



Fossil Fuel Use in Missouri at a Glance: Supporting Documentation

Division of Energy
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The data for the charts in “Fossil Fuel Use in Missouri at a Glance” come from the U.S. Energy Information Administration’s State Energy Data System (SEDS) at <http://www.eia.gov/state/seds/seds-data-complete.cfm?sid=MO>. These data were collected, screened, and arranged in an Excel file using an Access database. Further manipulation of the variables from SEDS occurred in Excel to obtain the outputs in the fact sheet, both through the use of the equations noted below and pivot tables.

The specific variables pulled from SEDS are shown below in Table A, along with their SEDS descriptors. Table B describes the general Excel equations used to obtain the data shown in the fact sheet.

Table A. Extracted SEDS Variables.

Variable	Description
CLACB	Coal consumed by the transportation sector.
CLCCB	Coal consumed by the commercial sector.
CLEIB	Coal consumed by the electric power sector.
CLICB	Coal consumed by the industrial sector.
CLRCB	Coal consumed by the residential sector.
CLTCB	Coal total consumption.
CLTCV	Coal total expenditures.
ELISB	Net interstate sales of electricity and associated losses (negative and positive values).
ESTCB	Electricity total consumption (i.e., sold).
LOTCB	Total electrical system energy losses.
NGACB	Natural gas consumed by the transportation sector.
NGCCB	Natural gas consumed by (delivered to) the commercial sector (including supplemental gaseous fuels).
NGEIB	Natural gas consumed by the electric power sector (including supplemental gaseous fuels).
NGICB	Natural gas consumed by (delivered to) the industrial sector (including supplemental gaseous fuels).
NGRCB	Natural gas consumed by (delivered to) the residential sector (including supplemental gaseous fuels).
NGTCB	Natural gas total consumption (including supplemental gaseous fuels).
NGTCV	Natural gas total expenditures (including supplemental gaseous fuels).
PAACB	All petroleum products consumed by the transportation sector.
PACCB	All petroleum products consumed by the commercial sector.
PAEIB	All petroleum products consumed by the electric power sector.
PAICB	All petroleum products consumed by the industrial sector.
PARCB	All petroleum products consumed by the residential sector.
PATCB	All petroleum products total consumption.
PATCV	All petroleum products total expenditures.
TEEIB	Total energy consumed by the electric power sector.
TETCB	Total energy consumption.

Table B. SEDS Variable Manipulations.

Equation	Description
$\text{sum}(\text{PAEIB}, \text{CLEIB}, \text{NGEIB})$	Total Fossil-Fuel Based Electric Power Sector Consumption
$\text{sum}(\text{PAEIB}, \text{CLEIB}, \text{NGEIB}) / \text{TEEIB}$	Share of Fossil Fuels Consumed by the Electric Power Sector
$(\text{sum}(\text{PAEIB}, \text{CLEIB}, \text{NGEIB}) / \text{TEEIB}) * \text{ESTCB}$	Total Fossil Fuel-Based Electric Power Sales
$(\text{sum}(\text{PAEIB}, \text{CLEIB}, \text{NGEIB}) / \text{TEEIB}) * \text{LOT CB}$	Total Fossil Fuel-Related Electrical System Energy Losses
$\text{IF}(\text{ELISB} < 0, (\text{abs}(\text{sum}(\text{PAEIB}, \text{CLEIB}, \text{NGEIB}) / \text{TEEIB}) * \text{ELISB}), 0)$	Total Fossil Fuel-Related Electricity Exports
$\text{NGRCB} + \text{NGCCB} + \text{NGICB}$	Natural Gas Used in Buildings (Other Than Electricity)
$\text{NGACB} + \text{PAACB} + \text{CLACB}$	Fossil Fuels Used in Transportation
$(\text{PARCB} + \text{PACCB} + \text{PAICB}) + (\text{CLRCB} + \text{CLCCB} + \text{CLICB})$	Other Fossil Fuel Consumption
$\text{sum}((\text{sum}(\text{PAEIB}, \text{CLEIB}, \text{NGEIB}) / \text{TEEIB}) * \text{ESTCB} + (\text{sum}(\text{PAEIB}, \text{CLEIB}, \text{NGEIB}) / \text{TEEIB}) * \text{LOT CB} + \text{IF}(\text{ELISB} < 0, (\text{abs}(\text{sum}(\text{PAEIB}, \text{CLEIB}, \text{NGEIB}) / \text{TEEIB}) * \text{ELISB}), 0) + (\text{NGRCB} + \text{NGCCB} + \text{NGICB}) + (\text{NGACB} + \text{PAACB} + \text{CLACB}) + ((\text{PARCB} + \text{PACCB} + \text{PAICB}) + (\text{CLRCB} + \text{CLCCB} + \text{CLICB})))$	Total Fossil Fuel Consumption (Figure 2)
$\text{sum}(\text{CLTCB}, \text{NGTCB}, \text{PATCB})$	Total Fossil Fuel Consumption (Figures 3, 4, and 5)
$\text{sum}(\text{CLTCV}, \text{NGTCV}, \text{PATCV})$	Total Fossil Fuel Expenditures

The rest of this document consists of the tables associated with each figure in “Fossil Fuel Use in Missouri at a Glance,” numbered in the order in which the charts appear in the fact sheet. Note that the data below are presented in units of billion British thermal units (BBtu), whereas they appear in the fact sheet in trillion Btu (TBtu).¹ In addition, the expenditure data were not converted into real dollar values.

Further information on the SEDS data may be found on the U.S. Energy Information Administration’s website.

¹ One British thermal unit (Btu) is the amount of heat required to raise the temperature of one pound of water at or near 39.2 degrees Fahrenheit by an additional degree.

Table 1. Total Fossil Fuel Consumption in Missouri, 1960 – 2012 (Btu).

Year	Total Fossil Fuel-Based Electric Power Sales	Total Fossil Fuel-Related Electrical System Energy Losses	Total Fossil Fuel-Related Electricity Exports	Natural Gas Used in Buildings (Other Than Electricity)	Fossil Fuels Used in Transportation	Other Fossil Fuel Consumption
1960	36,493	90,245	0	230,521	253,748	246,657
1961	36,476	88,643	0	240,899	255,832	231,107
1962	41,472	99,622	978	255,667	276,066	226,954
1963	46,959	112,257	0	258,818	282,147	220,961
1964	50,822	120,768	0	275,573	292,305	218,604
1965	53,105	126,774	0	290,360	304,630	232,507
1966	63,366	151,869	0	303,273	305,173	244,225
1967	66,854	159,690	0	308,869	322,430	241,302
1968	71,282	170,067	0	318,628	359,164	250,284
1969	77,939	185,923	0	338,263	370,068	253,131
1970	85,180	206,065	7,302	356,289	390,887	237,791
1971	90,602	218,479	14,389	353,802	403,843	230,088
1972	96,177	230,260	20,154	361,147	423,903	243,082
1973	98,613	234,020	62,062	361,899	428,118	255,627
1974	98,818	238,954	47,515	356,138	421,344	242,070
1975	109,332	262,255	41,877	338,571	424,725	238,740
1976	114,109	273,048	60,941	351,359	444,349	250,421
1977	123,531	295,259	70,793	337,925	456,659	255,288
1978	131,744	319,033	33,346	329,263	468,827	258,619
1979	134,970	322,183	36,293	313,327	446,792	258,335
1980	143,902	345,699	22,942	302,235	410,564	189,984
1981	143,654	336,391	24,589	274,526	399,232	180,838
1982	138,205	326,777	31,030	275,308	404,771	176,517
1983	149,032	350,489	33,302	258,910	409,725	155,400
1984	147,867	337,193	70,526	261,825	420,812	161,878
1985	127,540	292,109	68,027	258,526	429,881	166,678
1986	136,776	306,846	29,862	239,601	449,684	155,785
1987	146,851	325,027	18,597	231,126	459,019	165,431
1988	146,583	324,553	39,286	247,897	475,523	175,408
1989	150,355	347,107	17,295	248,078	482,028	163,491
1990	151,862	346,228	9,727	232,379	474,980	152,484
1991	157,257	362,829	0	243,156	472,265	143,263
1992	154,420	357,787	0	236,531	488,848	144,663
1993	157,435	375,432	0	265,852	508,080	153,329
1994	164,569	380,710	0	260,846	521,034	159,377
1995	179,665	419,779	0	260,922	540,634	162,390
1996	188,035	436,276	0	284,347	566,928	172,712
1997	191,240	444,162	6,482	270,968	579,249	163,129
1998	201,832	471,120	11,644	239,575	628,335	151,064
1999	202,918	480,629	0	242,654	621,316	186,253
2000	213,844	498,296	0	250,363	555,872	152,107
2001	220,039	495,100	16,459	250,521	555,597	193,007
2002	224,853	500,925	8,610	246,061	571,386	182,903
2003	223,103	493,606	75,443	240,882	593,687	183,084
2004	225,684	504,468	75,743	240,643	578,271	208,119
2005	248,033	556,987	36,268	238,200	592,358	193,499
2006	247,836	551,433	34,640	222,192	596,724	186,185
2007	257,093	571,842	0	233,141	607,106	177,727
2008	250,469	559,937	272	247,334	582,544	160,959
2009	232,172	513,172	30,783	232,476	570,509	138,479
2010	256,692	567,329	0	235,383	578,053	135,780
2011	251,472	553,699	44,533	229,757	568,150	114,448
2012	241,341	524,033	30,771	202,007	551,482	123,375

Table 2. Total Fossil Fuel Consumption in Missouri in 2012.²

Sector and Use	Billion Btu	Percent of 2012 Total
Total Fossil Fuel-Based Electric Power Sales	241,341	14%
Total Fossil Fuel-Related Electrical System Energy Losses	524,033	31%
Total Fossil Fuel-Related Electricity Exports	30,771	2%
Natural Gas Used in Buildings (Other Than Electricity)	202,007	12%
Fossil Fuels Used in Transportation	551,482	33%
Other Fossil Fuel Consumption	123,375	7%
Total	1,673,009	100%

² Percentages and totals may not add up as expected due to rounding or other errors.

Table 3. Share of Fossil Fuel Consumption by Primary Source in Missouri, 1960 – 2012.

Year	Coal	Natural Gas	All Petroleum Products
1960	20.23%	31.97%	47.79%
1961	18.74%	33.59%	47.67%
1962	20.04%	33.26%	46.70%
1963	19.62%	33.58%	46.80%
1964	19.25%	34.85%	45.89%
1965	18.97%	34.81%	46.22%
1966	18.61%	34.88%	46.51%
1967	17.98%	34.93%	47.08%
1968	18.80%	33.02%	48.19%
1969	20.16%	33.53%	46.31%
1970	21.76%	33.70%	44.54%
1971	22.43%	32.96%	44.61%
1972	24.32%	31.15%	44.53%
1973	26.62%	29.48%	43.89%
1974	27.19%	29.32%	43.49%
1975	30.39%	26.27%	43.34%
1976	31.34%	25.52%	43.13%
1977	32.73%	23.89%	43.38%
1978	31.52%	23.38%	45.10%
1979	33.90%	22.50%	43.60%
1980	37.55%	22.82%	39.64%
1981	39.44%	21.17%	39.39%
1982	38.73%	21.03%	40.24%
1983	41.59%	19.57%	38.84%
1984	42.38%	19.25%	38.38%
1985	39.45%	19.68%	40.87%
1986	38.86%	18.53%	42.61%
1987	39.23%	17.42%	43.35%
1988	38.83%	18.05%	43.11%
1989	39.08%	18.07%	42.84%
1990	39.45%	17.65%	42.90%
1991	38.89%	18.84%	42.27%
1992	38.28%	17.68%	44.03%
1993	34.04%	20.43%	45.54%
1994	36.86%	18.30%	44.84%
1995	38.34%	18.15%	43.52%
1996	38.68%	18.22%	43.10%
1997	40.51%	17.29%	42.20%
1998	40.84%	15.35%	43.81%
1999	39.75%	15.58%	44.67%
2000	41.60%	17.45%	40.94%
2001	41.39%	16.68%	41.93%
2002	41.83%	16.08%	42.09%
2003	43.96%	14.71%	41.33%
2004	44.05%	14.69%	41.26%
2005	44.80%	14.66%	40.54%
2006	45.08%	14.03%	40.89%
2007	43.76%	15.15%	41.09%
2008	44.01%	16.57%	39.42%
2009	44.58%	15.53%	39.90%
2010	45.23%	15.92%	38.85%
2011	46.86%	15.62%	37.52%
2012	45.93%	15.48%	38.60%

Table 4. Changes in Fossil Fuel and Total Energy Consumption in Missouri from 1960 Levels, 1960 – 2012.

Year	Fossil Fuel Consumption	Total Energy Consumption
1960		
1961	0.13%	-0.13%
1962	6.64%	4.44%
1963	8.99%	6.05%
1964	12.78%	9.94%
1965	18.34%	15.91%
1966	21.30%	22.50%
1967	24.43%	25.83%
1968	33.69%	34.59%
1969	43.59%	40.63%
1970	51.95%	45.48%
1971	55.23%	47.43%
1972	62.75%	53.73%
1973	70.52%	57.65%
1974	66.31%	55.46%
1975	67.58%	56.97%
1976	76.90%	63.53%
1977	82.25%	67.33%
1978	82.41%	72.94%
1979	78.99%	70.08%
1980	67.56%	58.11%
1981	60.91%	51.64%
1982	60.13%	51.37%
1983	60.63%	51.69%
1984	65.75%	53.67%
1985	58.96%	56.22%
1986	56.10%	56.43%
1987	59.35%	59.00%
1988	66.84%	66.71%
1989	66.73%	68.00%
1990	61.91%	64.85%
1991	62.53%	68.58%
1992	61.52%	67.51%
1993	62.68%	80.16%
1994	73.42%	81.31%
1995	83.35%	87.66%
1996	93.13%	97.18%
1997	95.96%	96.85%
1998	101.68%	101.86%
1999	104.64%	106.30%
2000	96.04%	99.66%
2001	104.89%	103.39%
2002	105.37%	105.00%
2003	114.26%	105.70%
2004	116.99%	107.21%
2005	120.83%	117.04%
2006	117.71%	115.36%
2007	117.21%	121.58%
2008	113.28%	118.16%
2009	103.34%	107.06%
2010	109.81%	115.42%
2011	108.60%	108.80%
2012	98.06%	101.40%

Table 5. Yearly Changes in Total Fossil Fuel Expenditures in Missouri, 1970 – 2012.

Year	Total Fossil Fuel Expenditures
1970	
1971	8.56%
1972	6.56%
1973	14.67%
1974	33.23%
1975	11.77%
1976	13.65%
1977	15.30%
1978	6.43%
1979	26.86%
1980	18.21%
1981	9.28%
1982	4.88%
1983	-4.73%
1984	0.23%
1985	-2.51%
1986	-20.06%
1987	5.79%
1988	3.45%
1989	6.57%
1990	8.71%
1991	-3.60%
1992	-1.06%
1993	2.84%
1994	3.03%
1995	1.74%
1996	18.95%
1997	0.74%
1998	-10.21%
1999	8.82%
2000	22.27%
2001	6.35%
2002	-10.21%
2003	17.57%
2004	16.86%
2005	25.09%
2006	9.79%
2007	9.20%
2008	13.67%
2009	-28.01%
2010	15.16%
2011	19.33%
2012	-3.16%

Table 6. Changes in Total Fossil Fuel Expenditures in Missouri from 1970 Levels, 1970 – 2012.

Year	Total Fossil Fuel Expenditures
1970	
1971	8.56%
1972	15.67%
1973	32.65%
1974	76.73%
1975	97.54%
1976	124.50%
1977	158.86%
1978	175.50%
1979	249.49%
1980	313.14%
1981	351.47%
1982	373.51%
1983	351.13%
1984	352.16%
1985	340.79%
1986	252.36%
1987	272.76%
1988	285.63%
1989	310.95%
1990	346.75%
1991	330.66%
1992	326.08%
1993	338.19%
1994	351.47%
1995	359.34%
1996	446.41%
1997	450.44%
1998	394.25%
1999	437.85%
2000	557.63%
2001	599.38%
2002	527.99%
2003	638.33%
2004	762.83%
2005	979.33%
2006	1084.94%
2007	1193.91%
2008	1370.84%
2009	958.80%
2010	1119.30%
2011	1355.03%
2012	1309.03%