

Wisconsin Coal Use, in Btu, by Economic Sector

TOTAL
COAL
CONSUMPTION
6.0%

Wisconsin's total coal consumption decreased 6.0 percent in 2011.

Coal use declined in all sectors because of decreased economic activity in 2011, and increased use of natural gas.

Wisconsin total coal use has increased by 87.4 percent since 1975. Industrial coal consumption decreased 1.4 percent in 2011. Commercial sector use of coal is limited primarily to state facilities and large institutions, and decreased by 13.3 percent.

1970-2011 TRILLIONS OF BTU AND PERCENT OF TOTAL

This table represents a conversion from tons to trillions of Btus. The conversion factor from tons to Btus of coal depends on the type of coal used in the sector. For example, the industrial and commercial sectors use bituminous coal with a high energy content (21.0 to 23.6 MMBtu/ton), where the utility sector uses sub-bituminous coal with a lower energy and sulfur content (19.6 MMBtu/ton). Utilities use low-sulfur coal to conform to regulations addressing sulfur emissions from utilities.

Year	Residential		Commercial		Industrial		Electric Utility ^a		Total	Total End Use
1970	9.5	2.7%	17.7	5.0%	97.1	27.3%	231.1	65.0%	355.4	124.3
1975	3.8	1.4%	7.1	2.7%	40.9	15.6%	210.5	80.3%	262.3	51.8
1980	2.3	0.7%	4.4	1.4%	47.2	14.5%	270.7	83.4%	324.6	53.9
1985	0.9	0.2%	4.4	1.2%	51.4	13.7%	317.7	84.9%	374.4	56.7
1990	0.4	0.1%	4.5	1.1%	51.9	12.6%	354.5	86.2%	411.4	56.9
1995	0.3	0.1%	3.8	0.8%	47.2	10.2%	412.4	88.9%	463.7	51.3
1996	0.3	0.1%	4.6	0.9%	43.1	8.9%	438.8	90.1%	486.9	48.1
1997	0.3	0.1%	4.6	0.9%	43.2	8.5%	462.0	90.6%	510.1	48.1
1998	0.3	0.1%	4.8	1.0%	41.9	8.4%	448.9	90.5%	495.8	46.9
1999	0.2	0.0%	5.0	1.0%	40.7	8.1%	459.6	90.9%	505.5	45.9
2000	0.2	0.0%	4.8	0.9%	43.0	8.3%	471.4	90.8%	519.4	48.0
2001	0.2	0.0%	4.8	0.9%	45.3	8.7%	471.6	90.4%	521.9	50.3
2002	0.2	0.0%	4.5	0.9%	46.7	9.2%	457.1	89.9%	508.5	51.3
2003	0.2	0.0%	4.7	0.9%	45.6	8.7%	476.6	90.4%	527.0	50.5
2004	0.1	0.0%	4.8	0.9%	47.0	8.7%	485.4	90.3%	537.2	51.9
2005	0.1	0.0%	4.8	0.9%	45.1	8.5%	481.7	90.6%	531.7	50.0
2006	0.1	0.0%	4.8	0.9%	46.7	9.0%	464.1	90.0%	515.7	51.6
2007	0.1	0.0%	3.9	0.8%	46.6	9.0%	465.4	90.2%	515.9	50.5
2008	0.0	0.0%	2.7	0.5%	45.5	8.4%	492.6	91.1%	540.8	48.2
2009	0.0	0.0%	2.0	0.4%	41.1	8.5%	441.4	91.1%	484.5	43.1
2010	0.0	0.0%	2.2	0.4%	42.1	8.1%	478.7	91.5%	523.0	44.3
2011 ^p	0.0	0.0%	1.9	0.4%	41.6	8.5%	448.0	91.2%	491.5	43.5

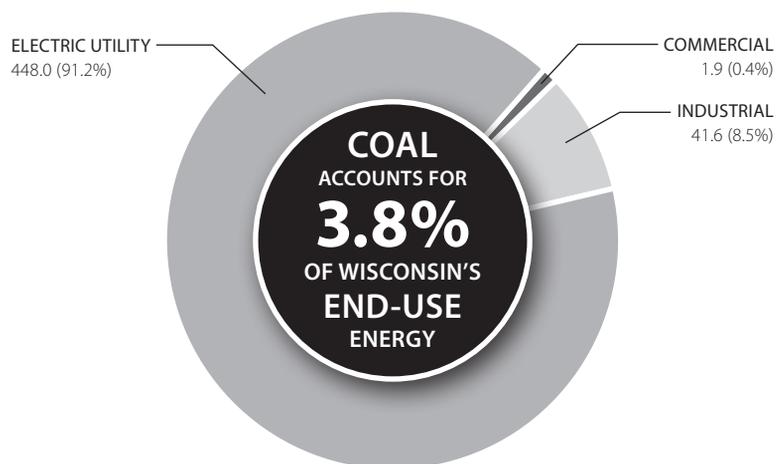
^a Includes petroleum coke co-fired with coal.

^p Preliminary estimates.

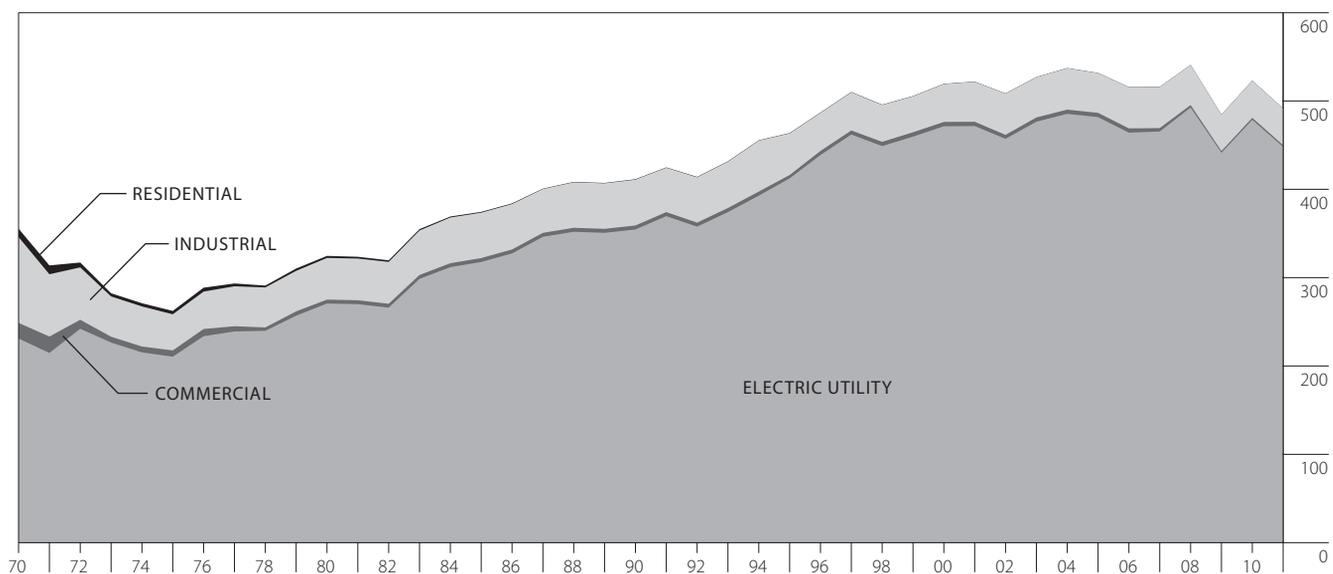
Source: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report*, [DOE/EIA-0214(94)] (October 1996); *Coal Distribution* [DOE/EIA-0125 (95/4Q)] (1980-1995); Wisconsin Department of Natural Resources, *Annual Survey of Point Source Emissions*, unpublished (1971-2011); annual reports of various Wisconsin electric generating utilities (1995-2011); U.S. Department of Commerce, Bureau of the Census of Housing (1970, 1980, 1990 and 2000).

Wisconsin Coal Use, by Economic Sector

2011 TRILLIONS OF BTU AND PERCENT OF TOTAL



1970-2011 TRILLIONS OF BTU



Source: Wisconsin State Energy Office.

Wisconsin Coal Use, in Tons, by Economic Sector

COAL
USE DECREASED
1,604
THOUSAND
TONS

The total weight of coal used in Wisconsin decreased 1,604 thousand tons (6.1 percent) in 2011.

1970-2011 THOUSANDS OF TONS AND PERCENT OF TOTAL

Year	Residential		Commercial		Industrial		Electric Utility ^a		Total
1970	453	2.9%	840	5.4%	3,870	25.0%	10,294	66.6%	15,457
1975	202	1.7%	375	3.1%	1,716	14.2%	9,776	81.0%	12,069
1980	113	0.7%	210	1.3%	2,001	12.5%	13,715	85.5%	16,039
1985	40	0.2%	211	1.1%	2,176	11.7%	16,208	87.0%	18,635
1990	20	0.1%	216	1.1%	2,200	10.7%	18,087	88.1%	20,523
1995	15	0.1%	179	0.8%	1,998	8.6%	21,042	90.6%	23,234
1996	14	0.1%	220	0.9%	1,827	7.5%	22,386	91.6%	24,447
1997	13	0.1%	220	0.9%	1,830	7.1%	23,571	92.0%	25,634
1998	12	0.0%	228	0.9%	1,773	7.1%	22,904	91.9%	24,917
1999	11	0.0%	237	0.9%	1,724	6.8%	23,450	92.2%	25,422
2000	10	0.0%	230	0.9%	1,820	7.0%	24,050	92.1%	26,110
2001	9	0.0%	229	0.9%	1,919	7.3%	24,062	91.8%	26,219
2002	8	0.0%	213	0.8%	1,978	7.8%	23,323	91.4%	25,522
2003	7	0.0%	226	0.9%	1,931	7.3%	24,314	91.8%	26,478
2004	6	0.0%	227	0.8%	1,989	7.4%	24,765	91.8%	26,987
2005	5	0.0%	228	0.9%	1,911	7.2%	24,577	92.0%	26,721
2006	4	0.0%	230	0.9%	1,976	7.6%	23,679	91.5%	25,889
2007	3	0.0%	185	0.7%	1,972	7.6%	23,745	91.7%	25,905
2008	0	0.0%	131	0.5%	1,927	7.1%	25,132	92.4%	27,190
2009	0	0.0%	94	0.4%	1,742	7.2%	22,518	92.5%	24,354
2010	0	0.0%	105	0.4%	1,785	6.8%	24,423	92.8%	26,313
2011^p	0	0.0%	91	0.4%	1,760	7.1%	22,858	92.5%	24,709

^a Includes petroleum coke co fired with coal.

^p Preliminary estimates.

Source: U.S. Department of Energy, Energy Information Administration, *State Energy Data Report* [DOE/EIA-0214(94)] (October 1996); U.S. Department of Commerce, Bureau of Census, *Census of Manufacturers and Annual Survey of Manufacturers, Fuels and Electric Energy Consumed* (1971-1982); Wisconsin Department of Natural Resources, *Annual Survey of Point Source Emissions*, unpublished (1971-2011); annual reports of various Wisconsin electric generating utilities (1995-2011); U.S. Department of Commerce, Bureau of the Census of Housing (1970, 1980, 1990 and 2000); http://www.eia.doe.gov/cneaf/electricity/epa/epa_sprdshts.html.

Wisconsin Electric Utility Coal Use, by Plant

1975-2011 THOUSANDS OF TONS

Utility/Plant Name	1975	1980	1985	1990	1995	2000	2005	2008	2009	2010	2011 ^p
Dairyland Power Cooperative											
Alma	502	1,188	1,268	1,506	1,231	1,754	2,031	2,010	1,732	1,441	1,314
Genoa	801	915	914	680	788	928	1,172	1,172	985	940	543
Stoneman ^c	111	74	44	30	0	0	38	13	13	0	0
Madison Gas and Electric Co.											
Blount Street ^d	77	144	61	95	137	215	228	115	15	12	0
Northern States Power Co.											
Bay Front	52	100	36	45	30	115	152	132	100	60	51
Wisconsin Electric Power Co.											
Oak Creek ^f	2,873	2,542	2,528	1,522	2,093	3,410	3,255	3,371	2,687	3,670	4,642
Pleasant Prairie	0	581	2,564	4,703	5,073	5,295	5,373	4,982	4,762	4,730	4,096
Port Washington ^d	691	683	348	126	430	641	0	0	0	0	0
Valley	536	774	528	463	458	690	780	761	612	566	484
Wisconsin Power and Light Co.											
Blackhawk ^e	24	30	8	0	0	0	0	0	0	0	0
Columbia	1,025	3,603	2,991	3,665	4,238	4,355	4,274	4,563	4,053	4,589	4,396
Edgewater	976	1,056	2,112	2,180	2,702	2,531	2,533	2,777	2,473	2,624	2,674
Nelson Dewey	512	552	541	497	615	580	729	642	569	632	575
Rock River	293	245	317	198	253	2	0	0	0	0	0
Wisconsin Public Services Corp.											
Pulliam	753	744	489	674	1,130	1,444	1,627	1,379	958	1,161	584
Weston	239	329	1,275	1,555	1,702	1,972	2,143	2,859	3,363	3,864	3,404
Municipal Utilities											
Manitowoc ^a	142	67	91	116	160	108	140	240	144	134	95
Menasha	58	28	25	25	2	10	6	116	52	0	0
Total^p	9,776	13,715	16,208	18,087	21,042	24,050	24,577	25,132	22,518	24,423	22,858

^a Includes petroleum coke co-fired with coal.

^b The totals do not always match the sum of the individual plants in this table. The totals are drawn from the federal Energy Information Administration, while the plant-specific data comes from the Wisconsin Department of Natural Resources emissions data. Starting in 2008, the totals reflect the WI DNR data.

^c Biomass replaced coal as the primary fuel.

^d Natural Gas replaced coal as the primary fuel.

^e This power plant is retired.

^f The Oak Creek coal use also includes the Elm Road generating station.

^p Preliminary estimates.

Source: Wisconsin Department of Natural Resources, Annual Survey of Point Source Emissions, unpublished (1975-2011); annual reports of various Wisconsin electric generating utilities (1995-2011); U.S. Department of Energy, *Electric Power Monthly* [DOE/EIA-0226 (2009/03)](March 2012).

COAL
USE BY
ELECTRIC
UTILITIES
6.4%

Coal use by Wisconsin's electric utilities decreased 6.4 percent in 2011. The largest power plants—Pleasant Prairie, Oak Creek, Elm Road and Columbia—used 57.5 percent of the utility coal burned in Wisconsin, while Wisconsin's newest coal plant Weston 4 (Wisconsin Public Service) is responsible for most of the increased coal consumption and uses 8.6 percent of Wisconsin's utility coal.

A map of Wisconsin's generating plants, including major coal plants, can be found in the Map Appendix at the back of the book.

Wisconsin Manufacturing Industry Coal Use, by Industry Group

PAPER & ALLIED PRODUCTS
91.1%

Wisconsin's industrial coal use continues to be dominated by paper and allied products, which consumed 91.1 percent of the industrial coal used in 2011.

Entries in the table without figures indicate coal tons of less than 500 tons.

1971-2011 THOUSANDS OF TONS

SIC Industry Group	1971	1975	1980	1985	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011 ^p
20 Food and Kindred	213	56	64	72	43	10	15	21	21	22	14	12	9	10
26 Paper and Allied	1,940	1,469	1,737	1,878	1,863	1,825	1,700	1,765	1,833	1,838	1,835	1,648	1,661	1,603
32 Stone, Clay and Glass	79	13	8	49	116	120	80	121	116	108	51	61	64	70
33 Primary Metals	114	50	80	66	95	—	—	—	—	—	27	21	51	77
37 Transport Equipment	107	35	30	37	32	22	12	4	6	4	—	—	—	—
Total Manufacturing	2,810	1,716	2,001	2,176	2,200	1,998	1,820	1,911	1,976	1,972	1,927	1,742	1,785	1,760

^p Preliminary.

Source: U.S. Department of Commerce, Bureau of the Census, *Census of Manufacturers*, and *Annual Survey of Manufacturers* (1972-1981); U.S. Department of Energy, Energy Information Administration, *Coal Distribution* [DOE/EIA-0125 (95/4Q)] (1980-1995); Wisconsin Department of Natural Resources, *Annual Survey of Point Source Emissions*, unpublished (1972-2011).

Coal Deliveries to Wisconsin Industries, by Region of Origin

COAL FROM WESTERN U.S.
41.3%

Coal currently used by Wisconsin industry comes primarily from the western part of the country (41.3 percent). There has been a gradual decline in industrial coal use. Industrial coal from Illinois has declined 52.7 percent since 1985.

1975-2011 THOUSANDS OF TONS

Origin ^a	1975	1980	1985	1990	1995	2000	2005 ^r	2006 ^r	2007	2008	2009 ^r	2010	2011 ^p
Eastern PA	39	136	24	4	5	8	137	152	148	141	48	18	45
Western PA	11	125	192	38	33	11	0	0	0	0	0	0	0
Northern WV	93	339	150	230	384	75	174	110	98	78	99	93	93
Ohio	91	129	43	0	10	0	37	18	19	0	0	0	0
Southern No. 1 (WV and VA) ^b	35	88	2	1	15	190	13	4	0	0	0	2	0
Southern No. 2 (WV and KY) ^c	1,210	497	757	628	529	326	244	248	261	259	126	173	150
Western KY	111	127	147	98	196	179	192	193	197	195	96	91	99
Illinois	515	520	624	300	228	147	102	107	106	135	307	310	295
Indiana	55	114	89	43	67	52	207	202	215	217	213	194	194
Western U.S.	11	3	0	0	0	0	0	0	0	0	0	0	0
CO and NM ^d	0	0	0	0	0	0	190	327	322	203	103	207	218
Wyoming	24	16	0	346	250	521	368	424	423	446	421	405	372
Utah	1	0	0	0	0	0	70	27	0	7	13	18	19
MO and WA ^e	281	220	158	0	15	0	0	0	0	0	0	5	7
Total	2,477	2,314	2,186	1,688	1,733	1,509	1,734	1,811	1,789	1,680	1,427	1,516	1,493

^a Includes shipments to Wisconsin end users and dealers. Does not include deliveries to Superior Midwest Energy Terminal for trans-shipment from Wisconsin.

^b Includes only West Virginia Southern beginning in 2010.

^c Includes East Kentucky beginning in 2010.

^d Includes only Colorado beginning in 2010.

^e Includes only Missouri beginning in 2010.

^p Preliminary.

^r Revised.

Source: U.S. Bureau of Mines, "Bituminous Coal and Lignite Distribution," *Mineral Industry Surveys* (1973-1976); U.S. Department of Energy, Energy Information Administration, *Bituminous and Subbituminous Coal and Lignite Distribution* (1977-1979), *Coal Industry Annual* [DOE/EIA-0584](2000), *Coal Distribution* [DOE/EIA-0125 (99/4Q)] (1980-1999), *Quarterly Coal Report* [DOE/EIA - 0121(2010/4Q)] (March 2012), www.eia.gov/coal/distribution/quarterly and www.eia.gov/coal/distribution/annual

Coal Deliveries to Wisconsin, by Transportation Mode and Type of Receiving Facility

1975-2011 THOUSANDS OF TONS

Transportation Mode and Type of Receiving Facility	1975	1980	1985	1990	1995	2000	2005 ^r	2006	2007	2008 ^r	2009 ^r	2010 ^r	2011 ^p
Rail													
Electric Utilities	7,631	11,140	13,194	17,237	18,815	25,072	21,723	25,181	24,063	25,368	21,890	23,027	22,782
Coke Plants	29	11	0	0	0	0	0	0	0	0	0	0	0
Other Industrial	850	1,047	846	811	772	1,169	1,176	1,441	1,377	1,469	1,299	1,321	1,164
Residential/Commercial	170	3	5	1	3	33	417	28	56	96	75	59	39
Subtotal	8,680	12,201	14,045	18,049	19,590	26,274	23,316	26,650	25,496	26,933	23,263	24,407	23,985
Great Lakes Shipping													
Electric Utilities	2,211	1,713	1,118	429	1,005	753	1,571	1,483	518	0	59	0	0
Coke Plants	224	167	0	0	0	0	0	0	0	0	0	0	0
Other Industrial	992	981	1,024	822	788	331	47	6	39	0	0	0	155
Residential/Commercial	212	46	11	1	0	0	0	0	0	41	14	34	44
Subtotal	3,639	2,907	2,153	1,252	1,793	1,084	1,618	1,489	557	41	72	34	200
River Barge													
Electric Utilities	1,756	1,487	1,042	855	1,083	32	1,507	401	454	49	434	176	0
Other Industrial	0	62	246	55	120	4	23	6	18	11	8	12	11
Residential/Commercial	0	1	10	2	126	129	0	0	0	32	24	19	10
Subtotal	1,756	1,550	1,298	912	1,329	165	1,530	407	472	92	466	207	21
Truck													
Electric Utilities	0	0	2	31	0	0	0	144	50	70	0	59	59
Other Industrial	0	1	45	1	53	5	488	359	355	199	120	184	162
Residential/Commercial	0	0	0	0	0	0	1	1	0	1	0	0	0
Subtotal	0	1	47	32	53	5	489	504	405	271	120	243	222
Total^a	14,075	16,659	17,543	20,245	22,765	27,528	26,953	29,050	26,930	27,336	23,921	24,891	24,428

^a Total data reported in this table may differ from other tables because of different sources. Subtotals may not add due to rounding.

^p Preliminary.

^r Revised.

Source: U.S. Bureau of Mines, "Bituminous Coal and Lignite Distribution", *Mineral Industry Surveys* (1973-1976); U.S. Department of Energy, Energy Information Administration, *Bituminous and Subbituminous Coal and Lignite Distribution* (1977-1979), *Coal Industry Annual* [DOE/EIA - 0584] (2000), *Coal Distribution* [DOE/EIA-0125 (99/4Q)] (1980-1999) and *Quarterly Coal Report* [DOA/EIA-0121 (2010/4Q)] (March 2012) (2001-2011), www.eia.gov/coal/distribution/quarterly and www.eia.gov/coal/distribution/annual

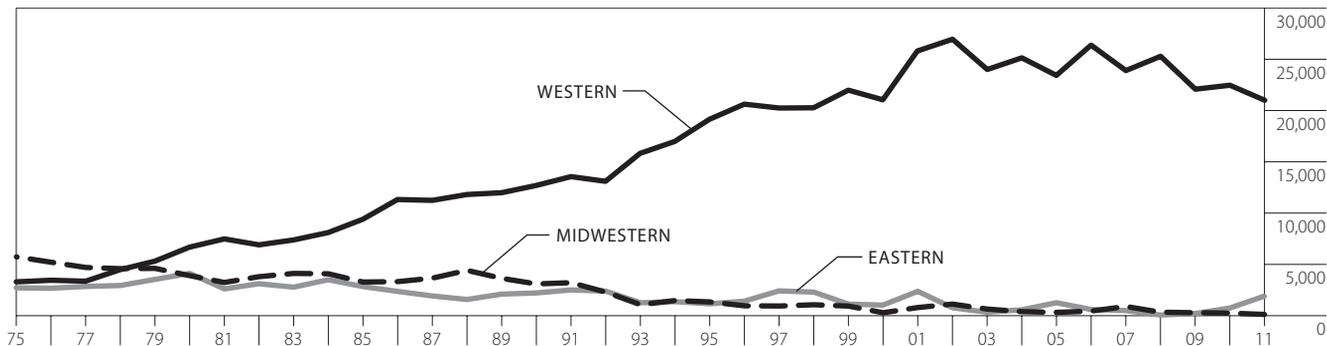
COAL
SHIPPED BY RAIL

1.7%

Coal shipped by rail decreased 1.7 percent in 2011. Total coal deliveries decreased by 1.9 percent. Ninety-eight percent of coal is delivered to Wisconsin by rail. The long term increase in coal tonnage shipped by rail reflects the increased use of low sulfur western coal. Use of low sulfur eastern coal shipped by the Great Lakes, and Midwest coal shipped by river barge, is expected to continue at near current levels. Changes in Wisconsin coal deliveries will be concentrated in rail deliveries of western coal for electric utilities.

Coal Deliveries to Wisconsin Power Plants, by Region of Origin

1975-2011 THOUSANDS OF TONS



Coal Deliveries to Wisconsin Power Plants, by State of Origin

COAL DELIVERIES
1.8%

Coal deliveries to Wisconsin power plants decreased 1.8 percent. This resulted in a decrease of coal stockpiled at Wisconsin utilities for future use.

1975-2011 THOUSANDS OF TONS

State	1975	1980	1985	1990	1995	2000	2005 ^r	2006	2007	2008 ^r	2009 ^r	2010	2011 ^p
Eastern													
Kentucky	2,073	2,816	2,122	196	95	47	758	269	179	0	10	10	10
Pennsylvania	572	1,007	639	1,760	941	826	0	3	12	0	76	650	1,764
West Virginia	5	233	0	136	57	34	251	260	240	0	0	18	67
Other States	1	0	9	59	0	62	190	2	0	0	59	0	0
Subtotal	2,651	4,056	2,770	2,151	1,093	969	1,199	534	431	0	145	678	1,842
Midwestern													
Illinois	4,857	3,364	1,478	1,136	1,232	0	97	297	686	155	220	183	59
Indiana	785	205	1,731	1,893	46	221	159	84	146	120	5	3	0
Ohio	27	272	0	0	0	0	0	0	0	0	0	0	0
Other States	0	1	9	0	0	0	0	0	0	0	0	0	0
Subtotal	5,669	3,842	3,218	3,029	1,278	221	256	381	832	275	225	186	59
Western													
Montana	2,161	2,575	2,235	1,983	2,102	463	591	1,237	1,961	562	501	535	482
Wyoming	1,053	4,042	7,101	10,605	15,223	19,192	20,581	23,150	19,811	23,307	20,841	21,383	19,841
Other States ^a	20	0	0	43	1,758	1,320	2,174	1,907	2,050	1,342	670	482	617
Subtotal	3,234	6,617	9,336	12,631	19,083	20,975	23,346	26,294	23,822	25,212	22,012	22,400	20,940
Total	11,554	14,515	15,324	17,811	21,454	22,165	24,801	27,209	25,085	25,487	22,382	23,263	22,841

^a Colorado.
^p Preliminary.
^r Revised.

Source: U.S. Department of Energy, *Cost and Quality of Fuels for Electric Utility Plants 2000* [DOE/EIA-0191(2001)] (May 2001), and *Quarterly Coal Report* [DOE/EIA-0121 (2009/4Q)] (March 2012), www.eia.gov/coal/distribution/quarterly and www.eia.gov/coal/distribution/annual