—	—	4,899	—	9,297	4,831	934,797	965,524
ND	257	830	266	128	—	7,316	—	—	1,208	13,596	82,968	116,074
NE	174	2,084	580	355	—	178	—	—	3,660	5,979	201,247	214,368
NH	73	1,043	—	161	—	—	52	—	1,126	20	81,855	84,331
NJ	2,073	3,409	—	535	—	—	13	—	2,131	991	587,894	701,772
NM	234	1,268	86	196	—	80,613	—	607	280	17,975	158,149	290,264
NV	1,233	1,382	665	214	—	5	—	386	445	2,889	255,181	267,117
NY	1,322	23,774	590	4,287	—	652	867	—	7,069	11,777	1,049,446	1,102,417
OH	1,445	11,363	500	1,757	—	896	—	—	8,487	12,713	1,132,013	1,262,117
OK	37	1,911	—	296	—	71,241	—	—	4,895	34,431	405,097	593,982
OR	1,400	8,919	544	1,379	—	25	—	175	8,627	8,520	354,978	384,697
PA	1,273	5,391	487	1,318	—	6,659	—	—	16,423	28,498	1,078,311	1,270,869
RI	40	831	—	129	—	—	—	—	48	848	57,543	59,439
SC	332	3,200	16	792	—	—	—	—	12,466	2,369	596,721	618,984
SD	157	935	667	145	—	509	—	48	107	5,437	74,197	82,201
TN	131	4,419	—	683	—	69	5,766	—	8,588	9,029	766,818	831,559
TX	1,377	7,841	533	1,319	—	314,429	—	—	8,914	87,481	2,528,652	3,822,020
UT	67	1,261	280	217	—	25,484	—	—	124	11,807	194,529	261,373
VA	822	5,269	528	2,201	—	3,958	63	—	10,308	5,624	787,400	838,746
VT	71	559	—	86	—	—	214	—	1,022	15	42,756	44,723
WA	194	15,085	1,247	2,333	—	—	18	—	12,887	6,767	627,384	753,832
WI	480	5,543	—	917	—	—	2,022	—	30,852	3,143	515,146	574,036
WV	64	1,514	4	234	—	9,821	5,197	—	912	21,475	238,402	290,709
WY	6	360	673	56	—	30,383	—	17	98	14,485	110,278	183,134
US	85,486	230,128	14,927	44,108	—	1,155,544	28,756	4,400	339,952	605,228	27,079,238	32,773,465

^a In this table, "other petroleum" consists of: still gas and petroleum coke consumed as process fuel; and aviation gasoline blending components, motor gasoline blending components, pentanes plus, and unfinished oils used as intermediate products.

^b Natural gas only; excludes supplemental gaseous fuels.

^c Electricity is converted at the rate of 3,412 Btu per kilowatthour.

^d Solar thermal and photovoltaic energy. Includes small amounts consumed by the commercial sector that cannot be separately identified.

— = No consumption.

Source: EIA, State Energy Data System.

Table TN56. Energy Consumption Adjustments for Calculating Expenditures, 1970 Through 2007
(Trillion Btu)

Year	Total (Gross) Consumption	Adjustments													Consumption used in Expenditure Calculations
		Residential		Commercial		Industrial						Transportation	Electrical System Energy Losses	Total	
		Geothermal and Solar/PV ^a	Wood	Geothermal and Hydro-electricity	Wood and Waste	Refinery Use	Crude Oil Lease, Plant, and Pipeline Fuel	Natural Gas Lease and Plant Fuel	Hydro-electricity	Geothermal	Wood and Waste	Natural Gas Pipeline Fuel			
1970	67,747	—	298	—	6	2,714	—	1,442	34	—	788	740	11,503	17,525	50,222
1971	69,193	—	284	—	5	2,694	—	1,456	34	—	804	761	12,103	18,140	51,053
1972	72,721	—	282	—	5	2,847	—	1,497	34	—	859	786	13,056	19,366	53,355
1973	75,778	—	263	—	5	3,010	—	1,539	35	—	900	745	13,900	20,395	55,382
1974	73,975	—	275	—	5	2,983	—	1,520	33	—	896	684	14,109	20,506	53,470
1975	72,023	—	316	—	6	2,884	—	1,434	32	—	822	595	14,341	20,430	51,593
1976	76,043	—	357	—	7	2,907	—	1,679	33	—	942	559	15,195	21,679	54,364
1977	78,028	—	402	—	8	3,008	—	1,706	33	—	989	544	15,938	22,627	55,401
1978	80,055	—	462	—	9	2,939	—	1,694	32	—	1,081	541	16,713	23,471	56,584
1979	80,926	—	543	—	10	3,078	—	1,534	34	—	1,086	613	16,922	23,819	57,107
1980	78,150	—	627	—	16	3,050	—	1,058	33	—	1,283	650	17,235	23,952	54,198
1981	76,200	—	651	—	16	2,201	—	959	33	—	1,354	660	17,225	23,098	53,102
1982	73,098	—	724	—	16	2,087	—	1,144	33	—	1,310	614	16,889	22,817	50,281
1983	72,972	—	722	—	16	2,120	140	1,010	33	—	1,480	505	17,327	23,355	49,617
1984	76,621	—	733	—	16	2,253	135	1,113	33	—	1,510	545	17,875	24,213	52,408
1985	76,524	—	755	—	18	2,045	128	1,001	33	—	1,503	521	18,265	24,270	52,254
1986	76,704	—	688	—	20	2,285	103	954	33	—	1,478	501	18,247	24,310	52,394
1987	79,069	—	634	—	22	2,485	72	1,194	33	—	1,472	538	18,675	25,125	53,944
1988	82,818	—	676	—	24	2,696	85	1,134	33	—	1,531	633	19,589	26,401	56,417
1989	84,878	58	684	3	73	2,710	59	1,103	28	2	684	650	21,006	27,058	57,820
1990	84,624	61	337	4	59	2,802	51	1,269	31	2	716	682	21,420	27,434	57,190
1991	84,549	64	353	4	60	2,667	39	1,164	30	2	685	621	21,613	27,302	57,247
1992	85,897	66	371	4	66	2,953	27	1,208	31	2	689	608	21,479	27,506	58,391
1993	87,556	68	308	4	68	2,876	21	1,199	30	2	642	643	22,275	28,138	59,418
1994	89,201	70	292	5	66	2,990	19	1,153	62	3	662	706	22,564	28,594	60,607
1995	91,149	71	292	6	66	2,914	15	1,253	55	3	445	723	23,356	29,198	61,951
1996	94,183	72	303	7	77	3,202	14	1,280	61	3	495	734	24,068	30,317	63,866
1997	94,829	72	233	7	80	3,195	5	1,251	58	3	493	781	24,325	30,504	64,325
1998	95,104	72	207	8	71	3,041	—	1,212	55	3	493	657	25,262	31,082	64,022
1999	96,713	72	218	9	66	3,049	—	1,103	49	4	495	663	25,849	31,576	65,136
2000	98,765	70	235	9	67	2,939	—	1,110	42	4	459	659	26,558	32,151	66,615
2001	96,187	69	210	9	46	3,151	—	1,139	33	5	437	641	25,814	31,553	64,634
2002	97,900	69	213	9	43	3,059	—	1,175	39	5	312	696	26,365	31,984	65,916
2003	98,262	71	225	12	46	3,174	—	1,186	43	3	315	614	26,306	31,995	66,268
2004	100,003	73	230	13	46	3,091	—	1,116	33	4	536	582	26,779	32,502	67,501
2005	100,246	77	253	14	47	3,106	—	1,140	32	4	335	603	27,323	32,934	67,312
2006	99,521	85	230	15	44	3,186	—	1,156	29	4	340	605	27,079	32,773	66,748
2007	—	—	—	—	—	2,314	—	—	—	—	—	—	—	2,314	—

^a Solar thermal and photovoltaic energy. Includes small amounts consumed by the commercial sector that cannot be separately identified. See Section 5 of the Technical Notes for explanation of estimation methodology.
— = No consumption.
R = Revised data.

Note: • Totals may not equal sum of components due to independent rounding. • All data are available via the full-precision data file (CSV) at http://www.eia.doe.gov/emeu/states/sep_fuel/html/csv/fuel_adjus_consum.csv.
Sources: EIA, State Energy Data System.

Estimates of wood and waste obtained at no charge by industrial CHP facilities for 1989 forward are estimated using the U.S. annual average percentages of wood and percentages of waste acquired at no cost by the electric power sector.

Each State's industrial wood and waste consumption quantities acquired at no cost are the sum of the estimated manufacturing and CHP facilities' quantities for each year.

Refinery Fuel. Petroleum refinery consumption of distillate fuel, residual fuel, liquefied petroleum gases, petroleum coke, still gas, natural gas, steam coal, and electricity is estimated for each State and subtracted from the State's industrial sector total of each energy source.

Refineries' consumption of each fuel is available in the data sources by State or group of States (1970 through 1980) and by Petroleum Administration for Defense (PAD) districts or subdistricts (1981 forward). Where State-level data for the individual fuels are not available, they are estimated by allocating the group or district's values to the States with operating refineries within that group or district. The refining States' industrial sector consumption of each fuel is added together for each group or district to derive that group or district's industrial sector consumption subtotal. Then each State's portion of the group or district's refinery fuel consumption is calculated in proportion to its share of the group or district's industrial sector consumption subtotal.

In some cases, the estimated State refinery fuel consumption of residual fuel or LPG exceeds the estimate of the total industrial sector consumption of that fuel for that State. When this occurs, the refinery fuel consumption for the PAD district or subdistrict, group of States, or individual State is reduced until each State has positive industrial consumption. The excess refinery fuel is reallocated to a different PAD district or subdistrict, group of States or individual State as shown in Table TN57. When this adjustment involves a PAD district or subdistrict or group value, the refineries' consumption estimates for all States within the PAD district or subdistrict or group are recalculated using these new values.

Because crude oil consumption is not an individual fuel in SEDS for 1970 through 1980, the small amounts of crude oil that were used at refineries during those years were allocated to residual and distillate fuels consumed at refineries. The allocation from crude oil refinery use to

Table TN57. Reallocations of Excess Refinery Fuel Consumption

Year	Fuel	Thousand Barrels	Excess in:	Reallocated to:
1971	Residual Fuel Oil	294	Kansas	Oklahoma
1973	Residual Fuel Oil	45	Group 4: Kentucky, Tennessee	Illinois
1979	LPG	173	Montana	Wyoming
1985	Residual Fuel Oil	212	PAD District IV	PAD District V
1986	Residual Fuel Oil	403	PAD District IV	PAD District V
1987	Residual Fuel Oil	497	PAD District IV	PAD District V
1988	Residual Fuel Oil	305	PAD District IV	PAD District V
1989	Residual Fuel Oil	381	PAD District IV	PAD District V
1990	Residual Fuel Oil	336	PAD District IV	PAD District V
1991	Residual Fuel Oil	378	PAD District IV	PAD District V
1992	Residual Fuel Oil	361	PAD District IV	PAD District V
1996	Residual Fuel Oil	184	PAD District IV	PAD District V
1997	Residual Fuel Oil	100	PAD District IV	PAD District V
1998	Residual Fuel Oil	82	PAD District IV	PAD District V
1999	Residual Fuel Oil	142	PAD District IV	PAD District V
2000	Residual Fuel Oil	224	PAD District IV	PAD District V
2001	Residual Fuel Oil	149	PAD District IV	PAD District II
2001	Residual Fuel Oil	95	PAD District V	PAD District II
2001	Residual Fuel Oil	281	PAD District V	PAD District I
2002	Residual Fuel Oil	33	PAD District V	PAD District III
2002	Residual Fuel Oil	67	PAD District V	PAD District IV
2003	Residual Fuel Oil	228	PAD District V	PAD District III
2004	Residual Fuel Oil	296	PAD District V	PAD District III
2005	LPG	198	PAD District V	PAD District IV
2007	Residual Fuel Oil	302	PAD District V	PAD District III

Source: EIA calculations based on data from the State Energy Data System and the *Petroleum Supply Annual*.

residual and distillate fuels refinery use was made according to each fuel's share of the total crude oil used directly (including losses) as residual and distillate fuels from the EIA *Petroleum Supply Annual, Volume 1*, of each year, Table 2.

Refinery consumption of still gas, excluding still gas consumed as petrochemical feedstocks, is subtracted from the SEDS industrial sector total for 1970 through 1985. Beginning in 1986, EIA data series no longer report refinery fuel and feedstock use separately, and all industrial still gas consumption is removed.

Refineries' consumption of coal is withheld in the data source for 1999 and 2000 and unpublished estimates developed by the data source office are used for 1999 and 2000. For 2001 and 2002, the U.S. values for refinery consumption of coal are published although the PAD district values are withheld. The PAD district values for 2001 and 2002 are estimated by applying the PAD districts' percentages of the U.S. total in 2000 to the U.S. totals for 2001 and 2002.

Intermediate Products. Aviation gasoline blending components, motor gasoline blending components, natural gasoline (1970 through 1983), pentanes plus (1984 forward), plant condensate (1970 through 1983), unfinished oils, and unfractionated stream (1970 through 1983) are used at refineries and blending plants to make end-use petroleum products, particularly motor gasoline. Accordingly, consumption of these products is completely removed.

Crude Oil Lease, Plant, and Pipeline Fuel. Industrial crude oil is assumed to be used as lease, plant, and pipeline fuel. Because these are process fuel uses, this crude oil is removed from SEDS industrial sector consumption.

Natural Gas Lease and Plant Fuel. Natural gas consumed as lease and plant fuel is process fuel and is subtracted from SEDS industrial sector natural gas totals by State and year.

Natural Gas Pipeline Fuel. Most of the natural gas consumed in the transportation sector of is used to power pipelines. As such, it is a process fuel and is subtracted from SEDS consumption in order to calculate expenditures.

Electricity Exports. Electricity exported to Canada and Mexico are excluded from the calculations of U.S. domestic energy expenditures and U.S. average energy prices.

Electrical System Energy Losses. The amount of energy lost during generation, transmission, and distribution of electricity (including plant use and unaccounted for electrical energy) is process fuel and is subtracted from sectoral energy consumption estimates used in the price and expenditure tables. The energy losses are "paid for" when residential, commercial, industrial, and transportation sector consumers buy the electricity produced by the electric power sector.

Data Sources

Capacity of Petroleum Refineries. 1982 forward: EIA, *Petroleum Supply Annual, Volume 1*, http://www.eia.doe.gov/oil_gas/petroleum/data_publications/petroleum_supply_annual/psa_volume1/psa_volume1.html tables titled "Number and Capacity of Operable Petroleum Refineries," columns titled, "Crude Capacity, Barrels per Calendar Day, Operating" (1982–1985), and "Atmospheric Crude Oil Distillation Capacity, Barrels per Calendar Day, Operating" (1986 forward).

1979–1981: EIA, Energy Data Reports, *Petroleum Refineries in the United States and U.S. Territories*, table titled "Number and Capacity of Petroleum Refineries," column heading, "Crude Capacity, Barrels per Calendar Day, Operating."

1978: EIA, Energy Data Reports, *Petroleum Refineries in the United States and Puerto Rico*, table titled "Number and Capacity of Petroleum Refineries," column heading, "Crude Capacity, Barrels per Calendar Day, Operating."

1970–1977: Bureau of Mines, U.S. Department of the Interior, Mineral Industry Surveys, *Petroleum Refineries in the United States and Puerto Rico*, table titled "Number and Capacity of Petroleum Refineries," column heading, "Crude Capacity, Barrels per Calendar Day, Operating."

Fuel Consumed at Refineries. 1981–1994, 1996, and 1998 forward: EIA, *Petroleum Supply Annual, Volume 1*, http://www.eia.doe.gov/oil_gas/petroleum/data_publications/petroleum_supply_annual/psa_volume1/psa_volume1.html table titled "Fuels Consumed at Refineries by PAD District." Data for 1991 are from a separately published an EIA *Errata* dated November 10, 1992, GPO Stock No. 061-003-00758-9.

1995, 1997: EIA, *Petroleum Supply Annual, Volume 1*, table titled "Fuels Consumed at Refineries by PAD District." Data for coal, electricity, and natural gas are not published and values for the previous year are repeated.

1976–1980: EIA, Energy Data Reports, *Crude Petroleum, Petroleum Products, and Natural Gas Liquids*, table titled "Fuels Consumed for All Purposes at Refineries in the United States, by States."

1970–1975: Bureau of Mines, U.S. Department of the Interior, Mineral Industry Surveys, *Crude Petroleum, Petroleum Products, and Natural Gas Liquids*, table titled “Fuels Consumed for All Purposes at Refineries in the United States, by States.”

Intermediate Products. 1970 forward: EIA, State Energy Data System, industrial sector consumption estimates for aviation gasoline blending components, crude oil, motor gasoline blending components, natural gasoline (1970–1983), pentanes plus (1984 forward), petroleum coke, plant condensate (1970–1983), still gas (excluding still gas consumed as petrochemical feedstocks, 1970–1985), unfinished oil, and unfractionated stream (1970–1983).

Natural Gas Lease, Plant, and Pipeline Fuel Use. 1997 forward: EIA, Natural Gas Navigator, http://tonto.eia.doe.gov/dnav/ng/ng_cons_sum_dcunusa.htm (use drop-down menu to select area, then click on icon that says “Download Series History”) and published in the EIA, *Natural Gas Annual*, Tables 26 through 76.

1993–1996: EIA *Historical Natural Gas Annual 1930 Through 2000*, http://www.eia.doe.gov/oil_gas/natural_gas/data_publications/historical_natural_gas_annual/hnga.html Table 15.

1970–1992: EIA *Natural Gas Annual 1994, Volume II*, Table 14.

Residential Wood. 1990 forward: EIA, unpublished data from the “1993 Residential Energy Consumption Survey,” Form EIA-457 <http://www.eia.doe.gov/emeu/recs/contents.html>.

1970–1989: EIA, unpublished data from the “1980 Residential Energy Consumption Survey,” Form EIA-457.

Commercial Wood and Waste. 1990 forward: EIA, unpublished data from the “1993 Residential Energy Consumption Survey,” Form EIA-457 <http://www.eia.doe.gov/emeu/recs/contents.html>.

1989 forward: EIA, SEDS, U.S. annual average percentages of wood (WDEISUS) and percentages of waste (WSEISUS) acquired at no cost by the electric power sector.

1970–1989: EIA, unpublished data from the “1980 Residential Energy Consumption Survey,” Form EIA-457.

Industrial Wood and Waste. 1994 forward: EIA, unpublished data from the “1994 Manufacturing Energy Consumption Survey” (Form EIA-846) <http://www.eia.doe.gov/emeu/mecs/contents.html>.

1989 forward: EIA, SEDS, U.S. annual average percentages of wood (WDEISUS) and percentages of waste (WSEISUS) acquired at no cost by the electric power sector.

1970–1993: EIA, unpublished data from the “1991 Manufacturing Energy Consumption Survey” (Form EIA-846).