

Wisconsin Electric Utility Sales, by Economic Sector

1970-2012 MILLIONS OF kWh AND PERCENT OF TOTAL

Year	Residential		Commercial ^b		Industrial		Agricultural ^{c,d}		Total ^e
1970	8,761	35.4%	5,738	23.2%	9,188	37.2%	1,028	4.2%	24,715
1975	10,893	34.8%	8,452	27.0%	10,721	34.3%	1,210	3.9%	31,276
1980	12,513	33.2%	11,243	29.8%	12,450	33.0%	1,539	4.1%	37,745
1985	13,257	31.8%	12,783	30.6%	13,940	33.4%	1,745	4.2%	41,725
1990 ^b	14,740	30.0%	15,808	32.1%	17,005	34.6%	1,645	3.3%	49,198
1995	17,040	29.4%	18,042	31.1%	21,290	36.7%	1,595	2.8%	57,967
1996	17,100	29.1%	18,588	31.6%	21,471	36.6%	1,585	2.7%	58,744
1997	16,935	28.2%	18,881	31.4%	22,703	37.8%	1,575	2.6%	60,094
1998	17,522	28.2%	19,334	31.2%	23,640	38.1%	1,565	2.5%	62,061
1999	17,942	28.2%	20,781	32.7%	23,264	36.6%	1,560	2.5%	63,547
2000	18,199	28.1%	21,407	33.1%	23,528	36.4%	1,555	2.4%	64,689
2001	18,990	28.8%	21,614	32.8%	23,823	36.1%	1,550	2.3%	65,977
2002 ^f	20,030	29.9%	22,290	33.3%	23,134	34.5%	1,545	2.3%	66,999
2003	21,364	31.8%	20,056	29.8%	24,226	36.0%	1,595	2.4%	67,241
2004	21,120	31.2%	19,951	29.4%	25,228	37.2%	1,501	2.2%	67,800
2005	21,385	30.4%	21,968	31.2%	25,376	36.1%	1,606	2.3%	70,335
2006	20,729	29.7%	22,232	31.8%	25,286	36.2%	1,574	2.3%	69,821
2007	21,454	30.1%	23,032	32.3%	25,436	35.7%	1,379	1.9%	71,301
2008	20,985	29.9%	22,978	32.8%	24,672	35.2%	1,486	2.1%	70,121
2009	20,458	30.9%	21,995	33.2%	22,390	33.8%	1,443	2.2%	66,286
2010	21,323	31.0%	22,514	32.7%	23,452	34.1%	1,463	2.1%	68,752
2011 ^r	21,249	31.0%	22,605	32.9%	23,407	34.1%	1,351	2.0%	68,612
2012 ^p	21,012	30.5%	22,727	33.0%	23,561	34.2%	1,520	2.2%	68,820

TOTAL
ELECTRICITY
SALES
0.3%

Total electricity sales increased 0.3 percent in 2012 but have grown 2.7 percent over the past ten years. In 2012, electricity sales decreased in the Residential sector, but increased in all other sectors.

A map of Wisconsin's major electric service territories, generating facilities and transmission lines can be found in the Map Appendix.

a Includes sales to public authorities (including sales for street and highway lighting) and utility company interdepartmental sales (for example, from electric to gas department of a combined utility).

b Beginning in 1989, U.S. DOE data sources have been used.

c Beginning in 2003, USDA agricultural statistics were used for electricity sales in this sector. To accommodate this shift in data sources, numbers in the residential and agricultural sectors have been historically revised.

d The agricultural sector does not include processing plants for crops and other agricultural products; these are classified under the commercial sector.

e Total sales may vary from other pages due to independent rounding.

f In 2002, EIA shifted their commercial and industrial criteria. Previous editions of this publication corrected for this shift, but revisions based on availability of firm agricultural electric consumption data prompted a historical revision starting in 1989. This publication no longer corrects for shifts in EIA data collection methods which are reflected in 2003.

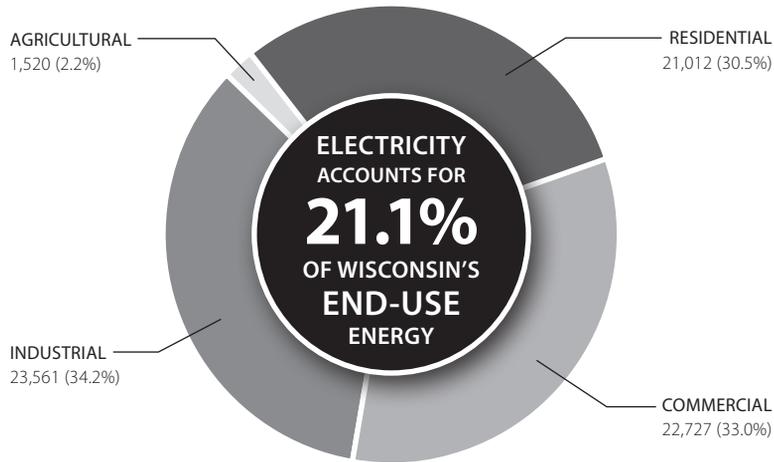
p Preliminary estimates.

r Revised.

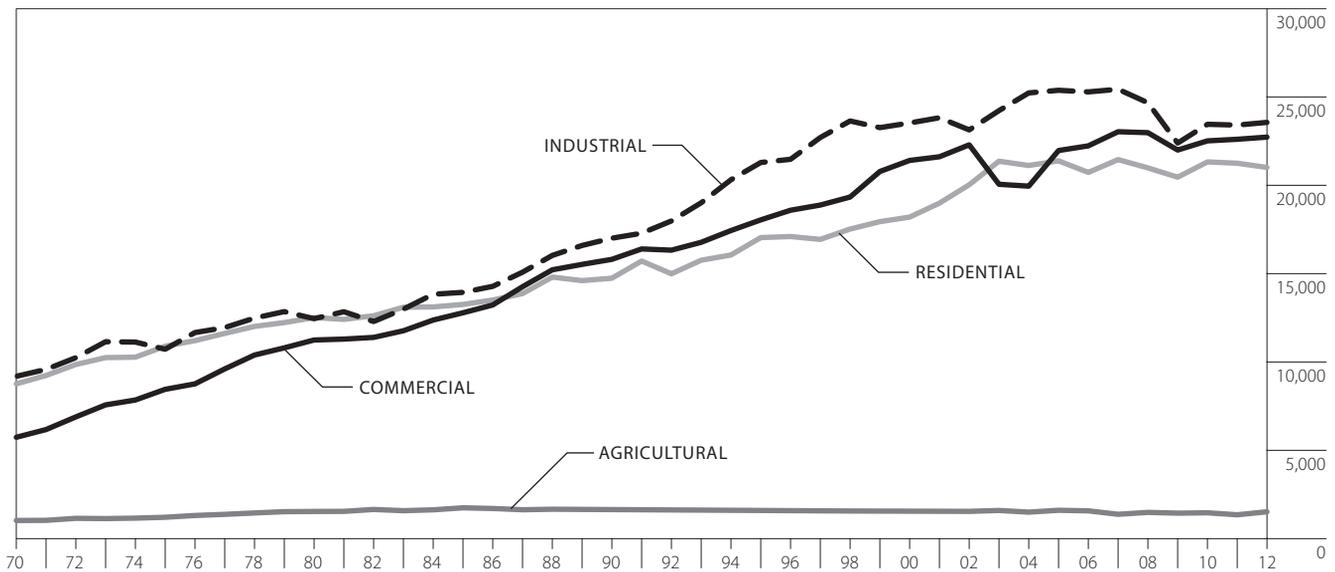
Source: Sectoral disaggregation by Wisconsin State Energy Office, based on Public Service Commission of Wisconsin, *Statistics of Wisconsin Public Utilities*, Bulletin #8 (1970-1994); U.S. Department of Agriculture, Rural Electrification Administration, *Annual Statistical Report*, REA Bulletin 1-1 (1970-1994); U.S. Department of Energy, *Electric Sales and Revenue 1989-1999* [DOE/EIA-0540 (99)] (October 2000), *Electric Power Monthly*, Table 5.4B [DOE/EIA-0226 (2013/05)] (May 2013) (1989-2012). www.eia.gov/electricity/monthly/index.cfm; U.S. Department of Agriculture, Economic Research Service, electricity expenditure data at <http://www.ers.usda.gov/> (2009-2012).

Wisconsin Electric Utility Sales, by Economic Sector

2012 MILLIONS OF kWh AND PERCENT OF TOTAL



1970-2012 MILLIONS OF kWh



Source: Wisconsin State Energy Office.

Wisconsin Electricity Sales to Ultimate Customers, by Private and Municipal Utilities and Power Cooperatives

1970-2012 MILLIONS OF kWh AND PERCENT OF TOTAL

Year	Private Utilities		Municipal Utilities		Power Cooperatives		Total
1970	21,515	87.1%	2,160	8.7%	1,040	4.2%	24,715
1975	27,021	86.4%	2,784	8.9%	1,471	4.7%	31,276
1980	32,335	85.7%	3,547	9.4%	1,864	4.9%	37,746
1985	35,497	85.1%	4,132	9.9%	2,096	5.0%	41,725
1990 ^a	41,653	84.7%	5,263	10.7%	2,282	4.6%	49,198
1995	48,814	84.2%	6,479	11.2%	2,674	4.6%	57,967
1996	49,332	84.0%	6,635	11.3%	2,777	4.7%	58,744
1997	50,640	84.3%	6,627	11.0%	2,827	4.7%	60,094
1998	52,242	84.2%	6,992	11.3%	2,827	4.6%	62,061
1999	53,517	84.2%	7,215	11.4%	2,815	4.4%	63,547
2000	54,404	84.1%	7,375	11.4%	2,910	4.5%	64,689
2001	55,545	84.2%	7,349	11.1%	3,083	4.7%	65,977
2002	56,250	84.0%	7,523	11.2%	3,226	4.8%	66,999
2003	56,459	84.0%	7,500	11.2%	3,282	4.9%	67,241
2004	57,099	84.0%	7,598	11.2%	3,279	4.8%	67,976
2005	58,899	83.7%	7,950	11.3%	3,487	5.0%	70,336
2006	58,407	83.7%	7,902	11.3%	3,512	5.0%	69,821
2007	59,585	83.6%	8,079	11.3%	3,637	5.1%	71,301
2008	58,429	83.3%	7,947	11.3%	3,746	5.3%	70,122
2009	55,051	83.1%	7,485	11.3%	3,750	5.7%	66,286
2010	57,183	83.2%	7,759	11.3%	3,810	5.5%	68,752
2011 ^r	56,914	83.0%	7,800	11.4%	3,898	5.7%	68,612
2012^p	57,128	83.0%	7,856	11.4%	3,836	5.6%	68,820

Investor owned utilities supply the vast majority of power to Wisconsin electricity customers (83.0 percent). The relative amounts of power supplied by the three types of utilities have changed very little over the past 20 years.

^a Beginning in 1989, U.S. DOE data sources have been used.

^p Preliminary estimates.

^r Revised.

Source: Public Service Commission of Wisconsin, Accounts and Finance Division, *Statistics of Wisconsin Public Utilities*, Bulletin #8, Table 5 (1970-1994); U.S. Department of Agriculture, Rural Electrification Administration, *Annual Statistical Report*, REA Bulletin 1-1, Table 31 (1970-1994); U.S. Department of Energy, *Electric Sales and Revenue 1989-2000* [DOE/EIA-0540 (2000)] (November 2001), and *Electric Power Monthly* [DOE/EIA-0226 (2013/05)] (May 2013) (1989-2012). www.eia.gov/electricity/monthly/index.cfm

Eastern Wisconsin Electric Utility Power Load and Non-Coincident Peak Demand

SUMMER
PEAK
DEMAND
0.2%

Wisconsin's 2012 summer peak electricity demand for the eastern Wisconsin utilities^a increased 0.2 percent due to warmer weather in July. The increase compared to 2011 was 29 megawatts.

WINTER
PEAK
DEMAND
1.2%

Winter peak demand decreased 1.2 percent in 2012 due to warmer December weather. Summer peak demand in 2012 exceeded winter peak demand by 3,718 megawatts. Winter peak demand includes November through February. Because these data are presented annually, winter peak demand in this chart only includes November and December 2012; the peak demand will be adjusted to include January and February in the next edition of this publication.

Non-coincident peak demand is the sum of the individual monthly peak electric demands from Wisconsin's eastern utilities.

1970-2012

Year	Load	Peak Demand		Capacity Factor ^b
	(Millions of kWh)	Summer (MW)	Winter (MW)	(Percent)
1970	22,818	4,125	3,964	63.1
1975	28,616	5,314	4,903	61.5
1980	34,836	6,009	5,525	66.0
1985	39,325	6,464	6,166	69.4
1990 ^c	47,381	8,326	7,210	65.0
1995	55,821	9,833	8,275	64.8
1996	58,408	9,061	8,285	73.4
1997	59,946	9,313	8,302	73.5
1998	59,563	10,099	8,644	67.3
1999	61,990	10,756	8,977	65.8
2000	64,084	10,814	9,152	67.6
2001	61,701	11,645	8,440	60.5
2002	67,698	11,401	8,917	67.8
2003	68,886	11,688	9,192	67.3
2004	68,296	10,981	9,729	70.8
2005	70,441	11,946	9,595	67.3
2006	67,216	12,129	9,238	63.3
2007	68,796	11,698	9,237	67.1
2008	66,931	11,060	9,482	68.9
2009	63,349	11,267	9,114	64.2
2010	65,092	11,568	9,036	64.2
2011 ^r	66,300	12,230	8,642	61.9
2012^p	65,623	12,259	8,541	60.9

^a Wisconsin Electric Power Co., Wisconsin Power and Light Co., Wisconsin Public Service Corp., and Madison Gas and Electric Co.

^b Capacity Factor = Annual Energy Generation (kWh) / [Peak Demand (kW) x 8,760 (hours/year)]

^c Beginning in January 1988, data includes Wisconsin Electric Power Co. generation from Presque Isle, Michigan.

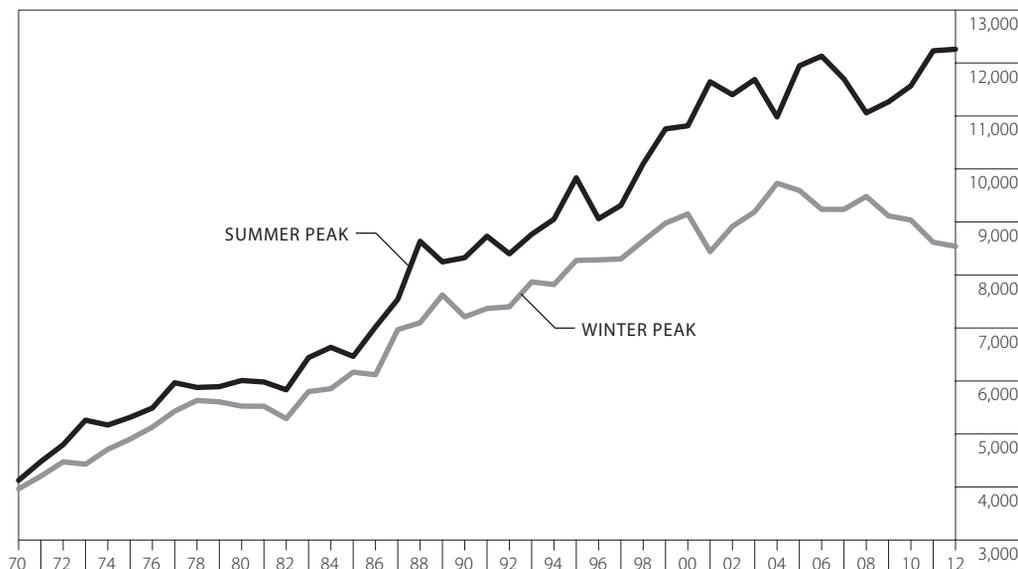
^p Preliminary estimates.

^r Revised.

Source: Wisconsin electric utility annual reports submitted to the Public Service Commission of Wisconsin (1970-2013); www.psc.wi.gov/apps40/annlreport/default.aspx

Eastern Wisconsin Electric Utility Non-Coincident Peak Demand

1970-2012 MEGAWATTS



HIGHEST
PEAK
12,259
MEGAWATTS
JULY 2012

Eastern Wisconsin Electric Utility Power Load and Non-Coincident Peak Demand, by Month

2012

Month	Load (Millions of kWh) ^a	Non-Coincident Peak Demand (MW) ^b
January	5,518	8,642
February	5,054	8,140
March	5,068	7,958
April	4,662	7,385
May	5,250	8,491
June	5,878	11,495
July	7,081	12,259
August	6,230	10,920
September	5,236	10,526
October	5,127	7,879
November	5,288	8,387
December	5,231	8,541
Total	65,623	

The highest non-coincident peak demand in 2012 was seen in July at 12,259 MW.

^a Wisconsin Electric Power Co., Wisconsin Power and Light Co., Wisconsin Public Service Corp., and Madison Gas and Electric Co.

^b Non-coincident peak demand is the sum of the individual monthly peak electric demands from the four utilities listed above for each month.

Source: Wisconsin electric utility annual reports submitted to the Public Service Commission of Wisconsin (2013).

www.psc.wi.gov/apps40/annreport/default.aspx

Wisconsin Electric Generating Capacity, by Type of Plant

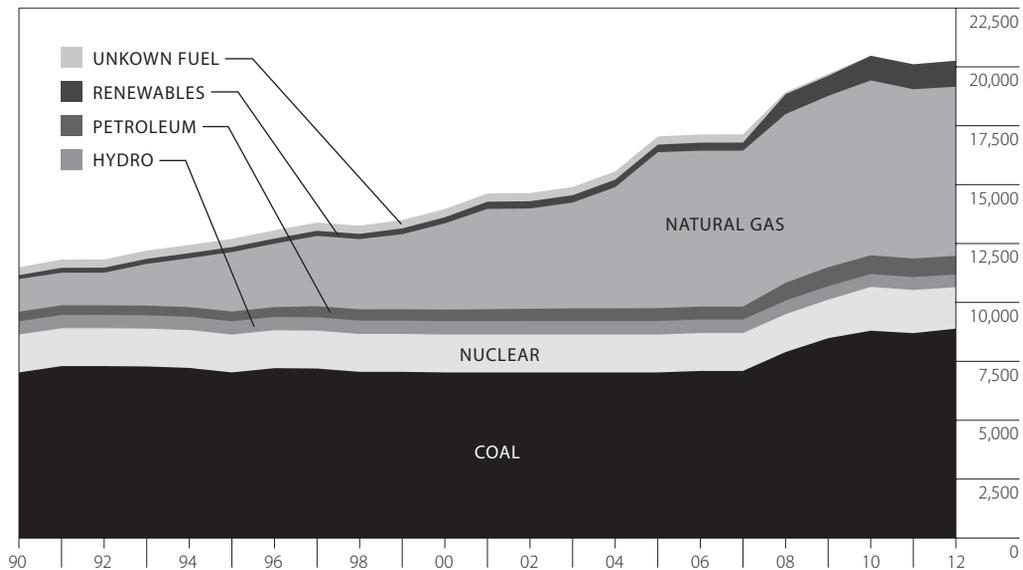
ELECTRIC GENERATION CAPACITY
151.3
MEGAWATTS
(0.8 PERCENT)
IN 2012

In 2012, Wisconsin's electric generation capacity increased by 151.3 megawatts (0.8 percent). These data represent electricity generation capacity by Wisconsin's investor-owned utilities, municipal utilities, electric cooperatives, independent power producers, and other non-utility operations (e.g., paper mills).

The Renewables data include biomass (e.g., wood, paper byproducts), biogas (landfill gas, and methane digester gas), solar photovoltaic and wind. Out-of-state facilities are not included in the Renewables or the hydroelectric figures. These figures include renewable facilities that are not RPS-registered.

All capacity figures are estimates, based on a point-in-time determination.

1990-2012 MEGAWATTS



Year	Coal	Nuclear	Hydro	Petroleum	Natural Gas	Renewables	Unknown Fuel	Total ^{a,b}
1990	7,028	1,609	562	410	1,383	165	337	11,494
1995	7,028	1,609	564	413	2,522	213	350	12,700
1996	7,209	1,609	566	417	2,694	216	350	13,062
1997	7,194	1,609	566	471	2,982	219	350	13,391
1998	7,053	1,609	567	477	2,982	220	350	13,258
1999	7,053	1,609	567	481	3,185	248	350	13,494
2000	7,028	1,609	567	491	3,662	258	350	13,965
2001	7,028	1,609	571	503	4,258	305	350	14,624
2002	7,028	1,609	576	516	4,258	308	350	14,646
2003	7,028	1,609	576	536	4,491	310	350	14,900
2004	7,028	1,609	576	536	5,143	317	350	15,560
2005	7,028	1,609	576	545	6,618	321	350	17,048
2006	7,091	1,609	576	547	6,618	341	350	17,133
2007	7,091	1,609	576	547	6,618	344	350	17,137
2008	7,893	1,608	575	756	7,161	844	89	18,925
2009	8,482	1,634	574	806	7,272	850	89	19,706
2010	8,799	1,861	544	796	7,426	1,044	0	20,470
2011	8,696	1,834	546	790	7,184	1,058	0	20,107
2012 ^p	8,887	1,761	541	790	7,177	1,103	0	20,259

^a Capacity is as of December 31 of each year.

^b Totals might not add due to rounding.

^p Preliminary.

Sources: Energy Information Administration, *Electric Power Annual*, [DOE/EIA-0348(2007)](October 2007), http://www.eia.doe.gov/cneaf/electricity/epa/epa_sprdshts.html. In 2008, this table was historically revised with data from the Public Service Commission of Wisconsin. Public Service Commission of Wisconsin, unpublished electrical capacity data (1990-2012); EIA data were used in previous publications.

Wisconsin Electric Generating Capacity, by Type of Plant and Type of Producer

1990-2012 MEGAWATTS

These data represent the generation capacity of utilities, who are required to have power available to customers via the power grid; and merchant producers who produce power for wholesale (Independent Power Producers) to utilities; and non-utilities which are primarily industrial sector businesses producing electricity for in-house use, any excess of which *may* also be sold to utilities for retail re-sale on the power grid.

Year	Utility Generating Capacity ^c				Non-Utility Generating Capacity			All Producers Capacity Total
	Cooperatives	Investor-Owned Utilities	Municipal	Utility Total	IPP ^a	Non-Utility ^b	Non-Utility Total	
1990	937	9,404	204	10,544	62	889	951	11,494
1991	937	9,352	203	10,492	62	916	977	11,469
1992	937	9,352	203	10,492	62	921	983	11,475
1993	937	9,627	289	10,852	62	922	983	11,836
1994	937	9,904	289	11,129	62	922	983	12,113
1995	937	10,452	290	11,678	62	960	1,022	12,700
1996	937	10,379	375	11,691	62	936	998	12,689
1997	937	10,432	376	11,744	350	939	1,289	13,033
1998	937	10,433	382	11,751	530	939	1,469	13,220
1999	937	10,455	410	11,801	830	946	1,775	13,577
2000	937	10,794	421	12,151	830	984	1,814	13,965
2001	1,033	10,798	432	12,263	1,361	1,000	2,361	14,624
2002	1,033	10,804	440	12,277	1,362	1,008	2,370	14,647
2003	1,033	11,057	440	12,530	1,362	1,008	2,371	14,901
2004	1,036	11,058	492	12,586	1,961	1,013	2,974	15,560
2005	1,037	11,098	501	12,636	3,397	1,015	4,412	17,048
2006	1,037	11,098	566	12,702	3,397	1,034	4,431	17,133
2007	1,037	10,024	566	11,628	4,471	1,038	5,509	17,137
2008	1,017	11,201	566	12,784	5,036	1,016	6,052	18,836
2009	1,017	11,960	566	13,543	5,071	1,092	6,163	19,706
2010	1,030	12,772	565	14,367	5,357	745	6,102	20,469
2011	972	12,520	593	14,085	5,306	716	6,022	20,107
2012^e	973	15,025	585	16,583	2,981	694	3,675	20,259

a IPPs are independent power producers allowed under law to sell their power to wholesalers such as utility cooperatives. They are barred from selling their power on the retail market.

b Non-utility sources refers to industrial power producers such as paper mills.

c Utilities include investor-owned utilities, electric cooperatives and municipalities.

e Estimate.

Source: Public Service Commission of Wisconsin, Accounts and Finance Division, *Generating Plants Operated by Wisconsin Electric Utilities*, Bulletin #46 (1971-1994) and personal communications 2002; U.S. Department of Agriculture, Rural Electrification Administration, *Annual Statistical Report*, REA Bulletin 1-1 (1971-1994); Public Service Commission of Wisconsin, unpublished electrical capacity data (1990-2012).

2012 saw a slight increase of 0.8 percent in capacity over 2011.

The Investor Owned Utilities (IOUs) saw an increase in capacity of 20 percent, and the Cooperatives, an increase of 0.1 percent. The Municipal utilities decreased their capacity by 1.5 percent; non-utilities by 3.1 percent, and IPPs by 43.8 percent.

These data were not available until 1990; the capacity listed for 1990 represents in-place capacity for all previous years of operation.

All capacity figures are estimates, based on a point-in-time determination.

Wisconsin Utility Electric Power Generation, by Type of Fuel

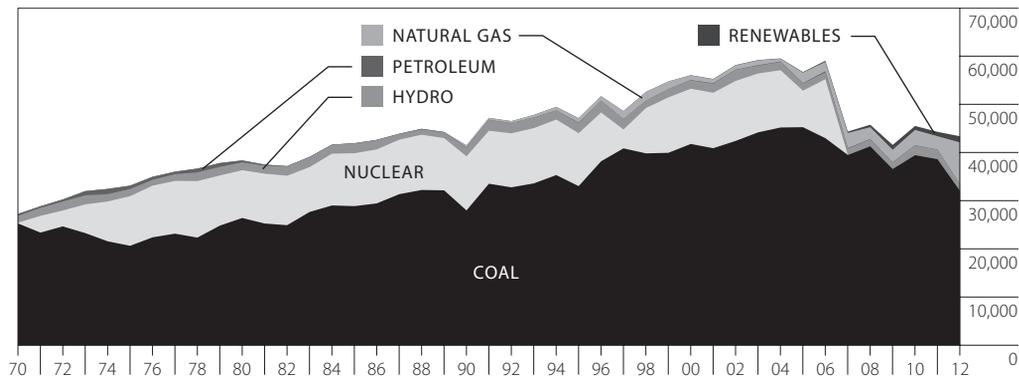
ELECTRIC UTILITY GENERATION
2.1%

Total electric generation by Wisconsin utilities—investor-owned, cooperative and municipal—decreased 2.1 percent in 2012. Generation from Independent Power Producers (IPPs) decreased by 15.6 percent and non-utilities saw 0.9 percent dip. In 2012, 86.3 percent of Wisconsin's power was produced in-state, and power imports increased by 59.9 percent.

Energy production from renewable sources increased by 39.8 percent in 2012, while production from coal decreased by 17.0 percent. The decrease in coal used for generation is due in part to a 210.7 percent increase in cleaner-burning natural gas generation.

Out-of-state generation is not included in these figures.

1970-2012 MILLIONS OF kWh



Year	Electricity Generation by Utilities						Total IPP	Non-Utility ^e	Total IPP and Non-Utility	Imports & Losses ^c	Total Sales ^h	
	Coal ^b	Nuclear ^g	Hydro ^a	Petroleum ^d	Natural Gas	Renewables ^f						Total Utilities
1970	25,253	155	1,413	390			27,211		0	-2,496	24,715	
1975	20,615	10,292	1,483	691			33,081		0	-1,805	31,276	
1980	26,383	9,912	1,628	393			38,316		0	-571	37,745	
1985	28,840	10,978	2,046	20			41,884		0	-159	41,725	
1990	27,956	11,224	1,791	76	393		41,440		0	7,758	49,198	
1995	32,994	10,970	2,097	97	924		47,082		0	10,885	57,967	
2000	41,736	11,459	1,749	52	965	43	56,004		0	8,685	64,689	
2005 ^r	45,219	7,574	1,499	75	2,185	105	56,657	2,306	275	2,581	11,098	70,336
2006 ^r	42,936	12,234	1,446	215	1,928	234	58,993	3,311	2,506	5,816	5,012	69,821
2007 ^g	39,460	0	1,314	123	3,132	277	44,306	16,263	2,913	19,176	7,818	71,301
2008	41,270	0	1,428	70	2,451	508	45,726	15,126	2,874	18,000	6,396	70,122
2009	36,554	0	1,353	38	2,597	997	41,539	16,027	2,687	18,713	6,033	66,286
2010	39,427	0	2,027	39	3,164	817	45,473	16,193	2,783	18,976	4,303	68,752
2011 ^f	38,591	0	1,928	37	2,790	906	44,251	15,761	2,794	18,555	5,889	68,695
2012 ^p	32,042	0	1,348	9	8,667	1,266	43,332	13,300	2,769	16,069	9,419	68,820

^a From 1970 to 1989, hydroelectric data were sourced from the Public Service Commission of Wisconsin bulletins; from 1990 to 2006, and current year data, are from the federal Department of Energy, Energy Information Administration (EIA). Starting in 2007, data are from the Public Service Commission of Wisconsin.

^b Coal data may include a small amount of refuse derived fuel (RDF).

^c Imports and losses is a reflection of the difference between total sales recorded by EIA and total Wisconsin-based generation. A negative sign indicates Wisconsin utilities exported electric power to other states.

^d Petroleum (oil) was split from natural gas as a generation resource starting in 1990. Prior to 1990, they were combined in this table. Propane used to produce electricity is included in this category.

^e Non-utility generation sources were available prior to 2005, but not collected separately until then.

^f The renewables category includes biomass, methane from landfills and digesters, solar and wind resources.

^g Wisconsin utilities no longer own nuclear generation; all nuclear reactors located in Wisconsin are owned by Independent Power Producers.

^h Sales figures for all years are from the EIA Electric Power Monthly.

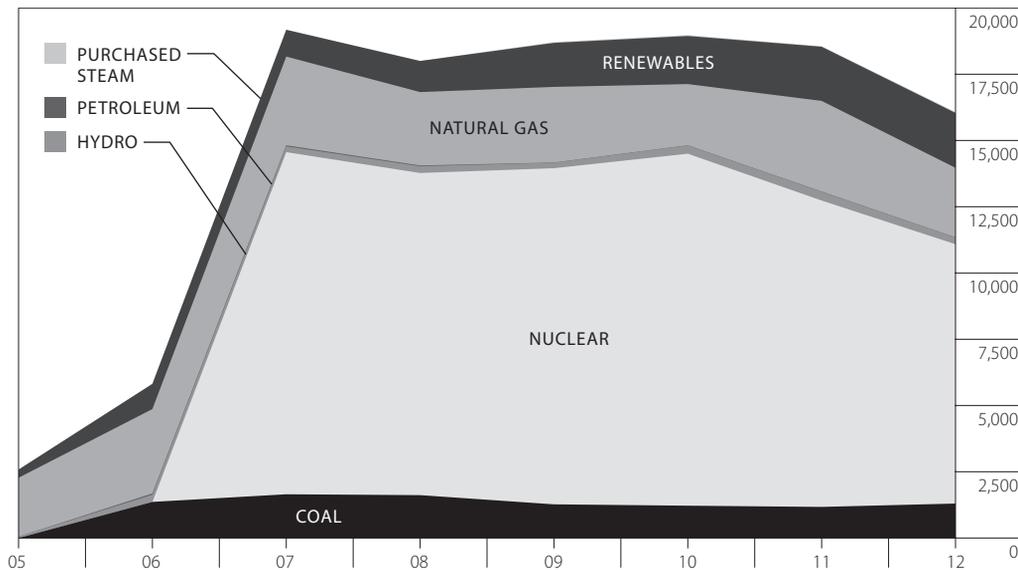
^p Preliminary.

^r Revised.

Source: Public Service Commission of Wisconsin, Accounts and Finance Division, *Generating Plants Operated by Wisconsin Electric Utilities*, Bulletin #46 (1971-1994) and personal communications 2002; U.S. Department of Agriculture, Rural Electrification Administration, *Annual Statistical Report*, REA Bulletin 1-1 (1971-1994); U.S. Department of Energy, Energy Information Administration, *Electric Power Monthly* [DOE/EIA-0226 (2012/05)] (May 2012) (1990-2006); Public Service Commission of Wisconsin, unpublished electrical generation data (2007-2012).

Wisconsin Independent Power Producer and Non-Utility Electric Power Generation, by Type of Fuel

2005-2012 MILLIONS OF kWh



Year	Coal	Nuclear ^d	Hydro	Petroleum	Natural Gas	Renewables ^c	Purchased Steam	Total IPP and Non-Utilities	Utilities	Imports & Losses ^a	Total Sales ^e
2005 ^{h,r}	0	0	52	0	2,221	308	0	2,581	56,657	11,098	70,336
2006 ^r	1,362	0	272	48	3,184	950	0	5,816	58,993	5,012	69,821
2007 ^{d,r}	1,650	12,910	220	38	3,348	1,010	0	19,176	44,306	7,819	71,301
2008	1,617	12,155	256	29	2,768	1,174	0	18,000	45,726	6,396	70,122
2009	1,270	12,683	209	5	2,855	1,660	30	18,713	41,539	6,034	66,286
2010	1,219	13,281	312	6	2,310	1,814	33	18,976	45,473	4,303	68,752
2011 ^r	1,173	11,560	331	8	3,421	2,043	19	18,555	44,251	5,889	68,695
2012 ^p	1,300	9,784	260	1	2,623	2,070	32	16,070	43,332	9,418	68,820

^a Imports and losses is a reflection of the difference between total sales recorded by EIA and total generation. A negative sign indicates Wisconsin utilities exported electric power to other states.

^b Non-utility generation sources were available prior to 2005, but not collected separately until then.

^c The renewables category includes biomass, methane from landfills and digesters, solar and wind resources.

^d All nuclear reactors located in Wisconsin are owned by Independent Power Producers.

^e Sales figures for all years are from the EIA Electric Power Monthly.

^p Preliminary.

^r Revised.

Source: Public Service Commission of Wisconsin, Accounts and Finance Division, *Generating Plants Operated by Wisconsin Electric Utilities*, Bulletin #46 (1971-1994) and personal communications 2002; U.S. Department of Agriculture, Rural Electrification Administration, *Annual Statistical Report*, REA Bulletin 1-1 (1971-1994); U.S. Department of Energy, Energy Information Administration, *Electric Power Monthly* [DOE/EIA-0226 (2012/05)] (May 2012) (1990-2006); Public Service Commission of Wisconsin, unpublished electrical generation data (2007-2012).

IPP AND
NON-UTILITY
ELECTRIC
GENERATION
13.4%

Total Independent Power Producer (IPP) and non-utility electric generation dropped by 13.4 percent in 2012: IPPs saw a 15.6 percent drop, and non-utilities saw 0.9 percent dip. Energy production from renewable sources increased by 1.3 percent in 2012, while production from coal increased by 10.8 percent. Out-of-state generation is not included in these figures.

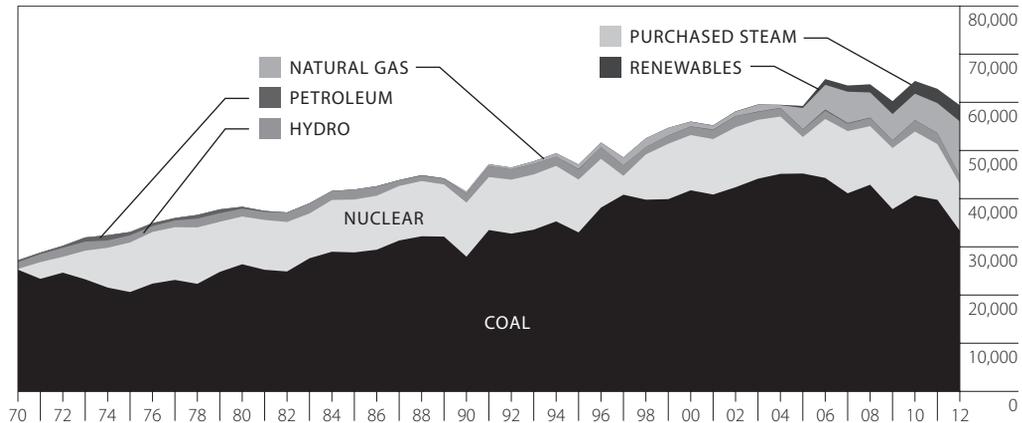
IPPs are independent power producers allowed under law to sell their power to wholesalers such as utility cooperatives. They are barred from selling their power on the retail market. *Non-Utility* refers to industrial power producers such as paper mills.

Wisconsin Electric Power Generation, All Producers, by Type of Fuel

**TOTAL
ELECTRIC
GENERATION
BY ALL
PRODUCERS
5.4%**

Total electric generation in Wisconsin by all producers decreased 5.4 percent in 2012. Utility generation dropped by 2.1 percent, while IPP and non-utility generation decreased by 13.4 percent. Generation from renewable sources increased by 13.1 percent, while generation from coal decreased 16.1 percent due in part to fuel switching from coal generation to natural gas generation, which saw an overall increase of 81.8 percent from 2011. Out-of-state generation is not included in these figures.

1970-2012 MILLIONS OF kWh



Year	Coal ^b	Nuclear	Hydro ^a	Petroleum ^d	Natural Gas	Renewables ^e	Purchased Steam	Total Generation	Imports & Losses ^c	Total Sales ^f
1970	25,253	155	1,413	390				27,211	-2,496	24,715
1975	20,615	10,292	1,483	691				33,081	-1,805	31,276
1980	26,383	9,912	1,628	393				38,316	-571	37,745
1985	28,840	10,978	2,046	20				41,884	-159	41,725
1990	27,956	11,224	1,791	76	393			41,440	7,758	49,198
1995	32,994	10,970	2,097	97	924			47,082	10,885	57,967
2000	41,736	11,459	1,749	52	965	43		56,004	8,685	64,689
2005 ^r	45,219	7,574	1,551	75	4,406	413		59,238	11,098	70,336
2006 ^r	44,298	12,234	1,718	263	5,112	1,184		64,809	5,012	69,821
2007 ^r	41,111	12,910	1,534	161	6,479	1,287		63,482	7,819	71,301
2008	42,887	12,155	1,685	100	5,219	1,681		63,727	6,396	70,122
2009	37,824	12,683	1,562	44	5,452	2,658	30	60,253	6,033	66,286
2010	40,646	13,281	2,339	45	5,474	2,631	33	64,449	4,303	68,752
2011 ^r	39,763	11,560	2,259	45	6,211	2,949	19	62,806	5,889	68,695
2012 ^p	33,342	9,784	1,608	9	11,290	3,337	32	59,401	9,419	68,820

- a** From 1970 to 1989, hydroelectric data were sourced from the Public Service Commission of Wisconsin bulletins; from 1990 to 2006, and current year data, are from the federal Department of Energy, Energy Information Administration (EIA). Starting in 2007, data are from the Public Service Commission of Wisconsin.
- b** Coal data may include a small amount of refuse derived fuel (RDF).
- c** Imports and losses is a reflection of the difference between total sales recorded by EIA and total Wisconsin-based generation. A negative sign indicates Wisconsin utilities exported electric power to other states.
- d** Petroleum (oil) was split from natural gas as a generation resource starting in 1990. Prior to 1990, they were combined in this table. Propane used to produce electricity is included in this category.
- e** The renewables category includes biomass, methane from landfills and digesters, solar and wind resources.
- f** Sales figures for all years are from the EIA Electric Power Monthly.
- p** Preliminary.
- r** Revised.

Source: Public Service Commission of Wisconsin, Accounts and Finance Division, *Generating Plants Operated by Wisconsin Electric Utilities*, Bulletin #46 (1971-1994) and personal communications 2002; U.S. Department of Agriculture, Rural Electrification Administration, *Annual Statistical Report*, REA Bulletin 1-1 (1971-1994); U.S. Department of Energy, Energy Information Administration, *Electric Power Monthly* [DOE/EIA-0226 (2012/05)] (May 2012) (1990-2006); Public Service Commission of Wisconsin, unpublished electrical generation data (2007-2012).

Wisconsin Electric Utility Fuel Costs of Power Generation, by Type of Plant

The costs in the table below reflect costs incurred by Wisconsin's five largest investor owned utilities.

1970-2012 CENTS PER kWh

Year	Fossil Fuel Steam (Coal)	Nuclear Steam ^b	Internal Combustion ^a	Total
1970	0.43	0.16	0.75	0.44
1975	1.01	0.36	1.47	0.75
1980	1.72	0.50	3.58	1.40
1985	2.02	0.61	6.76	1.60
1990	1.61	0.52	4.51	1.27
1995	1.33	0.48	3.62	1.12
1996	1.26	0.49	3.15	1.07
1997	1.28	0.50	4.30	1.22
1998	1.25	0.52	3.76	1.13
1999	1.21	0.53	3.70	1.07
2000	1.24	0.52	6.41	1.14
2001	1.27	0.54	6.36	1.15
2002	1.31	0.50	4.61	1.12
2003	1.37	0.48	6.49	1.21
2004	1.44	0.47	6.19	1.24
2005	1.58	0.39	10.29	1.65
2006	1.78	0.35	8.28	1.61
2007	2.00	0.27	7.49	1.84
2008 ^e	2.21	Not Available	7.14	1.89
2009 ^e	2.33	Not Available	4.52	1.81
2010 ^e	2.41	Not Available	3.70	1.85
2011 ^e	2.76	Not Available	2.76	2.03
2012 ^e	2.74	Not Available	2.06	1.88

^a Internal combustion includes both gas-powered turbines and diesel-powered engines.

^b Nuclear cost.

^e Estimate by Wisconsin State Energy Office based on amount of generation by the five major Wisconsin utilities.

Source: Public Service Commission of Wisconsin, Accounts and Finance Division, *Generating Plants Operated by Wisconsin Electric Utilities*, Bulletin #46 (1971-1994); annual reports of the five major Wisconsin electric generating utilities (1990-2012). www.psc.wi.gov/apps40/annreport/default.aspx

In this table, only the cost of fuel per kilowatt-hour of generation is reported. The table on the next page includes the annual variable cost of generation. Renewables such as hydroelectric plants, wind turbines and solar photovoltaic installations are not included here because they have no associated fuel costs.

Wisconsin utilities no longer own nuclear generation; all nuclear reactors located in Wisconsin are owned by Independent Power Producers. The data for 2005, 2006, and 2007 show a decline in fuel costs for nuclear generation because these are the years in which the sales of the plants were completed. Fuel cost data for nuclear plants are no longer available because these plants are owned by Independent Power Producers who do not submit annual reports to the Public Service Commission.

Utility Annual Variable Costs of Power Generation, by Type of Plant and Cost of Purchased Power

Wisconsin utilities no longer own nuclear generation; all nuclear reactors located in Wisconsin are owned by Independent Power Producers. The data for 2005, 2006, and 2007 show an increase in the per kWh cost of nuclear generation because these are the years in which sales of the plants were completed. Cost per kWh continues remain high for nuclear generation.

The All Plants and Purchased Power figures are revised from previous editions of this publication due to the break out of nuclear generation from purchased power.

This table shows the annual variable cost of generating one kWh of electricity by various technologies in Wisconsin's electric utility plants. The average cost is 109.7 percent higher than the previous peak in 1983 of 2.21 cents per kWh. The cost of purchased power increased by 10.0 percent from 2011 to 2012, and is 15.2 percent more expensive than electricity generated in Wisconsin.

The costs in the table below reflect costs incurred by Wisconsin's five largest investor-owned utilities.

1970-2012 CENTS PER kWh

Year	Fossil Fuel Steam (Coal)	Nuclear Steam ^b	Internal Combustion ^a	Hydro	All Plants	Purchased Power	Average Cost
1970	0.55	0.29	1.76	0.27	0.53	NA	NA
1975	1.25	0.51	2.73	0.32	0.97	NA	NA
1980	2.13	0.86	5.74	0.52	1.72	NA	NA
1983	2.58	1.61	29.27	0.56	2.21	NA	2.21
1985	2.55	1.32	19.12	0.61	2.09	NA	NA
1990 ^e	2.13	1.50	10.87	1.00	1.94	2.22	1.99
1995 ^e	1.80	1.63	4.71	0.71	1.75	2.17	1.83
1996 ^e	1.68	1.73	4.69	0.64	1.67	2.15	1.77
1997 ^e	1.68	4.37	5.09	0.69	1.94	2.27	2.04
1998 ^e	1.68	2.83	4.70	1.02	1.94	2.67	2.11
1999 ^e	1.68	2.03	4.83	0.87	1.79	2.96	2.05
2000 ^e	1.75	2.16	7.73	0.86	1.91	3.36	2.24
2001 ^e	1.76	2.37	7.63	0.90	1.95	3.90	2.41
2002 ^e	1.87	2.18	6.09	0.75	1.97	3.64	2.40
2003 ^e	1.91	2.40	8.02	1.12	2.10	4.05	2.61
2004 ^e	1.97	2.46	14.63	1.06	2.19	4.26	2.72
2005 ^e	2.11	2.64	16.02	1.21	2.74	5.25	3.48
2006 ^e	2.68	2.83	14.81	1.40	3.11	5.83	3.88
2007 ^e	2.94	3.05	11.76	1.65	3.42	6.29	4.22
2008 ^e	3.49	4.03	13.29	1.53	4.00	6.76	4.74
2009 ^e	3.77	4.25	9.84	1.81	4.22	5.78	4.65
2010 ^e	3.86	4.15	8.19	1.28	4.16	6.06	4.59
2011 ^e	4.25	4.01	7.49	1.37	4.33	5.69	4.65
2012 ^e	4.57	4.29	4.60	1.90	4.44	5.12	4.64

^a Internal combustion includes both gas powered turbines and diesel powered engines.

^b Nuclear reactors in Wisconsin are owned by independent power producers.

^e Estimate by Wisconsin State Energy Office based on amount of generation by the five major Wisconsin utilities.

NA – Not available.

Source: Public Service Commission of Wisconsin, Accounts and Finance Division, *Generating Plants Operated by Wisconsin Electric Utilities*, Bulletin #46 (1971-1994); annual reports of the five major Wisconsin electric generating utilities (1990-2012). www.psc.wi.gov/apps40/annreport/default.aspx

Electric Utility Sulfur Dioxide Emissions

1980-2012 TONS

Year	1980	1990	2000	2005	2007	2008	2009	2010	2011 ^r	2012 ^p
Dairyland Power Cooperative										
Alma	23,641	6,510	3,445	8,816	10,748	9,558	4,809	4,189	1,196	878
Genoa	43,516	28,130	8,165	13,074	12,480	11,970	6,479	8,874	3,296	2,379
J.P. Madgett	4,088	7,330	5,376	7,762	8,028	9,114	10,041	4,976	4,827	4,276
Stoneman	4,663	790	0	0	0	0	0	0	0	0
Madison Gas and Electric Co.										
Blount Street	8,436	3,851	6,923	5,969	2,762	2,958	397	278	1	1
Northern States Power Co.										
Bay Front	2,708	393	786	1,196	1,149	1,041	735	347	286	68
Wisconsin Electric Power Co.										
Oak Creek	122,472	45,650	22,831	12,903	13,695	14,472	14,823	13,032	14,021	2,200
Pleasant Prairie	4,972	26,933	28,726	33,656	2,229	1,092	988	1,195	928	3,519
Port Washington	42,295	4,009	15,572	2	4	4	6	6	5	739
Valley	41,761	14,053	15,835	8,482	6,848	6,887	5,376	4,890	4,226	11
Wisconsin Power and Light Co.										
Blackhawk	2,006	0	0	0	0	0	0	0	0	0
Columbia 1	24,937	18,616	15,056	13,729	12,093	13,561	11,833	14,527	12,340	12,678
Columbia 2	14,614	13,909	13,270	12,370	13,332	13,303	12,396	13,192	12,429	11,921
Edgewater 1-4	60,014	38,021	8,962	9,103	7,166	7,205	5,666	5,758	5,785	4,547
Edgewater 5	0	6,744	8,744	7,741	9,502	7,858	7,782	8,779	8,340	6,640
Nelson Dewey	32,304	10,985	14,275	14,999	15,064	13,531	12,646	13,454	11,505	3,304
Rock River	14,139	7,220	24	12	2	2	4	0	1	3
Wisconsin Public Services Corp.										
Pulliam	42,087	25,631	6,314	12,175	10,448	8,446	4,386	5,517	3,508	1,846
Weston 1, 2	21,009	6,589	3,340	3,988	2,983	2,852	2,060	2,601	1,679	1,133
Weston 3	0	7,598	8,358	9,540	6,125	7,338	5,912	7,216	5,593	4,236
Weston 4	0	0	0	0	0	333	972	1,120	904	687
Municipal Utilities										
Manitowoc	1,318	1,727	3,282	217	1,033	1,706	794	593	435	91
Marshfield	1,651	139	0	0	0	0	0	0	0	0
Menasha	991	695	79	0	0	0	0	0	0	0
Total										
Utility Sources	513,622	275,523	189,363	175,734	135,691	133,231	108,105	110,544	91,305	61,157
All Other Sources	172,777	101,517	87,115	68,600	67,838	101,419	89,849	94,150	40,474	46,702
All Stationary Sources	686,399	377,040	276,478	244,334	203,529	234,650	197,954	204,694	131,779	107,859
Percent Utility Sources	74.8%	73.1%	68.5%	71.9%	66.7%	56.8%	54.6%	54.0%	69.3%	56.7%

p Preliminary estimates.

r Revised.

Source: Wisconsin Department of Natural Resources, Annual Survey of Point Source Emissions, Sulfur Dioxide and Nitrogen Oxides Emissions Report PUBL-AM-343 and published by facility on the Wisconsin Department of Natural Resources website at <http://dnr.wi.gov/topic/AirEmissions/> (1986-2012).

**SULFUR
DIOXIDE
EMISSIONS
33.0%**

Utility sulfur dioxide emissions decreased 33.0 percent from 2011 to 2012. Declines in total emissions will depend on the growth in coal fired generation, old plant retirement, the effectiveness of future energy efficiency efforts and increased use of natural gas and renewable energy.

Electric Utility Nitrogen Oxides Emissions

**NITROGEN
OXIDES
EMISSIONS
24.4%**

Utility nitrogen oxides emissions decreased 24.4 percent from 2011 to 2012. Future decreases in total emissions will depend on the growth in coal fired generation, old plant retirement, the effectiveness of future energy efficiency efforts, increased use of natural gas and renewable energy, and the disposition of proposed U.S. EPA rules.

Recent changes in combustion technology have resulted in reduced NOX emissions for some generating plants.

1989-2012 TONS

Year	1989	1990	2000	2005	2007	2008	2009	2010	2011 ^r	2012 ^p
Dairyland Power Cooperative										
Alma	1,934	1,962	2,774	3,834	4,883	3,671	1,100	763	367	171
Genoa	5,243	5,304	3,611	3,717	3,556	2,696	1,574	1,669	769	2,841
J.P. Madgett	4,728	4,963	4,845	4,469	4,114	3,962	3,636	2,898	2,932	651
Madison Gas and Electric Co.										
Blount Street	1,511	1,165	1,480	1,187	463	568	78	88	47	66
Northern States Power Co.										
Bay Front	0	0	1,288	1,527	1,590	1,562	916	665	535	255
Wisconsin Electric Power Co.										
Oak Creek	13,967	8,917	19,786	4,650	4,646	4,978	5,530	4,982	5,657	1,978
Pleasant Prairie	17,701	16,356	18,452	11,318	2,560	2,862	2,623	2,711	2,498	1,003
Port Washington	1,005	771	4,074	45	111	129	129	131	115	2,110
Valley	4,414	4,874	7,259	3,893	3,268	3,106	1,817	1,446	1,250	48
Wisconsin Power and Light Co.										
Columbia 1	6,059	6,844	7,981	3,022	2,655	2,715	2,438	2,899	2,781	2,943
Columbia 2	7,943	10,336	6,874	2,829	2,484	2,549	2,329	2,447	2,703	2,655
Edgewater 1-4	16,583	16,684	12,817	3,781	2,697	2,805	1,409	1,503	1,563	1,164
Edgewater 5	2,960	3,638	8,743	2,282	1,976	1,698	1,552	1,791	1,735	1,442
Nelson Dewey	9,997	9,997	5,413	3,060	2,938	2,589	2,382	3,082	3,237	2,626
Rock River	4,367	3,697	419	373	108	88	33	6	6	39
Wisconsin Public Services Corp.										
Pulliam	6,769	7,087	8,045	9,235	8,222	6,591	3,391	2,705	1,348	854
Weston 1, 2	3,003	3,308	3,262	3,754	3,039	2,699	971	1,212	786	511
Weston 3	2,374	2,360	3,228	4,385	2,529	2,593	2,034	1,492	1,165	785
Weston 4	0	0	0	0	0	281	794	922	914	822
Municipal Utilities										
Manitowoc	923	923	102	88	278	593	245	234	22	41
Total										
Utility Sources	111,481	109,186	120,453	67,449	52,117	48,735	34,981	33,646	30,429	23,005
All Other Sources	86,473	24,774	19,625	45,232	42,660	48,287	43,196	48,621	20,779	24,048
All Stationary Sources	197,954	133,960	140,078	112,681	94,777	97,022	78,177	82,267	51,208	47,053
Percent Utility Sources	56.3%	81.5%	86.0%	59.9%	55.0%	50.2%	44.7%	40.9%	59.4%	48.9%

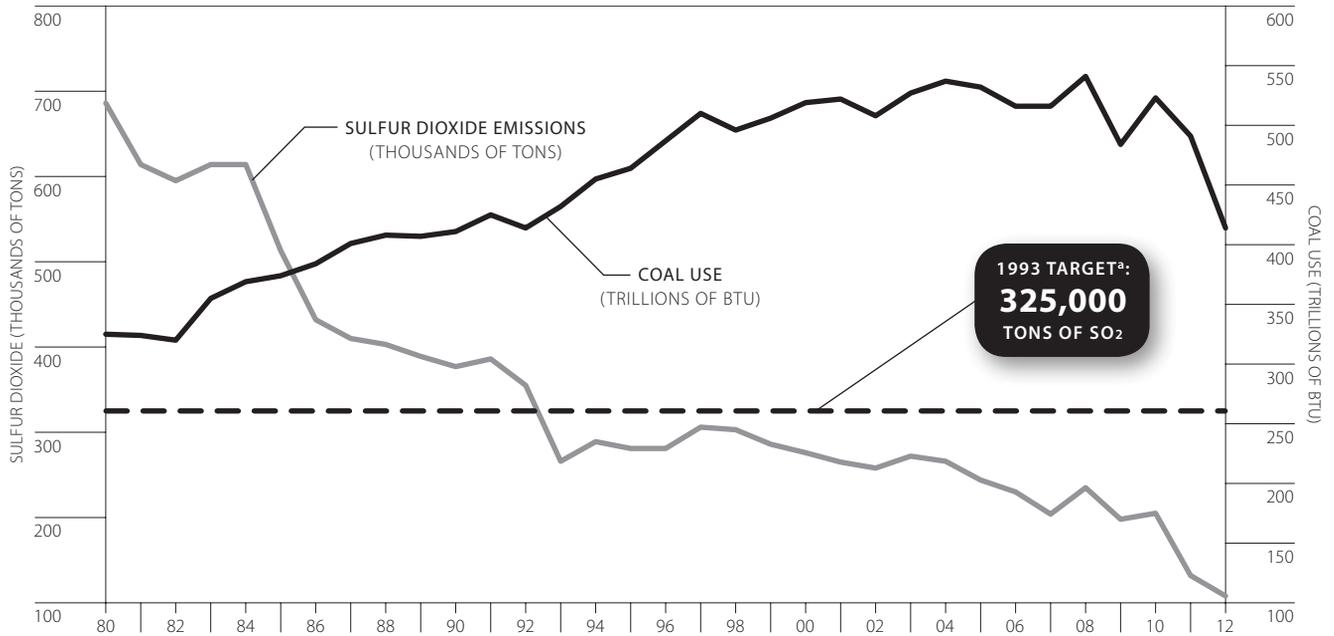
^p Preliminary estimates.

^r Revised.

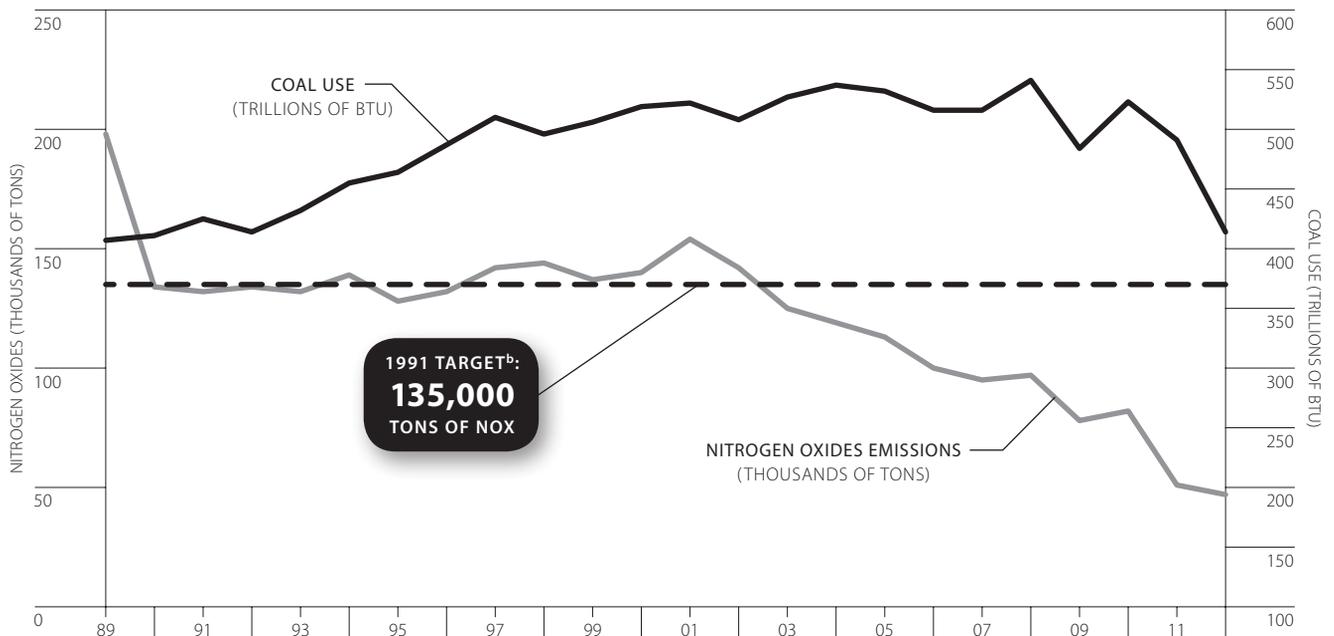
Source: Wisconsin Department of Natural Resources, Annual Survey of Point Source Emissions, Sulfur Dioxide and Nitrogen Oxides Emissions Report PUBL-AM-343 and published by facility on the Wisconsin Department of Natural Resources website at <http://dnr.wi.gov/topic/AirEmissions/> (1986-2012).

Wisconsin Sulfur Dioxide and Nitrogen Oxides Emissions and Coal Use

1980-2012 SULFUR DIOXIDE EMISSIONS AND COAL USE



1989-2012 NITROGEN OXIDES EMISSIONS AND COAL USE



a 1993 target established in Wisconsin Statutes, 285.45(2)(a). <http://www.legis.state.wi.us/statutes/Stat0285.pdf>. Target is for all major utilities and large sources.

b 1991 target established in Wisconsin Statutes, 285.47(2). <http://www.legis.state.wi.us/statutes/Stat0285.pdf>. Target is for all major utilities.

Source: Wisconsin State Energy Office.

Wisconsin Power Plant Inventory, 2012

Utility / Site ^a	Nameplate Capacity (MW)	Number of Units	Primary Fuel
Dairyland Power Cooperative			
Alma 4, 5	136.0	2	Coal
Elk Mound	71.0	2	Natural Gas
Flambeau	22.0	3	Hydro ^b
Genoa 3	345.6	1	Coal
J.P. Madgett	387.0	1	Coal
Seven Mile Creek	4.1	4	Biomass LFG ^g
Stiles	1.0	2	Hydro ^b
Various Biogas Methane	1.6	2	Biogas
Washington Island	5.0	7	Fuel Oil
Madison Gas and Electric Co.			
Blount Street 6, 7	100.0	2	Natural Gas
Fitchburg 1, 2	57.6	2	Natural Gas
Nine Springs	16.2	1	Natural Gas
Portables	54.0		Fuel Oil
Rosiere	11.2	17	Wind
Sycamore	41.6	2	Natural Gas
Various Hydrogen	0.01	1	Hydrogen
Various Solar	0.1		Solar
W. Marinette 34	83.0	1	Natural Gas
West Campus	169.3	3	Natural Gas
Northern States Power Co.			
Bay Front 4, 5, 6	67.2	3	Biomass Wood
Flambeau	16.0	1	Natural Gas
French Island 1, 2	30.4	2	Biomass Wood
French Island 3, 4	157.6	2	Fuel Oil
Various Hydro	240.9	58	Hydro ^b
Wheaton 1-4	216.0	4	Natural Gas
Wheaton 5-6	106.2	2	Fuel Oil
Shared Ownership			
Columbia 1 ^e	512.0	1	Coal
Columbia 2 ^e	511.0	1	Coal
Edgewater 4 ^f	330.0	1	Coal
Elm Road C1 ⁱ	1402.6	2	Coal
Weston 4 ^d	595.0	1	Coal

Utility / Site ^a	Nameplate Capacity (MW)	Number of Units	Primary Fuel
Wisconsin Electric Power Co.			
Blue Sky Green Field	145.2	88	Wind
Byron	1.3	2	Wind
Concord	381.2	4	Natural Gas
Domtar Rothschild	50.0	1	Biomass Wood
Germantown 1, 2, 3, 4	244.8	4	Fuel Oil
Germantown 5	106.9	1	Natural Gas
Glacier Hills	162.0	90	Wind
Milwaukee	11.0	1	Coal
Montfort	30.0	20	Wind
Paris	381.2	4	Natural Gas
Pleasant Prairie 1, 2	1233.0	2	Coal
Pleasant Prairie 3	2.0	1	Fuel Oil
Port Washington 1-3	1182.0	6	Natural Gas
S. Oak Creek 5-8	1191.6	4	Coal
Valley 1, 2	272.0	2	Coal
Valley 3	2.7	1	Fuel Oil
Various Hydro	13.6	8	Hydro ^b
Various Solar	0.003	3	Solar
Wisconsin Power and Light Co.			
Cedar Ridge	67.7	41	Wind
Edgewater 3, 5	440.0	2	Coal
Neenah	371.0	2	Natural Gas
Nelson Dewey 1, 2	200.0	2	Coal
Riverside	695.7	3	Natural Gas
Rock River 3-6	144.0	4	Natural Gas
Sheboygan Energy Center	380.0	2	Natural Gas
Sheepskin	40.0	1	Natural Gas
South Fond Du Lac	172.0	2	Natural Gas
Various Biogas Methane	0.3	10	Biogas
Various Hydro	36.6	12	Hydro ^b
Various Landfill Gas	2.8	13	Biomass LFG ^g
Various Solar	0.01	5	Solar

Utility / Site ^a	Nameplate Capacity (MW)	Number of Units	Primary Fuel
Wisconsin Public Services Corp.			
DePere	187.2	1	Natural Gas
Fox Energy Center	620.0	3	Natural Gas
Lincoln	9.2	14	Wind
Pulliam 31	91.0	1	Natural Gas
Pulliam 5-8	350.2	4	Coal
Various Hydro	92.2	47	Hydro ^b
Various Solar	0.05	8	Solar
W. Marinette 31, 32	167.1	3	Natural Gas
W. Marinette 33	83.0	1	Natural Gas
Weston 1-3	492.1	3	Coal
Weston 31, 32	76.3	2	Natural Gas
Municipal Utilities			
Manitowoc, City of	117.4	3	Coal/RDF ^c / Coke
Manitowoc, City of	30.0	2	Natural Gas
Menasha, City of	28.0	3	Coal
Merchant/IPP			
Forward Wind	129.0	86	Wind
Point Beach	1073.6	2	Nuclear
Various Landfill Gas	43.4	38	Biomass LFG ^g
Statewide Utilities			
Statewide	1073.6	2	Nuclear
Statewide	199.9	90	Renewables (biomass, biogas, solar)
Statewide	8554.5	34	Coal
Statewide	406.3	130	Hydro ^b
Statewide	5796.3	57	Natural Gas
Statewide	572.3	17	Fuel Oil
Statewide	555.6	272	Wind
Statewide Totals ^h	17029.4	602	All

^a This is not a comprehensive listing of all utility or independent power producer generation plants. Does not include out-of-state sites or non-utility generation.

^b Hydroelectric capacity differs from sums on other tables due to different data sources.

^c RDF is Refuse Derived Fuel.

^d The Weston 4 unit is owned by Wisconsin Public Service Corp. (70%) and Dairyland Power Cooperative (30%).

^e The Columbia 1 and 2 units are owned by Alliant Energy (46.2%), Wisconsin Public Service Corp. (31.8%) and Madison Gas & Electric Co. (22.0%).

^f The Edgewater 4 unit is owned by Alliant Energy (68.2%) and Wisconsin Public Service Corp. (31.8%).

^g LFG is Landfill Gas.

^h Statewide totals here are slightly different from capacity totals on other pages in this section because this table is not a comprehensive list of all plants.

ⁱ The Elm Road C1 unit is owned by Wisconsin Electric Power Co. (83.34%), WPPI Energy (8.33%) and Madison Gas and Electric (8.33%).

Source: U.S. Department of Energy, Energy Information Administration, Existing Electric Generating Units in the United States by State, Company and Plant, <http://www.eia.doe.gov/cneaf/electricity/page/capacity/capacity.html> (through 2007); Public Service Commission of Wisconsin, unpublished data (2008-2012); Annual report of Dairyland Power Cooperative submitted to the U.S. Department of Agriculture, Rural Utilities Service (2008-2012).