Section 7. Consumption Adjustments for Calculating Expenditures

Expenditures developed in the EIA State Energy Data System (SEDS) and published in this report are calculated by using the SEDS consumption estimates that are in the **State Energy Data 2000** tables. Expenditures are calculated by multiplying the price estimates by the consumption estimates, which have been adjusted to remove process fuel, intermediate petroleum products, 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 and commercial sectors and wood and waste in the industrial sector 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, 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, the industrial sector, and at electric utilities;
2. Geothermal energy in the residential, commercial, and industrial sectors, and at electric utilities;
2. Electricity generated from hydropower and wind energy in the industrial sector and at electric utilities; and
3. Estimated portions of wood consumed in the residential and commercial sectors and wood and waste in the industrial sector that were obtained at no cost.

Table TN51 shows the quantities of energy, by State, removed from SEDS consumption to calculate expenditures for 2000. State estimates for 1970 through 2000 are available on the SEDS Internet data files.

Table TN52 shows the adjustments made to SEDS national consumption estimates for 1970 through 2000 to derive the net consumption data used to calculate expenditures.

Adjustment Procedures

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

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 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.

Refinery fuel consumption data are available in the data sources by State or group of States (1970 through 1980) and by Petroleum Administration for Defense District (PADD) (1981 forward). Where State-level consumption data are not available, the State-level estimates are derived by allocating the district's or group's total consumption to the individual States within the district or group that had operating refineries in a given year. Individual fuels are allocated to the refining States according to each State's share of the refining States' subtotal of industrial sector fuel consumption during the year. In some instances, estimated refinery fuel consumption exceeds the SEDS estimate for total industrial consumption of a fuel within a State. When this occurs, the excess refinery fuel consumption is reallocated as shown in Table TN53.

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.

Residential and Commercial Geothermal, Solar, and Wood. There are no fuel costs for geothermal, photovoltaic, and solar thermal energy sources; therefore, all consumption is removed from the expenditure calculations. Some residential and commercial 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 and commercial 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 and

Table TN51. Estimates of Energy Consumed as Process Fuel, Intermediate Products, and Uncosted Renewables, 2000
(Billion Btu)

State	Refinery Use							
	Distillate	Residual	LPG	Other Petroleum [a]	Natural Gas	Coal	Electricity [b]	Total
AK	114	—	—	23,077	18,311	—	147	41,650
AL	67	5	9	10,100	27,446	—	8,366	45,993
AR	91	—	19	11,790	17,469	—	4,124	33,493
AZ	—	—	—	1,724	—	—	—	1,724
CA	940	329	4,318	196,423	97,360	—	9,110	308,481
CO	6	—	125	8,240	8,981	—	1,589	18,941
CT	—	—	—	4,253	—	—	—	4,253
DC	—	—	—	—	—	—	—	—
DE	33	2,972	13	20,175	1,880	15	295	25,382
FL	—	—	—	10,517	—	—	—	10,517
GA	447	2,688	318	5,891	9,627	160	2,952	22,081
HI	24	1,338	35	11,760	39	—	543	13,740
IA	—	—	—	2,127	—	—	—	2,127
ID	—	—	—	—	—	—	—	—
IL	41	632	789	102,894	16,675	6	3,547	124,584
IN	29	1,280	142	50,269	15,578	7	4,162	71,467
KS	24	1,107	835	29,156	6,813	—	886	38,822
KY	23	225	387	44,895	5,230	2	3,265	54,027
LA	261	5	632	273,135	148,779	—	7,630	430,442
MA	—	—	—	4,962	—	—	—	4,962
MD	—	—	—	2,192	—	—	—	2,192
ME	—	—	—	1,240	—	—	—	1,240
MI	21	1,425	175	20,632	15,557	3	3,229	41,043
MN	26	1,184	201	30,914	5,136	3	2,499	39,961
MO	—	—	—	1,440	—	—	—	1,440
MS	74	—	10	28,543	15,325	—	3,787	47,739
MT	3	—	9	15,682	1,898	—	1,048	18,641
NC	—	—	—	10,620	—	—	—	10,620
ND	15	181	75	6,159	1,222	7	263	7,921
NE	—	—	—	—	—	—	—	—
NH	—	—	—	2,658	—	—	—	2,658
NJ	124	1,135	405	78,417	11,043	1	966	92,091
NM	51	1	3	12,151	10,562	—	1,312	24,079
NV	142	—	488	322	3,371	—	1,592	5,915
NY	—	—	—	20,819	—	—	—	20,819
OH	26	4,099	245	58,085	16,899	5	6,413	85,772
OK	18	654	161	42,595	11,333	1	1,207	55,968
OR	—	—	—	—	—	—	—	—
PA	385	4,124	161	83,580	14,357	268	3,717	106,591
RI	—	—	—	—	—	—	—	—
SC	—	—	—	607	—	—	—	607
SD	—	—	—	—	—	—	—	—
TN	13	181	81	19,280	6,541	6	2,797	28,900
TX	480	2	2,296	568,080	322,306	—	24,259	917,423
UT	3	1,334	43	14,307	4,726	—	1,264	21,677
VA	335	3,860	177	11,587	5,786	194	1,686	23,626
VT	—	—	—	—	—	—	—	—
WA	149	2,715	2,906	53,309	8,467	—	5,016	72,562
WI	44	2,543	194	16,037	7,858	3	2,267	28,946
WV	203	605	63	2,613	3,130	126	907	7,646
WY	6	559	25	13,380	4,351	—	1,169	19,488
US	4,217	35,182	15,341	1,926,634	844,056	806	112,013	2,938,248

See footnotes at end of table.

Table TN51. Estimates of Energy Consumed as Process Fuel, Intermediate Products, and Uncosted Renewables, 2000 (Continued)

(Billion Btu)

State	Residential		Commercial		Industrial					Transportation	Electrical System Energy Losses	Total
	Geothermal and Solar [c]	Wood	Geothermal	Wood	Crude Oil Lease, Plant, and Pipeline Fuel	Natural Gas Lease and Plant Fuel	Hydro-electricity	Geothermal Wind and Solar	Wood and Waste	Natural Gas Pipeline Fuel		
AK	50	920	36	113	—	204,874	—	—	109	5,603	37,856	291,211
AL	142	4,056	—	498	—	16,465	—	42	86,000	23,594	488,620	665,410
AR	1,027	1,450	—	178	—	1,945	2	21	30,661	8,914	243,427	321,118
AZ	3,592	5,687	45	698	—	36	—	228	532	20,875	357,613	391,029
CA	18,418	22,097	550	2,711	—	62,891	13,181	300,862	57,614	9,481	1,427,746	2,224,032
CO	339	4,908	220	602	—	37,100	1,270	250	734	9,344	251,671	325,378
CT	280	3,112	—	382	—	—	3,870	—	19,012	3,096	175,223	209,226
DC	1	728	—	89	—	—	—	—	—	250	62,101	63,169
DE	108	879	—	108	—	—	—	—	501	64	65,955	92,998
FL	31,485	3,937	509	483	—	2,693	—	—	81,516	7,745	1,145,690	1,284,575
GA	304	8,463	7	1,038	—	—	258	21	87,860	5,733	697,238	823,005
HI	1,368	—	6	—	—	—	901	5,656	8,601	—	37,782	68,053
IA	111	3,359	213	412	—	—	129	4,995	8,863	8,308	228,666	257,182
ID	52	1,438	457	176	—	—	8,724	800	12,468	6,087	133,580	163,783
IL	671	8,025	—	984	—	79	852	—	12,642	13,535	787,983	949,355
IN	852	4,176	213	512	—	24	—	—	10,024	5,758	571,988	665,013
KS	63	3,124	220	383	—	30,235	156	—	1,467	38,804	210,142	323,417
KY	388	3,627	213	445	—	2,594	—	—	3,330	14,383	458,153	537,160
LA	267	2,405	213	295	—	212,450	5,430	42	67,918	53,331	472,042	1,244,834
MA	197	5,800	215	711	—	—	1,897	—	26,805	2,492	302,875	345,953
MD	164	5,648	—	693	—	—	190	—	15,250	3,346	354,968	382,450
ME	122	1,412	—	173	—	—	36,602	—	74,036	864	71,154	185,603
MI	1,193	6,973	213	855	—	10,523	1,016	—	45,171	27,340	612,922	747,250
MN	545	5,598	—	687	—	—	3,018	7,391	27,836	21,354	349,728	456,117
MO	193	6,622	—	812	—	—	—	—	876	7,679	424,963	442,584
MS	16	2,412	217	296	—	3,908	—	42	33,861	32,211	265,219	385,919
MT	64	1,112	150	136	—	2,639	34,005	70	7,195	6,471	85,294	155,776
NC	338	8,953	—	1,098	—	—	9,861	—	35,718	7,387	701,160	775,135
ND	113	813	113	100	—	9,793	—	—	619	10,937	55,069	85,478
NE	90	1,968	246	241	—	31	—	—	573	3,156	142,444	148,750
NH	42	1,212	—	149	—	—	11,216	—	12,114	34	59,430	86,854
NJ	692	3,412	—	419	—	—	143	—	18,840	3,000	409,369	527,966
NM	466	2,131	83	261	—	57,871	—	600	266	44,173	109,985	239,915
NV	682	2,132	521	262	—	7	141	29,219	—	901	162,583	202,363
NY	629	33,555	243	4,116	—	607	51,648	106	48,361	7,635	830,862	998,581
OH	688	7,857	213	964	—	1,072	—	—	34,695	19,269	966,397	1,116,927
OK	74	1,946	—	239	—	67,533	—	—	5,999	21,179	289,952	442,889
OR	925	5,142	358	631	—	50	3,403	827	17,836	12,122	294,435	335,728
PA	756	5,516	216	677	—	5,505	6,767	100	55,036	39,402	783,001	1,003,567
RI	39	973	—	119	—	—	50	—	839	306	42,713	45,039
SC	161	4,483	—	550	—	—	372	—	40,881	3,561	450,523	501,139
SD	74	891	317	109	—	1,008	—	52	276	6,300	48,454	57,480
TN	100	5,025	—	616	—	30	5,306	—	26,075	14,320	560,011	640,384
TX	967	6,702	219	822	—	296,185	36	5,020	41,912	59,233	1,861,850	3,190,368
UT	71	2,077	162	255	—	25,932	85	353	981	2,811	135,635	190,038
VA	315	7,626	213	935	—	1,884	636	—	46,625	8,255	565,789	655,905
VT	31	652	—	80	—	—	8,173	—	3,661	15	32,986	45,598
WA	328	8,794	318	1,079	—	—	2,682	—	39,068	6,248	564,594	695,674
WI	343	3,814	—	468	—	—	2,463	—	59,490	4,099	381,110	480,733
WV	45	2,161	4	265	—	9,854	8,292	—	1,411	34,793	162,005	226,476
WY	5	618	649	76	—	24,936	—	2,527	—	14,741	72,352	135,391
US	69,982	236,425	7,572	29,001	—	1,090,754	222,775	359,222	1,212,157	660,536	20,003,306	26,829,981

[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] Electricity is converted at the rate of 3,412 Btu per kilowatthour.

[c] Includes small amounts of solar energy consumed by the commercial sector that cannot be separately identified.

—No consumption.

Source: State Energy Data System 2000.

Table TN52. Energy Consumption Adjustments, 1970 Through 2000

(Trillion Btu)

Year	Total (Gross) Consumption	Adjustments														Net Consumption
		Residential		Commercial		Industrial						Transportation				
		Geothermal and Solar [a]	Wood	Geothermal	Wood	Refinery Use	Crude Oil Lease, Plant, and Pipeline Fuel	Natural Gas Lease and Plant Fuel	Hydro-electricity	Geothermal, Wind, and Solar	Wood and Waste	Natural Gas Pipeline Fuel	Electrical System Energy Losses	Total	
1970	67,761	—	298	—	6	2,714	—	1,442	34	—	788	740	11,517	17,539	50,222
1971	69,218	—	284	—	5	2,694	—	1,456	34	—	804	761	12,127	18,165	51,053
1972	72,775	—	282	—	5	2,847	—	1,497	34	—	859	786	13,110	19,420	53,355
1973	75,877	—	263	—	5	3,010	—	1,539	35	—	900	745	13,999	20,495	55,382
1974	74,065	—	275	—	5	2,983	—	1,520	33	—	896	684	14,198	20,595	53,470
1975	72,066	—	316	—	6	2,884	—	1,434	32	—	822	595	14,384	20,473	51,593
1976	76,103	—	357	—	7	2,907	—	1,679	33	—	942	559	15,255	21,739	54,364
1977	78,151	—	402	—	8	3,008	—	1,706	33	—	989	544	16,060	22,750	55,401
1978	80,192	—	462	—	9	2,939	—	1,694	32	—	1,081	541	16,850	23,608	56,584
1979	81,067	—	543	—	10	3,078	—	1,534	34	—	1,086	613	17,063	23,960	57,107
1980	78,466	—	633	—	15	3,052	—	1,058	33	—	1,283	650	17,387	24,111	54,355
1981	76,601	—	640	—	15	2,204	—	959	33	—	1,354	660	17,464	23,329	53,272
1982	73,399	—	690	—	17	2,089	—	1,144	33	—	1,310	614	17,100	22,995	50,404
1983	73,279	—	681	—	16	2,121	140	1,010	33	—	1,480	505	17,583	23,571	49,708
1984	76,912	—	690	—	16	2,254	135	1,113	33	—	1,510	545	18,157	24,454	52,458
1985	R 76,779	—	673	—	18	2,046	128	1,001	33	—	1,503	521	R 18,558	R 24,481	52,299
1986	R 76,967	—	655	—	20	2,285	103	954	33	—	1,478	501	R 18,502	R 24,532	52,435
1987	R 79,427	—	633	—	22	2,485	72	1,194	33	—	1,472	538	R 19,004	R 25,454	53,973
1988	R 83,045	—	658	—	24	2,696	85	1,134	33	—	1,531	633	R 19,812	R 26,606	56,438
1989	R 84,272	58	682	3	R 27	2,710	59	1,103	R 63	123	R 1,306	650	R 20,219	R 27,002	R 57,554
1990	R 84,094	61	337	3	R 22	2,803	51	1,269	R 81	164	R 1,220	682	R 20,193	R 26,886	R 57,207
1991	R 84,060	64	355	3	R 24	2,668	39	1,164	R 79	190	R 1,196	622	R 20,321	R 26,723	R 57,337
1992	R 85,332	66	374	3	R 25	2,954	27	1,209	97	204	R 1,243	608	R 19,964	R 26,775	R 58,556
1993	R 87,224	68	308	3	R 26	2,878	21	1,199	117	231	R 1,274	643	R 20,492	R 27,261	R 59,964
1994	R 89,003	70	302	4	R 26	2,991	19	1,153	135	223	R 1,192	706	R 20,727	R 27,548	R 61,455
1995	R 90,875	71	335	5	R 26	2,915	15	1,253	R 149	221	R 1,177	723	R 21,309	R 28,199	R 62,676
1996	R 93,817	R 72	334	5	R 28	3,203	14	1,280	R 167	232	R 1,280	734	R 21,921	R 29,271	R 64,547
1997	R 94,189	R 72	233	6	R 27	3,196	5	1,251	R 155	236	R 1,288	781	R 22,123	R 29,373	R 64,816
1998	R 94,228	72	R 211	7	26	3,041	—	R 1,211	R 148	241	R 1,312	657	R 22,666	R 29,592	R 64,636
1999	R 95,992	72	R 226	7	R 29	3,051	—	R 1,103	R 199	331	R 1,186	R 663	R 21,949	R 28,816	R 67,177
2000	98,216	70	236	8	29	2,938	—	1,091	223	359	1,212	661	20,003	26,830	71,386

[a] Includes small amounts of solar energy consumed by the commercial sector that cannot be separately identified.

—No consumption.

Note: Totals may not equal sum of components due to independent rounding.

Sources: **Total (Gross) Consumption—**EIA, **State Energy Data 2000** consumption tables, http://www.eia.doe.gov/emeu/states/sep_use/total/use_tot_us.html, column titled, "Total."

Residential Geothermal and Solar—http://www.eia.doe.gov/emeu/states/sep_use/total/use_tot_us.html, columns titled "Geothermal" and "Solar."

Residential Wood—State Energy Data System 2000 (SEDS).

Commercial Geothermal—http://www.eia.doe.gov/emeu/states/sep_use/total/use_tot_us.html, column titled "Geothermal."

Commercial Wood—SEDS.

Refinery Use—SEDS.

Crude Oil Lease, Plant, and Pipeline Fuel—SEDS.

Natural Gas Lease and Plant Fuel—SEDS.

Hydroelectricity—http://www.eia.doe.gov/emeu/states/sep_use/total/use_tot_us.html, column titled, "Hydroelectric Power."

Geothermal, Wind, and Solar—http://www.eia.doe.gov/emeu/states/sep_use/total/use_tot_us.html, column titled, "Other."

Wood and Waste—SEDS.

Natural Gas Pipeline Fuel—SEDS.

Electrical System Energy Losses—http://www.eia.doe.gov/emeu/states/sep_use/total/use_tot_us.html, sum of four end-use sectors' column titled, "Electrical System Energy Losses."

Total Adjustments—SEDS.

Net Consumption—SEDS.

Table TN53. Reallocations of Excess Refinery Fuel Consumption

Year	Fuel	Thousand Barrels	Excess in:	Reallocated to:
1971	Residual Fuel	294	Kansas	Oklahoma
1973	Residual Fuel	45	Group 4: Kentucky, Tennessee	Illinois
1979	LPG	173	Montana	Wyoming
1985	Residual Fuel	212	PADD IV	PADD V
1986	Residual Fuel	403	PADD IV	PADD V
1987	Residual Fuel	497	PADD IV	PADD V
1988	Residual Fuel	305	PADD IV	PADD V
1989	Residual Fuel	381	PADD IV	PADD V
1990	Residual Fuel	332	PADD IV	PADD V
1991	Residual Fuel	374	PADD IV	PADD V
1992	Residual Fuel	355	PADD IV	PADD V
1996	Residual Fuel	179	PADD IV	PADD V
1997	Residual Fuel	92	PADD IV	PADD V
1998	Residual Fuel	64	PADD IV	PADD V
1999	Residual Fuel	125	PADD IV	PADD V
2000	Residual Fuel	250	PADD IV	PADD V

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

commercial wood consumption of the States in each region in 1990 through 1999.

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.

Industrial Hydroelectricity, Geothermal, Wind, Photovoltaic, and Solar Thermal Energy. Electricity generated by industries 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 industries' products. Therefore, SEDS industrial use of these renewable sources are removed from the expenditure calculations.

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 nonutility power producers 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 (MECS1991) 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.

Estimates of wood and waste obtained at no charge by nonutility power producers for 1989 forward are developed from the MECS data series above assuming that nonutilities are not purchasing waste, but are paying for the same proportions of wood fuel as the manufacturers are.

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

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

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 Prices*

and Expenditures tables. The energy losses are "paid for" when residential, commercial, industrial, and transportation sector consumers buy the electricity produced at electric utilities.

Data Sources

Capacity of Petroleum Refineries. 1982 forward: Energy Information Administration, *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: Energy Information Administration, 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: Energy Information Administration, 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: Energy Information Administration, *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: Energy Information Administration, *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: Energy Information Administration, 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."

1970 forward: Energy Information Administration, 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. 1970 forward: EIA *Natural Gas Annual 1994, Volume II,* Table 14 (1970–1992), 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 (1993 forward).

Residential and Commercial 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.

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.

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