CHAPTER 1

Total Energy Use

There are two common ways to account for energy use:

resource energy consumption and

end-use energy consumption.

End-use refers to the energy content of electricity and other fuels at the point of use by customers. **Resource energy** includes all energy resources used to generate electricity, including the energy content of the coal, petroleum, nuclear and renewable fuels. Resource energy also includes the energy used to produce the electricity imported into Wisconsin from other states and Canada. Because about 70 percent of the energy used to generate and distribute electricity to its point of use is lost as waste heat, resource consumption figures are greater than end-use consumption figures.

Prior to 1997, petroleum was Wisconsin's leading energy source, but its share of resource energy use has fallen from a peak of 40 percent in 1977 to 26.0 percent in 2010. Coal is the leading resource energy source in Wisconsin, comprising 32.1 percent of all resource energy use. Coal surpassed natural gas as the state's second largest energy source in 1981, and in 1997 coal surpassed petroleum as the state's leading source of resource energy.

Renewables increased by 5.6 percent and comprises 5.2 percent of Wisconsin's overall use of resource energy consumption. This includes hydroelectric generation, solar (photovoltaic and solar thermal), biomass (e.g., wood and wood by-products), biogas (e.g., agricultural manure digesters, wastewater treatment plants, and landfill gas), and wind.

Nuclear power in Wisconsin is no longer owned by utilities, but by independent power producers who sell the power to customers in Wisconsin.

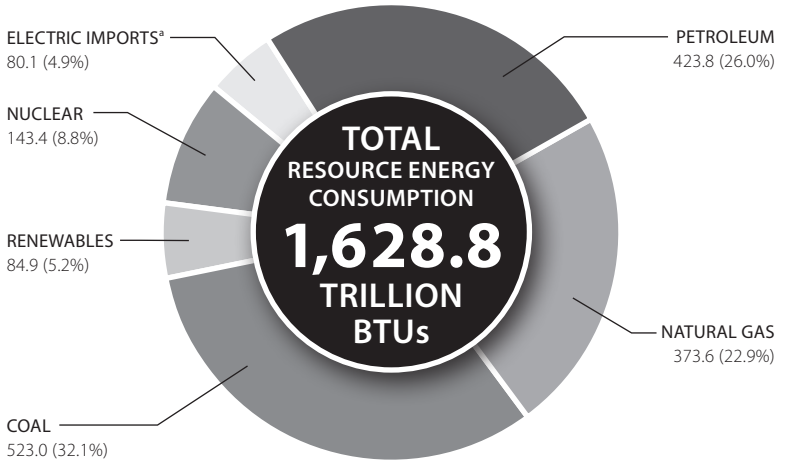
In general, the residential (25.5 percent) and industrial (27.4 percent) sectors each account for about one-quarter of Wisconsin's resource energy consumption. The transportation sector used 23.8 percent of the state's resource energy while the commercial and agricultural sectors accounted for 21.1 percent and 2.1 percent, respectively. In 2010, residential, commercial and agricultural end-use energy consumption decreased by 4.7, 5.9 and 11.6 percent respectively. Industrial and transportation end-use energy consumption increased by 2.2 and 3.7 percent respectively. Overall, end-use energy use decreased by 0.6 percent.

RESOURCE Energy Consumption	2010	Percent of Wisconsin's Resource Energy Consumption
Resource Energy Consumption	↑ 0.8% overall	
BY FUEL		
Coal Consumption, Utilities	↑ 8.0%	32.1%
Petroleum Consumption	↑ 0.0%	26.0%
Natural Gas Consumption	↓ 4.4%	22.9%
Electricity Imports	↓ 18.7%	4.9%
Renewables	↑ 5.6%	5.2%
BY ECONOMIC SECTOR		
Transportation	↑ 3.7%	23.8%
Residential	↓ 1.3%	25.5%
Industrial	↑ 3.3%	27.4%
Commercial	↓ 1.8%	21.1%
Agricultural	↓ 7.7%	2.1%

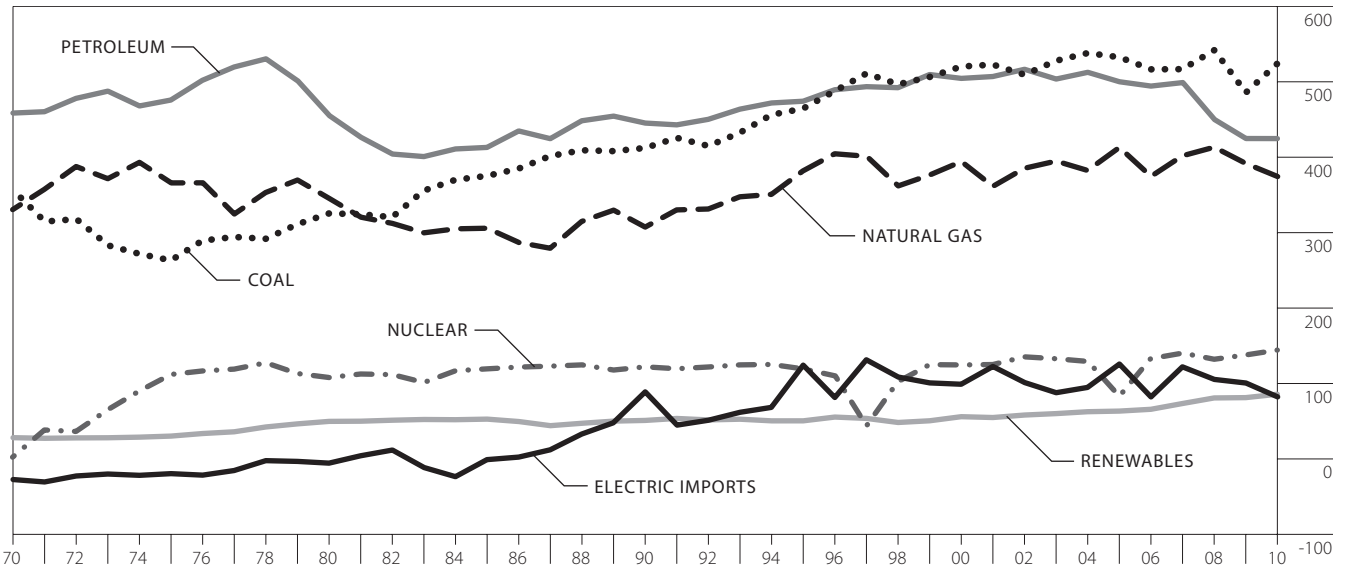
END-USE Energy Consumption	2010	Percent of Wisconsin's End-Use Energy Consumption
End-Use Energy Consumption	↓ 0.6% overall	
BY FUEL		
Petroleum Consumption	↑ 0.0%	38.3%
Natural Gas Consumption	↓ 5.4%	29.9%
Electricity Consumption	↑ 3.7%	21.2%
Renewables Consumption	↑ 3.5%	6.5%
Coal Consumption, Non-Utilities	↑ 2.9%	4.0%
BY ECONOMIC SECTOR		
Transportation	↑ 3.7%	35.1%
Industrial	↑ 2.2%	24.3%
Residential	↓ 4.7%	22.9%
Commercial	↓ 5.9%	15.6%
Agricultural	↓ 11.6%	2.1%

Wisconsin Resource Energy Consumption, by Type of Fuel

2010 TRILLIONS OF BTU AND PERCENT OF TOTAL



1970-2010 TRILLIONS OF BTU



a "Electric imports" is the estimated resource energy used in other states or Canada to produce the electricity imported into Wisconsin. This resource energy is estimated assuming 11,300 Btu of resource energy per kWh imported into Wisconsin. Values below the "0" indicate that resource energy was used in Wisconsin to produce electricity that was exported out of state.

Source: Wisconsin State Energy Office

Wisconsin Resource Energy Consumption, by Type of Fuel

1970-2010 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Petroleum		Natural Gas		Coal[a]		Renewables[b]		Nuclear[d]		Electric Imports[c]		Total
1970	457.7	*40.1%*	327.4	*28.7%*	355.4	*31.1%*	27.3	*2.4%*	1.7	*0.1%*	-28.2	*-2.5%*	1,141.3
1975	475.0	*38.8%*	368.3	*30.0%*	262.3	*21.4%*	29.4	*2.4%*	111.2	*9.1%*	-20.4	*-1.7%*	1,225.8
1980[r]	454.4	*35.7%*	344.0	*27.0%*	324.6	*25.5%*	48.9	*3.8%*	107.0	*8.4%*	-6.5	*-0.5%*	1,272.5
1985	412.0	*32.7%*	304.2	*24.2%*	374.4	*29.7%*	51.9	*4.1%*	118.6	*9.4%*	-1.8	*-0.1%*	1,259.3
1990	444.4	*31.3%*	306.4	*21.6%*	411.4	*28.9%*	50.2	*3.5%*	121.2	*8.5%*	87.7	*6.2%*	1,421.2
1995	473.4	*29.4%*	381.1	*23.7%*	463.7	*28.8%*	49.6	*3.1%*	118.5	*7.4%*	123.0	*7.6%*	1,609.2
1996[r]	488.5	*30.1%*	403.7	*24.9%*	486.9	*30.0%*	54.6	*3.4%*	109.3	*6.7%*	80.2	*4.9%*	1,623.2
1997[r]	492.7	*30.3%*	400.4	*24.6%*	510.1	*31.3%*	52.8	*3.2%*	42.3	*2.6%*	130.3	*8.0%*	1,628.7
1998[r]	491.4	*30.6%*	361.0	*22.5%*	495.8	*30.9%*	47.4	*3.0%*	101.5	*6.3%*	107.7	*6.7%*	1,604.8
1999[r]	508.6	*30.6%*	375.5	*22.6%*	505.5	*30.4%*	49.7	*3.0%*	124.1	*7.5%*	99.9	*6.0%*	1,663.4
2000[r]	503.5	*29.7%*	393.3	*23.2%*	519.4	*30.7%*	55.1	*3.3%*	123.8	*7.3%*	98.1	*5.8%*	1,693.2
2001[r]	505.9	*30.0%*	360.4	*21.3%*	521.9	*30.9%*	54.0	*3.2%*	124.3	*7.4%*	121.6	*7.2%*	1,688.2
2002[r]	515.6	*30.3%*	384.5	*22.6%*	508.5	*29.9%*	57.3	*3.4%*	134.4	*7.9%*	100.4	*5.9%*	1,700.8
2003[r]	502.7	*29.5%*	394.0	*23.1%*	527.0	*31.0%*	59.2	*3.5%*	132.0	*7.8%*	86.9	*5.1%*	1,701.8
2004[r]	511.4	*29.8%*	381.5	*22.3%*	537.2	*31.3%*	61.7	*3.6%*	128.4	*7.5%*	94.0	*5.5%*	1,714.2
2005[r]	499.2	*29.2%*	411.9	*24.1%*	531.7	*31.1%*	62.5	*3.7%*	81.8	*4.8%*	124.7	*7.3%*	1,711.9
2006[r]	493.5	*29.7%*	373.5	*22.5%*	515.7	*31.1%*	64.9	*3.9%*	132.1	*8.0%*	81.0	*4.9%*	1,660.7
2007[r]	498.1	*28.5%*	401.0	*22.9%*	515.9	*29.5%*	72.6	*4.2%*	139.4	*8.0%*	121.3	*6.9%*	1,748.3
2008[r]	449.3	*26.1%*	412.4	*24.0%*	540.8	*31.5%*	80.0	*4.7%*	131.3	*7.6%*	104.7	*6.1%*	1,718.5
2009[r]	423.9	*26.2%*	390.8	*24.2%*	484.5	*30.0%*	80.4	*5.0%*	137.0	*8.5%*	98.5	*6.1%*	1,615.2
2010[p]	**423.8**	***26.0%***	**373.6**	***22.9%***	**523.0**	***32.1%***	**84.9**	***5.2%***	**143.4**	***8.8%***	**80.1**	***4.9%***	**1,628.8**

a Including petroleum coke.

b Renewables includes solar, wind, wood, biogas, biomass, ethanol and hydroelectric.

c Electric imports are the estimated resource energy used in other states or Canada to produce the electricity imported into Wisconsin. This resource energy is estimated assuming 11,300 Btu of resource energy per kWh imported into Wisconsin. Negative percentages indicate that resource energy was used in Wisconsin to produce electricity that was exported out of state.

d Nuclear energy reported here is from power plants formerly owned by Wisconsin utilities and currently owned by independent power producers.

p Preliminary estimates.

r Revised due to revisions in contributing tables.

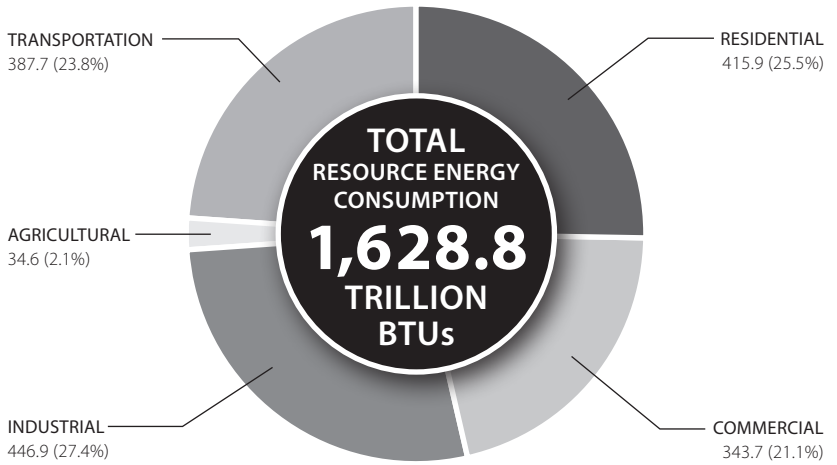
Source: Compiled from tables in this publication for Wisconsin petroleum, natural gas, coal, renewable resources and electricity use, by economic sector, and for Wisconsin electric utility energy use.

RESOURCE ENERGY CONSUMPTION
0.8%

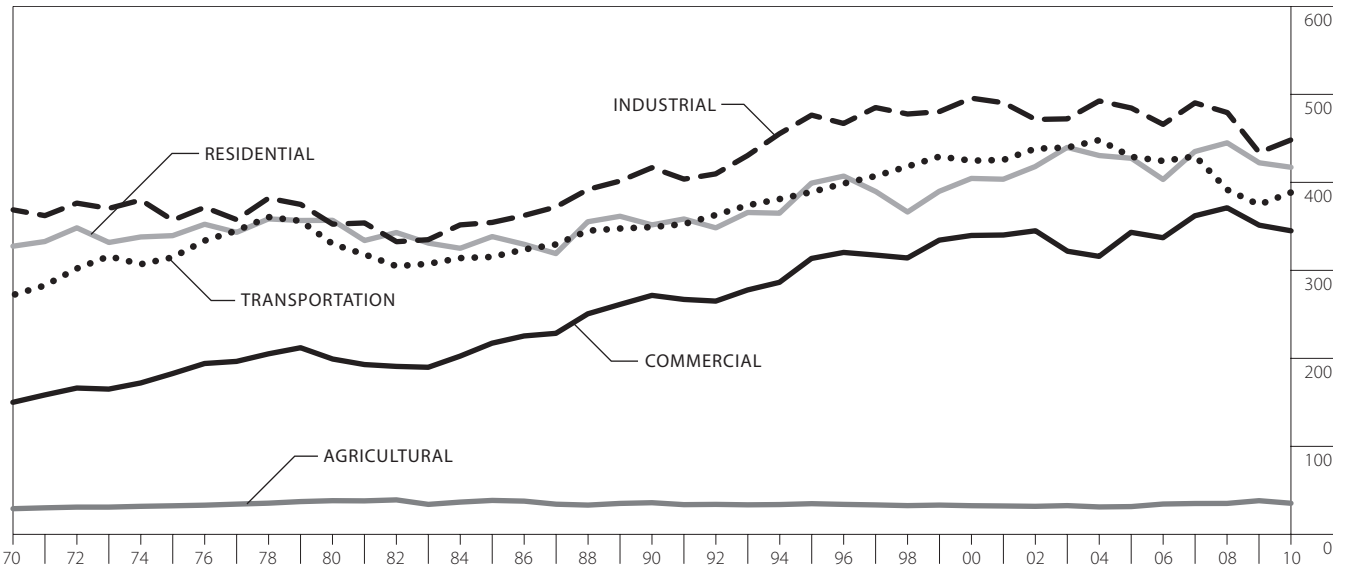
Resource energy consumption increased 0.8 percent in 2010. Petroleum consumption stayed level with 2009; natural gas, decreased 4.4 percent; coal, increased 8.0 percent; and renewables, increased 5.6 percent.

Wisconsin Resource Energy Consumption, by Economic Sector

2010 TRILLIONS OF BTU AND PERCENT OF TOTAL



1970-2010 TRILLIONS OF BTU



Source: Wisconsin State Energy Office.

Wisconsin Resource Energy Consumption, by Economic Sector

1970-2010 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Residential		Commercial		Industrial		Agricultural[a]		Transportation		Total
1970	324.3	*28.4%*	149.3	*13.1%*	368.0	*32.2%*	28.4	*2.5%*	271.2	*23.8%*	1,141.3
1975	341.9	*27.9%*	182.0	*14.9%*	356.1	*29.1%*	31.7	*2.6%*	314.0	*25.6%*	1,225.8
1980[r]	355.6	*27.9%*	198.5	*15.6%*	351.7	*27.6%*	37.5	*2.9%*	329.2	*25.9%*	1,272.5
1985	336.8	*26.7%*	216.5	*17.2%*	353.7	*28.1%*	37.8	*3.0%*	314.5	*25.0%*	1,259.3
1990	350.9	*24.7%*	270.8	*19.1%*	416.0	*29.3%*	35.2	*2.5%*	348.4	*24.5%*	1,421.2
1995	398.4	*24.8%*	312.8	*19.4%*	475.6	*29.6%*	34.1	*2.1%*	388.3	*24.1%*	1,609.2
1996[r]	406.3	*25.0%*	319.6	*19.7%*	466.1	*28.7%*	33.3	*2.1%*	397.9	*24.5%*	1,623.2
1997[r]	388.8	*23.9%*	316.6	*19.4%*	484.2	*29.7%*	32.7	*2.0%*	406.4	*25.0%*	1,628.7
1998[r]	365.4	*22.8%*	313.3	*19.5%*	476.9	*29.7%*	31.9	*2.0%*	417.3	*26.0%*	1,604.8
1999[r]	389.1	*23.4%*	333.6	*20.1%*	479.6	*28.8%*	32.5	*2.0%*	428.5	*25.8%*	1,663.4
2000[r]	403.7	*23.8%*	338.9	*20.0%*	494.9	*29.2%*	31.8	*1.9%*	423.9	*25.0%*	1,693.2
2001[r]	402.8	*23.9%*	339.4	*20.1%*	489.7	*29.0%*	31.5	*1.9%*	424.7	*25.2%*	1,688.2
2002[r]	417.3	*24.5%*	344.2	*20.2%*	470.7	*27.7%*	31.1	*1.8%*	437.5	*25.7%*	1,700.8
2003[r]	438.9	*25.8%*	321.0	*18.9%*	471.4	*27.7%*	31.8	*1.9%*	438.8	*25.8%*	1,701.8
2004[r]	429.7	*25.1%*	315.1	*18.4%*	491.7	*28.7%*	30.4	*1.8%*	447.3	*26.1%*	1,714.2
2005[r]	426.6	*24.9%*	342.4	*20.0%*	483.7	*28.3%*	30.8	*1.8%*	428.3	*25.0%*	1,711.9
2006[r]	402.3	*24.2%*	336.3	*20.2%*	465.0	*28.0%*	33.7	*2.0%*	423.5	*25.5%*	1,660.7
2007[r]	434.4	*24.8%*	361.3	*20.7%*	489.6	*28.0%*	34.3	*2.0%*	428.8	*24.5%*	1,748.3
2008[r]	444.2	*25.8%*	370.4	*21.6%*	478.6	*27.9%*	34.4	*2.0%*	390.9	*22.7%*	1,718.5
2009[r]	421.2	*26.1%*	350.2	*21.7%*	432.5	*26.8%*	37.5	*2.3%*	373.8	*23.1%*	1,615.2
2010[p]	**415.9**	***25.5%***	**343.7**	***21.1%***	**446.9**	***27.4%***	**34.6**	***2.1%***	**387.7**	***23.8%***	**1,628.8**

a SEO discontinued a per-acre approach to gathering fuel data for the agriculture sector and substituted data from the Wisconsin Department of Revenue and from the federal National Agriculture Statistics Service (NASS). Data from NASS were not available previously.

p Preliminary estimates.

r Revised due to revisions in contributing tables.

Source: Compiled from tables in this publication for Wisconsin petroleum, natural gas, coal, renewable energy and electricity use, by economic sector, and for Wisconsin electric utility energy use.

RESOURCE ENERGY CONSUMPTION
0.8%

Total resource energy consumption increased 0.8 percent in 2010. The only increases were in the industrial and transportation sectors of 3.3 and 3.7 percent. The other sectors saw decreases of 1.3 percent (Residential), 1.8 percent (Commercial), and 7.7 percent (Agriculture).

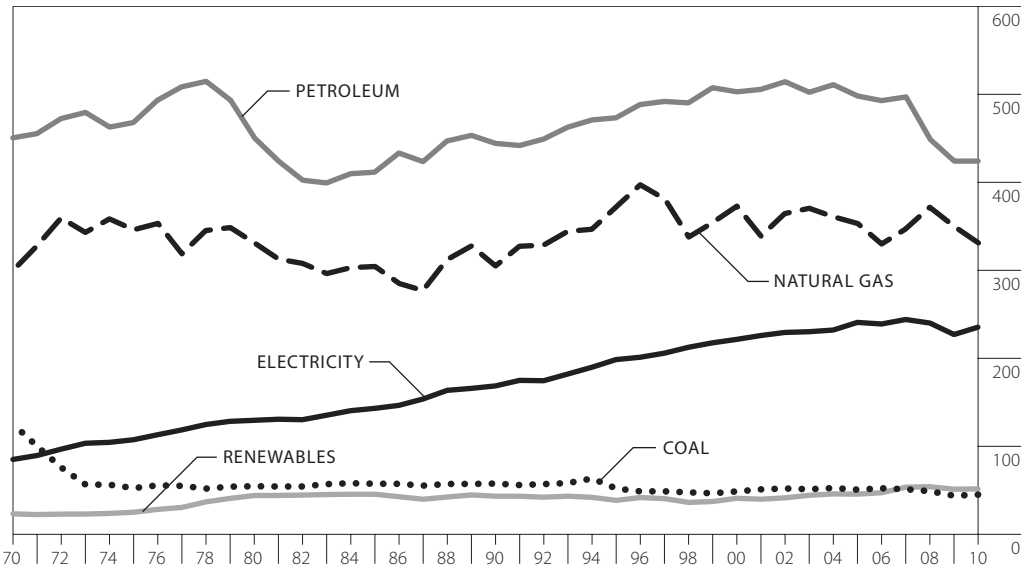
Wisconsin End-Use Energy Consumption, by Type of Fuel

END-USE ENERGY 0.6% IN 2010

End-use energy is a measure of the energy content of fuels at the point of consumption. Since much of the energy needed to generate electricity is lost in the generation process, end-use energy consumption figures will always be lower than the directly linked resource energy consumption figures.

End-use energy decreased 0.6 percent overall in 2010, after decreasing by 5.6 percent in 2009. Petroleum continues to be the most-used end-use energy source in Wisconsin (38.3 percent).

1970-2010 TRILLIONS OF BTU



1970-2010 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Petroleum		Natural Gas		Coal		Renewables		Electricity		Total
1970	449.8	*46.0%*	296.3	*30.3%*	124.3	*12.7%*	22.5	*2.3%*	84.4	*8.6%*	977.2
1975	467.2	*46.8%*	348.5	*34.9%*	51.8	*5.2%*	24.3	*2.4%*	106.7	*10.7%*	998.6
1980r	449.6	*44.7%*	329.9	*32.8%*	53.9	*5.4%*	43.3	*4.3%*	128.8	*12.8%*	1,005.6
1985	410.7	*42.9%*	302.8	*31.6%*	56.7	*5.9%*	44.9	*4.7%*	142.4	*14.9%*	957.5
1990	443.4	*43.7%*	304.0	*29.9%*	56.9	*5.6%*	43.3	*4.3%*	167.9	*16.5%*	1,015.5
1995	472.5	*41.7%*	371.0	*32.7%*	51.3	*4.5%*	41.9	*3.7%*	197.8	*17.4%*	1,134.5
2000r	501.9	*42.1%*	371.9	*31.2%*	48.0	*4.0%*	48.1	*4.0%*	220.8	*18.5%*	1,190.7
2001r	504.6	*43.3%*	337.8	*29.0%*	50.3	*4.3%*	46.4	*4.0%*	225.2	*19.3%*	1,164.3
2002r	513.5	*42.6%*	363.8	*30.2%*	51.3	*4.3%*	48.2	*4.0%*	228.7	*19.0%*	1,205.5
2003r	501.5	*41.7%*	369.7	*30.7%*	50.5	*4.2%*	52.1	*4.3%*	229.5	*19.1%*	1,203.2
2004r	509.9	*42.2%*	360.1	*29.8%*	51.9	*4.3%*	53.8	*4.5%*	231.4	*19.2%*	1,207.0
2005r	497.4	*41.6%*	352.5	*29.5%*	50.0	*4.2%*	55.3	*4.6%*	240.1	*20.1%*	1,195.3
2006r	492.1	*42.1%*	329.0	*28.2%*	51.6	*4.4%*	57.5	*4.9%*	238.3	*20.4%*	1,168.4
2007r	496.2	*41.3%*	346.1	*28.8%*	50.5	*4.2%*	66.4	*5.5%*	243.4	*20.2%*	1,202.6
2008r	448.2	*38.0%*	370.7	*31.5%*	48.2	*4.1%*	71.7	*6.1%*	239.3	*20.3%*	1,178.1
2009r	423.4	*38.1%*	349.2	*31.4%*	43.1	*3.9%*	69.9	*6.3%*	226.2	*20.3%*	1,111.8
2010p	**423.3**	***38.3%***	**330.5**	***29.9%***	**44.3**	***4.0%***	**72.3**	***6.5%***	**234.7**	***21.2%***	**1,105.1**

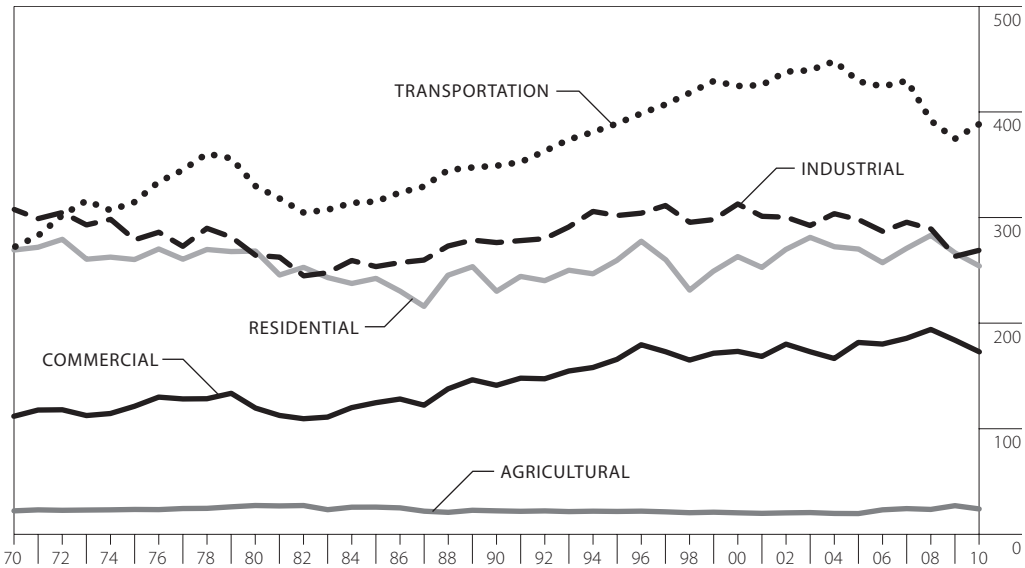
p Preliminary estimates.

r Revised due to revisions in contributing tables.

Source: Compiled from tables in this publication for Wisconsin petroleum, natural gas, coal, renewable and electricity use, by economic sector, and for Wisconsin electric utility energy use.

Wisconsin End-Use Energy Consumption, by Economic Sector

1970-2010 TRILLIONS OF BTU



END-USE ENERGY 0.6% IN 2010

End-use energy consumption decreased 0.6 percent in 2010. The transportation sector continues to be the largest consumer of end-use energy in Wisconsin (35.1 percent).

1970-2010 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Residential		Commercial		Industrial		Agricultural		Transportation		Total
1970	266.2	*27.2%*	111.2	*11.4%*	307.0	*31.4%*	21.6	*2.2%*	271.2	*27.8%*	977.2
1975	262.8	*26.3%*	120.6	*12.1%*	278.2	*27.9%*	22.9	*2.3%*	314.0	*31.4%*	998.6
1980r	267.1	*26.6%*	119.0	*11.8%*	263.6	*26.2%*	26.7	*2.7%*	329.2	*32.7%*	1,005.6
1985	240.9	*25.2%*	124.0	*13.0%*	252.9	*26.4%*	25.2	*2.6%*	314.5	*32.8%*	957.5
1990	229.3	*22.6%*	140.4	*13.8%*	275.7	*27.2%*	21.6	*2.1%*	348.4	*34.3%*	1,015.5
1995	258.8	*22.8%*	165.1	*14.6%*	301.3	*26.6%*	21.0	*1.9%*	388.3	*34.2%*	1,134.5
2000r	262.3	*22.0%*	172.6	*14.5%*	312.1	*26.2%*	19.7	*1.7%*	423.9	*35.6%*	1,190.7
2001r	252.0	*21.6%*	167.8	*14.4%*	300.5	*25.8%*	19.2	*1.7%*	424.7	*36.5%*	1,164.3
2002r	269.2	*22.3%*	179.4	*14.9%*	299.7	*24.9%*	19.7	*1.6%*	437.5	*36.3%*	1,205.5
2003r	280.5	*23.3%*	172.2	*14.3%*	291.7	*24.2%*	20.0	*1.7%*	438.8	*36.5%*	1,203.2
2004r	271.7	*22.5%*	165.8	*13.7%*	303.0	*25.1%*	19.2	*1.6%*	447.3	*37.1%*	1,207.0
2005r	269.5	*22.6%*	181.1	*15.1%*	297.4	*24.9%*	19.0	*1.6%*	428.3	*35.8%*	1,195.3
2006r	256.1	*21.9%*	179.6	*15.4%*	286.7	*24.5%*	22.6	*1.9%*	423.5	*36.2%*	1,168.4
2007r	270.2	*22.5%*	185.0	*15.4%*	294.9	*24.5%*	23.7	*2.0%*	428.8	*35.7%*	1,202.6
2008r	282.5	*24.0%*	193.3	*16.4%*	288.5	*24.5%*	23.0	*1.9%*	390.9	*33.2%*	1,178.1
2009r	265.8	*23.9%*	183.1	*16.5%*	262.5	*23.6%*	26.5	*2.4%*	373.8	*33.6%*	1,111.8
2010p	**253.5**	***22.9%***	**172.2**	***15.6%***	**268.3**	***24.3%***	**23.4**	***2.1%***	**387.7**	***35.1%***	**1,105.1**

p Preliminary estimates.

r Revised due to revisions in contributing tables.

Source: Compiled from tables in this publication for Wisconsin petroleum, natural gas, coal, renewable energy and electricity use, by economic sector, and for Wisconsin electric utility energy use.

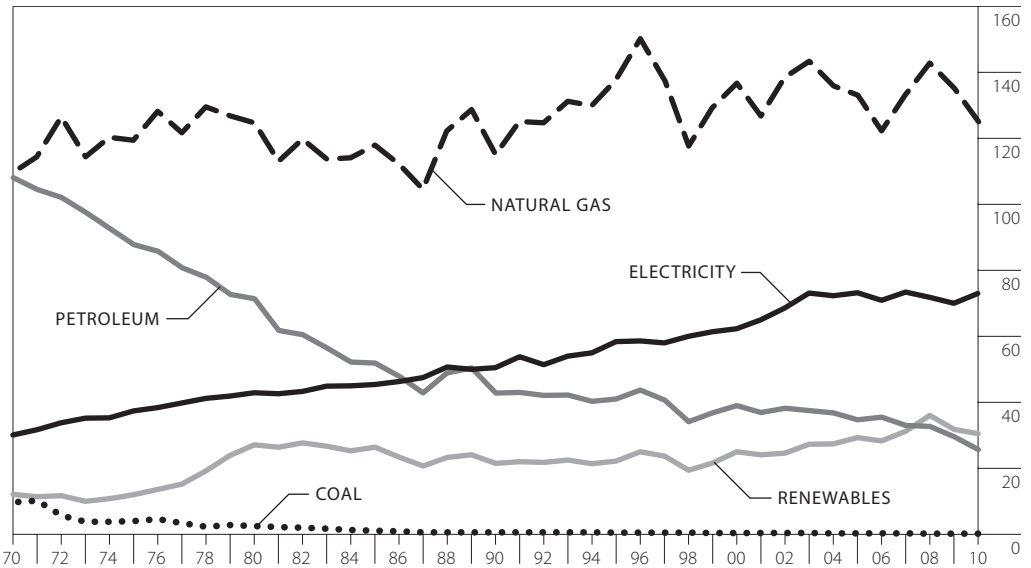
Wisconsin Residential Energy Use, by Type of Fuel

RESIDENTIAL END-USE ENERGY 4.7% IN 2010

Residential end-use energy decreased 4.7 percent in 2010. Natural gas continues to be the dominant fuel used in Wisconsin homes (49.3 percent), comprising just under half of the end-use energy used.

Electricity consumption increased 4.2 percent from 2009, while petroleum use decreased by 13.2 percent and natural gas use decreased 7.5 percent. Between 1970 and 2010, petroleum use in the residential sector declined 76.4 percent.

1970-2010 TRILLIONS OF BTU



1970-2010 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Petroleum		Natural Gas		Coal		Renewables[a]		Electricity		Total End Use	Total Resource[b]
1970	107.9	*40.5%*	107.0	*40.2%*	9.5	*3.6%*	11.9	*4.5%*	29.9	*11.2%*	266.2	324.3
1975	87.6	*33.3%*	122.4	*46.6%*	3.8	*1.4%*	11.8	*4.5%*	37.2	*14.1%*	262.8	341.9
1980[r]	71.2	*26.7%*	124.0	*46.4%*	2.3	*0.9%*	26.9	*10.1%*	42.7	*16.0%*	267.1	355.6
1985	51.7	*21.4%*	116.9	*48.5%*	0.9	*0.4%*	26.2	*10.9%*	45.2	*18.8%*	240.9	336.8
1990	42.6	*18.6%*	114.7	*50.0%*	0.4	*0.2%*	21.3	*9.3%*	50.3	*21.9%*	229.3	350.9
1995	40.8	*15.8%*	137.5	*53.1%*	0.3	*0.1%*	22.0	*8.5%*	58.2	*22.5%*	258.8	398.4
2000[r]	38.8	*14.8%*	136.4	*52.0%*	0.2	*0.1%*	24.8	*9.5%*	62.1	*23.7%*	262.3	403.7
2005[r]	34.5	*12.8%*	132.9	*49.3%*	0.1	*0.0%*	29.1	*10.8%*	73.0	*27.1%*	269.5	426.6
2006[r]	35.3	*13.8%*	121.9	*47.6%*	0.1	*0.0%*	28.1	*11.0%*	70.7	*27.6%*	256.1	402.3
2007[r]	32.8	*12.2%*	133.0	*49.2%*	0.1	*0.0%*	31.0	*11.5%*	73.2	*27.1%*	270.2	434.4
2008[r]	32.5	*11.5%*	142.5	*50.5%*	0.0	*0.0%*	35.8	*12.7%*	71.6	*25.4%*	282.5	444.2
2009[r]	29.4	*11.1%*	135.0	*50.8%*	0.0	*0.0%*	31.6	*11.9%*	69.8	*26.3%*	265.8	421.2
2010[p]	**25.5**	***10.1%***	**124.9**	***49.3%***	**0.0**	***0.0%***	**30.3**	***12.0%***	**72.8**	***28.7%***	**253.5**	**415.9**

a Renewables includes wood/biomass, solar, wind and biogas.

b Includes energy resources (and losses) attributable to electricity generation.

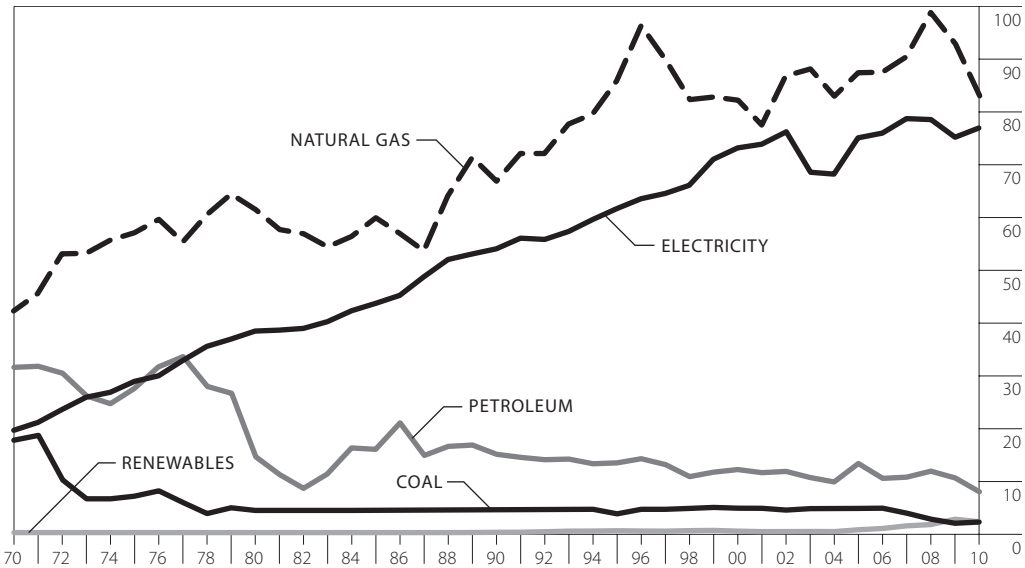
p Preliminary estimates.

r Revised due to revisions in contributing tables.

Source: Compiled from tables in this publication for Wisconsin petroleum, natural gas, coal, renewables and electricity use, by economic sector, and for Wisconsin electric utility energy use.

Wisconsin Commercial Energy Use, by Type of Fuel

1970-2010 TRILLIONS OF BTU



1970-2010 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Petroleum		Natural Gas		Coal		Renewables[a]		Electricity		Total End Use	Total Resource[b]
1970	31.5	*28.3%*	42.2	*38.0%*	17.7	*15.9%*	0.2	*0.2%*	19.6	*17.6%*	111.2	149.3
1975	27.5	*22.8%*	57.0	*47.2%*	7.1	*5.9%*	0.2	*0.2%*	28.8	*23.9%*	120.6	182.0
1980	14.6	*12.3%*	61.4	*51.6%*	4.4	*3.7%*	0.2	*0.2%*	38.4	*32.3%*	119.0	198.5
1985	16.0	*12.9%*	59.8	*48.2%*	4.4	*3.6%*	0.2	*0.2%*	43.6	*35.2%*	124.0	216.5
1990	15.0	*10.7%*	66.7	*47.5%*	4.5	*3.2%*	0.3	*0.2%*	54.0	*38.4%*	140.4	270.8
1995	13.4	*8.1%*	85.8	*52.0%*	3.8	*2.3%*	0.6	*0.3%*	61.6	*37.3%*	165.1	312.8
2000	12.1	*7.0%*	82.1	*47.6%*	4.8	*2.8%*	0.5	*0.3%*	73.1	*42.3%*	172.6	338.9
2005	13.3	*7.3%*	87.3	*48.2%*	4.8	*2.6%*	0.7	*0.4%*	75.0	*41.4%*	181.1	342.4
2006	10.5	*5.8%*	87.4	*48.7%*	4.8	*2.7%*	1.0	*0.5%*	75.9	*42.3%*	179.6	336.3
2007	10.7	*5.8%*	90.3	*48.8%*	3.9	*2.1%*	1.5	*0.8%*	78.6	*42.5%*	185.0	361.3
2008	11.8	*6.1%*	98.6	*51.0%*	2.7	*1.4%*	1.7	*0.9%*	78.4	*40.6%*	193.3	370.4
2009[r]	10.6	*5.8%*	92.8	*50.7%*	2.0	*1.1%*	2.7	*1.5%*	75.1	*41.0%*	183.1	350.2
2010[p]	**8.0**	***4.6%***	**83.0**	***48.2%***	**2.2**	***1.3%***	**2.3**	***1.3%***	**76.8**	***44.6%***	**172.2**	**343.7**

a Renewables includes solar, wood, biomass, wind, hydro and biogas.

b Includes energy resources (and losses) attributable to electricity generation.

p Preliminary estimates.

r Revised due to revisions in contributing tables.

Source: Compiled from tables in this publication for Wisconsin petroleum, natural gas, coal, renewables and electricity use, by economic sector, and for Wisconsin electric utility energy use.

COMMERCIAL END-USE ENERGY **5.9%** IN 2010

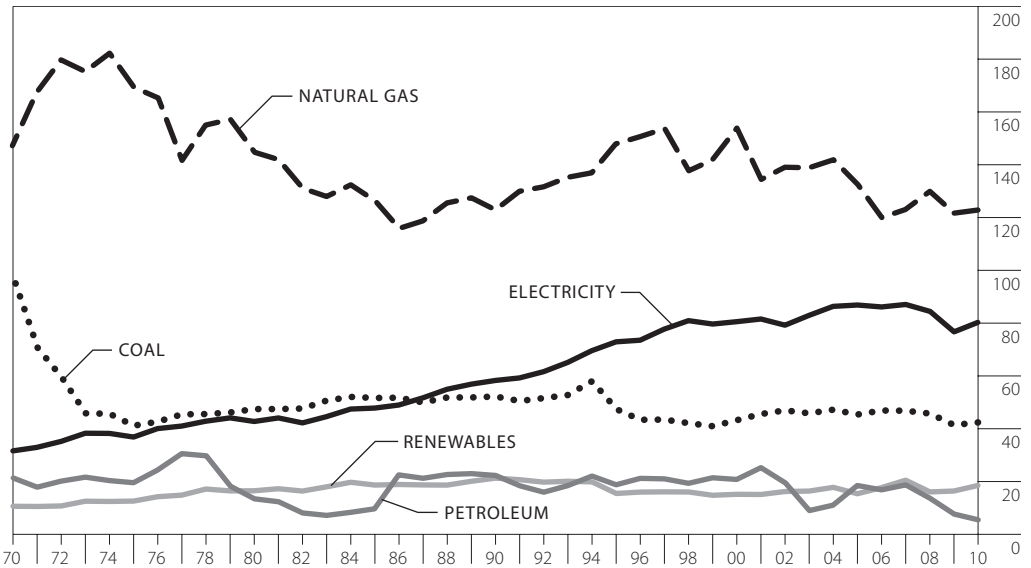
In 2010, commercial sector end-use energy decreased 5.9 percent. Since 1980, commercial end-use energy has increased 44.8 percent. Electricity energy use doubled (100.2 percent) over the same period. The commercial sector saw increases in electricity use (2.4 percent) and coal (11.6 percent), and decreases in petroleum (24.7 percent), natural gas (10.6 percent) and renewables (17.7 percent). Natural gas remains the major energy source, providing 48.2 percent of commercial sector energy, followed by electricity at 44.6 percent. Electricity use in this sector increased 292.4 percent since 1970. Petroleum's importance in this sector has declined from consuming 28.3 percent of the energy used in 1970, to presently accounting for only 4.6 percent of total commercial energy consumption.

Wisconsin Industrial Energy Use, by Type of Fuel

INDUSTRIAL END-USE ENERGY 2.2% IN 2010

End-use energy consumption in the industrial sector increased 2.2 percent in 2010, following a decrease of 9.0 percent in 2009. The major industrial energy sources are natural gas (45.7 percent) and electricity (29.8 percent), trailed by coal (15.7 percent), renewables (6.8 percent) and petroleum (2.0 percent). While petroleum continues to be the largest end-use energy source in Wisconsin, in the industrial sector petroleum comprises the smallest amount of energy use by fuel. Use of all fuels in the industrial sector increased, with the exception of petroleum which declined by 29.3 percent. The increases, by fuel, are: natural gas, 1.0 percent; coal, 2.5 percent; renewables, 13.0 percent; and electricity, 4.7 percent.

1970-2010 TRILLIONS OF BTU



1970-2010 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Petroleum		Natural Gas		Coal		Renewables[a]		Electricity		Total End Use	Total Resource[b]
1970	21.1	*6.9%*	147.1	*47.9%*	97.1	*31.6%*	10.4	*3.4%*	31.4	*10.2%*	307.0	368.0
1975	19.3	*6.9%*	169.1	*60.8%*	40.9	*14.7%*	12.3	*4.4%*	36.6	*13.2%*	278.2	356.1
1980	13.2	*5.0%*	144.5	*54.8%*	47.2	*17.9%*	16.2	*6.2%*	42.5	*16.1%*	263.6	351.7
1985	9.4	*3.7%*	126.1	*49.9%*	51.4	*20.3%*	18.4	*7.3%*	47.6	*18.8%*	252.9	353.7
1990	22.1	*8.0%*	122.6	*44.5%*	51.9	*18.8%*	21.0	*7.6%*	58.0	*21.1%*	275.7	416.0
1995	18.5	*6.1%*	147.7	*49.0%*	47.2	*15.7%*	15.2	*5.1%*	72.7	*24.1%*	301.3	475.6
2000	20.5	*6.6%*	153.4	*49.1%*	43.0	*13.8%*	14.9	*4.8%*	80.3	*25.7%*	312.1	494.9
2005	18.2	*6.1%*	132.3	*44.5%*	45.1	*15.2%*	15.1	*5.1%*	86.6	*29.1%*	297.4	483.7
2006	16.6	*5.8%*	119.7	*41.8%*	46.7	*16.3%*	17.4	*6.1%*	86.3	*30.1%*	286.7	465.0
2007	18.5	*6.3%*	122.8	*41.6%*	46.6	*15.8%*	20.2	*6.9%*	86.8	*29.4%*	294.9	489.6
2008[r]	13.4	*4.6%*	129.6	*44.9%*	45.5	*15.8%*	15.8	*5.5%*	84.2	*29.2%*	288.5	478.6
2009[r]	7.4	*2.8%*	121.4	*46.2%*	41.1	*15.7%*	16.2	*6.2%*	76.4	*29.1%*	262.5	432.5
2010[p]	**5.3**	***2.0%***	**122.6**	***45.7%***	**42.1**	***15.7%***	**18.3**	***6.8%***	**80.0**	***29.8%***	**268.3**	**446.9**

a Renewables includes hydro, wood, wind, biogas and biomass.

b Includes energy resources (and losses) attributable to electricity generation.

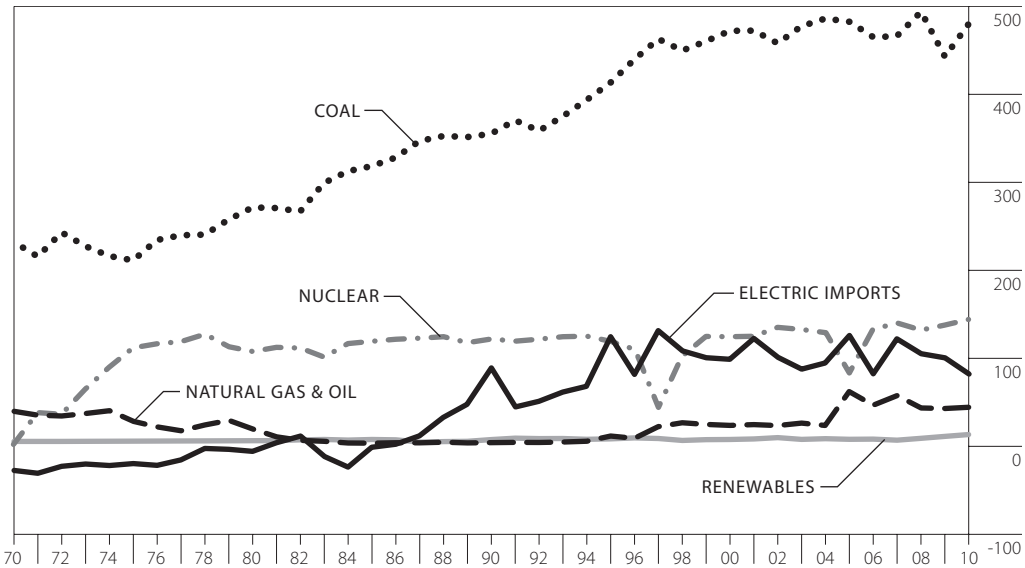
p Preliminary estimates.

r Revised due to revisions in contributing tables.

Source: Compiled from tables in this publication for Wisconsin petroleum, natural gas, coal, renewables and electricity use, by economic sector, and for Wisconsin electric utility energy use.

Wisconsin Energy Use for Electricity Generation, in Btu, by Type of Fuel

1970-2010 TRILLIONS OF BTU



1970-2010 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Petroleum		Natural Gas		Coal[a]		Renewables		Nuclear[b]		Electric Imports[c]		Hydro		Total
1970	7.9	*3.2%*	31.1	*12.5%*	231.1	*93.0%*	4.8	*1.9%*	1.7	*0.7%*	-28.2	*-11.4%*	4.8	*1.9%*	248.4
1975	7.8	*2.3%*	19.8	*5.9%*	210.5	*63.0%*	5.1	*1.5%*	111.2	*33.3%*	-20.4	*-6.1%*	5.1	*1.5%*	333.9
1980	4.8	*1.2%*	14.1	*3.6%*	270.7	*68.4%*	5.6	*1.4%*	107.0	*27.0%*	-6.5	*-1.6%*	5.6	*1.4%*	395.8
1985	1.4	*0.3%*	1.4	*0.3%*	317.7	*71.5%*	7.0	*1.6%*	118.6	*26.7%*	-1.8	*-0.4%*	7.0	*1.6%*	444.2
1990	1.0	*0.2%*	2.4	*0.4%*	354.5	*61.8%*	6.9	*1.2%*	121.2	*21.1%*	87.7	*15.3%*	6.1	*1.1%*	573.7
1995	0.8	*0.1%*	10.1	*1.5%*	412.4	*61.3%*	7.7	*1.1%*	118.5	*17.6%*	123.0	*18.3%*	7.2	*1.1%*	672.5
2000	1.6	*0.2%*	21.4	*3.0%*	471.4	*65.2%*	7.0	*1.0%*	123.8	*17.1%*	98.1	*13.6%*	6.0	*0.8%*	723.3
2005	1.8	*0.2%*	59.4	*7.9%*	481.7	*63.7%*	7.2	*1.0%*	81.8	*10.8%*	124.7	*16.5%*	5.1	*0.7%*	756.6
2006	1.4	*0.2%*	44.5	*6.1%*	464.1	*63.5%*	7.4	*1.0%*	132.1	*18.1%*	81.0	*11.1%*	4.9	*0.7%*	730.5
2007	1.9	*0.2%*	54.9	*7.0%*	465.4	*59.0%*	6.2	*0.8%*	139.4	*17.7%*	121.3	*15.4%*	4.5	*0.6%*	789.1
2008	1.1	*0.1%*	41.7	*5.3%*	492.6	*63.2%*	8.3	*1.1%*	131.3	*16.8%*	104.7	*13.4%*	4.9	*0.6%*	779.7
2009[r]	0.6	*0.1%*	41.6	*5.7%*	441.4	*60.5%*	10.5	*1.4%*	137.0	*18.8%*	98.5	*13.5%*	4.6	*0.6%*	729.6
2010[p]	**0.5**	***0.1%***	**43.1**	***5.7%***	**478.7**	***63.1%***	**12.6**	***1.7%***	**143.4**	***18.9%***	**80.1**	***10.6%***	**6.9**	***0.9%***	**758.4**

a Includes petroleum coke.

b Based on 10,800 Btu per kWh.

c Estimated assuming 11,300 Btu of resource energy per kWh imported into Wisconsin. Numbers in parentheses and negative percentages indicate resource energy used in Wisconsin to produce electricity that was exported.

p Preliminary estimates.

r Revised.

Source: Public Service Commission of Wisconsin, Accounts and Finance Division, *Statistics of Wisconsin Public Utilities*, Bulletin #8 (1970-1994); U.S. Department of Agriculture, Rural Electrification Administration, *Annual Statistical Report*, REA Bulletin 1-1 (1970-1995); Wisconsin Department of Natural Resources, Annual Survey of Point Source Emissions, unpublished (1971-2010); American Gas Association, *Gas Facts* (1970-1995); U.S. Department of Energy, Energy Information Administration, *Electric Power Monthly*, [DOE/EIA-0226(2012/02)] (February 2012); Public Service Commission of Wisconsin, unpublished data (2005-2010); survey of wastewater treatment facilities and landfills on biogas production (2007-2010).

ENERGY USE FOR ELECTRIC GENERATION
3.9%
IN 2010

Wisconsin's energy use for electric generation increased by 3.9 percent in 2010. Since the early 1980s, coal and nuclear power have been dominate fuels for electricity generation.

Coal use increased 8.5 percent and imports of electricity (and associated losses) from other states and Canada decreased 18.7 percent. Petroleum use decreased by 10.5 percent while natural gas increased by 3.6 percent. In 2010, of the electricity produced in Wisconsin, coal provided 63.1 percent of the energy. The proportion of energy provided by petroleum, natural gas, renewables and hydropower was only 8.5 percent, and the balance of electricity was nuclear (18.9 percent) or imports to the state (10.6 percent).

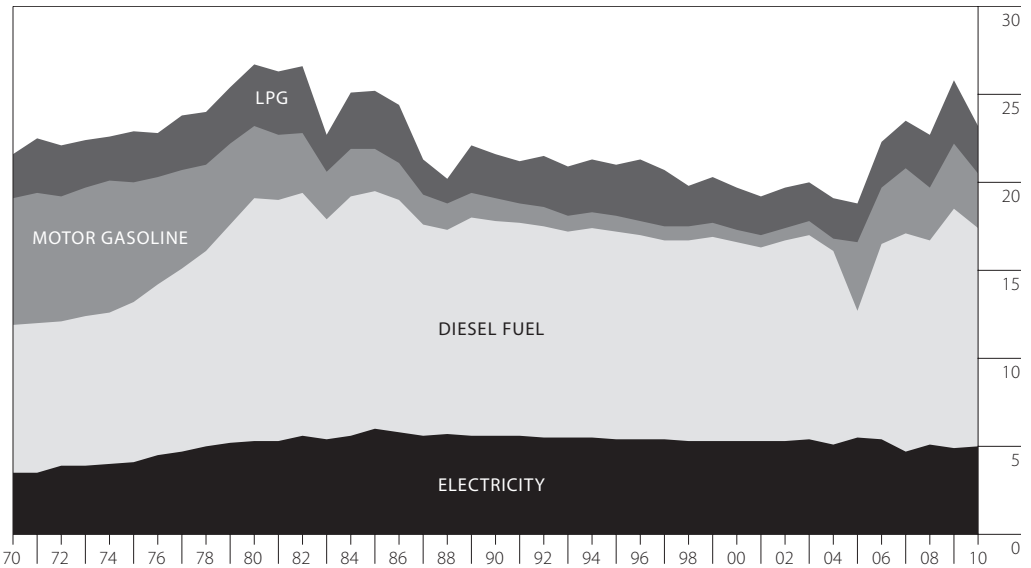
Wisconsin Agricultural Energy Use, in Btu, by Type of Fuel

AGRICULTURAL END-USE ENERGY 7.7% IN 2010

Agricultural energy end-use decreased 7.7 percent in 2010. Energy use in this sector is affected by changes in mechanization and automation, and by advances in technology such as biodiesel. Agricultural sector energy use accounted for 2.1 percent of total end-use energy in Wisconsin.

Starting in 2005, figures in this table reflect a shift from a per acre approach to gathering fuel data to new data resources for petroleum fuels. Previous to 2005, distillate and kerosene data were included in the diesel figure.

1970-2010 TRILLIONS OF BTU



1970-2010 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Motor Gasoline	Diesel Fuel[a]	LPG	Other Fuel[b]	Total Petroleum		Electricity		Total End Use	Total Resource Use[c]
1970	7.2	8.4	2.5		18.1	*83.8%*	3.5	*16.2%*	21.6	28.4
1975	6.8	9.1	2.9		18.8	*82.0%*	4.1	*18.0%*	22.9	31.7
1980	4.1	13.8	3.5		21.4	*80.3%*	5.3	*19.7%*	26.7	37.5
1985	2.4	13.5	3.3		19.2	*76.3%*	6.0	*23.7%*	25.1	37.8
1990	1.3	12.2	2.5		16.0	*74.0%*	5.6	*26.0%*	21.6	35.2
1995[r]	0.9	11.8	2.9		15.6	*74.1%*	5.4	*25.9%*	21.0	34.1
2000	0.7	11.3	2.4		14.4	*73.1%*	5.3	*26.9%*	19.7	31.8
2005	3.9	7.2	2.2	0.3	13.6	*71.2%*	5.5	*28.8%*	19.0	30.8
2006	3.2	11.1	2.6	0.3	17.2	*76.2%*	5.4	*23.8%*	22.6	33.7
2007	3.7	12.4	2.7	0.3	19.0	*80.2%*	4.7	*19.8%*	23.7	34.3
2008[r]	3.0	11.6	3.0	0.3	17.9	*77.9%*	5.1	*22.1%*	23.0	34.4
2009	3.7	13.6	3.6	0.7	21.6	*81.4%*	4.9	*18.6%*	26.5	37.5
2010[p]	**3.1**	**12.4**	**2.7**	**0.2**	**18.4**	***78.7%***	**5.0**	***21.3%***	**23.4**	**34.6**

a Includes other light distillates, through 2005.

b This fuel is primarily distillate and kerosene, but may include small amounts of coal and wood.

c Includes energy resources (and losses) attributed to electricity generation.

p Preliminary estimates.

r Revised.

Source: Wisconsin Department of Administration, Division of Energy, based on U.S. Department of Agriculture, *Energy and U. S. Agriculture: 1974 Data Base* (September 1976), *1978 Census of Agriculture* (1980) and *Farm Production Expenditures* (1980-1984); Wisconsin Department of Agriculture, Trade, and Consumer Protection, *Wisconsin Agricultural Statistics* (1974-2009) and *Wisconsin Dairy Facts* (1982-2006); Wisconsin Department of Revenue fuels sales and tax data (1991-2010); National Agriculture Statistics Service, unpublished expenditure data (2005-2010); United States Department of Agriculture, Economic Research Service data, http://www.ers.usda.gov/data-products/farm-income-and-wealth-statistics.aspx (2005-2010); Energy Information Administration, petroleum navigator (2005-2010).

Wisconsin Agricultural Energy Use, in Gallons and kWh, by Type of Fuel

1970-2010 MILLIONS OF GALLONS AND MILLIONS OF kWh

Year	Motor Gasoline	Diesel[a]	LPG	Other Fuel[b]	Total Petroleum	Electricity (Millions of kWh)
1970	58.0	60.7	0.1		118.8	1,028
1975	54.3	65.8	0.1		120.2	1,210
1980	33.0	99.3	0.1		132.4	1,539
1985	19.1	97.8	0.1		117.0	1,745
1990	10.1	88.5	0.1		98.7	1,645
1995	6.9	85.0	0.1		92.0	1,595
1996	6.3	84.0	36.8		127.1	1,585
1997	6.1	81.9	33.1		121.1	1,575
1998	6.0	82.2	24.2		112.4	1,565
1999	6.1	83.7	27.6		117.4	1,560
2000	5.8	81.4	25.3		112.5	1,555
2001	5.7	79.5	23.5		108.7	1,550
2002	5.8	82.1	24.0		111.9	1,545
2003	6.0	84.1	22.8		112.9	1,595
2004	5.8	81.2	24.1		111.1	1,501
2005[r]	31.2	52.1	22.6	1.9	107.9	1,606
2006[r]	25.9	80.0	27.1	2.2	135.2	1,574
2007[r]	29.6	89.1	28.3	1.9	149.0	1,379
2008	23.6	83.9	31.8	2.0	141.3	1,486
2009[r]	29.5	98.1	37.8	4.8	170.3	1,443
2010[p]	**24.8**	**89.3**	**28.7**	**1.7**	**144.5**	**1,463**

Although farmers use manure digesters and other forms of energy generation such as biomass, and biodiesel to power and heat their farm, their primary energy comes from petroleum sources.

The State Energy Office instituted a new method of data collection for fuels used in the agricultural sector. Starting in 2005, agricultural sector data have been revised to reflect the new data collection method. Previous to 2005, kerosene and distillates were included in the diesel figure.

a Fuel oil and kerosene, through 2004.

b This fuel is primarily distillate and kerosene, but may include small amounts of coal and wood.

p Preliminary estimates.

r Revised.

Source: Wisconsin Department of Administration, Division of Energy, based on U.S. Department of Agriculture, *Energy and U. S. Agriculture: 1974 Data Base* (September 1976), *1978 Census of Agriculture* (1980) and *Farm Production Expenditures* (1980-1984); Wisconsin Department of Agriculture, Trade, and Consumer Protection, *Wisconsin Agricultural Statistics* (1974-2009) and *Wisconsin Dairy Facts* (1982-2006); and Wisconsin Department of Revenue fuels sales and tax data (1991-2010); National Agriculture Statistics Service, unpublished expenditure data (2005-2010); United States Department of Agriculture, Economic Research Service data, http://www.ers.usda.gov/data-products/farm-income-and-wealth-statistics.aspx (2005-2010); Energy Information Administration, petroleum navigator (2005-2010).

Wisconsin Transportation Energy Use, in Btu, by Type of Fuel

TRANSPORTATION
ENERGY USE
3.7%

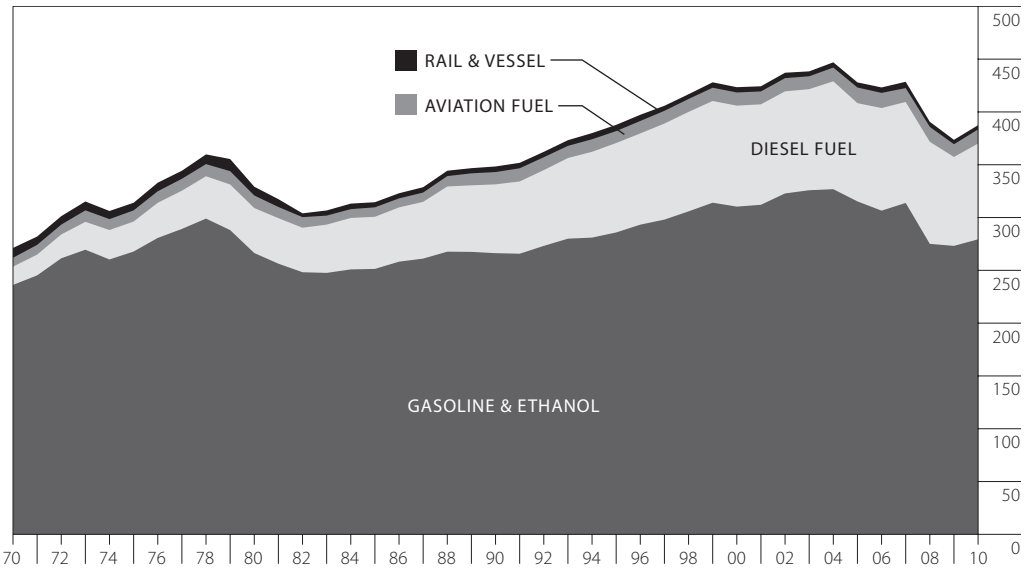
MOTOR
GASOLINE USE
1.6%

ETHANOL USE
10.7%

Transportation energy use increased 3.7 percent in 2010. Motor gasoline use increased 1.6 percent, while ethanol use increased 10.7 percent.

Diesel fuel is used primarily for trucking freight. Diesel fuel use increased 7.7 percent. Transportation activities consume 35.1 percent of Wisconsin's total end-use energy, accounting for 86.4 percent of petroleum use.

1970-2010 TRILLIONS OF BTU



Year	Motor Gasoline[a]	Ethanol	Diesel Fuel	Aviation Gasoline	Aviation Jet Fuel	Rail Distillate & Residual	LPG	Total[b]
1970	236.2	0.0	17.3	0.7	7.7	9.3	NA	271.2
1975	267.8	0.0	28.4	0.8	9.8	7.2	NA	314.0
1980	266.4	0.0	42.6	0.9	11.0	8.3	NA	329.2
1985[r]	251.2	0.1	49.4	0.6	8.4	4.8	NA	314.5
1990	265.6	0.7	65.2	0.6	11.0	5.4	NA	348.4
1995[r]	281.8	4.1	84.7	0.7	10.6	5.9	0.6	388.3
2000[r]	302.4	7.9	95.6	0.8	11.7	5.0	0.5	423.9
2005	304.9	10.4	93.1	0.5	14.3	4.9	0.3	428.3
2006	295.5	11.0	97.2	0.4	13.9	5.2	0.3	423.5
2007	300.2	13.6	95.6	0.4	12.8	6.0	0.2	428.8
2008[r]	256.7	18.3	96.6	0.3	13.8	4.8	0.2	390.9
2009	253.8	19.4	84.2	0.3	11.8	4.2	0.2	373.8
2010[p]	**257.9**	**21.5**	**90.7**	**0.3**	**13.1**	**4.0**	**0.2**	**387.7**

a Excludes ethanol.

b Since 1994, fewer than .05 trillion Btu of compressed natural gas (CNG) were used for highway transportation.

p Preliminary estimate.

r Revised.

NA – Not available.

Source: Wisconsin Department of Commerce, Bureau of Petroleum Inspection, *Report on Petroleum Products Inspected and Delivered to Wisconsin* (1970-1995); Wisconsin Department of Revenue, *Motor Vehicle Fuel Tax Statistics* (1970-2010) and *Petroleum Supply Annual*, DOE/EIA-3340 (1982-2010); US Department of Energy, Form EIA-782C, "Monthly Report of Petroleum Products Sold for Consumption" (1983-2010); WI State Energy Office surveys of airport fixed base operators (2007-2009) and railways (2007-2010).

Wisconsin Transportation Energy Use, in Gallons, by Type of Fuel

1970-2010 MILLIONS OF GALLONS

Year	Motor Gasoline[a]	Ethanol	Diesel Fuel	Aviation		Distillate & Residual		LPG	Total[b]
				Gasoline	Jet Fuel	Rail	Vessel		
1970	1,889.1	0.0	124.8	5.9	56.7	49.2	17.0	NA	2,142.7
1975	2,142.8	0.0	205.1	6.7	72.4	36.6	14.1	NA	2,477.7
1980	2,130.7	0.0	307.1	7.0	81.4	44.8	14.8	NA	2,585.8
1985	2,009.7	1.5	356.9	4.5	62.2	27.1	7.4	NA	2,469.3
1990	2,124.5	8.3	471.1	5.0	81.6	29.1	9.0	NA	2,728.6
1995	2,254.1	48.5	612.5	5.6	78.6	35.1	6.9	6.1	3,047.3
1996	2,307.8	56.8	624.6	5.7	82.0	38.4	3.7	6.0	3,125.0
1997	2,345.4	57.5	657.6	5.8	84.0	34.1	0.0	5.8	3,190.3
1998	2,398.4	71.5	681.0	5.9	85.0	31.9	0.5	5.7	3,280.0
1999	2,461.5	75.4	696.3	6.1	87.4	37.0	0.0	5.1	3,368.8
2000	2,419.4	93.8	691.2	6.0	87.0	35.9	0.0	5.3	3,338.6
2001	2,438.6	85.9	687.7	5.9	85.0	35.2	0.0	4.6	3,342.9
2002	2,523.0	88.2	698.9	4.9	88.2	36.9	0.0	4.0	3,444.1
2003	2,538.7	100.9	692.1	4.3	86.1	33.7	0.0	3.8	3,459.6
2004	2,545.6	102.5	738.5	4.2	92.5	35.7	0.0	3.7	3,522.7
2005	2,439.2	123.0	672.7	4.1	105.7	35.1	0.0	3.0	3,382.8
2006	2,364.1	130.4	702.6	3.5	102.9	37.2	0.0	3.2	3,343.9
2007	2,401.7	161.2	691.3	2.8	94.6	43.2	0.0	2.3	3,397.2
2008[r]	2,054.0	217.0	698.6	2.6	102.4	34.7	0.0	2.5	3,111.8
2009[r]	2,030.3	229.7	608.7	2.4	87.0	30.1	0.0	2.2	2,990.5
2010[p]	**2,063.2**	**254.3**	**655.5**	**2.4**	**97.0**	**28.9**	**0.0**	**2.2**	**3,103.7**

a Excludes ethanol. See adjacent column for amounts of ethanol.

b In 2010, 302.0 thousand gasoline gallon equivalents (GGEs) of compressed natural gas, and 2,262.2 thousand GGEs of liquefied propane gas were used for highway transportation.

p Preliminary estimate.

r Revised.

NA – Not available.

Source: Wisconsin Department of Commerce, Bureau of Petroleum Inspection, *Report on Petroleum Products Inspected and Delivered to Wisconsin* (1970-1995); Wisconsin Department of Revenue, *Motor Vehicle Fuel Tax Statistics* (1970-2010) and *Petroleum Supply Annual*, DOE/EIA-3340 (1982-2010); US Department of Energy, Form EIA-782C, "Monthly Report of Petroleum Products Sold Into States for Consumption" (1983-2010); WI State Energy Office surveys of airport fixed base operators (2007-2009) and railways (2007-2010).

AVERAGE PRICE OF GASOLINE **$.417** PER GALLON

In 2010, the average statewide price of gasoline increased by $.417 a gallon, to $2.791 a gallon.

Ethanol, a renewable energy resource primarily distilled from corn, is used as an oxygenate in reformulated gasoline and in the blending of E10 (10 percent ethanol, 90 percent gasoline) and E85 (85 percent ethanol, 15 percent gasoline).

The increased use of ethanol is also linked to the increased availability of ethanol statewide.

Wisconsin Petroleum Use, by Economic Sector

1970-2010 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Residential		Commercial		Industrial		Agricultural[a]		Transportation		Electric Utility		Total	Total End Use
1970	107.9	*23.6%*	31.5	*6.9%*	21.1	*4.6%*	18.1	*4.0%*	271.2	*59.3%*	7.9	*1.7%*	457.7	449.8
1975	87.6	*18.4%*	27.5	*5.8%*	19.3	*4.1%*	18.8	*4.0%*	314.0	*66.1%*	7.8	*1.6%*	475.0	467.2
1980	71.2	*15.7%*	14.6	*3.2%*	13.2	*2.9%*	21.4	*4.7%*	329.2	*72.4%*	4.8	*1.1%*	454.4	449.6
1985	51.7	*12.5%*	16.0	*3.9%*	9.4	*2.3%*	19.2	*4.7%*	314.4	*76.3%*	1.4	*0.3%*	412.0	410.7
1990	42.6	*9.6%*	15.0	*3.4%*	22.1	*5.0%*	16.0	*3.6%*	347.7	*78.2%*	1.0	*0.2%*	444.4	443.4
1995	40.8	*8.6%*	13.4	*2.8%*	18.5	*3.9%*	15.6	*3.3%*	384.2	*81.2%*	0.8	*0.2%*	473.4	472.5
1996	43.5	*8.9%*	14.2	*2.9%*	20.9	*4.3%*	15.9	*3.3%*	393.1	*80.5%*	0.9	*0.2%*	488.5	487.6
1997	40.5	*8.2%*	13.1	*2.7%*	20.8	*4.2%*	15.3	*3.1%*	401.5	*81.5%*	1.6	*0.3%*	492.7	491.2
1998	33.9	*6.9%*	10.8	*2.2%*	19.1	*3.9%*	14.5	*3.0%*	411.3	*83.7%*	1.8	*0.4%*	491.4	489.6
1999	36.6	*7.2%*	11.7	*2.3%*	21.2	*4.2%*	15.0	*2.9%*	422.2	*83.0%*	2.0	*0.4%*	508.6	506.6
2000	38.8	*7.7%*	12.1	*2.4%*	20.5	*4.1%*	14.4	*2.9%*	416.0	*82.6%*	1.6	*0.3%*	503.5	501.9
2001	36.7	*7.3%*	11.6	*2.3%*	25.0	*4.9%*	14.0	*2.8%*	417.5	*82.5%*	1.3	*0.3%*	505.9	504.6
2002	38.0	*7.4%*	11.8	*2.3%*	19.3	*3.7%*	14.4	*2.8%*	430.1	*83.4%*	2.1	*0.4%*	515.6	513.5
2003[r]	37.3	*7.4%*	10.6	*2.1%*	8.7	*1.7%*	14.5	*2.9%*	430.3	*85.6%*	1.3	*0.3%*	502.7	501.5
2004[r]	36.6	*7.1%*	9.8	*1.9%*	10.8	*2.1%*	14.0	*2.7%*	438.7	*85.8%*	1.5	*0.3%*	511.4	509.9
2005[r]	34.5	*6.9%*	13.3	*2.7%*	18.2	*3.6%*	13.6	*2.7%*	417.9	*83.7%*	1.8	*0.4%*	499.2	497.4
2006[r]	35.3	*7.2%*	10.5	*2.1%*	16.6	*3.4%*	17.2	*3.5%*	412.5	*83.6%*	1.4	*0.3%*	493.5	492.1
2007[r]	32.8	*6.6%*	10.7	*2.1%*	18.5	*3.7%*	19.0	*3.8%*	415.2	*83.4%*	1.9	*0.4%*	498.1	496.2
2008[r]	32.5	*7.2%*	11.8	*2.6%*	13.4	*3.0%*	17.9	*4.0%*	372.6	*82.9%*	1.1	*0.2%*	449.3	448.2
2009[r]	29.4	*6.9%*	10.6	*2.5%*	7.4	*1.8%*	21.6	*5.1%*	354.4	*83.6%*	0.6	*0.1%*	423.9	423.4
2010[p]	**25.5**	***6.0%***	**8.0**	***1.9%***	**5.3**	***1.2%***	**18.4**	***4.4%***	**366.2**	***86.4%***	**0.5**	***0.1%***	**423.8**	**423.3**

a The SEO discontinued a per-acre approach to gathering fuel data for the agriculture sector and substituted data from the Wisconsin Department of Revenue and the federal National Agriculture Statistics Service (NASS). Data from NASS were not available previous to 2005.

p Preliminary estimates.

r Revised.

Source: Wisconsin Department of Commerce, Bureau of Petroleum Inspection, *Report on Petroleum Products Inspected and Delivered to Wisconsin* (1970-1995); Wisconsin Department of Revenue, *Collection of Petroleum Inspection Fees* (1996-2006) and *Fuel Tax Statistical Report* (1996-2010); Office of Energy Independence phone surveys of airport fixed base operators (1997-2009) and railways (1997-2010); US Department of Energy, Form EIA-782C, "Monthly Report of Petroleum Products Sold Into States for Consumption" (1983-2010); US Department of Energy, Form EIA-821 (2003-2010); unpublished data from the National Agriculture Statistics Service (2005-2010).

OVERALL PETROLEUM USE STAYED LEVEL

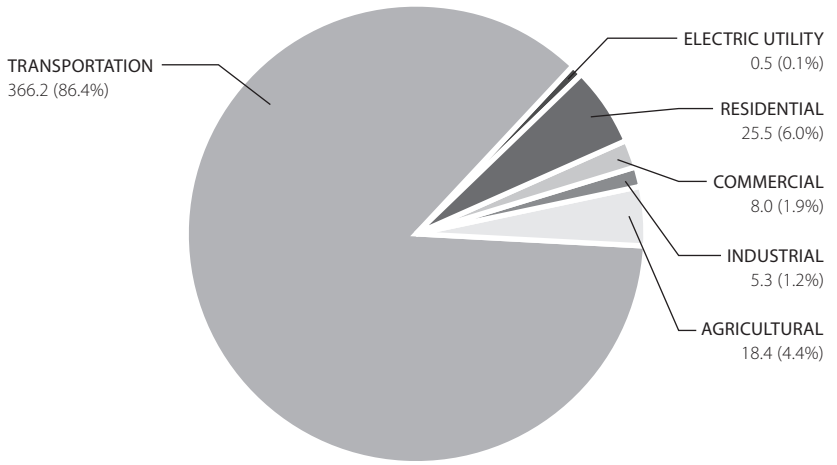
Overall petroleum use, measured in British thermal units (Btu), stayed level between 2009 and 2010. Most of the petroleum is used in the Transportation sector, 86.4 percent of the petroleum used in Wisconsin was for transportation, which saw an increase of 3.3 percent.

Agriculture sector numbers do not include agricultural processing plants; these are classified in the commercial sector.

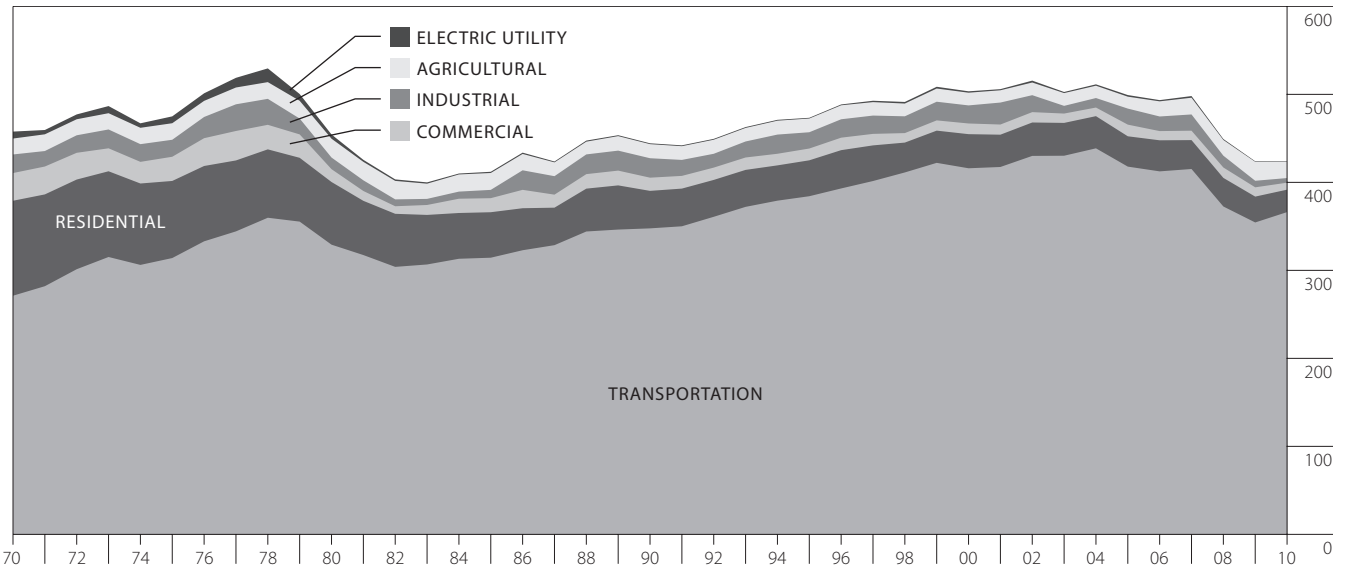
Numbers for 2003-2009 for the Residential, Commercial and Industrial sectors have been revised based on federal Energy Information Administration data.

Wisconsin Petroleum Use, by Economic Sector

2010 TRILLIONS OF BTU AND PERCENT OF TOTAL



1970-2010 TRILLIONS OF BTU



Source: Wisconsin State Energy Office.

Wisconsin Petroleum Use, in Btu, by Type of Product

1970-2010 TRILLIONS OF BTU

Year	Gasoline[a,b]	Jet Fuel	Light Distillate	Middle Distillate	Residual Fuel Oil	LPG[c]	Total
1970	244.1	7.7	35.1	123.4	21.9	25.7	457.9
1975	275.4	9.8	16.9	133.5	13.3	26.0	474.9
1980	271.3	11.0	11.3	124.7	11.0	25.2	454.5
1985	254.2	8.4	13.4	110.7	2.3	23.1	412.1
1990	267.5	11.0	10.8	122.4	7.9	24.8	444.4
1995	283.3	10.6	9.8	131.3	7.6	30.9	473.4
1996	290.0	11.1	10.4	136.2	6.8	34.2	488.7
1997	294.7	11.3	10.7	137.4	6.8	31.8	492.7
1998	301.3	11.5	10.9	135.5	4.9	27.3	491.3
1999	309.2	11.8	11.4	142.0	5.0	29.4	508.8
2000	303.9	11.8	11.3	141.1	5.3	30.3	503.7
2001[r]	306.3	11.5	11.4	142.2	5.6	29.2	506.2
2002	316.7	11.9	11.2	141.5	4.3	30.1	515.7
2003[r]	318.6	11.6	12.0	127.0	5.9	27.7	502.8
2004[r]	319.4	12.5	12.5	132.0	6.9	28.3	511.7
2005[r]	309.3	14.3	11.4	128.7	8.0	27.5	499.2
2006[r]	299.2	13.9	11.4	133.0	4.3	31.8	493.5
2007[r]	304.3	12.8	10.3	134.8	4.6	31.3	498.1
2008[r]	260.0	13.8	10.5	129.8	3.8	31.3	449.3
2009[r]	257.8	11.8	9.1	111.3	0.7	33.2	423.9
2010[p]	**261.3**	**13.1**	**9.5**	**111.0**	**0.6**	**28.4**	**423.9**

Middle distillate, which decreased by 0.3 percent since 2009, is used both as a heating fuel in furnaces and boilers, and as diesel fuel in trucks. Light distillate, which increased by 3.8 percent since 2009, includes kerosene and is primarily used as a thinner during periods of cold weather.

a Includes both vehicle and aviation gasoline.

b Does not include ethanol. Ethanol use in motor gasoline is shown in the Renewable Energy chapter and later in this chapter.

c Liquefied petroleum gas (propane).

p Preliminary estimates.

r Revised.

Source: Wisconsin Department of Commerce, Bureau of Petroleum Inspection, *Report on Petroleum Products Inspected and Delivered to Wisconsin* (1970-1995); Wisconsin Department of Revenue, *Collection of Petroleum Inspection Fees* (1996-2006) and *Fuel Tax Statistical Report* (1996-2010); U.S. Department of Energy, Form EIA-782C, "Monthly Report of Petroleum Products Sold into States for Consumption" http://www.eia.gov/oil_gas/petroleum/data_publications/prime_supplier_report/psr_historical.html. (1983-2010); WI Office of Energy Independence telephone surveys of airport fixed base operators (1997-2009) and railways (1997-2010); unpublished expenditure data from the National Agriculture Statistics Service (2005-2010).

Wisconsin Petroleum Use, in Gallons, by Type of Product

GASOLINE USE
1.4%

JET FUEL
11.5%

In 2010, gasoline use increased by 1.4 percent and jet fuel increased by 11.5 percent.

LP USE
14.6%

LP use decreased by 14.6 percent.

1970-2010 MILLIONS OF GALLONS

Year	Gasoline[a,b]	Jet Fuel	Light Distillate	Middle Distillate	Residual Fuel Oil	LPG[c]	Total
1970	1,953.0	56.7	260.2	889.7	146.2	269.0	3,574.8
1975	2,203.5	72.4	125.0	962.8	88.8	272.6	3,725.1
1980	2,170.5	81.4	83.4	899.4	73.5	264.1	3,572.3
1985	2,033.3	62.2	94.6	803.9	15.2	241.5	3,250.7
1990	2,139.5	81.6	77.4	885.8	52.2	260.2	3,496.8
1995	2,266.6	78.6	74.9	943.8	50.5	323.8	3,738.1
1996	2,319.8	82.0	77.4	982.0	45.2	357.9	3,864.3
1997	2,357.4	84.0	79.3	990.5	45.6	332.9	3,889.6
1998	2,410.3	85.0	80.8	976.6	32.8	285.9	3,871.4
1999	2,473.7	87.4	84.1	1,024.2	33.1	307.7	4,010.3
2000	2,431.2	87.0	83.9	1,017.4	35.4	317.5	3,972.3
2001	2,450.2	85.0	84.3	1,025.6	37.2	306.1	3,988.4
2002	2,533.7	88.2	82.9	1,020.3	28.8	314.7	4,068.7
2003[r]	2,549.0	86.1	88.7	915.4	39.6	290.0	3,968.8
2004[r]	2,555.6	92.5	92.3	952.0	46.2	296.9	4,035.4
2005[r]	2,474.6	105.7	84.6	927.8	53.5	288.4	3,934.5
2006[r]	2,393.6	102.9	84.1	958.8	28.8	332.6	3,900.8
2007[r]	2,434.2	94.6	76.6	971.8	30.7	328.1	3,936.0
2008[r]	2,080.2	102.4	78.0	936.0	25.6	327.3	3,549.4
2009[r]	2,062.2	87.0	67.6	802.8	4.7	348.2	3,372.5
2010[p]	**2,090.5**	**97.0**	**70.2**	**800.2**	**4.2**	**297.2**	**3,359.3**

a Includes both vehicle and aviation gasoline.

b Does not include the ethanol. Ethanol use in motor gasoline is shown in the Renewable Energy chapter and later in this chapter.

c Liquefied petroleum gas (propane).

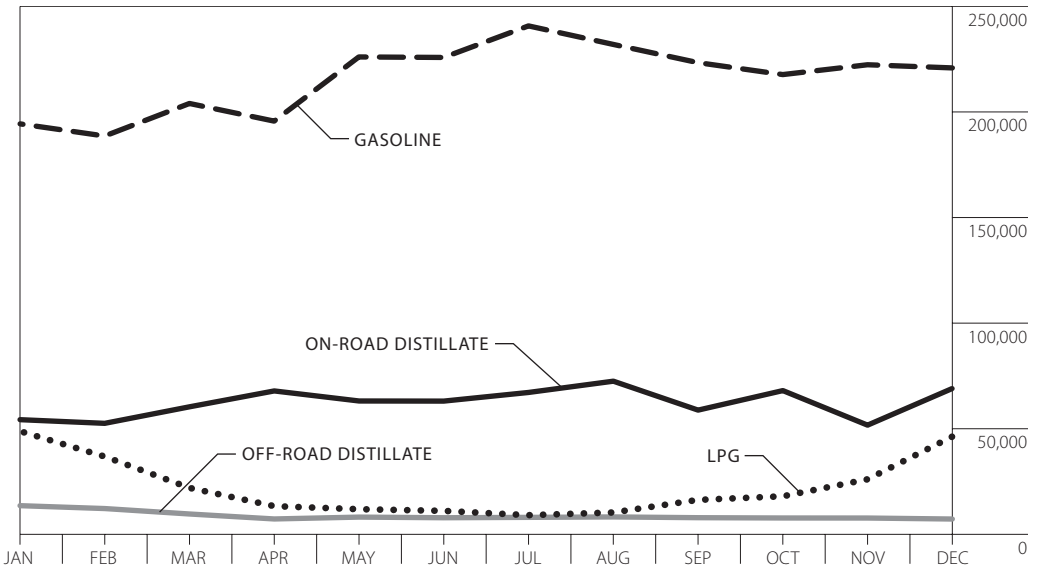
p Preliminary estimates.

r Revised.

Source: Wisconsin Department of Commerce, Bureau of Petroleum Inspection, *Report on Petroleum Products Inspected and Delivered to Wisconsin* (1970-1995); Wisconsin Department of Revenue, *Collection of Petroleum Inspection Fees* (1996-2006) and *Fuel Tax Statistical Report* (1996-2009); U.S. Department of Energy Form EIA-782C, "Monthly Report of Petroleum Products Sold into States for Consumption" (1983-2009) http://www.eia.gov/oil_gas/petroleum/data_publications/prime_supplier_report/psr_historical.html.; WI Office of Energy Independence telephone surveys of airport fixed base operators and railways; unpublished data from the National Agriculture Statistics Service (2005-2009).

Petroleum Product Deliveries to Wisconsin, by Month

2010 THOUSANDS OF GALLONS



Month	Off-Road Distillate[a]	On-Road Distillate[b]	LPG[c]	Gasoline[d]
January	13,260	53,976	48,511	194,034
February	11,889	52,239	36,493	188,276
March	9,316	60,062	21,658	203,679
April	*6,964*	67,581	13,026	195,321
May	*7,843*	62,823	11,589	225,717
June	*7,542*	62,767	10,792	225,483
July	*7,722*	66,859	8,765	240,409
August	*7,927*	72,193	10,041	231,644
September	*7,569*	58,486	16,001	223,013
October	*7,429*	67,735	17,698	217,372
November	*7,405*	51,355	25,742	222,026
December	*6,936*	68,722	45,928	220,529
Total	**101,802**	**744,797**	**266,244**	**2,587,504**

a Kerosene, No. 1 and No. 2 fuel oil used for heating and processing, jet fuel and aviation gasoline used for flying. Does not include non-taxed diesel fuel used on farms. Numbers in italics are incomplete data because some data are withheld by the federal Energy Information Administration to protect reporter identification.

b On-road diesel fuel sales.

c Liquefied petroleum gas (propane).

d Vehicle gasoline sales; does not include aviation gasoline. Includes ethanol.

Source: Wisconsin Department of Revenue, *Monthly Motor Fuel Consumption Report* (2008-2010); U.S. Department of Energy, Form EIA-782C, "Monthly Report of Petroleum Products Sold into States for Consumption" (2010) http://www.eia.gov/oil_gas/petroleum/data_publications/prime_supplier_report/psr_historical.html.

In general, gasoline sales peaked during the summer vacation months, while deliveries of fuels used for heating (off-road distillate and LPG) peaked during winter months.

Figures will not match the consumption figures in earlier pages in this chapter because deliveries do not always translate to sales during the same time frame.

A map of Wisconsin's petroleum pipelines can be found in the Map Appendix at the back of the book.

Wisconsin Production and Use of Ethanol in Reformulated Gasoline, E10 and E85

ETHANOL PRODUCTION
10.2%

In 2010, Wisconsin ethanol production increased 10.2 percent while consumption increased by 7.2 percent over 2009.

The increase in ethanol usage in Wisconsin is related to a number of factors including: major oil companies blending ethanol with gasoline at retail locations to stretch gasoline; retail outlets where E85 is sold are likely to sell E10 at their other pumps; and the overall saturation of Wisconsin's gasoline by ethanol statewide.

Ethanol is one of the few energy sources that Wisconsin exports.

1994-2010 THOUSANDS OF GALLONS

		Consumption			
Year	Production	RFG[a]	E10[b]	E85[c]	Total
1994	NA	NA	13,331	9	13,340
1995	NA	38,048	10,461	17	48,526
1996	NA	49,784	6,973	36	56,793
1997	NA	49,460	8,012	54	57,526
1998	NA	66,571	4,877	58	71,506
1999	NA	67,400	7,937	63	75,400
2000	NA	70,724	23,080	43	93,847
2001	NA	67,449	18,458	32	85,939
2002	15,529	71,152	17,026	48	88,226
2003	76,947	77,302	23,536	86	100,924
2004	106,886	74,816	27,617	106	102,539
2005[r]	171,764	73,046	49,191	723	122,960
2006[r]	210,386	77,614	50,498	2,302	130,414
2007[r]	283,800	69,963	86,472	4,800	161,235
2008[r]	447,300	68,047	143,849	5,100	216,996
2009[r]	413,348	74,142	150,347	5,200	229,689
2010[p]	**455,597**	**77,968**	**173,351**	**3,000**	**254,319**

a RFG is reformulated gasoline. Starting January 1, 1995, the federal government mandated its sale in six southeastern Wisconsin counties to comply with the Clean Air Act. Ethanol is used to provide the oxygenate required in RFG. The RFG in this table represents the ethanol in RFG, a very small portion of overall RFG sales in Wisconsin.

b E10 is a motor fuel blend consisting of 10 percent ethanol and 90 percent conventional gasoline (non RFG).

c E85 is a motor fuel consisting of 85 percent ethanol and 15 percent gasoline.

p Preliminary.

r Revised.

NA – Not available.

Source: Wisconsin Department of Revenue; Wisconsin State Energy Office survey of E85 distributors; U.S. Department of Energy, Form EIA-782C, *Monthly Report of Petroleum Products Sold into States for Consumption* (2010)
http://www.eia.gov/oil_gas/petroleum/data_publications/prime_supplier_report/psr_historical.html.

Wisconsin Liquefied Petroleum Gas Use, by Economic Sector

1970-2010 MILLIONS OF GALLONS AND PERCENT OF TOTAL

Year	Residential		Commercial		Industrial		Agricultural[a]		Transportation		Total
1970	190.9	*70.9%*	23.8	*8.8%*	28.2	*10.5%*	26.2	*9.7%*	NA	*0.0%*	269.1
1975	176.5	*64.7%*	36.5	*13.4%*	29.5	*10.8%*	30.1	*11.0%*	NA	*0.0%*	272.6
1980	176.3	*66.7%*	33.5	*12.7%*	17.5	*6.6%*	36.9	*14.0%*	NA	*0.0%*	264.2
1985	158.2	*65.5%*	29.4	*12.2%*	19.3	*8.0%*	34.6	*14.3%*	NA	*0.0%*	241.5
1990	162.1	*62.3%*	36.5	*14.0%*	35.7	*13.7%*	25.9	*10.0%*	NA	*0.0%*	260.2
1995	203.8	*62.9%*	48.0	*14.8%*	35.0	*10.8%*	30.9	*9.5%*	6.1	*1.9%*	323.8
1996	219.5	*61.3%*	51.7	*14.4%*	43.9	*12.3%*	36.8	*10.3%*	6.0	*1.7%*	357.9
1997	210.3	*63.2%*	48.7	*14.6%*	35.0	*10.5%*	33.1	*9.9%*	5.8	*1.7%*	332.9
1998	183.5	*64.2%*	42.4	*14.8%*	30.1	*10.5%*	24.2	*8.5%*	5.7	*2.0%*	285.9
1999	197.9	*64.3%*	45.8	*14.9%*	31.3	*10.2%*	27.6	*9.0%*	5.1	*1.7%*	307.7
2000	211.0	*66.5%*	47.2	*14.9%*	28.7	*9.0%*	25.3	*8.0%*	5.3	*1.7%*	317.5
2001[r]	204.0	*66.7%*	45.8	*15.0%*	28.3	*9.2%*	23.5	*7.7%*	4.6	*1.5%*	306.1
2002	213.1	*67.7%*	47.6	*15.1%*	26.0	*8.3%*	24.0	*7.6%*	4.0	*1.3%*	314.7
2003[r]	198.9	*68.6%*	43.7	*15.1%*	20.7	*7.1%*	22.8	*7.9%*	3.8	*1.3%*	290.0
2004[r]	203.2	*68.5%*	44.7	*15.1%*	21.2	*7.1%*	24.1	*8.1%*	3.7	*1.2%*	296.9
2005[r]	198.5	*68.8%*	43.6	*15.1%*	20.7	*7.2%*	22.6	*7.8%*	3.0	*1.0%*	288.4
2006[r]	228.3	*68.6%*	50.2	*15.1%*	23.8	*7.1%*	27.1	*8.1%*	3.2	*1.0%*	332.6
2007[r]	224.6	*68.5%*	49.4	*15.1%*	23.4	*7.1%*	28.3	*8.6%*	2.3	*0.7%*	328.1
2008[r]	221.2	*67.6%*	48.7	*14.9%*	23.1	*7.1%*	31.8	*9.7%*	2.5	*0.8%*	327.3
2009[r]	232.6	*66.8%*	51.2	*14.7%*	24.3	*7.0%*	37.8	*10.9%*	2.2	*0.6%*	348.2
2010[p]	**201.0**	***67.6%***	**44.2**	***14.9%***	**21.0**	***7.1%***	**28.7**	***9.7%***	**2.2**	***0.8%***	**297.2**

a Starting with 2005 data, the SEO discontinued a per-acre approach to gathering fuel data for the agriculture sector and substituted data from the Wisconsin Department of Revenue and from the federal National Agriculture Statistics Service (NASS).

p Preliminary estimates.

r Revised.

NA – Not available.

Source: U.S. Department of Energy, Form EIA-25, "Prime Supplier's Monthly Report" (1974-2010) and Form EIA-782C, "Monthly Report of Petroleum Products Sold into States for Consumption" (1983-2010) http://www.eia.gov/oil_gas/petroleum/data_publications/prime_supplier_report/psr_historical.html; National Agricultural Statistics Service, unpublished data (2005-2010); Wisconsin Department of Revenue, *Monthly Motor Fuel Consumption Report* (2008-2010).

LPG USE
14.6%

Liquefied petroleum gas (LPG), (propane), use decreased 14.6 percent in 2010.

Agriculture sector numbers do not include agricultural processing plants; these are classified in the commercial sector.

Wisconsin Natural Gas Use, by Economic Sector

NATURAL GAS
END-USE
5.3%
FROM 2009

In 2010, warmer winter weather led to decreased natural gas use in the residential sector. In the electric sector, natural gas used to generate electricity increased by 3.6 percent. The electric sector includes natural gas used by utilities and independent power producers who generate and sell electricity to other companies. Overall, natural gas end-use decreased by 5.3 percent from 2009. Natural gas end-use is up 8.7 percent from 1990.

A map of Natural Gas Company Territories and Major Pipelines can be found in the Map Appendix in this publication.

1970-2010 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Residential		Commercial[a]		Industrial		Electric[b]		Total	Total End Use
1970	109.4	*33.2%*	42.2	*12.8%*	147.1	*44.6%*	31.1	*9.4%*	329.8	298.7
1975	119.2	*32.6%*	57.0	*15.6%*	169.1	*46.3%*	19.8	*5.4%*	365.1	345.3
1980	124.5	*36.1%*	61.4	*17.8%*	144.5	*41.9%*	14.1	*4.1%*	344.5	330.4
1985	117.7	*38.6%*	59.8	*19.6%*	126.1	*41.3%*	1.4	*0.5%*	305.0	303.6
1990	114.7	*37.4%*	66.7	*21.8%*	122.6	*40.0%*	2.4	*0.8%*	306.4	304.0
1995	137.5	*36.1%*	85.8	*22.5%*	147.7	*38.8%*	10.1	*2.7%*	381.1	371.0
1996	149.8	*37.1%*	96.1	*23.8%*	150.4	*37.3%*	7.4	*1.8%*	403.7	396.3
1997	137.3	*34.3%*	89.7	*22.4%*	153.4	*38.3%*	20.0	*5.0%*	400.4	380.4
1998	117.2	*32.5%*	82.2	*22.8%*	137.4	*38.1%*	24.2	*6.7%*	361.0	336.8
1999	129.1	*34.4%*	82.7	*22.0%*	141.6	*37.7%*	22.1	*5.9%*	375.5	353.4
2000[r]	136.4	*34.7%*	82.1	*20.9%*	153.4	*39.0%*	21.4	*5.4%*	393.3	371.9
2001[r]	126.4	*35.1%*	77.3	*21.4%*	134.1	*37.2%*	22.6	*6.3%*	360.4	337.8
2002[r]	138.3	*36.0%*	86.7	*22.5%*	138.8	*36.1%*	20.7	*5.4%*	384.5	363.8
2003	143.1	*36.3%*	88.0	*22.3%*	138.6	*35.2%*	24.3	*6.2%*	394.0	369.7
2004[r]	135.7	*35.6%*	82.8	*21.7%*	141.6	*37.1%*	21.4	*5.6%*	381.5	360.1
2005[r]	132.9	*32.3%*	87.3	*21.2%*	132.3	*32.1%*	59.4	*14.4%*	411.9	352.5
2006	121.9	*32.6%*	87.4	*23.4%*	119.7	*32.0%*	44.5	*11.9%*	373.5	329.0
2007	133.0	*33.2%*	90.3	*22.5%*	122.81	*30.6%*	54.9	*13.7%*	401.1	346.1
2008[r]	142.5	*34.6%*	98.6	*23.9%*	129.6	*31.4%*	41.7	*10.1%*	412.4	370.7
2009[r]	135.0	*34.5%*	92.8	*23.7%*	121.4	*31.1%*	41.6	*10.6%*	390.8	349.2
2010[p]	**124.9**	***33.4%***	**83.0**	***22.2%***	**122.6**	***32.8%***	**43.1**	***11.5%***	**373.6**	**330.5**

a Includes sales to government agencies and other public authorities for general or institutional purposes and vehicle fuel, classified as "other" sales by the American Gas Association.

b Includes gas used in electric power generation by utilities and independent power producers.

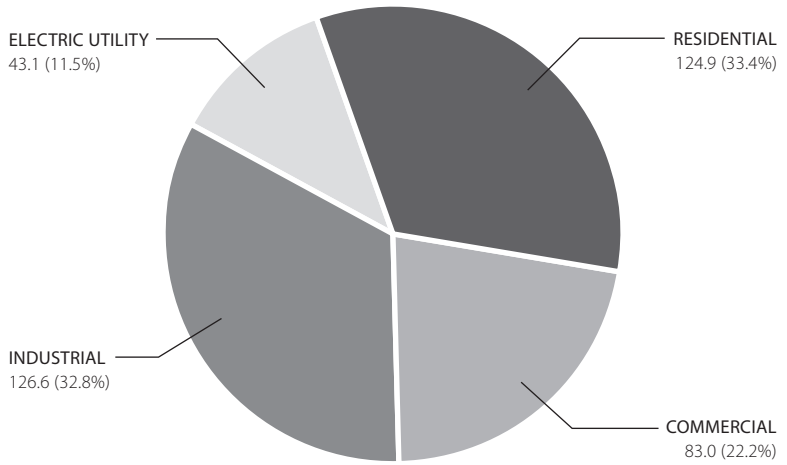
p Preliminary estimates.

r Revised using final annual data from the federal Energy Information Administration.

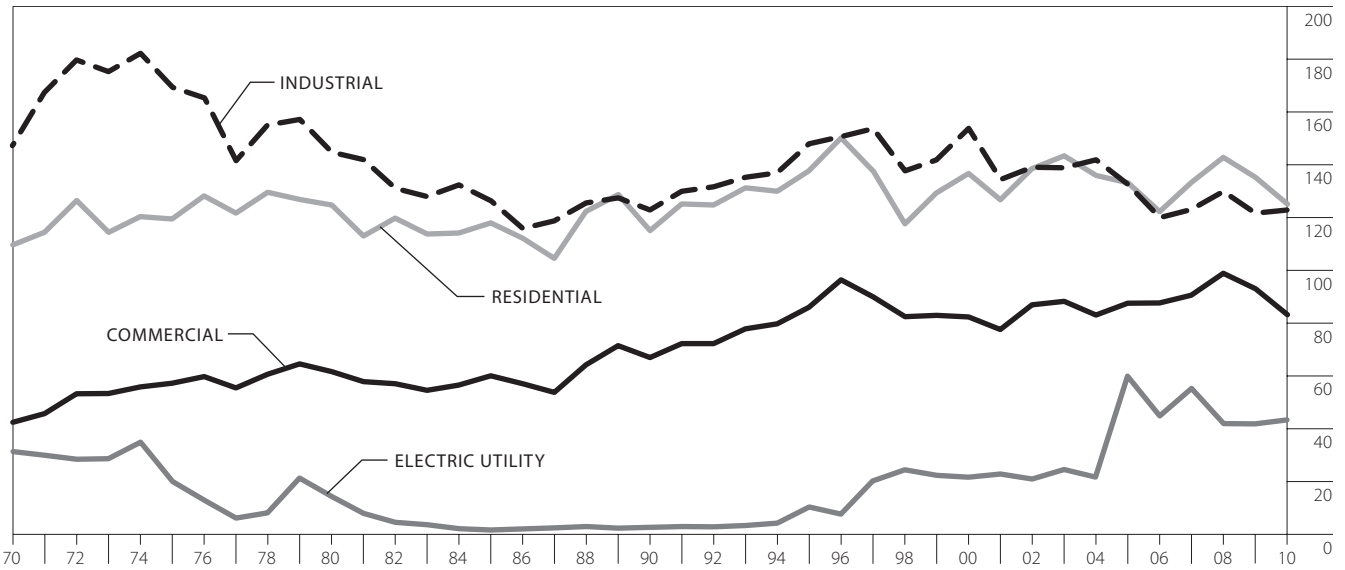
Source: American Gas Association, Gas Facts (1961-1997); Public Service Commission of Wisconsin, Accounts and Finance Division, *Statistics of Wisconsin Public Utilities*, Bulletin #8 (1963-1989), Public Service Commission of Wisconsin, *Operating Revenue and Expense Statistics; Class A and B Utilities in Wisconsin* (1990-1993), form PSC-AF 2 *Gas Sales and Sales Ratio* (1994-2007) and discussions with Public Service Commission staff; U.S. Department of Energy, *Natural Gas Annual, 1991-2011* [DOE/EIA-0131(08)] (March 2012) http://www.eia.gov/naturalgas/annual and *Natural Gas Monthly* [DOE/EIA-0130 (2012/03)] (March 2012) http://www.eia.gov/naturalgas/monthly/.

Wisconsin Natural Gas Use, by Economic Sector

2010 TRILLIONS OF BTU AND PERCENT OF TOTAL



1970-2010 TRILLIONS OF BTU



Source: Wisconsin State Energy Office.

Wisconsin Natural Gas Sales, by Public Service Commission of Wisconsin Sector

In 2010, natural gas use for residential and non residential space heating decreased. Because of its lower cost, transport gas continues to be the preferred method of purchasing gas by large commercial and industrial users. These large users purchase the gas directly from the producers and have the interstate pipelines and local distribution companies transport this gas through their pipeline system for a fee.

Firm natural gas service guarantees no interruptions while *interruptible* service permits interruption on short notice, generally in peak-load seasons. Natural gas classified under "general" is used for applications other than heating, such as running gas appliances like a stove, dryer or water heater.

Data presented here are derived from natural gas utility annual reports submitted to the Public Service Commission of Wisconsin. Data collected by the federal Energy Information Administration and the PSCW differ in methodology used to account for natural gas used by a utility for electric generation, resulting in a difference in statewide gas consumption. Figures on this page do not match figures elsewhere in this publication due to different data sources.

This table has been completely revised to account for new methodology that more accurately tracks gas consumption across Wisconsin.

1970-2010 TRILLIONS OF BTU

	Residential		Commercial, Industrial & Electric			Total to Ultimate Utility Customers	Commercial, Industrial and Electric Transport Gas	Total Sold and Used[c,d]
Year	General	Heating	Firm[a]	Interruptible[b]	Heating			
1970	7.6	101.3	27.4	121.9	47.6	324.0	0.0	324.7
1975	6.8	112.4	36.6	135.2	60.6	362.8	0.0	363.6
1980	4.3	116.8	25.0	99.6	62.2	343.5	0.0	344.1
1985	2.8	114.7	13.4	95.6	65.6	306.7	0.0	307.3
1990	2.1	112.1	3.7	32.6	59.8	228.4	75.1	303.5
1995	1.8	135.0	3.3	50.2	78.7	289.9	87.4	377.2
1996	1.9	145.8	3.3	37.6	86.2	294.1	103.3	397.4
1997	1.8	134.2	3.3	23.6	79.3	260.6	133.3	394.0
1998	1.6	113.6	3.2	17.1	66.7	216.4	141.8	358.2
1999	1.6	125.1	3.0	18.3	72.5	231.6	147.0	378.6
2000	1.6	132.0	2.8	16.4	77.8	241.9	147.5	389.4
2001	1.4	123.7	3.2	14.7	70.0	224.5	133.3	357.7
2002	1.4	134.6	4.2	16.2	73.6	244.0	138.2	382.2
2003	1.5	140.2	4.3	12.1	77.6	253.9	136.0	390.0
2004	1.5	133.0	4.3	9.1	73.0	234.8	138.2	373.0
2005	1.4	129.9	3.4	9.6	72.8	239.5	157.3	396.8
2006	1.4	118.7	3.0	8.6	69.9	214.1	145.0	359.1
2007	1.5	129.7	3.3	8.6	74.2	232.4	159.7	392.1
2008	1.7	139.0	3.5	9.7	81.2	247.6	158.1	405.6
2009	1.7	131.7	3.5	9.0	76.7	231.4	153.3	384.7
2010[p]	**1.7**	**121.8**	**3.1**	**8.5**	**70.1**	**214.6**	**153.8**	**368.4**

a Firm service guarantees no interruptions.

b Interruptible service permits interruption on short notice, generally in peak-load seasons.

c Includes gas used by the gas utility and transport gas.

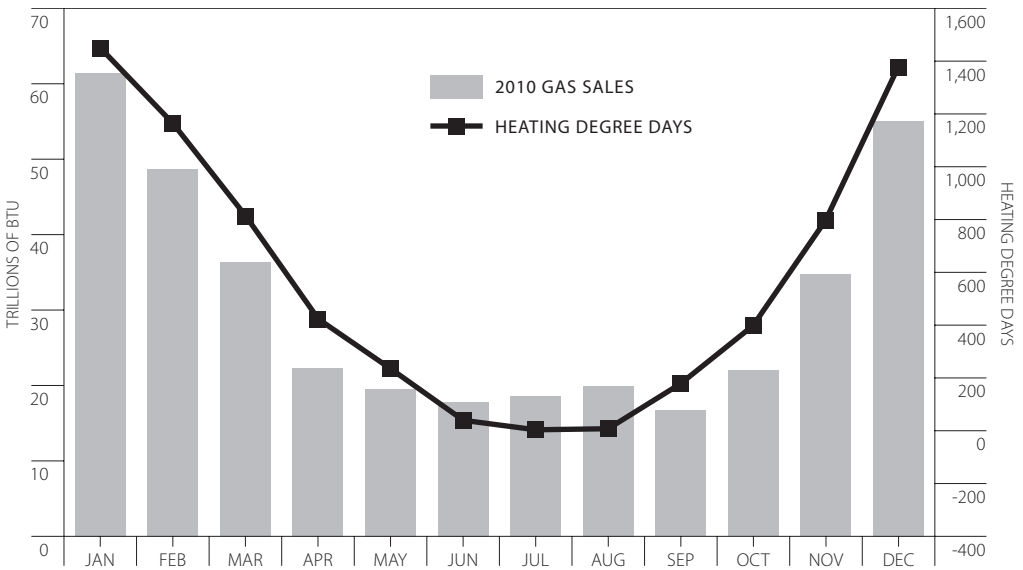
d Totals given here may differ from other tables due to different sources.

p Preliminary estimates.

Source: Public Service Commission of Wisconsin, Accounts and Finance Division, *Statistics of Wisconsin Public Utilities*, Bulletin #8 (1963-1989), *Operating Revenue and Expense Statistics; Class A and B Utilities in Wisconsin* (1990-1993), and form PSC-AF 2 (1994-2010).

Wisconsin Natural Gas Sales, by Month

2010 GAS SALES AND HEATING DEGREE DAYS



This graph has been revised to correct for baseline natural gas consumption unrelated to space heating. Baseline consumption is not weather variable.

1976-2010 TRILLIONS OF BTU

Month	1976	1980	1985	1990	1995	2000	2005	2006	2007	2008	2009	2010
January	50.9	52.8	51.3	40.6	52.7	60.1	60.2	44.9	54.3	62.2	67.5	61.4
February	40.3	47.3	42.3	39.3	48.7	47.1	45.7	49.3	61.5	58.8	49.1	48.7
March	38.5	42.9	32.2	34.3	39.1	37.7	48.3	42.2	41.1	49.0	43.1	36.4
April	26.5	27.4	21.2	25.2	32.9	32.0	28.8	23.6	32.4	30.3	30.4	22.3
May	22.3	17.6	14.4	18.9	20.0	21.6	22.8	19.8	19.1	20.5	18.3	19.5
June	16.0	14.1	11.2	12.7	15.5	15.9	21.2	18.5	16.0	15.6	17.4	17.8
July	14.6	13.4	11.1	11.5	15.2	15.6	20.2	17.7	17.7	17.1	14.7	18.6
August	15.8	13.5	11.7	12.8	17.6	18.0	21.0	18.4	20.3	16.9	16.0	19.9
September	16.3	14.8	13.1	14.1	16.9	17.6	18.4	17.6	17.3	16.7	17.5	16.7
October	27.4	25.9	18.7	22.7	25.2	24.2	24.0	31.2	25.1	26.4	28.4	22.0
November	38.9	32.2	31.2	30.3	44.7	40.6	35.8	35.6	37.4	37.8	32.4	34.7
December	51.3	46.3	48.6	44.3	54.5	63.7	55.1	45.0	54.6	59.1	54.5	55.1
Total[a]	**358.8**	**348.2**	**306.9**	**306.9**	**383.0**	**394.1**	**401.5**	**363.8**	**396.8**	**410.4**	**389.5**	**373.1**

a Totals given here may differ from other tables due to different sources.

Source: Wisconsin natural gas utility monthly AF2 reports submitted to the Public Service Commission of Wisconsin (1976-2010). http://psc.wi.gov/apps40/dockets/default.aspx Search Docket: 05 GF 159.

NATURAL GAS
4.2%

In 2010, mild weather during the winter heating season months led to a 4.2 percent decrease in natural gas use compared to 2009. Sales of natural gas are directly related to the number of Heating Degree Days (HDD). For more information on HDDs and Cooling Degree Days (CDD), see Chapter 8 in this publication.

July peaks in consumption are due to utilities using natural gas for electricity generation to meet increased demand driven by air conditioning use.

Springtime consumption is higher because a building's baseline temperature is colder following winter. This trend is reversed in the fall when buildings retain heat from the summer.

Average Number of Natural Gas Customers in Wisconsin, by Public Service Commission of Wisconsin Sector

7,316
NEW CUSTOMERS

Wisconsin gas utilities added 7,316 new customers in 2010.

This table was completely revised in 2009 to account for new methodology that more accurately tracks the number of natural gas customers across Wisconsin.

Firm natural gas service guarantees no interruptions while *interruptible* service permits interruption on short notice, generally in peak-load seasons. Natural gas classified under "general" is used for applications other than heating, such as running gas appliances like a stove, dryer or water heater. *Transport* gas is gas piped through utility pipelines, but paid for through a direct contract between an industrial user and the natural gas pipeline company.

1970-2010

	Residential		Commercial, Industrial & Electric				
Year	General	Space Heating	Firm	Interruptible	Space Heating	Transportation	Total
1970	183,695	566,676	13,806	3,104	50,783		818,064
1975	157,684	700,766	11,685	3,716	65,666		939,517
1980	112,700	853,300	10,058	2,206	78,736		1,057,000
1985	90,500	922,500	9,220	2,312	85,468		1,110,000
1990	77,000	1,046,557	9,713	1,257	101,487	740	1,236,754
1995	62,000	1,229,424	7,723	1,426	122,275	569	1,423,417
1996	60,900	1,263,670	7,115	2,159	124,930	803	1,459,577
1997	59,200	1,302,148	6,954	1,405	130,087	1,138	1,500,932
1998	57,900	1,332,168	7,199	1,255	133,854	1,501	1,533,877
1999	56,000	1,370,909	7,221	1,124	135,241	1,999	1,572,494
2000	54,700	1,404,259	7,095	1,005	139,764	2,136	1,608,959
2001	51,500	1,433,036	7,511	1,233	142,844	2,326	1,638,450
2002	49,200	1,465,500	8,208	1,362	147,404	2,448	1,674,122
2003	48,900	1,492,555	8,295	1,396	148,181	2,394	1,701,721
2004	48,300	1,521,419	8,956	1,377	149,323	2,441	1,731,816
2005	45,700	1,546,921	7,673	1,266	152,145	2,509	1,756,214
2006	45,400	1,566,372	6,790	1,234	154,307	2,450	1,776,553
2007	45,900	1,586,300	6,886	1,195	156,131	2,401	1,798,813
2008	45,900	1,600,744	7,002	1,201	158,421	2,371	1,815,639
2009[r]	45,700	1,610,914	6,927	1,209	159,763	2,340	1,826,853
2010[p]	**45,800**	**1,617,783**	**6,900**	**1,203**	**160,151**	**2,332**	**1,834,169**

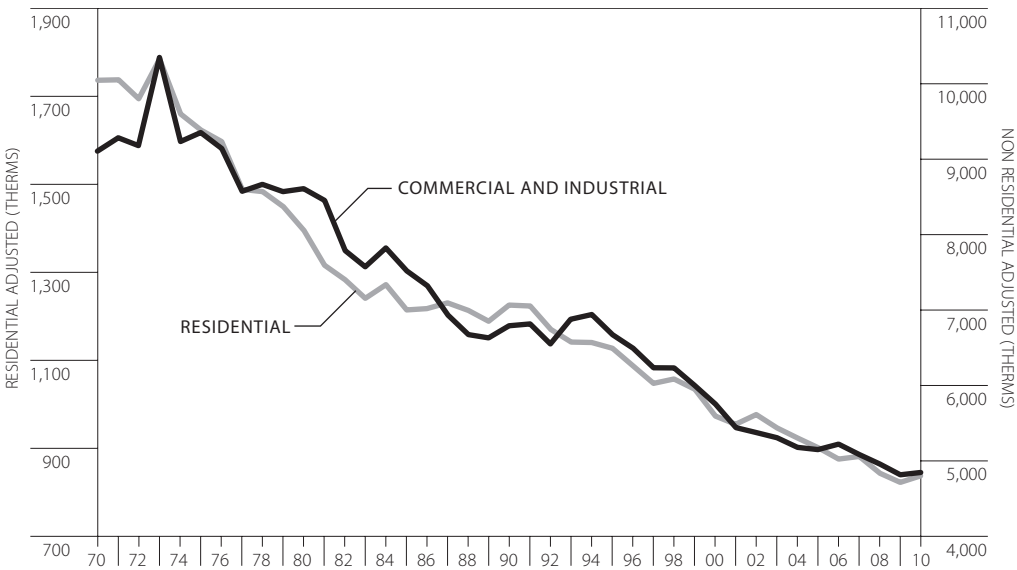
p Preliminary estimates.

r Revised.

Source: Public Service Commission of Wisconsin, Accounts and Finance Division, *Statistics of Wisconsin Public Utilities*, Bulletin #8 (1963-1989), *Operating Revenue and Expense Statistics; Class A and B Utilities in Wisconsin* (1990-1993), and form PSC-AF 2 Gas Sales and Sales Ratio (1994-2011), U.S. Department of Energy, *Natural Gas Annual*, 1991-2011 [DOE/EIA-0131(11)] (March 2012) http://www.eia.gov/naturalgas/annual/.

Wisconsin Natural Gas Sales Per Customer, by Public Service Commission of Wisconsin Sector

1970-2010 THERMS PER CUSTOMER



	Residential			Commercial, Industrial & Electric			
		Space Heating				Space Heating	
Year	General	Actual	Adjusted[a]	Firm	Interruptible	Actual	Adjusted[a]
1970[r]	412	1,788	1,697	19,852	393,886	9,377	8,900
1975[r]	432	1,603	1,587	31,297	364,846	9,234	9,139
1980[r]	384	1,443	1,364	32,065	451,417	8,900	8,412
1985[r]	310	1,250	1,187	19,336	413,392	7,742	7,348
1990[r]	277	1,078	1,197	5,705	259,679	5,973	6,635
1995[r]	295	1,104	1,101	5,991	352,144	6,540	6,521
2000[r]	296	950	972	4,667	163,625	5,615	5,746
2001[r]	274	873	953	5,054	119,572	4,974	5,433
2002[r]	279	929	975	6,129	119,077	5,112	5,367
2003[r]	310	950	945	6,289	86,533	5,327	5,299
2004[r]	302	885	922	5,805	66,183	4,966	5,171
2005[r]	304	848	900	5,541	75,815	4,843	5,141
2006[r]	299	763	874	5,710	69,685	4,552	5,213
2007[r]	334	826	880	6,177	71,737	4,768	5,076
2008[r]	372	878	842	6,404	81,151	5,160	4,950
2009[r]	382	827	821	6,524	74,036	4,840	4,807
2010[p]	**363**	**761**	**836**	**5,863**	**70,742**	**4,405**	**4,838**

a Space heating categories are adjusted to reflect demand under average heating degree days (HDDs). In the residential category, annual consumption per heating degree day was multiplied by the 1981-2010 30-year normal of 7,531 HDDs. In the commercial category, the space heating use was adjusted the same way.

p Preliminary estimates.

r Revised.

Source: Public Service Commission of Wisconsin, *Statistics of Wisconsin Public Utilities*, Bulletin #8 (1963-1989), *Operating Revenue and Expense Statistics; Class A and B Utilities in Wisconsin* (1990-1993), and form PSC-AF 2 (1990-2011).

RESIDENTIAL SPACE HEATING
1.8%
COMMERCIAL & INDUSTRIAL SPACE HEATING
0.6%

Natural gas use for residential space heating, adjusted for weather conditions, increased 1.8 percent in 2010, while Commercial and Industrial space heating increased 0.6 percent in 2010. Figures in this table were revised to include updated weather-correction methodology.

Data in this table have been historically revised to reflect 1981-2010 30-year weather normals and 2010 population weights by weather zone (see the map in Chapter 8 of this publication).

Wisconsin Natural Gas Deliveries, by Pipeline Company

The major supplier of natural gas to Wisconsin, ANR, transports most of its gas from Oklahoma and Louisiana. Northern Natural Gas Company transports its gas to Wisconsin from Texas, Oklahoma, Kansas and Alberta, Canada. Natural Gas Pipeline Company transports gas to Wisconsin primarily from Oklahoma, Louisiana and Texas. However, Viking Gas Transmission Company's gas originates primarily from Alberta, Canada. Guardian Pipeline began transporting natural gas to Wisconsin on December 7, 2002.

1970-2010 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	ANR Pipeline Co.[a]		Viking Gas Trans. Co.[b]		Natural Gas Pipeline Co.[c]		Northern Natural Gas Co.		Guardian Pipeline[d]		Total[e,f]
1970	289.4	*88.2%*	6.0	*1.8%*	6.3	*1.9%*	26.6	*8.1%*			328.3
1975	323.0	*88.5%*	5.7	*1.6%*	7.1	*1.9%*	29.2	*8.0%*			365.0
1980	305.5	*88.8%*	3.9	*1.1%*	7.8	*2.3%*	26.8	*7.8%*			344.0
1985	265.8	*87.4%*	1.2	*0.4%*	7.7	*2.5%*	29.4	*9.7%*			304.1
1990	218.2	*72.0%*	6.0	*2.0%*	7.4	*2.4%*	53.8	*17.7%*			303.2
1995	264.3	*69.6%*	9.1	*2.4%*	23.5	*6.2%*	83.1	*21.9%*			380.0
1996	269.5	*67.7%*	9.9	*2.5%*	26.1	*6.6%*	92.3	*23.2%*			397.8
1997	265.8	*68.1%*	10.4	*2.7%*	23.1	*5.9%*	90.8	*23.3%*			390.1
1998	241.0	*67.6%*	10.2	*2.9%*	19.7	*5.5%*	85.5	*24.0%*			356.4
1999	256.3	*68.8%*	11.4	*3.1%*	16.3	*4.4%*	88.3	*23.7%*			372.3
2000	272.1	*69.0%*	11.1	*2.8%*	21.0	*5.3%*	90.0	*22.8%*			394.2
2001	236.4	*66.0%*	14.1	*3.9%*	23.7	*6.6%*	84.1	*23.5%*			358.3
2002	267.2	*68.7%*	15.1	*3.9%*	22.3	*5.7%*	82.5	*21.2%*	1.9	*0.5%*	389.0
2003	257.0	*64.6%*	16.0	*4.0%*	19.9	*5.0%*	84.8	*21.3%*	20.3	*5.1%*	398.0
2004[r]	241.8	*60.5%*	14.8	*3.7%*	19.8	*5.0%*	84.0	*20.6%*	40.8	*10.2%*	401.2
2005[r]	253.2	*61.1%*	16.1	*3.9%*	19.6	*4.7%*	84.0	*19.9%*	42.9	*10.4%*	415.8
2006[r]	219.0	*57.5%*	14.6	*3.8%*	19.9	*5.2%*	88.6	*22.8%*	40.6	*10.7%*	382.7
2007[r]	249.9	*59.2%*	18.8	*4.5%*	18.0	*4.3%*	88.4	*20.5%*	48.9	*11.6%*	424.0
2008[r]	258.3	*58.6%*	17.9	*4.1%*	17.5	*4.0%*	94.9	*21.1%*	53.9	*12.2%*	442.5
2009[r]	243.0	*59.0%*	17.6	*4.3%*	18.5	*4.5%*	80.6	*19.2%*	53.5	*13.0%*	413.2
2010[p]	**226.9**	***59.9%***	**18.8**	***5.0%***	**12.2**	***3.2%***	**77.1**	***20.3%***	**43.9**	***11.6%***	**378.7**

a Formerly American Natural Resources Pipeline Co.

b Formerly Midwest Gas Transmission Co.

c In 1994, Midcon Corporation became part of the Natural Gas Pipeline Co. Prior to 1994, data in this table included delivery information from Midcon Corporation.

d The Guardian Pipeline became operational on December 7, 2002.

e Total purchases differ from the total sold and used by gas utilities due to inventory changes, utility production from liquefied petroleum gas and some unaccounted gas.

f Prior to 1990, deliveries represent utility gas sales. Beginning in 1990, deliveries represent total gas used in Wisconsin, including both utility and transported gas deliveries.

p Preliminary estimates.

r Revised.

Source: Public Service Commission of Wisconsin, Accounts and Finance Division, *Statistics of Wisconsin Public Utilities*, Bulletin #8 (1970-1993). Telephone conversations and unpublished emails with pipeline representatives 1991-2010.

Wisconsin Coal Use, in Btu, by Economic Sector

1970-2010 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 Btu/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[r]	0.1	*0.0%*	3.9	*0.8%*	46.6	*9.0%*	465.4	*90.2%*	515.9	50.5
2008[r]	0.0	*0.0%*	2.7	*0.5%*	45.5	*8.4%*	492.6	*91.1%*	540.8	48.2
2009[r]	0.0	*0.0%*	2.0	*0.4%*	41.1	*8.5%*	441.4	*91.1%*	484.5	43.1
2010[p]	**0.0**	***0.0%***	**2.2**	***0.4%***	**42.1**	***8.1%***	**478.7**	***91.5%***	**523.0**	**44.3**

a Includes petroleum coke co-fired with coal.

p Preliminary estimates.

r Revised.

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 (1971-2010); annual reports of various Wisconsin electric generating utilities (1995-2010); U.S. Department of Commerce, Bureau of the Census of Housing (1970, 1980, 1990 and 2000).

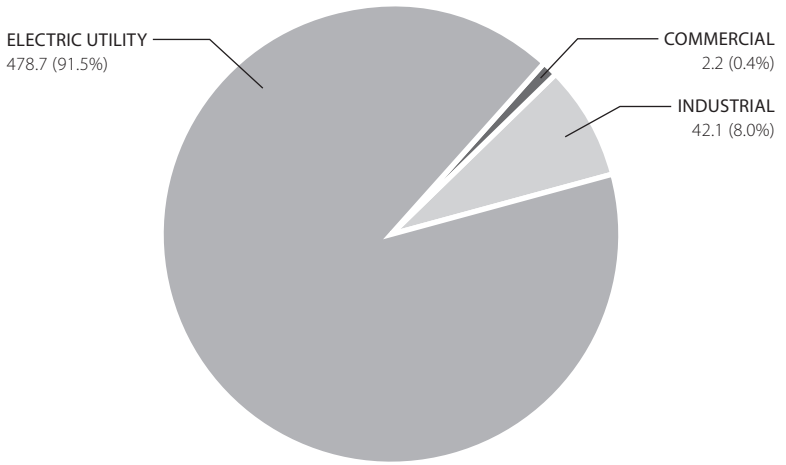
TOTAL COAL CONSUMPTION 7.9%

2010 saw an increase in Wisconsin's total coal consumption for all sectors, with an overall increase of 7.9 percent over 2009.

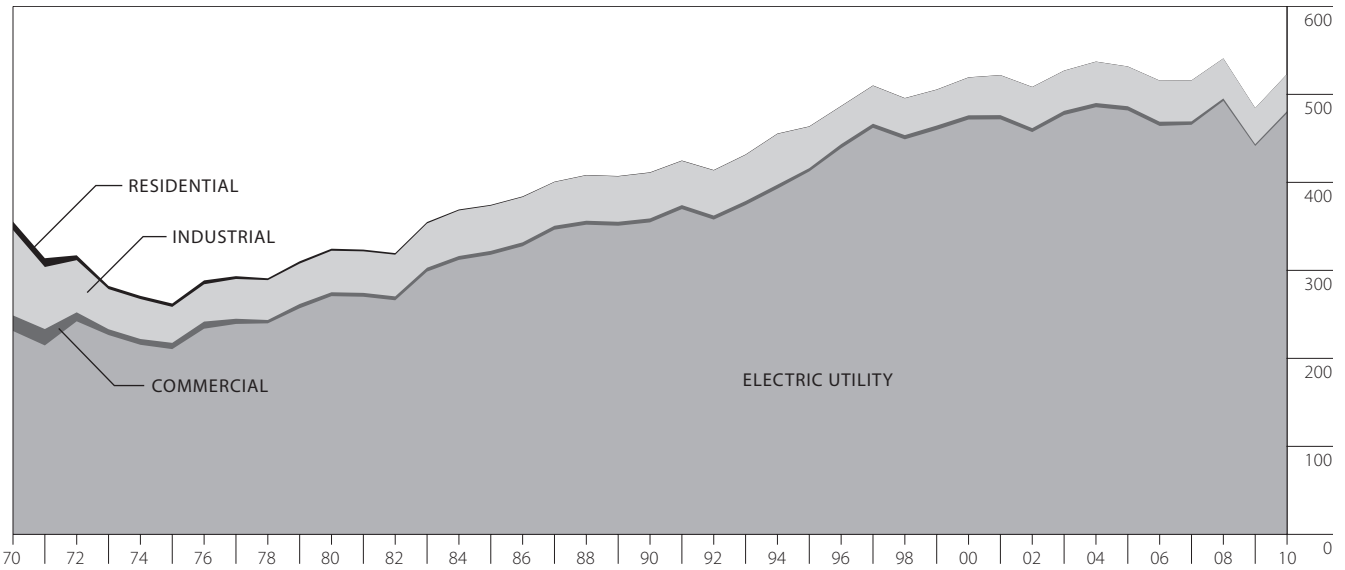
Wisconsin total coal use has increased by 99.4 percent since 1975. Industrial coal consumption increased 2.4 percent in 2010. Commercial sector use of coal is limited primarily to state facilities and large institutions, and increased by 10.0 percent.

Wisconsin Coal Use, by Economic Sector

2010 TRILLIONS OF BTU AND PERCENT OF TOTAL



1970-2010 TRILLIONS OF BTU



Source: Wisconsin Office of Energy Independence.

Wisconsin Coal Use, in Tons, by Economic Sector

1970-2010 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[r]	0	*0.0%*	131	*0.5%*	1,927	*7.1%*	25,132	*92.4%*	27,190
2009[r]	0	*0.0%*	94	*0.4%*	1,742	*7.2%*	22,518	*92.4%*	24,354
2010[p]	**0**	***0.0%***	**105**	***0.4%***	**1,785**	***6.8%***	**24,423**	***92.8%***	**26,313**

a Includes petroleum coke co fired with coal.

p Preliminary estimates.

r Revised.

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 (1971-2010); annual reports of various Wisconsin electric generating utilities (1995-2010); 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.

COAL
USE INCREASED
1,959
THOUSAND TONS

The total weight of coal used in Wisconsin increased by 1,959 thousand tons (8.0 percent) in 2010.

Wisconsin Electric Utility Coal Use, by Plant

COAL
USE BY ELECTRIC UTILITIES
8.5%

Coal use by Wisconsin's electric utilities increased 8.5 percent in 2010. The two largest power plants, Pleasant Prairie and Columbia, used 38.2 percent of the utility coal burned in Wisconsin. The state's newest coal plant Weston 4 (Wisconsin Public Service) used 1,944 thousand tons of coal, is responsible for most of the increased coal consumption and uses 8.0 percent of Wisconsin's utility coal.

A map of Wisconsin's coal transportation routes and major coal plants can be found in the Map Appendix at the back of the book.

1975-2010 THOUSANDS OF TONS

Utility / Plant Name	1975	1980	1985	1990	1995	2000	2005	2006	2007	2008	2009	2010[p]
Dairyland Power Cooperative												
Alma	502	1,188	1,268	1,506	1,231	1,754	2,031	1,950	2,019	2,010	1,732	1,441
Genoa	801	915	914	680	788	928	1,172	1,162	1,083	1,172	985	940
Stoneman	111	74	44	30	0	0	38	23	36	13	13	0
Madison Gas and Electric Co.												
Blount Street	77	144	61	95	137	215	228	103	106	115	15	12
Northern States Power Co.												
Bay Front	52	100	36	45	30	115	152	96	140	132	100	60
Wisconsin Electric Power Co.												
Oak Creek	2,873	2,542	2,528	1,522	2,093	3,410	3,255	3,287	3,238	3,371	2,687	3,670
Pleasant Prairie	0	581	2,564	4,703	5,073	5,295	5,373	4,737	4,963	4,982	4,762	4,730
Port Washington	691	683	348	126	430	641	0	0	0	0	0	0
Valley	536	774	528	463	458	690	780	805	792	761	612	566
Wisconsin Power and Light Co.												
Blackhawk	24	30	8	0	0	0	0	0	0	0	0	0
Columbia	1,025	3,603	2,991	3,665	4,238	4,355	4,274	4,326	4,541	4,563	4,053	4,589
Edgewater	976	1,056	2,112	2,180	2,702	2,531	2,533	2,400	2,810	2,777	2,473	2,624
Nelson Dewey	512	552	541	497	615	580	729	727	657	642	569	632
Rock River	293	245	317	198	253	2	0	0	0	0	0	0
Wisconsin Public Services Corp.												
Pulliam	753	744	489	674	1,130	1,444	1,627	1,620	1,617	1,379	958	1,161
Weston	239	329	1,275	1,555	1,702	1,972	2,143	2,044	1,712	2,859	3,363	3,864
Municipal Utilities												
Manitowoc[a]	142	67	91	116	160	108	140	105	77	240	144	134
Marshfield	90	40	48	7	0	0	0	0	0	0	0	0
Menasha	58	28	25	25	2	10	6	63	110	116	52	0
Richland Center	21	20	20	0	0	0	0	0	0	0	0	0
Total[b]	**9,776**	**13,715**	**16,208**	**18,087**	**21,042**	**24,050**	**24,577**	**23,679**	**23,745**	**25,132**	**22,518**	**24,423**

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.

p Preliminary estimates.

Source: Wisconsin Department of Natural Resources, Annual Survey of Point Source Emissions, unpublished (1975-2010); annual reports of various Wisconsin electric generating utilities (1995-2010); U.S. Department of Energy, *Electric Power Monthly* [DOE/EIA-0226 (2009/03)](March 2009).

Wisconsin Manufacturing Industry Coal Use, by Industry Group

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

1971-2010 THOUSANDS OF TONS

SIC Industry Group	1971	1975	1980	1985	1990	1995[r]	2000	2005	2006	2007	2008[r]	2009[r]	2010[p]
20 Food and Kindred	213	56	64	72	43	10	15	21	21	22	14	12	9
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
32 Stone, Clay and Glass	79	13	8	49	116	120	80	121	116	108	51	61	64
33 Primary Metals	114	50	80	66	95	—	—	—	—	—	27	21	51
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**

p Preliminary.

r Revised.

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 (1972-2010).

PAPER & ALLIED PRODUCTS
93.1%

Wisconsin's industrial coal use continues to be dominated by paper and allied products, which consumed 93.1 percent of the industrial coal used in 2010.

Coal Deliveries to Wisconsin Industries, by Region of Origin

1975-2010 THOUSANDS OF TONS

Origin[a]	1975	1980	1985	1990	1995	2000	2005	2006	2007	2008	2009	2010[p]
Eastern PA	39	136	24	4	5	8	137	152	148	141	48	18
Western PA	11	125	192	38	33	11	0	0	0	0	0	0
Northern WV	93	339	150	230	384	75	175	110	98	78	99	93
Ohio	91	129	43	0	10	0	36	18	19	0	0	0
Southern No. 1 (WV and VA)	35	88	2	1	15	190	13	4	0	0	0	2
Southern No. 2 (WV and KY)	1,210	497	757	628	529	326	243	248	261	259	125	173
Western KY	111	127	147	98	196	179	192	193	197	195	97	91
Illinois	515	520	624	300	228	147	101	107	106	135	307	310
Indiana	55	114	89	43	67	52	207	202	215	217	214	194
Western U.S.	11	3	0	0	0	0	0	0	0	0	0	0
CO and NM	0	0	0	0	0	0	190	326	322	203	104	207
Wyoming	24	16	0	346	250	521	368	424	423	446	421	405
Utah	1	0	0	0	0	0	71	27	0	7	12	18
MO and WA	281	220	158	0	15	0	0	0	0	0	0	5
Total	**2,477**	**2,314**	**2,186**	**1,688**	**1,733**	**1,509**	**1,733**	**1,811**	**1,789**	**1,681**	**1,427**	**1,516**

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

p Preliminary.

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* [DOA/EIA-0121 (2012/01Q)] (June 2012), www.eia.doe.gov/cneaf/coal/page/coaldistrib/coal_distributions.html.

COAL FROM WESTERN U.S.
41.9%

Coal currently used by Wisconsin industry comes primarily from the western part of the country (41.9 percent). There has been a gradual decline in industrial coal use. Industrial coal from Illinois has declined 50.3 percent since 1985.

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

COAL
SHIPPED BY RAIL
1.1%

Coal shipped by rail increased 1.1 percent in 2010 as total coal deliveries to Wisconsin power plants increased commensurately. Most—98.1 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.

1975-2010 THOUSANDS OF TONS

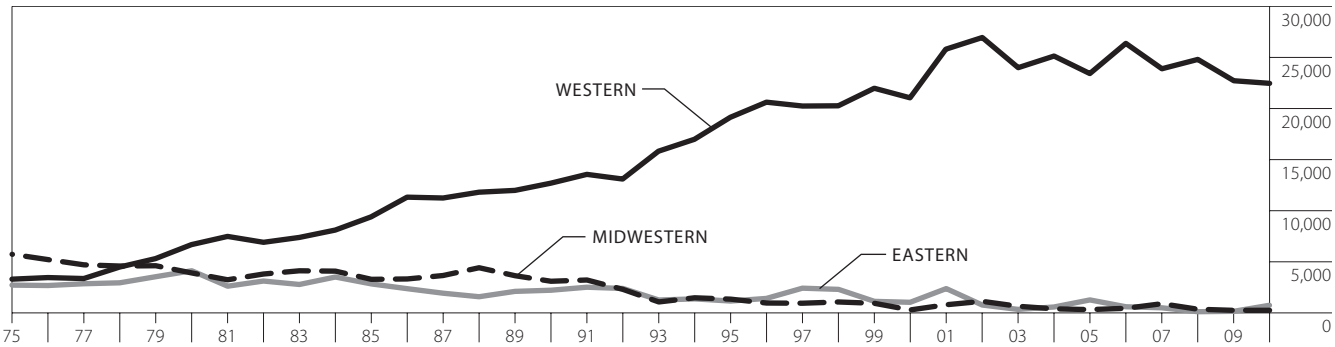
Transportation Mode and Type of Receiving Facility	1975	1980	1985	1990	1995	2000	2005	2006	2007	2008	2009	2010
Rail												
Electric Utilities	7,631	11,140	13,194	17,237	18,815	25,072	21,722	25,181	24,063	24,996	22,761	23,027
Coke Plants	29	11	0	0	0	0	0	0	0	0	0	0
Other Industrial	850	1,047	846	811	772	1,169	1,177	1,441	1,377	1,469	1,299	1,321
Residential/Commercial	170	3	5	1	3	33	417	28	56	96	75	59
Subtotal	**8,680**	**12,201**	**14,045**	**18,049**	**19,590**	**26,274**	**23,316**	**26,650**	**25,496**	**26,561**	**24,135**	**24,407**
Great Lakes Shipping												
Electric Utilities	2,211	1,713	1,118	429	1,005	753	1,572	1,483	518	69	0	0
Coke Plants	224	167	0	0	0	0	0	0	0	0	0	0
Other Industrial	992	981	1,024	822	788	331	46	6	39	0	0	0
Residential/Commercial	212	46	11	1	0	0	0	0	0	40	14	30
Subtotal	**3,639**	**2,907**	**2,153**	**1,252**	**1,793**	**1,084**	**1,618**	**1,489**	**557**	**109**	**14**	**30**
River Barge												
Electric Utilities	1,756	1,487	1,042	855	1,083	32	1,508	401	454	12	103	176
Other Industrial	0	62	246	55	120	4	22	6	18	11	9	12
Residential/Commercial	0	1	10	2	126	129	0	0	0	32	24	19
Subtotal	**1,756**	**1,550**	**1,298**	**912**	**1,329**	**165**	**1,530**	**407**	**472**	**55**	**136**	**207**
Truck												
Electric Utilities	0	0	2	31	0	0	0	144	50	0	60	59
Other Industrial	0	1	45	1	53	5	488	359	355	200	119	184
Residential/Commercial	0	0	0	0	0	0	1	1	0	1	0	0
Subtotal	**0**	**1**	**47**	**32**	**53**	**5**	**489**	**504**	**405**	**201**	**179**	**243**
Total[a]	**14,075**	**16,659**	**17,543**	**20,245**	**22,765**	**27,528**	**26,953**	**29,050**	**26,930**	**26,926**	**24,464**	**24,887**

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

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 (2012/01Q)] (June 2012), www.eia.doe.gov/cneaf/coal/page/coaldistrib/coal_distributions.html.

Coal Deliveries to Wisconsin Power Plants, by Region of Origin

1975-2010 THOUSANDS OF TONS



Coal Deliveries to Wisconsin Power Plants, by State of Origin

1975-2010 THOUSANDS OF TONS

State	1975	1980	1985	1990	1995	2000	2005	2006	2007	2008	2009	2010p
Eastern												
Kentucky	2,073	2,816	2,122	196	95	47	758	269	179	0	10	10
Pennsylvania	572	1,007	639	1,760	941	826	0	3	12	0	76	650
West Virginia	5	233	0	136	57	34	252	260	240	12	0	18
Other States	1	0	9	59	0	62	191	2	0	37	0	0
Subtotal	**2,651**	**4,056**	**2,770**	**2,151**	**1,093**	**969**	**1,201**	**534**	**431**	**49**	**86**	**678**
Midwestern												
Illinois	4,857	3,364	1,478	1,136	1,232	0	97	297	686	236	86	183
Indiana	785	205	1,731	1,893	46	221	159	84	146	56	96	3
Ohio	27	272	0	0	0	0	0	0	0	0	0	0
Other States	0	1	9	0	0	0	0	0	0	0	0	0
Subtotal	**5,669**	**3,842**	**3,218**	**3,029**	**1,278**	**221**	**256**	**381**	**832**	**292**	**182**	**186**
Western												
Montana	2,161	2,575	2,235	1,983	2,102	463	591	1,237	1,961	562	548	535
Wyoming	1,053	4,042	7,101	10,605	15,223	19,192	20,581	23,150	19,811	22,569	21,438	21,383
Other States	20	0	0	43	1,758	1,320	2,174	1,907	2,050	1,605	670	482
Subtotal	**3,234**	**6,617**	**9,336**	**12,631**	**19,083**	**20,975**	**23,346**	**26,294**	**23,822**	**24,736**	**22,656**	**22,400**
Total	**11,554**	**14,515**	**15,324**	**17,811**	**21,454**	**22,165**	**24,803**	**27,209**	**25,085**	**25,077**	**22,924**	**23,263**

p Preliminary.

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* [DOA/EIA-0121 (2012/01Q)] (June 2012), www.eia.doe.gov/cneaf/coal/page/coaldistrib/coal_distributions.html.

COAL DELIVERIES 1.5%

In 2010, coal deliveries to Wisconsin power plants increased 1.5 percent.

Wisconsin Electric Utility Sales, by Economic Sector

TOTAL ELECTRICITY SALES
3.6%

Total electricity sales increased 3.6 percent in 2010 and have grown 6.3 percent over the past ten years. In 2010, electricity sales increased in all sectors with the highest increase of 4.5 percent in the industrial sector.

A map of Wisconsin's major electric lines and service territory areas can be found in the Map Appendix.

1970-2010 MILLIONS OF kWh AND PERCENT OF TOTAL

Year	Residential		Commercial[a]		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[r]	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	20,986	*29.9%*	22,978	*32.8%*	24,672	*35.2%*	1,486	*2.1%*	70,122
2009[r]	20,458	*30.9%*	21,995	*33.2%*	22,390	*33.8%*	1,443	*2.2%*	66,286
2010[p]	**21,323**	***31.0%***	**22,514**	***32.7%***	**23,452**	***34.1%***	**1,463**	***2.1%***	**68,752**

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 to electricity sales to 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.

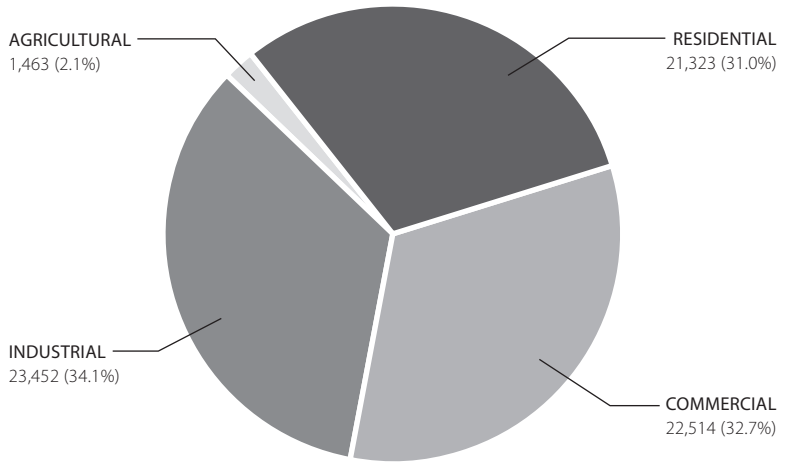
p Preliminary estimates.

r Revised.

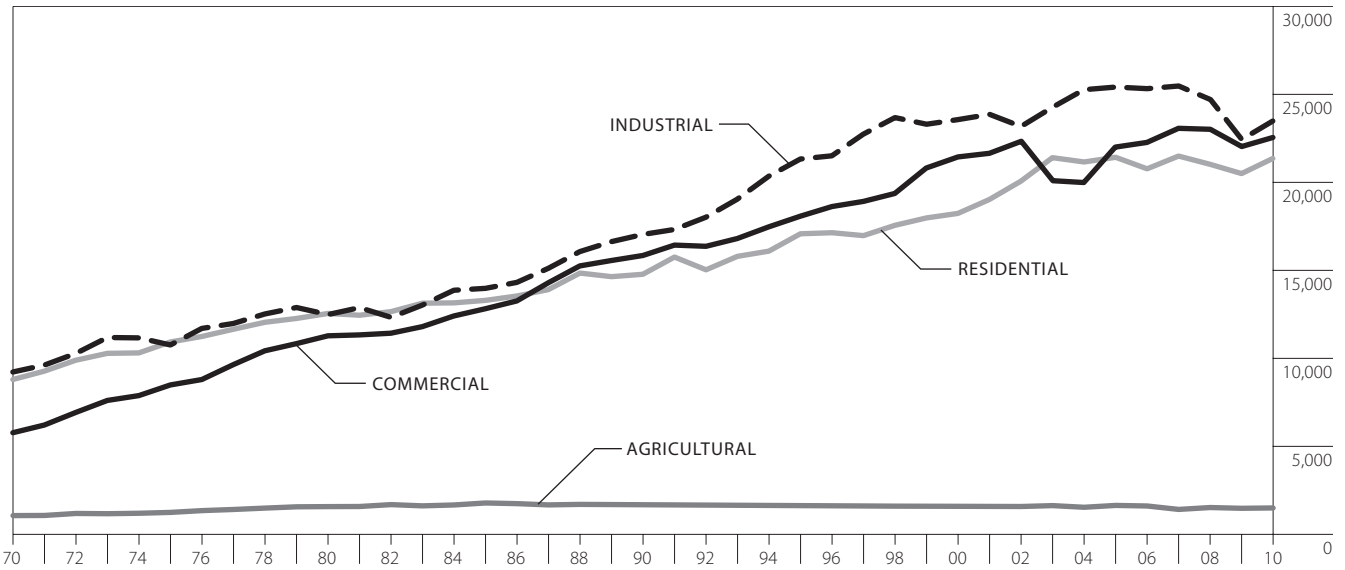
Source: Sectoral disaggregation by Wisconsin Office of Energy Independence, based on Public Service Commission of Wisconsin, *Statistics of Wisconsin Public Utilities*, Bulletin #8 (1970-1994); U.S. Department of Agriculture, Rural Electrification Administration, Annual Statistical Report, REA Bulletin 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 (2012/02)] (February 2012) (1989-2010). http://www.eia.doe.gov/cneaf/electricity/epm/epm_sum.html; U.S. Department of Agriculture, Economic Research Service, electricity expenditure data at http://www.ers.usda.gov/ (2007-2010).

Wisconsin Electric Utility Sales, by Economic Sector

2010 MILLIONS OF kWh AND PERCENT OF TOTAL



1970-2010 MILLIONS OF kWh



Source: Wisconsin State Energy Office.

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

Investor owned utilities supply the vast majority of power to Wisconsin electricity customers (83.2 percent). The relative amounts of power supplied by the three types of suppliers have changed very little over the past 20 years.

1970-2010 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[r]	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[p]	**57,183**	***83.2%***	**7,759**	***11.3%***	**3,810**	***5.5%***	**68,752**

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 (2012/02)] (February 2012). www.eia.doe.gov/cneaf/electricity/epm/epm_sum.html

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

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

1970-2010

Year	Load (Millions of kWh)	Peak Demand Summer (MW)	Peak Demand Winter (MW)	Capacity Factor[b] (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[r]	68,796	11,698	9,237	67.1
2008[r]	66,931	11,060	9,482	68.9
2009	63,349	11,267	9,114	64.2
2010[p]	**65,092**	**11,568**	**9,036**	**64.2**

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 (1970-2010); http://psc.wi.gov/apps40/annlreport/default.aspx

SUMMER PEAK DEMAND
2.7%

Wisconsin's 2010 summer peak electricity demand for the eastern Wisconsin utilities[a] increased 2.7 percent due to warmer weather in August. The increase compared to 2009 was 301 megawatts.

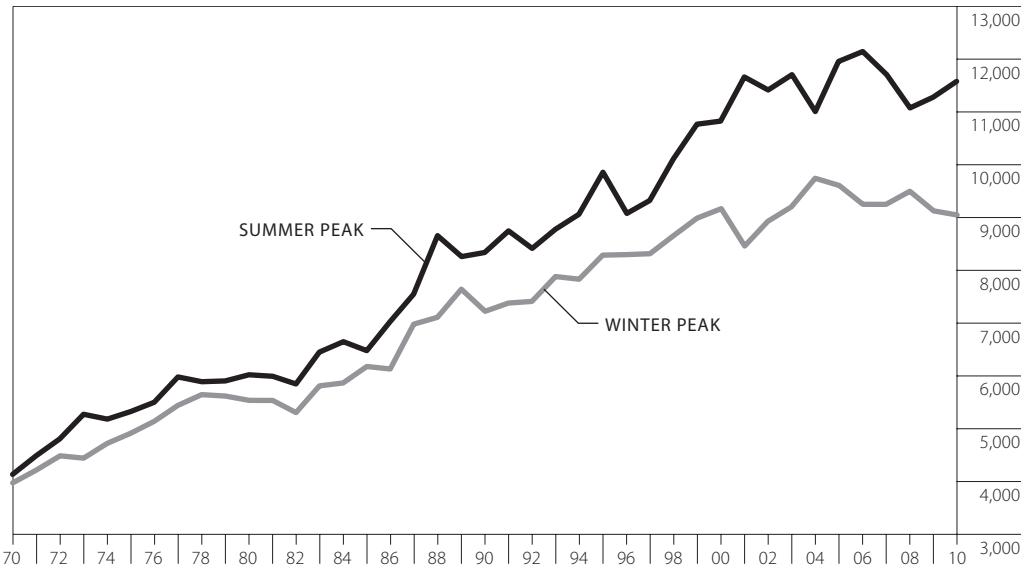
WINTER PEAK DEMAND
0.9%

Winter peak demand decreased 0.9 percent in 2010 due to warmer December weather. Summer peak demand in 2010 exceeded winter peak demand by 2,532 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 2010; the peak demand will be adjusted to include January and February in the next edition of this publication.

Eastern Wisconsin Electric Utility Non-Coincident Peak Demand

HIGHEST PEAK
12,129
MEGAWATTS
SUMMER 2006

1970-2010 MEGAWATTS



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

The highest non-coincident peak demand in 2010 was seen in August.

2010

Month	Load (Millions of kWh)[a]	Non-Coincident Peak Demand (MW)[b]
January	5,802	8,764
February	5,041	8,422
March	5,142	7,975
April	4,823	7,403
May	5,252	10,136
June	5,550	10,273
July	6,406	10,696
August	6,388	11,568
September	5,116	9,717
October	4,993	7,863
November	4,971	8,212
December	5,608	9,036
Total	**65,092**	

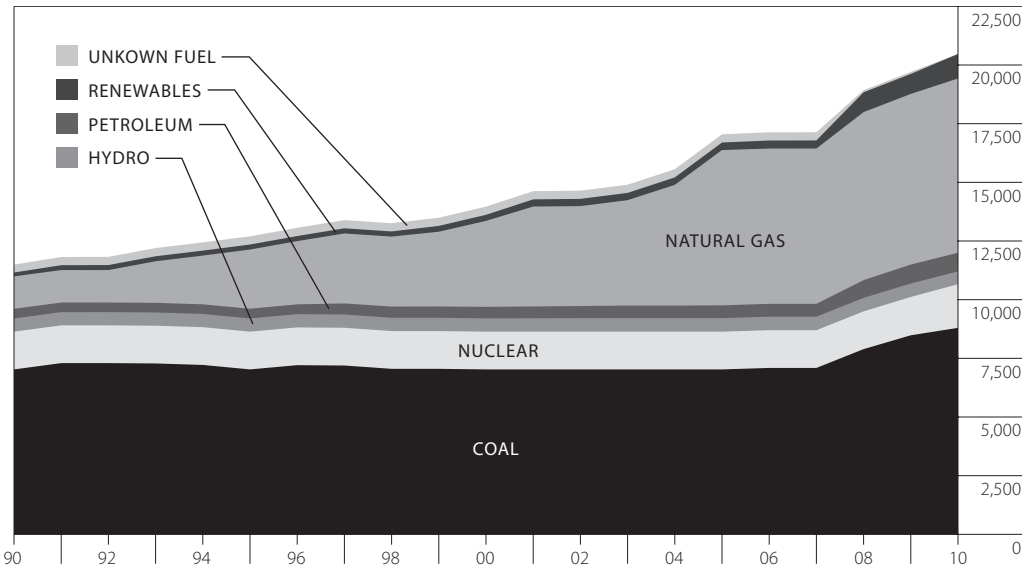
a Wisconsin Electric Power Co., Wisconsin Power and Light Co., Wisconsin Public Service Corp., and Madison Gas and Electric Co.

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 (2010). http://psc.wi.gov/apps40/annlreport/default.aspx

Wisconsin Electric Generating Capacity, by Type of Plant

1990-2010 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[p]	**8,799**	**1,861**	**544**	**796**	**7,426**	**1,044**	**0**	**20,470**

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. PSC/Wisconsin Generating Capacity by Fuel (1990-2010); EIA data were used in previous publications.

ELECTRIC GENERATION CAPACITY
764
MEGAWATTS
(3.9 PERCENT)
IN 2010

In 2010, Wisconsin's electric generation capacity increased by 764 megawatts (3.9 percent). These data represent electricity generation capacity by Wisconsin's investor-owned utilities, municipal utilities, electric co-operatives, independent power producers, and other non-utility operations (e.g., paper mills).

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

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

2010 saw an overall capacity increase of 3.9 percent over 2009. The increases according to producers were: Investor Owned Utilities (IOUs), 6.8 percent and Independent Power Producers (IPPs), 5.6 percent; and power co-operatives, 1.3 percent. The following producers saw a net decrease in their generation capacity: municipal utilities 0.2 percent, and non-utilities, 31.8 percent. The large decrease in capacity for non-utilities is likely due to closings of large industrial power producers.

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

1990-2010 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.

	Utility Generating Capacity[c]				Non-Utility Generating Capacity			All Producers Capacity Total
Year	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[p]	**1,030**	**12,772**	**565**	**14,367**	**5,357**	**745**	**6,102**	**20,469**

a IPPs are independent power producers allowed under law to sell their power to wholesalers such as utility co-operatives. 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 co-operatives and municipalities.

p Preliminary.

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 generation data (1990-2010).

Wisconsin Electric Power Generation, by Type of Plant

Utilities include investor-owned utilities, electric co-operatives and municipalities.

IPPs are independent power producers allowed under law to sell their power to wholesalers such as utility co-operatives. They are barred from selling their power on the retail market. The primary fuel used by IPPs is uranium, followed by natural gas, wind, and hydroelectric.

Non-Utility refers to industrial power producers such as paper mills. These generation facilities primarily use coal and renewable resources such as biogas and hydroelectric to generate electricity for their own use.

1970-2010 MILLIONS OF kWh

	Electricity Generation by Utilities[e]											
Year	Coal[b]	Nuclear[g]	Hydro[a]	Petroleum[d]	Natural Gas	Renewables[f]	Total Utilities	IPP	Nonutility[e]	Total IPP and Nonutility	Imports & Losses[c]	Total Sales[h]
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
2001	40,855	11,507	1,888	99	815	51	55,215	2		2	10,760	65,977
2002	42,368	12,449	2,283	43	910	62	58,115	0		0	8,884	66,999
2003	44,140	12,220	1,623	93	1,008	62	59,146	404		404	7,691	67,241
2004	45,149	11,888	1,748	56	574	69	59,484	0		0	8,316	67,800
2005	45,219	7,574	1,499	75	2,185	105	56,657	2,648	275	2,923	11,031	70,336
2006[r]	42,936	12,234	1,446	215	1,928	234	58,993	3,662	2,534	6,196	7,166	69,821
2007	39,460	0	1,330	123	3,132	277	44,322	16,263	2,913	19,176	10,715	71,301
2008[r]	41,270	0	1,445	70	2,451	508	45,743	15,126	2,874	18,000	9,252	70,122
2009[r]	36,554	0	1,242	38	2,597	997	41,428	16,027	2,687	18,713	8,831	66,286
2010[p]	**39,427**	**0**	**1,905**	**39**	**3,164**	**817**	**45,351**	**16,193**	**2,783**	**18,976**	**7,208**	**68,752**

a From 1970 to 1989, hydroelectric data were sourced from the Public Service Commission of Wisconsin bulletins; from 1990 to 2006, and for the current year, data are from the federal Department of Energy, Energy Information Administration (EIA). 2007, 2008 and data for the previous year are from the Public Service Commission of Wisconsin.

b Coal data may include a small amount of refuse derived fuel for all producer types.

c 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. In 2009, the renewables category also includes undifferentiated renewables. These renewables are not split out by type of fuel due to data source limitations.

g Wisconsin utilities no longer own nuclear generation; all nuclear reactors located in Wisconsin are owned by Independent Power Producers. Nuclear generation data can be found in the IPP category in the above table.

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); US Department of Energy, Energy Information Administration, *Electric Power Monthly* [DOE/EIA-0226 (2010/03)] (March 2010) (1990-2006); Public Service Commission of Wisconsin, unpublished electrical generation data (2007-2010).

ELECTRIC UTILITY GENERATION
9.5%

Total electric generation by Wisconsin utilities increased 9.5 percent in 2010, while generation from Independent Power Producers (IPPs) increased by 1.0 percent. Industrial, or non-utility, generation increased by 3.6 percent. The percent of Wisconsin's power that is produced in-state has been gradually increasing since 2007 as in-state capacity has grown and imports have decreased. In 2010, 93.6 percent of Wisconsin's power was produced in-state, and power imports decreased by 18.4 percent.

Utility energy production from renewable sources decreased by 18.1 percent in 2010, while production from coal decreased by 7.9 percent.

The "Imports and Losses" column is a reflection of the difference between total sales recorded by EIA and total sales reported by utilities and IPPs.

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

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 and 2006 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.

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

1970-2010 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[e]	1.61	0.52	4.51	1.27
1995[e]	1.33	0.48	3.62	1.12
1996[e]	1.26	0.49	3.15	1.07
1997[e]	1.28	0.50	4.30	1.22
1998[e]	1.25	0.52	3.76	1.13
1999[e]	1.21	0.53	3.70	1.07
2000[e]	1.24	0.52	6.41	1.14
2001[e]	1.27	0.54	6.36	1.15
2002[e]	1.31	0.50	4.61	1.12
2003[e]	1.37	0.48	6.49	1.21
2004[e]	1.44	0.47	6.19	1.24
2005[e]	1.58	0.39	10.29	1.65
2006[e]	1.78	0.35	8.28	1.61
2007[e]	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**

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

b Nuclear cost.

e Estimate by Wisconsin Office of Energy Independence 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 (1990-2010). http://psc.wi.gov/apps40/annlreport/default.aspx

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

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

1970-2010 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
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**

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 Office of Energy Independence 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 (1990-2010). http://psc.wi.gov/apps40/annlreport/default.aspx

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 more than double the previous peak in 1983 of 2.21 cents per KWh. The cost of purchased power has risen in recent years and is 45.7 percent more expensive than electricity generated in Wisconsin.

Wisconsin utilities no longer own nuclear generation; all nuclear reactors located in Wisconsin are owned by Independent Power Producers. The figures for 2005 and 2006 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 to increase for nuclear generation.

Electric Utility Sulfur Dioxide Emissions

SULFUR DIOXIDE EMISSIONS
2.3%

Utility sulfur dioxide emissions increased 2.3 percent from 2009 to 2010. 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.

1980-2010 TONS

Year	1980	1990	2000	2005	2006	2007	2008	2009[r]	2010[p]
Dairyland Power Cooperative									
Alma	23,641	6,510	3,445	8,816	11,748	10,748	9,558	4,809	4,189
Genoa	43,516	28,130	8,165	13,074	13,658	12,480	11,970	6,479	8,874
J.P. Madgett	4,088	7,330	5,376	7,762	7,807	8,028	9,114	10,041	4,976
Stoneman	4,663	790	0	0	0	0	0	0	0
Madison Gas and Electric Co.									
Blount Street	8,436	3,851	6,923	5,969	2,617	2,762	2,958	397	278
Northern States Power Co.									
Bay Front	2,708	393	786	1,196	944	1,149	1,041	735	347
Wisconsin Electric Power Co.									
Oak Creek	122,472	45,650	22,831	12,903	13,594	13,695	14,472	14,823	13,032
Pleasant Prairie	4,972	26,933	28,726	33,656	28,566	2,229	1,092	988	1,195
Port Washington	42,295	4,009	15,572	2	2	4	4	6	6
Valley	41,761	14,053	15,835	8,482	7,087	6,848	6,887	5,376	4,890
Wisconsin Power and Light Co.									
Blackhawk	2,006	0	0	0	0	0	0	0	0
Columbia 1	24,937	18,616	15,056	13,729	10,616	12,093	13,561	11,833	14,527
Columbia 2	14,614	13,909	13,270	12,370	11,780	13,332	13,303	12,396	13,192
Edgewater 1-4	60,014	38,021	8,962	9,103	7,675	7,166	7,205	5,666	5,758
Edgewater 5	0	6,744	8,744	7,741	8,084	9,502	7,858	7,782	8,779
Nelson Dewey	32,304	10,985	14,275	14,999	14,519	15,064	13,531	12,646	13,454
Rock River	14,139	7,220	24	12	2	2	2	4	0
Wisconsin Public Service Corp.									
Pulliam	42,087	25,631	6,314	12,175	10,869	10,448	8,446	4,386	5,517
Weston 1, 2	21,009	6,589	3,340	3,988	3,278	2,983	2,852	2,060	2,601
Weston 3	0	7,598	8,358	9,540	9,318	6,125	7,338	5,912	7,216
Weston 4	0	0	0	0	0	0	333	972	1,120
Municipal Utilities									
Manitowoc	1,318	1,727	3,282	217	732	1,033	1,706	794	593
Marshfield	1,651	139	0	0	0	0	0	0	0
Menasha	991	695	79	0	0	0	0	0	0
Total									
Utility Sources	**513,622**	**275,523**	**189,363**	**175,734**	**162,896**	**135,691**	**133,231**	**108,105**	**110,544**
All Other Sources	**172,777**	**101,517**	**87,115**	**68,600**	**67,394**	**67,838**	**87,888**	**77,203**	**80,696**
All Stationary Sources	**686,399**	**377,040**	**276,478**	**244,334**	**230,290**	**203,529**	**221,119**	**185,308**	**191,240**
Percent Utility Sources	**74.8%**	**73.1%**	**68.5%**	**71.9%**	**70.7%**	**66.7%**	**60.3%**	**58.3%**	**57.8%**

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/air/emission/ObtainEmissionSummary1995ToPresent.htm (1986-2010).

Electric Utility Nitrogen Oxides Emissions

1989-2010 TONS

Year	1989	1990	2000	2005	2006	2007	2008	2009	2010p
Dairyland Power Cooperative									
Alma	1,934	1,962	2,774	3,834	4,252	4,883	3,671	1,100	763
Genoa	5,243	5,304	3,611	3,717	3,909	3,556	2,696	1,574	1,669
J.P. Madgett	4,728	4,963	4,845	4,469	4,098	4,114	3,962	3,636	2,898
Madison Gas and Electric Co.									
Blount Street	1,511	1,165	1,480	1,187	490	463	568	78	88
Northern States Power Co.									
Bay Front	0	0	1,288	1,527	1,171	1,590	1,562	916	665
Wisconsin Electric Power Co.									
Oak Creek	13,967	8,917	19,786	4,650	4,634	4,646	4,978	5,530	4,982
Pleasant Praire	17,701	16,356	18,452	11,318	8,745	2,560	2,862	2,623	2,711
Port Washington	1,005	771	4,074	45	85	111	129	129	131
Valley	4,414	4,874	7,259	3,893	3,435	3,268	3,106	1,817	1,446
Wisconsin Power and Light Co.									
Columbia 1	6,059	6,844	7,981	3,022	2,699	2,655	2,715	2,438	2,899
Columbia 2	7,943	10,336	6,874	2,829	2,448	2,484	2,549	2,329	2,447
Edgewater 1-4	16,583	16,684	12,817	3,781	2,726	2,697	2,805	1,409	1,503
Edgewater 5	2,960	3,638	8,743	2,282	2,276	1,976	1,698	1,552	1,791
Nelson Dewey	9,997	9,997	5,413	3,060	2,848	2,938	2,589	2,382	3,082
Rock River	4,367	3,697	419	373	125	108	88	33	6
Wisconsin Public Services Corp.									
Pulliam	6,769	7,087	8,045	9,235	8,164	8,222	6,591	3,391	2,705
Weston 1, 2	3,003	3,308	3,262	3,754	2,622	3,039	2,699	971	1,212
Weston 3	2,374	2,360	3,228	4,385	3,965	2,529	2,593	2,034	1,492
Weston 4	0	0	0	0	0	0	281	794	922
Municipal Utilities									
Manitowoc	923	923	102	88	146	278	593	245	234
Total									
Utility Sources	**111,481**	**109,186**	**120,453**	**67,449**	**58,838**	**52,117**	**48,735**	**34,981**	**33,646**
All Other Sources	**86,473**	**24,774**	**19,625**	**45,232**	**41,282**	**42,660**	**48,287**	**43,196**	**45,540**
All Stationary Sources	**197,954**	**133,960**	**140,078**	**112,681**	**100,120**	**94,777**	**97,022**	**78,177**	**79,186**
Percent Utility Sources	**56.3%**	**81.5%**	**86.0%**	**59.9%**	**58.8%**	**55.0%**	**50.2%**	**44.7%**	**42.5%**

p Preliminary estimates.

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/air/emission/ObtainEmissionSummary1995toPresent.htm (1986-2010).

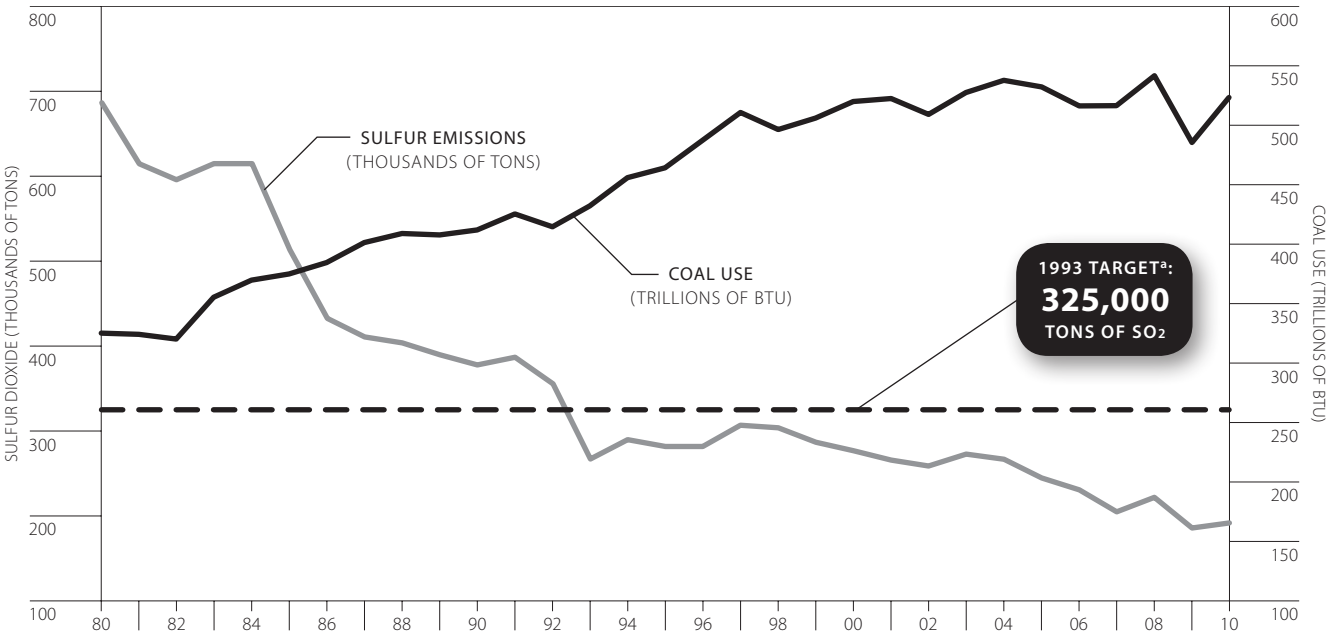
NITROGEN OXIDES EMISSIONS 3.8%

Utility nitrogen oxides emissions decreased 3.8 percent from 2009 to 2010. 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 US EPA rules.

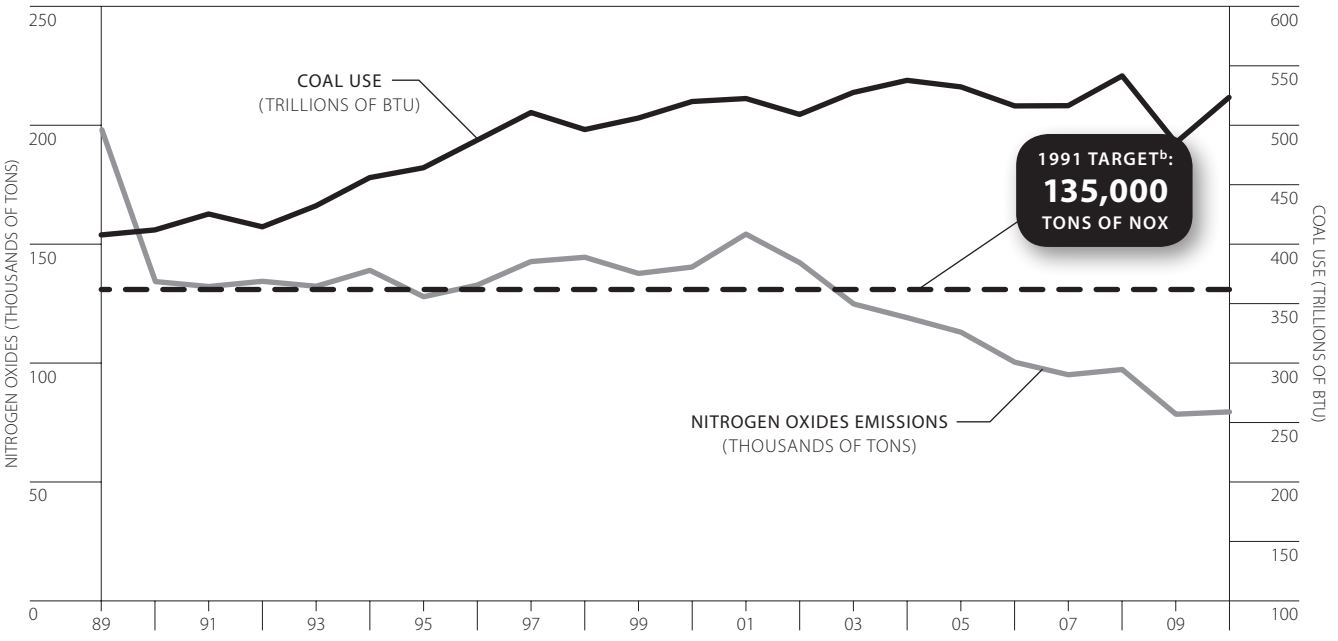
Recent changes in combustion technology have resulted in reduced NOX emissions for some generating plants.

Wisconsin Sulfur Dioxide and Nitrogen Oxides Emissions and Coal Use

1980-2010 SULFUR DIOXIDE EMISSIONS AND COAL USE



1989-2010 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 Utility Power Plant Inventory, 2010

Utility / Site[a]	Nameplate Capacity (MW)	Number of Units	Primary Fuel
Dairyland Power Cooperative			
Alma 1-3	58.1	3	Coal, Oil
Alma 4, 5	136.0	2	Coal, Oil
Elk Mound	71.0	2	Gas
Flambeu	22.0	3	Hydro[b]
Genoa 3	345.6	1	Coal, Oil
J.P. Madgett	387.0	1	Coal, Oil
Seven Mile Creek	4.1	3	LFG[i]
Various Biogas Methane	1.6	2	Gas
Madison Gas and Electric Co.			
Blount Street 3, 4, 5, 6, 7	177.5	5	Coal, RDF[c]
Diesel	54.0	1	Oil
Fitchburg 1, 2	57.6	2	Gas
Nine Springs	16.2	1	Gas
Rosiere	11.2	17	Wind
Sycamore	41.6	2	Gas
Various Solar	0.06	8	Solar
West Campus	169.3	3	Gas
Northern States Power Co.			
Bay Front 4, 5, 6	67.2	3	Wood, Coal
Flambeau	16.0	1	Gas
French Island 1, 2	30.4	2	Wood, RDF[c]
French Island 3, 4	157.6	2	Oil
Various Hydro	240.9	58	Hydro[b]
Wheaton 1-6	322.2	6	Gas, Oil
Shared Ownership			
Columbia 1[f]	512.0	1	Coal
Columbia 2[f]	511.0	1	Coal
Edgewater 4[g]	330.0	1	Coal
Edgewater 5[h]	380.0	1	Coal
Elm Road C1[k]	600.2	2	Coal
W. Marinette 33[e]	83.5	1	Gas
Weston 4[d]	595.0	1	Coal

Utility / Site[a]	Nameplate Capacity (MW)	Number of Units	Primary Fuel
Wisconsin Electric Power Co.			
Blu Sky Green Field	145.2	88	Wind
Byron	1.3	2	Wind
Concord	381.2	4	Gas
Germantown 1, 2, 3, 4	294.8	4	Oil
Germantown 5	106.9	1	Gas
Milwaukee	11.0	1	Coal
Paris	437.2	4	Gas
Pleasant Prairie 1, 2	1233.0	2	Coal
Pleasant Prairie 3	2.0	1	Oil
Port Washington 1-3	1182.0	3	Gas
S. Oak Creek 5-8	1191.6	4	Coal
Valley 1, 2	272.0	2	Coal
Valley 3	2.7	1	Oil
Various Hydro	13.6	8	Hydro[b]
Various Solar	0.003	3	Solar
Wisconsin Power and Light Co.			
Blackhawk 3, 4	50.0	2	Gas
Cedar Ridge	67.7	41	Wind
Edgewater 3	60.0	1	Coal
Nelson Dewey 1, 2	200.0	2	Coal
Rock River 1, 2	150.0	2	Gas
Rock River 3-6	144.0	4	Gas
Sheepskin	40.0	1	Gas
South Fond Du Lac	344.0	4	Gas
Superior Glacial Ridge	2.0	2	LFG[i]
Various Hyrdo	36.6	11	Hydro[b]
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	Gas
Eagle River	4.0	2	Oil
Glacier Hills Wind	162.0	90	Wind
Glenmore	1.2	2	Wind
Lincoln	9.2	14	Wind
Oneida Casino	4.0	2	Oil
Pulliam 31	91.0	1	Gas
Pulliam 5-8	350.2	4	Coal
Various Hydro	57.2	38	Hydro[b]
Various Solar	0.05	8	Solar
W. Marinette 31, 32, 34	166.6	3	Gas
Weston 1-3	492.1	3	Coal
Weston 31, 32	76.3	2	Gas
Municipal Utilities			
Manitowoc, City of	127.4	4	Coke
Manitowoc, City of	5.5	1	Gas
Menasha, City of	28.0	3	Coal
Merchant/IPP			
Kewaunee	560.1	1	Nuclear
Point Beach	1073.6	1	Nuclear
Statewide Utilities			
Statewide	105.4	36	Biomass, Biogas, Solar
Statewide	7997.7	45	Coal
Statewide	370.3	118	Hydro[b]
Statewide	4083.3	54	Natural Gas
Statewide	519.1	13	Oil
Statewide	397.8	164	Wind
Statewide Totals[j]	13473.6	430	All

a Does not include non-utility generation, all electric cooperative or all municipal utility. This chart shows only in-state generation and does not include out of state generation owned by Wisconsin utilities.

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 West Marinette 33 unit is jointly owned by Wisconsin Public Service Corp. (68%) and the City of Marshfield (32%).

f 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%).

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

h The Edgewater 5 unit is owned by Alliant Energy (75%) and Wisconsin Electric Power Co. (25%).

i LFG is Landfill Gas

j Statewide totals here are slightly different from capacity totals on other pages in this section because this table does not include nuclear reactors. Nuclear reactors are not included because they are owned by Independent Power Producers, not utilities.

k The Elm Road C1 unit is owned by Wisconsin Electric Power Co. (81.67%), WPPI Energy (10%) 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); Annual report of Dairyland Power Cooperative submitted to the U.S. Department of Agriculture, Rural Utilities Service (2008-2009).

CHAPTER 3

Renewable Energy

A Quick Guide to Renewable Energy

Renewable energy resources play a key role in Wisconsin's efforts to reduce dependence on imported fuels. According to Wisconsin Statutes 196.374(1)(j), a renewable resource "derives energy from any source other than coal, petroleum products, nuclear power, or …natural gas." This energy statistics publication looks at the primary renewable resources used in Wisconsin: solar, wind, water, biomas/biogas, and ethanol.

Biomass is organic matter (plant material, vegetation, agriculture waste, forestry waste) used as a fuel or source of energy. Use of biomass as an energy source results in little net production of carbon dioxide because the CO_2 generated during combustion of plant material equals the CO_2 consumed during the lifecycle of the plant. A map of biomass density across the United States can be found in the Map Appendix.

Wind power uses turbines to generate electricity for distribution on the electric grid and/or to displace energy normally purchased from the grid. A map of wind production sites and wind energy potential across Wisconsin can be found in the Map Appendix.

Biogas is produced from the state's landfills and agricultural manure digesters. Often, biogas is included under the heading biomass. In this statistics book, we break out biogas from biomass to provide further definition and detail about these resources in the state.

Solar thermal uses sunlight to generate heat for applications such as water heating without fossil fuels.

Hydro power uses the kinetic energy of moving water to generate electricity for distribution on the electric grid. A map of hydroelectric sites in Wisconsin can be found in the Map Appendix.

Solar photovoltaic uses sunlight to generate electricity to displace energy normally purchased from the electric grid, or to add energy to the electric grid. A map of solar intensity across the United States Wisconsin can be found in the Map Appendix.

Ethanol is a renewable transportation fuel primarily made from corn. It is used as the oxygenate in reformulated gasoline sold in southeastern Wisconsin and as E10 and E85 throughout the state. A listing of ethanol facilities is on the State Energy Office website at: http://energyindependence.wi.gov/docview.asp?docid=11272&locid=160.

Wisconsin Renewable Energy Production, by Type of Fuel

This table includes all renewable energy used in Wisconsin for generating electricity and for other applications that displace fossil fuels (e.g., space heating, transportation fuel).

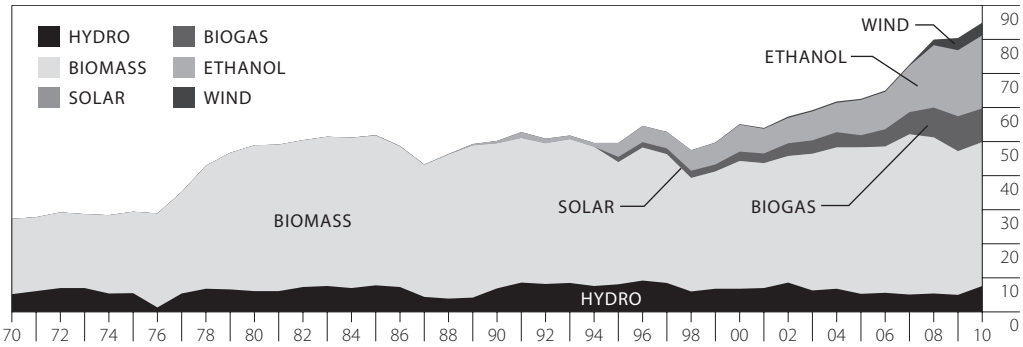
All the figures for solar energy, biomass and biogas were historically revised in 2007 to more accurately represent a revision to methodology and data sources. For example, this table does not include estimated passive solar, municipal solid waste or other refuse derived fuels, (e.g., railroad ties, tires) except where defined by law as a renewable fuel.

OVERALL RENEWABLE ENERGY END-USE 5.6%

Overall renewable energy resource use in Wisconsin increased 5.6 percent in 2010. Ethanol use in the transportation sector increased 10.7 percent. Hydro generation includes electricity generation by Wisconsin utilities and dams owned by industrial users (e.g., paper mills). Solar and wind energy figures include distributed energy sold to utilities by residential and commercial users.

Maps of Wisconsin's hydroelectric sites, wind installations ("wind farms") and U.S. potential for biomass and solar can be found in the Map Appendix in the back of this book.

1970-2010 TRILLIONS OF BTU



1970-2010 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Hydro		Biomass		Solar		Biogas		Ethanol[a]		Wind		Total
1970	5.2	*19.0%*	22.1	*81.0%*	0.0	*0.0%*	0.0	*0.0%*	0.0	*0.0%*	0.00	*0.0%*	27.3
1975	5.5	*18.7%*	23.9	*81.3%*	0.0	*0.0%*	0.0	*0.0%*	0.0	*0.0%*	0.00	*0.0%*	29.4
1980	6.1	*12.5%*	42.8	*87.5%*	0.0	*0.0%*	0.0	*0.0%*	0.0	*0.0%*	0.00	*0.0%*	48.9
1985	7.8	*15.0%*	44.0	*84.7%*	0.0	*0.0%*	0.0	*0.0%*	0.1	*0.2%*	0.00	*0.0%*	51.9
1990	6.9	*13.7%*	42.6	*84.9%*	0.0	*0.0%*	0.0	*0.0%*	0.7	*1.4%*	0.00	*0.0%*	50.2
1995	8.1	*16.4%*	35.9	*72.3%*	0.0	*0.0%*	1.5	*3.1%*	4.1	*8.3%*	0.00	*0.0%*	49.6
2000[r]	6.8	*12.3%*	37.5	*68.0%*	0.0	*0.0%*	2.8	*5.0%*	7.9	*14.4%*	0.16	*0.3%*	55.1
2005[r]	5.3	*8.5%*	43.0	*68.8%*	0.00652	*0.0%*	3.5	*5.7%*	10.4	*16.6%*	0.32	*0.5%*	62.6
2006[r]	5.6	*8.6%*	42.9	*66.1%*	0.01227	*0.0%*	5.1	*7.8%*	11.0	*16.9%*	0.35	*0.5%*	64.9
2007[r]	5.1	*7.0%*	47.0	*64.8%*	0.01674	*0.0%*	6.5	*8.9%*	13.6	*18.7%*	0.37	*0.5%*	72.6
2008[r]	5.4	*6.8%*	45.8	*57.3%*	0.02728	*0.0%*	8.7	*10.9%*	18.3	*22.9%*	1.66	*2.1%*	80.0
2009[r]	5.0	*6.2%*	42.2	*52.4%*	0.03528	*0.0%*	10.2	*12.7%*	19.4	*24.1%*	3.59	*4.5%*	80.4
2010[p]	**7.6**	***8.9%***	**42.2**	***49.8%***	**0.04370**	***0.1%***	**9.8**	***11.6%***	**21.5**	***25.3%***	**3.73**	***4.4%***	**84.9**

a Ethanol is blended with a petroleum-based fuel to produce reformulated gasoline, E10 and E85.

p Preliminary estimates.

r Revised.

Source: U.S. Department of Energy, Energy Information Administration, *Estimates of U.S. Wood Energy Consumption from 1949 to 1981* (August 1983); Public Service Commission of Wisconsin, unpublished data compiled from annual reports (2007-2010); Focus on Energy, aggregated data (2005-2010); survey data from conversations and emails with utilities, independent operators of landfills and/or waste water treatment plants, and public schools (2007-2010); Department of Revenue *Monthly Motor Fuel Consumption Report* (2000-2010); Energy Center of Wisconsin, *Wisconsin Agricultural Biogas* Casebook (2008); Wisconsin Department of Natural Resources, Annual Survey of Point Source Emissions, unpublished (1972-2010); Wisconsin Department of Administration, Division of Energy, "Wisconsin Residential Wood Energy Model," unpublished (1981-2010); Focus on Energy Evaluation *Semiannual Report (Second Half of 2009),* April 23, 2010 (2009) and *Annual Report (2010),* June 17, 2011. Compiled from renewable energy tables in this publication.

Wisconsin Renewable Energy Production, by Economic Sector

TOTAL RENEWABLE END-USE ENERGY
3.5%

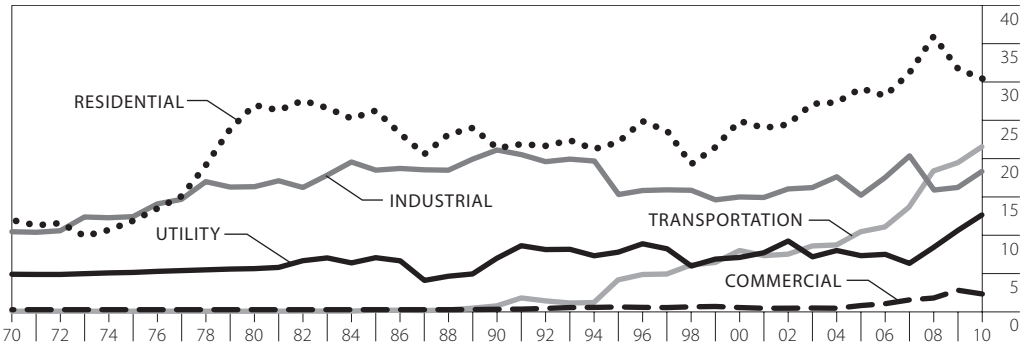
Wisconsin's total renewable end-use energy increased by 3.5 percent. The residential sector uses the most renewable energy, primarily due to woodburning for space heating. The industrial sector also includes woodburning data. Residential and commercial data include solar hot water, photovoltaic systems, and wind power. Data reported in the electric sector represents resource energy, meaning that the renewable fuels are used to generate electricity which is sold through the grid. Transportation sector renewable energy measures use of ethanol blended with gasoline and sold as E10 and E85.

Maps of Wisconsin's hydroelectric sites, wind installations ("wind farms") and U.S. potential for biomass and solar can be found in the Map Appendix in the back of this book.

This table includes all renewable energy used in Wisconsin for generating electricity and for other applications that displace fossil fuels (e.g., space heating, transportation fuel).

In 2007, the figures in this table were revised to remove non-metered resources such as passive solar energy and resources not considered renewable under Wisconsin law (e.g., municipal solid waste and refuse derived fuel such as railroad ties and tires). This impacted all sectors when compared to previous versions of this publication.

1970-2010 TRILLIONS OF BTU



1970-2010 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Residential		Commercial		Industrial		Electric Utility		Transportation		Total Resources	Total End Use
1970	11.9	*43.6%*	0.2	*0.7%*	10.4	*38.0%*	4.8	*17.7%*	0.0	*0.0%*	27.3	22.5
1975	11.8	*40.1%*	0.2	*0.7%*	12.3	*42.0%*	5.1	*17.2%*	0.0	*0.0%*	29.4	24.3
1980	26.9	*55.0%*	0.2	*0.4%*	16.2	*33.2%*	5.6	*11.4%*	0.0	*0.0%*	48.9	43.3
1985	26.2	*50.4%*	0.2	*0.4%*	18.4	*35.5%*	7.0	*13.5%*	0.1	*0.2%*	51.9	44.9
1990	21.3	*42.4%*	0.3	*0.5%*	21.0	*41.9%*	6.9	*13.8%*	0.7	*1.4%*	50.2	43.3
1995	22.0	*44.4%*	0.6	*1.1%*	15.2	*30.7%*	7.7	*15.5%*	4.1	*8.3%*	49.6	41.9
2000[r]	24.8	*45.0%*	0.5	*0.9%*	14.9	*27.0%*	7.0	*12.7%*	7.9	*14.4%*	55.1	48.1
2005[r]	29.1	*46.5%*	0.7	*1.2%*	15.1	*24.2%*	7.2	*11.6%*	10.4	*16.6%*	62.5	55.3
2006[r]	28.1	*43.3%*	1.0	*1.5%*	17.4	*26.9%*	7.4	*11.4%*	11.0	*17.0%*	64.9	57.5
2007[r]	31.0	*42.8%*	1.5	*2.0%*	20.2	*27.9%*	6.2	*8.6%*	13.6	*18.7%*	72.6	66.4
2008[r]	35.8	*44.8%*	1.7	*2.2%*	15.8	*19.8%*	8.3	*10.4%*	18.3	*22.9%*	80.0	71.7
2009[r]	31.6	*39.3%*	2.7	*3.4%*	16.2	*20.1%*	10.5	*13.1%*	19.4	*24.1%*	80.4	69.9
2010[p]	**30.3**	***36.0%***	**2.3**	***2.7%***	**18.3**	***21.7%***	**12.6**	***14.9%***	**21.5**	***24.7%***	**84.9**	**72.3**

p Preliminary estimates.

r Revised.

Source: Focus on Energy, unpublished, aggregated data (2005-2010); Focus on Energy Evaluation *Semiannual Report (Second Half of 2009),* April 23, 2010 (2009) and *Annual Report (2010),* June 17, 2011; survey data from conversations and emails with utilities, independent operators of landfills and/or waste water treatment plants, and public schools (2007-2010); Department of Revenue *Monthly Motor Fuel Consumption Report* (2000-2010); Energy Center of Wisconsin, *Wisconsin Agricultural Biogas* Casebook (2008); Public Service Commission of Wisconsin, unpublished data compiled from utility annual reports (1970-2010).

Wisconsin Wood Use, by Economic Sector

Residential wood use is estimated using a variety of factors including heating degree days, cost of other winter fuels and gross domestic product, the efficiency factor of wood, and the number of households in Wisconsin. Residential wood, because it is often a supplemental space heating fuel, is especially susceptible to vary based on the number of heating degree days.

The Commercial sector wood use includes schools, hospitals, wholesalers and retailers, and construction. The decrease in the Commercial sector is due to a combination of factors such as the low price of natural gas, and a heating season with fewer heating degree days.

The Industrial sector—which includes large scale users such as furniture manufacturers and paper producers—reflects changes in the paper industry, such as plant closings and re-openings.

1970-2010 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Residential		Commercial		Industrial		Total
1970	11.9	*53.8%*	0.20	*0.9%*	10.0	*45.2%*	22.1
1975	11.8	*49.4%*	0.20	*0.8%*	11.9	*49.8%*	23.9
1980	26.9	*62.9%*	0.20	*0.5%*	15.7	*36.7%*	42.8
1985	26.2	*59.5%*	0.20	*0.5%*	17.6	*40.0%*	44.0
1990	21.3	*51.2%*	0.26	*0.6%*	20.0	*48.2%*	41.5
1995	22.0	*62.5%*	0.55	*1.6%*	12.7	*35.9%*	35.3
1996[r]	24.8	*64.5%*	0.50	*1.3%*	13.1	*34.2%*	38.4
1997[r]	23.5	*63.5%*	0.48	*1.3%*	13.1	*35.2%*	37.0
1998[r]	19.2	*58.9%*	0.57	*1.8%*	12.8	*39.4%*	32.6
1999[r]	21.4	*63.8%*	0.62	*1.8%*	11.5	*34.4%*	33.5
2000[r]	24.8	*67.9%*	0.48	*1.3%*	11.2	*30.8%*	36.5
2001[r]	23.9	*67.1%*	0.38	*1.1%*	11.3	*31.8%*	35.6
2002[r]	24.4	*67.2%*	0.37	*1.0%*	11.5	*31.8%*	36.3
2003[r]	27.1	*69.2%*	0.36	*0.9%*	11.7	*29.9%*	39.1
2004[r]	27.2	*67.7%*	0.32	*0.8%*	12.7	*31.5%*	40.3
2005[r]	29.1	*70.0%*	0.27	*0.7%*	12.2	*29.3%*	41.5
2006[r]	28.1	*71.3%*	0.24	*0.6%*	11.0	*28.1%*	39.4
2007[r]	31.0	*71.1%*	0.44	*1.0%*	12.2	*27.9%*	43.7
2008[r]	35.8	*83.0%*	0.54	*1.2%*	6.8	*15.7%*	43.1
2009[r]	31.6	*82.1%*	0.89	*2.3%*	6.0	*15.6%*	38.5
2010[p]	**30.3**	***78.1%***	**0.37**	***1.0%***	**8.1**	***21.0%***	**38.8**

p Preliminary estimates.

r Revised.

Source: U.S. Department of Energy, Energy Information Administration, *Estimates of U.S. Wood Energy Consumption from 1949 to 1981* (August 1983); Wisconsin Department of Natural Resources, Annual Survey of Point Source Emissions, unpublished (1972-2010); USDA Forest Service, *Residential Fuelwood Consumption and Production in Wisconsin* (1994); Wisconsin Department of Administration, Division of Energy, "Wisconsin Residential Wood Energy Model," unpublished (1981-2010); *Directory of Wisconsin Wood Burning Facilities* (1995); and survey data from conversations and emails with public schools (2007-2010).

WOOD
ENERGY USE
1.0%

Wood energy use in Wisconsin increased by 1.0 percent in 2010. This table shows wood used in Wisconsin for applications that displace the use of fossil fuels, such as space heating or water heating. Wood used in this table does not represent wood used to generate electricity.

In previous versions of this book, the electric sector was included in this table. Electric sector data is included in tables elsewhere in this chapter.

A map of biomass potential distribution across the United States can be found in the Map Appendix in the back of this book.

Wisconsin Manufacturing Industry Use of Wood Fuel, by Industry Group

The use of wood and wood products as fuel by Wisconsin industries is concentrated among businesses that use or produce a wood product. Lumber mills burn sawdust, bark and scrap wood as a boiler fuel and for kiln drying boards. Furniture and paper companies use scrap wood and wood byproducts for process steam, heating and generating electricity. Wood in Wisconsin is a renewable resource for heating as well as electricity generation.

The total tons of wood used in the paper industry was revised downward for 2008 and 2009 to remove tonnage that was used for electrical generation.

1972-2010 THOUSANDS OF TONS AND TRILLIONS OF BTU[a]

	Lumber		Furniture		Paper & Allied		Other Manufacturing		Total	
Year	(Tons)	(Btu)	(Tons)	(Btu)	(Tons)	(Btu)	(Tons)	(Btu)	(Tons)	(Btu)
1972	391.2	4.42	13.2	0.15	508.5	5.75	16.1	0.18	929.0	10.50
1975	437.2	4.94	24.5	0.28	575.6	6.50	17.1	0.19	1,054.4	11.91
1980	447.5	5.06	56.9	0.64	872.8	9.86	12.0	0.14	1,389.2	15.70
1985	427.3	4.83	53.9	0.61	1,046.7	11.83	33.5	0.38	1,561.4	17.64
1990	490.9	5.55	64.0	0.72	1,186.5	13.41	30.0	0.34	1,771.4	20.02
1995	480.6	5.43	29.3	0.33	592.3	6.69	19.9	0.23	1,122.1	12.68
1996	435.9	4.93	29.9	0.34	676.8	7.65	18.6	0.21	1,161.2	13.12
1997	402.2	4.54	23.2	0.26	712.3	8.05	17.6	0.20	1,155.3	13.05
1998	408.1	4.61	22.1	0.25	693.2	7.83	10.9	0.12	1,134.2	12.82
1999	455.4	5.15	22.7	0.26	535.1	6.05	7.9	0.09	1,021.1	11.54
2000	432.3	4.89	20.1	0.23	534.5	6.04	7.5	0.09	994.5	11.24
2001	419.9	4.74	19.0	0.21	554.5	6.27	8.9	0.10	1,002.3	11.33
2002	415.2	4.69	17.2	0.19	577.5	6.53	9.0	0.10	1,019.0	11.51
2003	384.3	4.34	15.3	0.17	626.9	7.08	8.2	0.09	1,034.7	11.69
2004	434.5	4.91	13.5	0.15	665.5	7.52	10.5	0.12	1,123.9	12.70
2005	421.8	4.77	10.8	0.12	633.4	7.16	10.5	0.12	1,076.5	12.16
2006	356.1	4.02	7.6	0.09	597.3	6.75	16.5	0.19	977.4	11.05
2007	361.3	4.08	7.5	0.08	690.4	7.80	19.3	0.22	1,078.5	12.19
2008[r]	300.0	3.39	5.6	0.06	272.9	3.08	20.7	0.23	599.3	6.77
2009[r]	256.7	2.90	4.0	0.05	249.3	2.82	21.8	0.25	531.8	6.01
2010[p]	**314.2**	**3.55**	**2.5**	**0.03**	**379.1**	**4.28**	**24.5**	**0.28**	**720.4**	**8.14**

a Gross heating values of wood range from 8 MMBtu per ton to 17 MMBtu per ton, due in part to differences in moisture content. In this table, 11.3 MMBtu per ton is used, based on estimates of moisture content and type of wood used in Wisconsin.

p Preliminary.

r Revised.

Source: Estimates by the Wisconsin State Energy Office, based on Wisconsin Department of Natural Resources, Annual Survey of Point Source Emissions, unpublished (1972-2010); Employment Research Associates, *Biomass Resources: Generating Jobs and Energy,* Technical Papers (January 1986); Department of Administration, Division of Energy, *Directory of Wisconsin Wood Burning Facilities* (1995).

Wisconsin Electric Utility Use of Wood Fuel

1970-2010

Year	Tons[a]	Billions of Btu
1970-1975	0	0
1980	76,282	740
1985	155,717	1,666
1990	299,464	3,112
1995	327,201	3,506
1996	339,803	3,837
1997	304,618	3,326
1998	334,231	3,871
1999	330,491	3,765
2000	296,739	3,430
2001	301,580	3,484
2002	283,774	3,260
2003	267,446	3,154
2004	242,973	2,877
2005	253,638	2,961
2006	288,907	3,482
2007	315,811	3,437
2008	342,684	3,735
2009	362,471	3,868
2010	**380,600**	**4,333**

a At French Island, NSP burns wood and refuse derived fuel (RDF) which includes railroad ties and tires. RDF tonnage is counted in the wood tonnage on this page.

Source: Wisconsin Department of Natural Resources, Annual Survey of Point Source Emissions, unpublished (1972-1994); annual reports of various Wisconsin electric generating utilities (1995-2010). http://psc.wi.gov/apps40/annlreport/default.aspx

WOOD FUEL USED FOR ELECTRICITY

In the utility sector, Northern States Power (NSP)/Xcel Energy uses wood for their electricity-generation fuel at the Bay Front and French Island generating plants. Use of wood fuel for electricity generation at these plants increased by 5 percent in 2010.

These figures represent resource energy, before conversion of wood fuel to electricity.

NSP began using wood fuel at Bay Front in 1976 and at its French Island facility in 1980. In 2009, NSP increased wood usage at its Bay Front plant. These are the only electric utility generation sites in Wisconsin using significant amounts of wood.

A map of biomass potential distribution across the United States can be found in the Map Appendix.

Wisconsin Electric Utility and Non-Utility Hydroelectric Generation

ELECTRIC UTILITY HYDROELECTRIC PRODUCTION
51.7%

Total Wisconsin hydroelectric production—generated by utilities and non-utilities—increased 51.7 percent from 2009 to 2010. Utility generation was up by 49.8 percent, and non-utility generation increased by 75.8 percent. Because hydroelectric production is impacted by rainfall, among other factors, precipitation inches are provided in this table. In 2010, total precipitation in Wisconsin increased by 30.9 percent from 2009.

A map of Wisconsin's hydroelectric sites can be found in the Map Appendix in the back of the book.

1970-2010 MILLIONS OF kWh

Beginning in 2009, the utility figure includes production by Independent Power Producers who are required under law to sell their power to regulated utilities. Non-utility figures represent hydroelectric generation from the industrial sector, such as paper companies.

Year	Wisconsin Operated Utility Plant Location		Total Utility[c]	Wisconsin Non-Utility	Total Wisconsin	Total Wisconsin Precipitation (inches per year)
	Wisconsin[a,b]	MIchigan				
1970	1,413.2	448.1	1,861.3	110.0	1,523.2	32.0
1975	1,482.9	450.3	1,933.2	129.4	1,612.3	32.4
1980	1,628.3	488.9	2,117.2	160.4	1,788.7	32.5
1985	2,046.3	543.6	2,589.9	235.9	2,282.2	37.0
1990	1,791.0	340.2	2,131.2	223.4	2,014.4	36.2
1995	2,097.1	440.1	2,537.2	281.4	2,378.5	32.9
1996	2,401.9	500.7	2,902.6	294.1	2,696.0	32.8
1997	2,182.2	458.5	2,640.7	301.1	2,483.3	28.6
1998	1,517.8	324.0	1,841.8	229.6	1,747.4	32.7
1999	1,734.0	416.1	2,150.1	250.6	1,984.6	34.0
2000	1,749.4	369.6	2,119.0	241.4	1,990.8	34.8
2001	1,887.6	383.3	2,270.9	168.6	2,056.2	35.5
2002	2,282.9	485.8	2,768.7	232.1	2,515.0	35.2
2003	1,623.4	373.4	1,996.8	219.9	1,843.3	28.4
2004	1,748.4	401.0	2,149.4	232.3	1,980.7	35.3
2005[r]	1,499.0	338.6	1,837.6	51.7	1,550.7	29.3
2006	1,446.0	326.3	1,772.3	180.9	1,626.9	30.7
2007	1,314.0	272.6	1,586.6	169.2	1,483.2	34.0
2008	1,428.0	272.6	1,700.6	157.6	1,585.6	33.6
2009[r]	1,352.7	251.2	1,603.9	108.2	1,460.9	30.3
2010[p]	**2,026.7**	**330.3**	**2,357.0**	**190.3**	**2,217.0**	**39.7**

a Including Wisconsin power cooperatives.

b Estimated.

c From 1970 to 1989, data were sourced from the Public Service Commission bulletins; from 1990 to 2008, data are sourced from the federal Energy Information Administration (EIA). Beginning in 2009, data are from the Wisconsin Public Service Commission. Totals here may not match other hydroelectric totals in the book due to different data sources.

p Preliminary estimates.

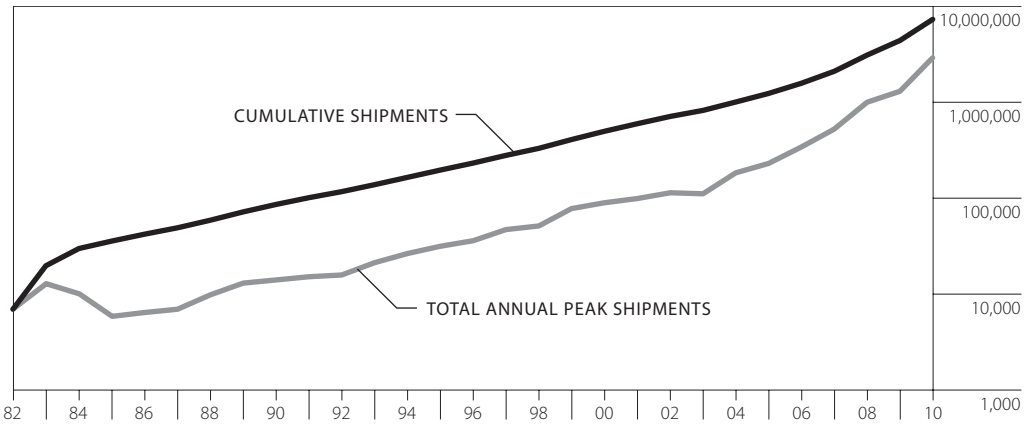
r Revised.

Source: Public Service Commission of Wisconsin, Accounts and Finance Division, *Generating Plants Operated by Wisconsin Electric Utilities*, Bulletin #46 (1971-1994); U.S. Department of Agriculture, Rural Electrification Administration, *Annual Statistical Report*, REA Bulletin 1-1 (1971-1994); Wisconsin Department of Administration, Division of Energy, Wisconsin Hydroelectric Generation Model, unpublished (1994); National Oceanic and Atmospheric Administration, *Monthly State Heating Degree Days, Historical Climatology Series 5-1* (April 2004); U.S. Department of Energy, Energy Information Administration, *Electric Power Monthly* [DOE/EIA-0226 (2010/03)] (March 2010) (1990-2008); Public Service Commission of Wisconsin, unpublished electrical production data (2005-2010).

U. S. Photovoltaic Modules and Cell Shipments and Conversion Efficiency

1982-2010 PHOTOVOLTAIC SHIPMENTS (KILOWATTS)

The table also includes information about conversion efficiency, which measures the fraction of solar energy that is converted into electrical energy. PV modules average a conversion efficiency of about 15 percent for Crystalline Silicon and about 10 percent for Amorphous Silicon.



	Photovoltaic Shipments[a]		Average Energy Conversion Efficiency Photovoltaic					
			Crystalline Silicon			Thin-Film Silicon		Concentrator
Year	Shipments Total Annual Peak Kilowatts	Cumulative Kilowatts	Single Crystal	Cast	Ribbon	Amorphous Silicon	Other	Silicon
1982	6,897	6,897						
1985	5,769	35,198						
1990	13,837	84,719						
1995	31,059	193,328						
2000	88,221	490,716						
2001	97,666	588,382						
2002	112,090	700,472						
2003	109,357	809,829						
2004	181,116	990,945						
2005	226,916	1,217,861						
2006	337,268	1,555,129						
2007	517,684	2,072,813	17	14	12	8	12	35
2008	986,504	3,059,317	19	14	13	8	12	34
2009[p]	1,282,560	4,341,877	20	14	13	8	12	38
2010[e]	**2,875,932**	**7,217,809**		**16**		**11**		**27**

a Total shipments in the table represent shipment from outside and within the United States, and do not include export shipments to other counties.

e Estimate.

p Preliminary.

Source: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review* [DOE/EIA-0384(2010) (January 2012)], table 10.8 (2010) http://www.eia.gov/totalenergy/data/annual/; U. S. Department of Energy, Energy Information Administration, December 2009, Form EIA-63B, *Annual Photovoltaic Module/Cell Manufacturers Survey*, Table 3.8, "Average Energy Conversion Efficiency of Photovoltaic Cells and Modules Shipped", 2007-2008 (2009).

Shipments of photovoltaic (PV) modules and cells are measured in peak kilowatts (KW), also known as the rated capacity (how much power can be produced under standardized test conditions). Data in the table show KWs of shipments for each year, as well as cumulative shipments since the Energy Information Administration (EIA) began collecting these data.

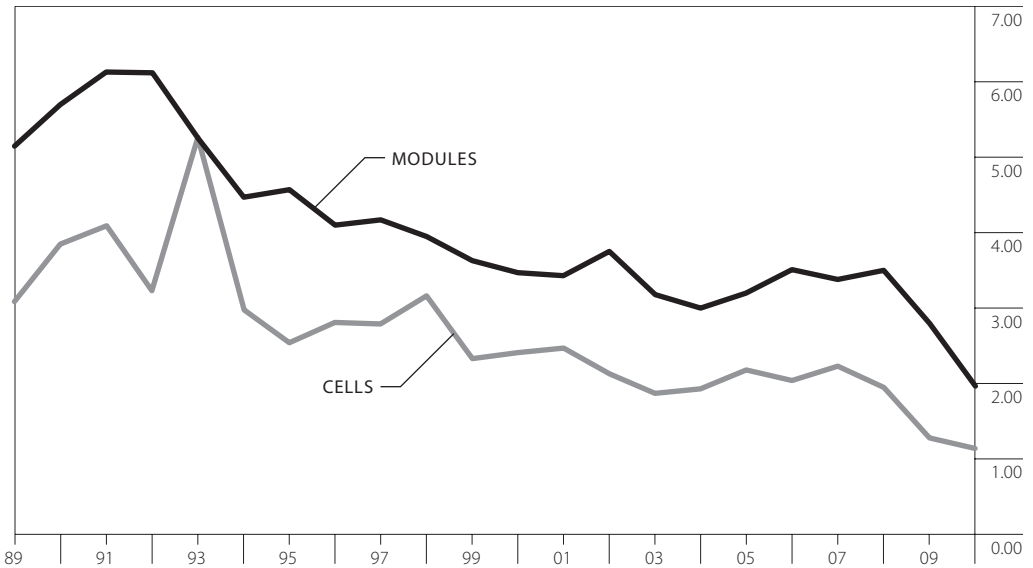
Since 1982 total shipments of PV systems have exceeded 7,000 Megawatts (MW). Since 2003 annual shipments of PV systems have seen an annual average growth rate of 54.4 percent. The volume of shipments is a good proxy for the growth of PV in the commercial, industrial and residential sectors and demonstrates a steady growth in the purchase and installation of PV in the United States.

U. S. Photovoltaic Modules and Cell Prices

Growth in photovoltaic (PV) is demonstrated by falling prices. From 1990 to 2010, PV systems shipment prices fell by a factor of two. A PV module is an integrated assembly of PV cells that generate direct current power for PV systems. The price per watt of a module (about $2/watt) is about 70 percent higher than the cost of PV cells (about $1/watt).

A small grid-connected fix-mounted PV system has a retail price of about $7 per watt installed. The PV modules comprise about half of that price. In Wisconsin, the cost of purchasing and installing PV power systems can be offset through the involvement of the Focus on Energy Program, the state's rate-payer funded energy efficiency program.

1989-2010 DOLLARS PER PEAK WATT



	Dollars per Peak Watt (nominal[a] dollars)		2010 Dollars[b]	
Year	Modules	Cells	Modules	Cells
1989	5.14	3.08	8.20	4.91
1990	5.69	3.84	8.74	5.90
1995	4.56	2.53	6.20	3.44
1996	4.09	2.80	5.46	3.74
1997	4.16	2.78	5.46	3.65
1998	3.94	3.15	5.11	4.09
1999	3.62	2.32	4.63	2.97
2000	3.46	2.40	4.33	3.00
2001	3.42	2.46	4.18	3.01
2002	3.74	2.12	4.50	2.55
2003	3.17	1.86	3.74	2.19
2004	2.99	1.92	3.43	2.20
2005	3.19	2.17	3.54	2.41
2006	3.50	2.03	3.76	2.18
2007	3.37	2.22	3.52	2.32
2008	3.49	1.94	3.57	1.98
2009	2.79	1.27	2.82	1.28
2010[p]	**1.96**	**1.13**	**1.96**	**1.13**

a Nominal dollars represent the prices during the year cited, they are not adjusted for inflation.

b 2010 prices indicate the price adjusted for inflation.

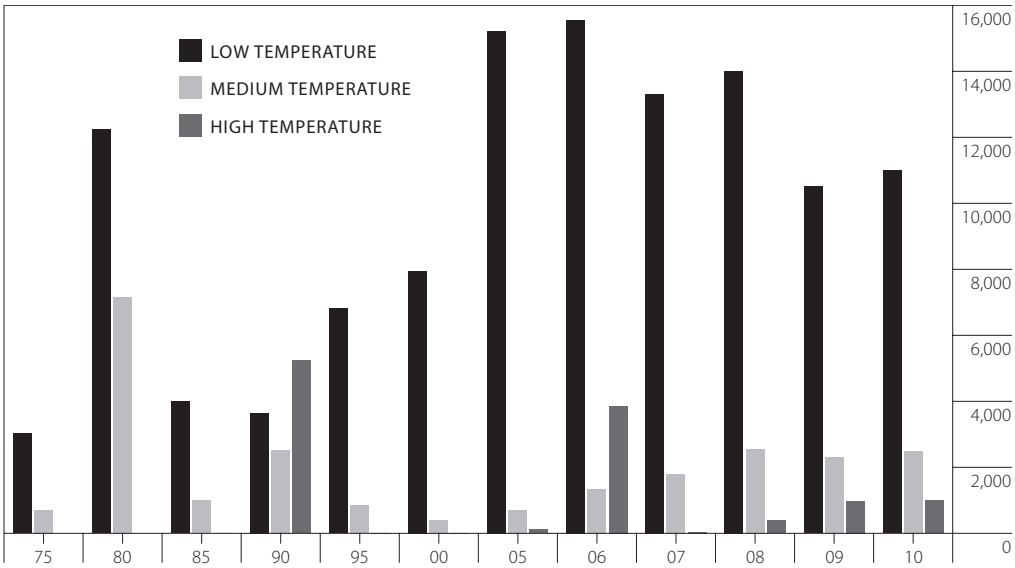
p Preliminary.

Source: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review* [DOE/EIA-0384(2010) (October 2011)], table 10.8 http://www.eia.gov/totalenergy/data/annual/; U. S. Department of Energy, Energy Information Administration, December 2009, Form EIA-63B, *Annual Photovoltaic Module/Cell Manufacturers Survey*, Table 3.8, "Average Energy Conversion Efficiency of Photovoltaic Cells and Modules Shipped", 2007-2008 (2009).

U. S. Solar Thermal Collector Shipments

1975-2010 THOUSANDS OF SQUARE FEET

In Wisconsin medium temperature solar thermal systems can range from $100-$200 per square foot, depending on the size of the system, the quality of the system and the labor involved in the installation. A solar thermal system sized for a residential home is typically 40-64 square feet of collector area, or 1 square foot of medium-temperature solar thermal collector for every gallon of hot water used within the household per day.



1975-2010 THOUSANDS OF SQUARE FEET AND PERCENT OF ALL SHIPMENTS

Year	Low Temperature		Medium Temperature		High Temperature		Total
1975	3,026	*80.8%*	717	*19.2%*		*0.0%*	3,743
1980	12,233	*63.1%*	7,165	*36.9%*		*0.0%*	19,398
1985	4,000	*80.0%*	1,000	*20.0%*	0	*0.0%*	5,000
1990	3,645	*31.9%*	2,527	*22.1%*	5,237	*45.9%*	11,409
1995	6,813	*88.9%*	840	*11.0%*	13	*0.2%*	7,666
2000	7,948	*95.2%*	400	*4.8%*	5	*0.1%*	8,353
2005	15,224	*94.9%*	702	*4.4%*	115	*0.7%*	16,041
2006	15,546	*74.9%*	1,346	*6.5%*	3,852	*18.6%*	20,744
2007	13,323	*87.9%*	1,797	*11.9%*	33	*0.2%*	15,153
2008	14,015	*82.6%*	2,560	*15.1%*	388	*2.3%*	16,963
2009[p]	10,511	*76.2%*	2,307	*16.7%*	980	*7.1%*	13,798
2010[e]	**11,000**	***75.9%***	**2,500**	***17.2%***	**1,000**	***6.9%***	**14,500**

e Estimate.

p Preliminary.

Source: U.S. Department of Energy, Energy Information Administration, *Solar Thermal Collector Manufacturing Activities*, 2009 (2010), table 2.12, http://www.eia.gov/totalenergy/data/annual/

Solar thermal collectors displace fossil fuels by using solar energy to heat water. Data in the table below represent national solar thermal collector shipments; these figures are not specific to Wisconsin. Solar thermal shipments can be used as a rough proxy for increased national interest in using solar power for water heating.

Different collectors heat water to different temperatures, for different applications. In 2010, low temperature collectors, used primarily for seasonal pool heating, comprise 75.9 percent of the shipments. Medium temperature collectors, used for domestic water heating, comprise only 17 percent of all shipments in the United States. High temperature solar collectors are used for energy generation applications in the sunniest parts of the country.

Wisconsin Renewable Energy Electricity Generated and Purchased

RENEWABLE ELECTRICITY GENERATION
16.5%

In 2010, Wisconsin's electric utilities and non-utilities, such as paper mills, increased their generation of electricity generated from renewable energy sources by 16.5 percent. The primary renewable energy source used was hydropower at 45.4 percent, followed by wind power at 22.4 percent of Wisconsin's renewable electricity generation.

Sales of renewable energy generated in Wisconsin comprise approximately 7.11 percent of total electric sales in Wisconsin, an increase of 12.3 percent over 2009.

Wind power in this table represents wind power from in-state wind production facilities, and does not include generation at out-of-state sites owned by, or purchased by, Wisconsin utilities. Increases in wind generation represent efforts of Wisconsin's utilities to add wind power to their overall energy portfolio to meet requirements of the Renewable Portfolio Standard (RPS).

In this table, biomass includes wood, paper pellets and black liquor. Biogas includes methane burned at landfills, waste water treatment facilities, and agricultural manure digesters to generate electricity. Solar generation comes primarily from distributed energy sources such as residences with photovoltaic installations that sell power to the electric utility for distribution on the electric grid.

In 2007 these figures were revised from previous versions of this publication to remove resources that are not considered renewable under Wisconsin law (e.g., municipal solid waste or refuse derived fuels).

Maps of Wisconsin's hydroelectric sites, wind installations ("wind farms") and U.S. potential for biomass and solar can be found in the Map Appendix in the back of the book.

1990-2010 MILLIONS OF KWH AND PERCENT OF TOTAL

Year	Hydro		Biomass		Biogas		Wind		Solar		Total
1990	2,014.4	*96.7%*	68.1	*3.3%*	0.0	*0.0%*	0.0	*0.0%*	0.00	*0.0%*	2,082.5
1995	2,378.5	*93.5%*	54.2	*2.1%*	110.1	*4.3%*	0.0	*0.0%*	0.00	*0.0%*	2,542.8
1996	2,696.0	*94.1%*	56.5	*2.0%*	112.8	*3.9%*	0.0	*0.0%*	0.00	*0.0%*	2,865.3
1997	2,483.3	*93.3%*	57.5	*2.2%*	121.2	*4.6%*	0.0	*0.0%*	0.00	*0.0%*	2,662.0
1998	1,747.4	*89.1%*	60.9	*3.1%*	151.2	*7.7%*	2.2	*0.1%*	0.00	*0.0%*	1,961.7
1999	1,984.6	*89.2%*	68.6	*3.1%*	147.4	*6.6%*	23.7	*1.1%*	0.00	*0.0%*	2,224.3
2000	1,990.8	*86.1%*	78.1	*3.4%*	197.2	*8.5%*	46.6	*2.0%*	0.00	*0.0%*	2,312.7
2001	2,056.2	*85.2%*	83.0	*3.4%*	203.3	*8.4%*	70.2	*2.9%*	0.00	*0.0%*	2,412.7
2002	2,515.0	*84.9%*	70.6	*2.4%*	267.3	*9.0%*	111.1	*3.7%*	0.03	*0.0%*	2,964.0
2003	1,843.3	*79.9%*	79.4	*3.4%*	280.5	*12.2%*	104.0	*4.5%*	0.12	*0.0%*	2,307.3
2004	1,980.7	*79.2%*	98.1	*3.9%*	317.5	*12.7%*	105.3	*4.2%*	0.30	*0.0%*	2,501.9
2005	1,550.7	*76.9%*	148.2	*7.3%*	224.3	*11.1%*	93.5	*4.6%*	0.46	*0.0%*	2,017.2
2006	1,626.9	*56.7%*	815.8	*28.4%*	322.2	*11.2%*	102.7	*3.6%*	0.91	*0.0%*	2,868.5
2007	1,483.2	*50.8%*	914.4	*31.3%*	412.6	*14.1%*	110.4	*3.8%*	1.57	*0.1%*	2,922.2
2008[r]	1,585.6	*47.5%*	698.6	*20.9%*	563.6	*16.9%*	488.4	*14.6%*	3.45	*0.1%*	3,339.6
2009	1,460.9	*34.8%*	1,017.2	*24.3%*	657.1	*15.7%*	1,051.6	*25.1%*	5.31	*0.1%*	4,192.2
2010[p]	**2,217.0**	***45.4%***	**913.0**	***18.7%***	**655.3**	***13.4%***	**1,092.3**	***22.4%***	**7.54**	***0.2%***	**4,885.1**

p Preliminary estimates.

r Revised.

Source: Public Service Commission of Wisconsin, unpublished data compiled from annual reports (2007-2010); Focus on Energy aggregated data (2005-2010); survey data from conversations and emails with utilities, independent operators of landfills and/or waste water treatment plants, and public schools (2007-2010); Department of Revenue *Monthly Motor Fuel Consumption Report* (2000-2010); Energy Center of Wisconsin, Wisconsin *Agricultural Biogas* Casebook (2008); Public Service Commission of Wisconsin, Focus on Energy Evaluation *Semiannual Report (Second Half of 2009),* April 23, 2010 (2009) http://www.focusonenergy.com/files/Document_Management_System/Evaluation/semiannualsecondhalf2009_evaluationreport.pdf

Indices of Wisconsin Energy Efficiency

TOTAL ENERGY USE PER $1,000 OF GROSS STATE PRODUCT

2.2%

These indices can be useful in evaluating energy efficiency trends in Wisconsin. In 2010, energy efficiency trended downward, with the exception of Electric Energy Use per $1,000 of Gross State Product (GSP), which saw a slight upward increase of 0.6 percent.

The other efficiency measures saw decreases as follows: Total Energy Use per $1,000 of GSP, 2.2 percent; Residential Energy Use per Capita, 1.4 percent; Commercial Energy Use per Employee, 1.7 percent; and Agricultural Energy Use per Acre, 11.6 percent from 2009. Industrial Energy Use per $1,000 Manufacturing Value Added decreased by 7.7 percent and is 53.8 percent lower than in 1970.

Energy efficiency activities in the residential and commercial sectors are measured primarily by recording the number of buildings that have received professional audits, installed energy efficiency improvements or were certified as meeting energy efficiency building codes.

1970-2010 MILLIONS OF BTU

Year	Total Energy Use Per $1,000 GSP[a]	Electric Energy Use Per $1,000 GSP[a]	Residential Energy Use Per Capita[b]	Commercial Energy Use Per Employee[d]	Industrial Energy Use Per $1,000 Manufacturing Value Added[a,c]	Agricultural Energy Use Per Acre
1970	12.4	0.92	73.4		8.6	1.1
1975	11.5	1.00	74.9		6.5	1.2
1980[r]	10.4	1.05	75.6		5.3	1.4
1985	9.5	1.07	71.0		5.1	1.4
1990	9.2	1.09	71.7	161.5	4.8	1.2
1995	8.7	1.08	77.6	165.9	4.3	1.3
1996[r]	8.5	1.05	78.4	166.4	4.2	1.3
1997[r]	8.2	1.03	74.3	161.5	4.3	1.3
1998[r]	7.7	1.02	69.2	156.3	3.9	1.2
1999[r]	7.7	1.00	73.1	161.7	3.9	1.3
2000[r]	7.6	0.99	75.3	160.5	4.0	1.2
2001[r]	7.5	1.00	74.4	159.8	4.1	1.2
2002[r]	7.4	1.00	76.4	161.9	4.0	1.3
2003[r]	7.3	0.98	79.8	149.7	3.8	1.3
2004[r]	7.2	0.97	77.6	144.9	4.0	1.2
2005[r]	7.1	0.99	76.4	155.2	3.9	1.2
2006[r]	6.8	0.97	71.6	150.8	3.7	1.5
2007[r]	7.1	0.98	76.9	160.3	3.7	1.6
2008[r]	7.1	0.99	78.3	163.6	4.2	1.5
2009[r]	6.8	0.95	74.2	158.3	4.3	1.7
2010[p]	**6.6**	**0.95**	**73.1**	**155.7**	**4.0**	**1.5**

a Manufacturing Value Added and Gross State Product in 2010 dollars, deflated with Gross Domestic Product Implicit Price Deflator.

b Not adjusted for yearly variations in temperature.

c Value added data for Wisconsin not available. Value added estimated using U.S. and Wisconsin trends.

d Per Employee Data not available prior to 1990 due to change in coding from SIC to NAICS.

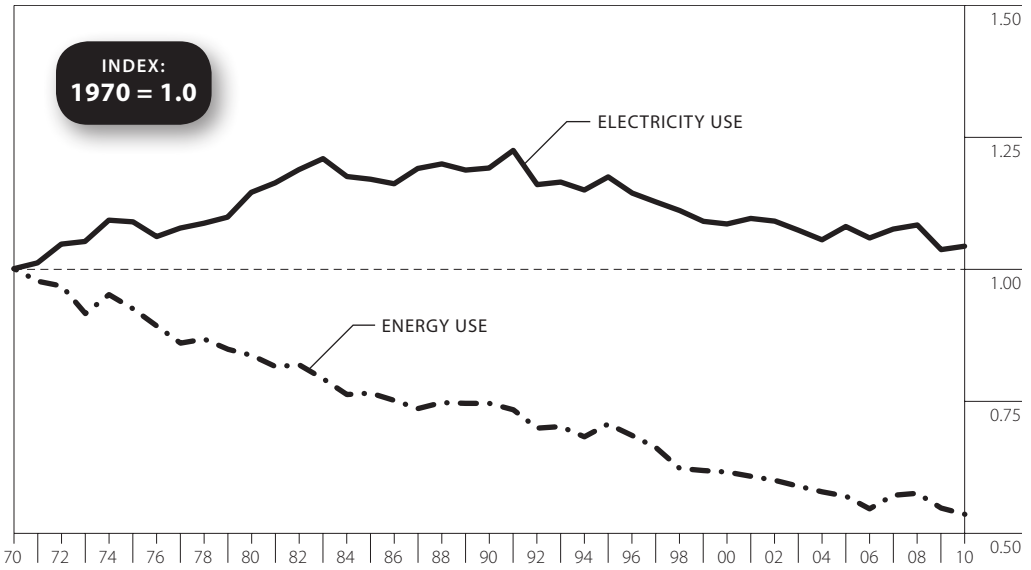
p Preliminary data.

r Revised.

Source: Wisconsin Department of Workforce Development employment data, http://worknet.wisconsin.gov/worknet/dalaus.aspx?menuselection=da; U.S. Department of Commerce, *Annual Survey and Census of Manufacturers* http://www.census.gov/mcd/asm-as3.html (1972-2010); Wisconsin Department of Agriculture, Trade and Consumer Protection, *Wisconsin's Agricultural Statistics, 2010*; other tables in this publication used for household estimates, gross state product, total resource energy use and use by sector.

Indices of Wisconsin Energy Efficiency

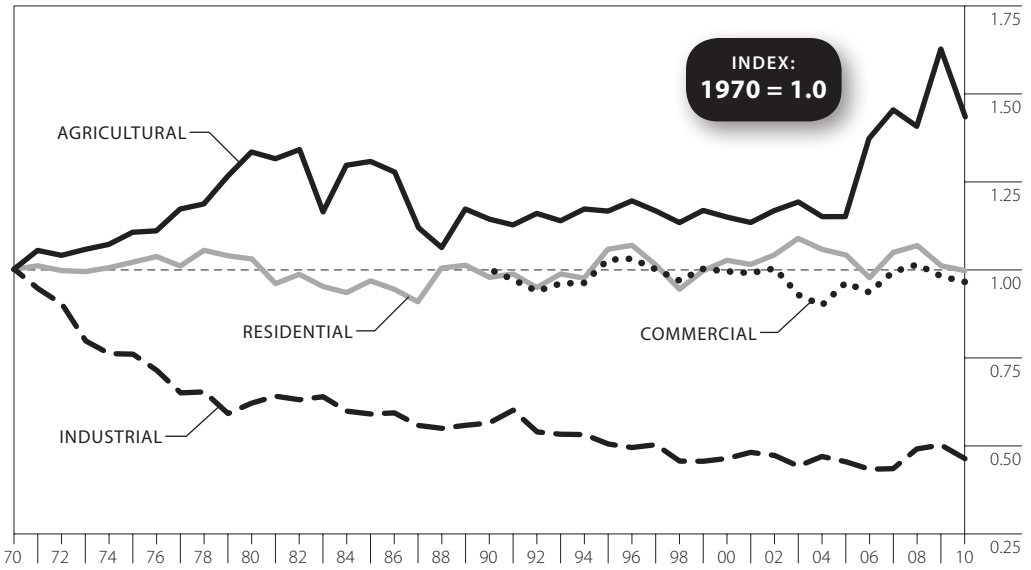
1970-2010 ENERGY AND ELECTRICITY USE PER DOLLAR OF GROSS STATE PRODUCT[a]



WISCONSIN ENERGY USE PER DOLLAR OF GROSS STATE PRODUCT

WISCONSIN ELECTRICITY USE PER DOLLAR OF GROSS STATE PRODUCT

1970-2010 ENERGY INDICES BY ECONOMIC SECTOR[a]



RESIDENTIAL ENERGY USE PER CAPITA

COMMERCIAL ENERGY USE PER EMPLOYEE

INDUSTRIAL ENERGY USE PER UNIT MANUFACTURING VALUE ADDED OUTPUT

AGRICULTURAL ENERGY USE PER ACRE

a All data, except commercial employment data, normalized to 1.0 in 1970, an arbitrary baseline to which all other years can be compared. Commercial employment data normalized to 1990, when industrial codes changed from SIC to NAICS.

Source: Wisconsin State Energy Office.

Indices of Wisconsin Energy Expenditures, 2010 Dollars

AGRICULTURAL PER ACRE

RESIDENTIAL PER HOUSEHOLD

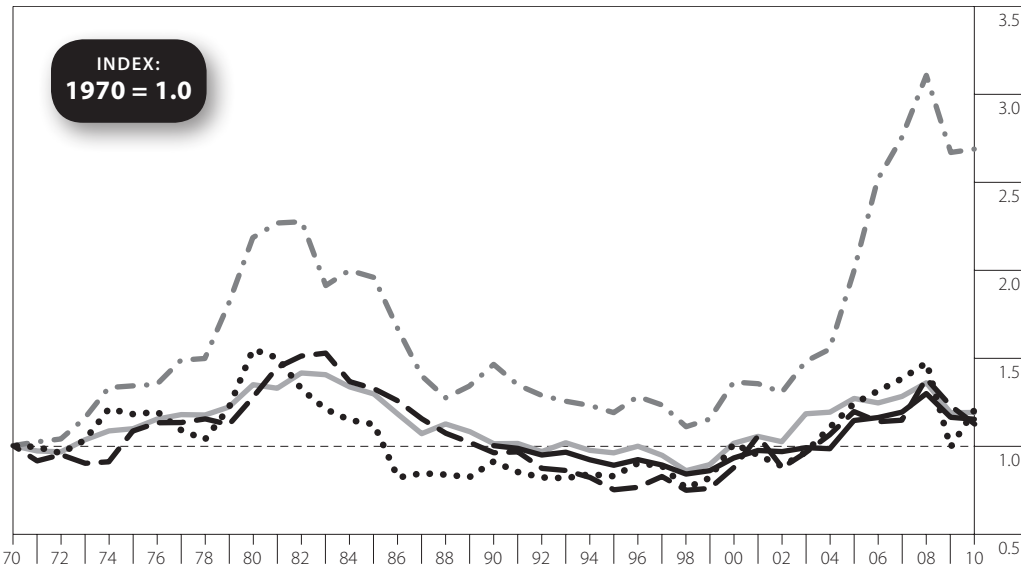
TRANSPORTATION PER VEHICLE

COMMERCIAL PER EMPLOYEE

INDUSTRIAL PER $1,000 VALUE ADDED

In 2010, Wisconsin saw a mixed bag of increases and decreases in energy expenditure indices. This represents a departure from 2009's across-the-board decreases. The Expenditures per Vehicle increased 21.6 percent, Commercial Expenditures per Employee fell by 0.9 percent, Agricultural Expenditures per acre increased by 0.7 percent, Residential Expenditures per household were almost level, with a 0.1 percent increase, while Industrial Expenditures per $1,000 of Value Added decreased by 8.4 percent.

1970-2010 2010 DOLLARS



Year	Agricultural Expenditures Per Acre	Commercial Expenditures Per Employee[a]	Residential Expenditures Per Household	Industrial Expenditures Per $1,000 Value Added	Transportation Expenditures Per Vehicle
1970[r]	13		1,649	36	1,379
1975	18		1,808	39	1,626
1980	29		2,220	46	2,133
1985[r]	26		2,135	48	1,547
1990[r]	19	1,221	1,667	35	1,254
1995	16	1,085	1,582	27	1,140
2000[r]	18	1,136	1,672	32	1,393
2001[r]	18	1,188	1,736	38	1,305
2002[r]	17	1,180	1,686	32	1,218
2003[r]	20	1,207	1,948	35	1,329
2004[r]	21	1,200	1,963	39	1,523
2005	26	1,396	2,091	43	1,709
2006[r]	33	1,416	2,050	41	1,809
2007	37	1,454	2,111	42	1,905
2008[r]	41	1,581	2,237	50	2,027
2009[r]	35	1,418	1,958	45	1,360
2010[p]	**36**	**1,405**	**1,960**	**41**	**1,653**

a All data, except commercial employment data, normalized to 1.0 in 1970, an arbitrary baseline to which all other years can be compared. Commercial employment data normalized to 1990, when industrial codes changed from SIC to NAICS.

p Preliminary estimate.

r Revised.

Source: Compiled from tables in this publication for Wisconsin residential, commercial, industrial, agricultural and transportation energy use.

Wisconsin Per Capita Resource Energy Consumption, by Type of Fuel

1970-2010 MILLIONS OF BTU

Year	Petroleum	Natural Gas	Coal	Renewable	Nuclear	Electric Imports[a]	Total
1970	103.6	74.1	80.4	6.2	0.4	-6.4	258.3
1975	104.0	80.7	57.4	6.4	24.3	-4.5	268.5
1980[r]	96.6	73.1	69.0	10.4	22.7	-1.4	270.4
1982	85.3	65.8	67.6	10.7	23.5	2.3	255.2
1985	86.8	64.1	78.9	10.9	25.0	-0.4	265.4
1990	90.8	62.6	84.1	10.3	24.8	17.9	290.5
1995	92.2	74.2	90.3	9.7	23.1	24.0	313.4
1996[r]	94.3	77.9	94.0	10.5	21.1	15.5	313.2
1997[r]	94.1	76.5	97.5	10.1	8.1	24.9	311.2
1998[r]	93.1	68.4	93.9	9.0	19.2	20.4	303.9
1999[r]	95.5	70.5	95.0	9.3	23.3	18.8	312.5
2000[r]	93.9	73.3	96.8	10.3	23.1	18.3	315.7
2001[r]	93.5	66.6	96.4	10.0	23.0	22.5	311.9
2002[r]	94.4	70.4	93.1	10.5	24.6	18.4	311.4
2003[r]	91.4	71.7	95.9	10.8	24.0	15.8	309.5
2004[r]	92.3	68.9	97.0	11.1	23.2	17.0	309.4
2005[r]	89.4	73.8	95.2	11.2	14.6	22.3	306.5
2006[r]	87.8	66.5	91.8	11.6	23.5	14.4	295.6
2007[r]	88.2	71.0	91.4	12.9	24.7	21.5	309.6
2008[r]	79.2	72.7	95.4	14.1	23.2	18.5	303.1
2009[r]	74.6	68.8	85.3	14.2	24.1	17.3	284.4
2010[p]	**74.5**	**65.7**	**92.0**	**14.9**	**25.2**	**14.1**	**286.4**

PER CAPITA
RESOURCE ENERGY
CONSUMPTION
0.7%

Wisconsin's per capita resource energy consumption increased 0.7 percent in 2010. Compared to the low point in 1982, 2010 per capita energy use in Wisconsin is 12.2 percent higher.

a "Electric Imports" is the estimated resource energy used in other states or Canada to produce the electricity imported into Wisconsin. This resource energy is estimated assuming 11,300 Btu of resource energy per kWh imported into Wisconsin. A negative sign indicates that resource energy was used in Wisconsin to produce electricity that was exported.

p Preliminary estimates.

r Revised.

Source: Compiled from tables in this publication for Wisconsin petroleum, natural gas, coal and renewable energy use, electric imports and population.

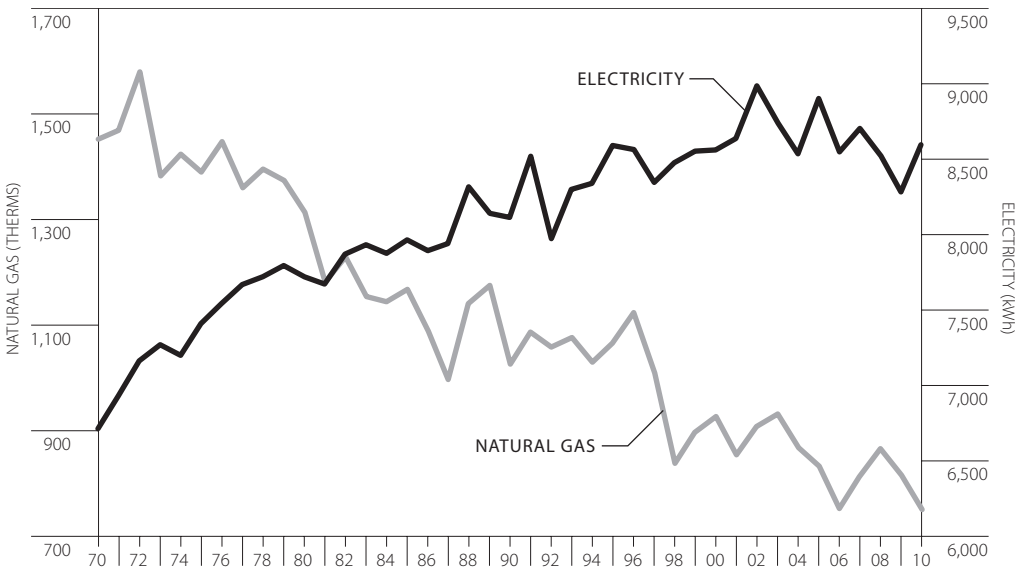
Wisconsin Residential Electricity and Natural Gas Use Per Customer

ELECTRICITY USE PER CUSTOMER
3.9%

NATURAL GAS USE PER CUSTOMER
8.0%

Electricity Use per Customer increased 3.9 percent in 2010, while natural gas use decreased 8.0 percent. The decrease in natural gas relates to the decrease in Heating Degree Days (HDD) in 2010—a 9.6 percent decrease compared to 2009. To learn more about HDDs, see the Miscellaneous chapter of this publication.

1970-2010



Year	Natural Gas[a] Number of Customers (Thousands)	Natural Gas[a] Use Per Customer (Therms)	Electricity Number of Customers (Thousands)	Electricity Use Per Customer (kWh)
1970[r]	750.4	1,451	1,429	6,711
1975[r]	858.5	1,388	1,607	7,407
1980[r]	966.0	1,313	1,801	7,716
1985[r]	1,013.0	1,166	1,870	7,960
1990[r]	1,123.6	1,023	2,017	8,109
1995[r]	1,291.4	1,065	2,170	8,586
2000[r]	1,459.0	925	2,329	8,557
2001[r]	1,484.5	852	2,365	8,634
2002[r]	1,514.7	907	2,404	8,976
2003[r]	1,541.5	930	2,445	8,736
2004[r]	1,569.7	867	2,486	8,526
2005[r]	1,592.6	832	2,526	8,890
2006[r]	1,611.8	750	2,550	8,540
2007[r]	1,632.2	812	2,573	8,697
2008[r]	1,646.6	864	2,580	8,519
2009	1,656.6	815	2,589	8,273
2010[p]	**1,663.6**	**750**	**2,595**	**8,594**

a U. S. Department of Energy/Energy Information Administration data from EIA forms 176 and 861.

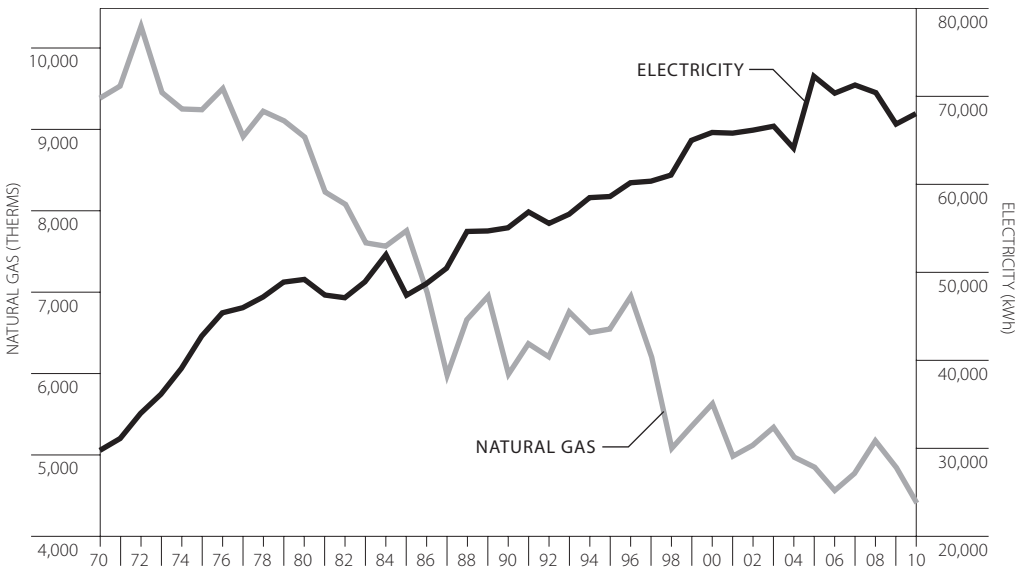
p Preliminary estimates.

r Revised.

Source: Edison Electric Institute, *Statistical Yearbook* (1971-1996); Public Service Commission of Wisconsin, Accounts and Finance Division, *Statistics of Wisconsin Public Utilities*, Bulletin #8 (1970-1979), Public Service Commission of Wisconsin, form PSC-AF 2 *Gas Sales and Sales Ratio* (1980-2011); U.S. Department of Energy, *Electric Sales and Revenues 1993-2000* [DOE/EIA-0540(2000)] (November 2001).

Wisconsin Commercial Electricity and Natural Gas Use Per Customer

1970-2010



Year	Natural Gas: Number of Customers (Thousands)	Natural Gas: Use Per Customer (Therms)	Electricity: Number of Customers (Thousands)	Electricity: Use Per Customer (kWh)
1970r	50.8	9,377	167	29,701
1975r	65.7	9,234	178	42,709
1980r	76.7	8,900	193	49,115
1985r	87.0	7,742	224	47,292
1990r	106.0	5,973	229	54,990
1995r	125.5	6,540	254	58,540
2000r	140.4	5,615	278	65,817
2001r	144.1	4,974	284	65,741
2002r	149.8	5,112	290	66,081
2003r	150.1	5,327	301	66,522
2004r	151.9	4,966	302	63,963
2005r	155.1	4,843	312	72,150
2006r	159.1	4,552	324	70,272
2007r	160.6	4,768	330	71,203
2008r	163.0	5,160	334	70,353
2009	163.8	4,840	337	66,748
2010p	**164.2**	**4,405**	**338**	**67,969**

p Preliminary estimates.

r Revised.

Source: Edison Electric Institute, *Statistical Yearbook* (1971-1996); Public Service Commission of Wisconsin, Accounts and Finance Division, *Statistics of Wisconsin Public Utilities*, Bulletin #8 (1970-1979), Public Service Commission of Wisconsin, form PSC-AF 2 *Gas Sales and Sales Ratio* (1980-2011); U.S. Department of Energy, *Electric Sales and Revenues 1993-2000* [DOE/EIA-0540(2000)] (November 2001).

ELECTRICITY USE PER CUSTOMER 1.8%

NATURAL GAS USE PER CUSTOMER 9.0%

Commercial electricity use per customer in 2010 increased 1.8 percent, while natural gas use per customer decreased 9.0 percent. The decrease in natural gas relates to the decrease in Heating Degree Days (HDD) in 2010—a 9.6 percent decrease compared to 2009. To learn more about HDDs, see the Miscellaneous chapter in this publication.

Focus on Energy Tracked Energy Savings

Focus on Energy is Wisconsin's rate-payer funded energy efficiency and renewable energy program. It works with energy consumers—individuals, business, industry, government—to evaluate and help fund energy efficiency and renewable energy efforts.

The table shows annual first-yearc energy savings in Wisconsin due to Focus on Energy efforts. Gross electricity savings are shown in kilowatt hours (kWhs), while gross natural gas savings are shown in therms. The percent column shows the percent of statewide sales, by sector, represented by the verified gross savings.

The efforts of Focus on Energy undergo regular evaluation by independent contractors who certify program-tracked savings. The verified gross kWh, KW and therm savings have been verified by a third-party contractor.

2001-2010 MILLIONS OF kWhs, THERMS AND DOLLARS

	Verified kWh Saved	Percent of Statewide Sector[a] kWh Saved	Verified Therms Saved	Percent of Statewide Sector Sales[b] Therms Saved	Dollar Value of Energy Saved	Number of Participants
July 1, 2001 - June 30, 2007[c]						
Total Saved	1,178.46		61,118,326		167,907,949	1,113,842
Business	689.82		48,588,762		94,944,633	43,281
Residential	440.95		9,247,900		65,615,728	1,070,213
Renewables	47.69		3,281,664		7,347,588	348
July 1, 2007 - December 31, 2008						
Total Saved	599.26	0.567%	26,622,537	0.434%	$79,598,763	592,714
Business	412.28	0.557%	20,247,680	0.501%	$49,925,700	27,658
Residential	179.99	0.568%	4,145,352	0.198%	$27,217,319	564,660
Renewables	6.99		2,229,505		$2,455,744	396
January 1, 2009 - December 31, 2009						
Total Saved	634.62	0.957%	29,661,512	0.759%	$83,273,246	514,714
Business	500.79	1.091%	20,712,687	0.810%	$58,696,839	20,517
Residential	116.89	0.573%	3,591,004	0.266%	$18,660,979	493,780
Renewables	16.93		5,357,821		$5,915,428	417
January 1, 2010 - December 31, 2010						
Total Saved	590.64	0.859%	23,640,236	0.633%	$75,411,086	432,636
Business	470.99	0.993%	20,041,916	0.806%	$56,396,192	17,672
Residential	119.65	0.562%	3,598,320	0.288%	$19,014,894	414,964
Renewables	0.00	0.000%	0	0.000%	$0	0
July 1, 2001 - December 31, 2010						
Total Saved	3002.98	0.461%	141,042,611	0.381%	$406,191,044	2,653,906
Business	2073.88	0.458%	109,591,045	0.450%	$259,963,364	109,128
Residential	857.49	0.432%	20,582,576	0.162%	$130,508,920	2,543,617
Renewables	71.61		10,868,990		$15,718,760	1,161

a Statewide sector sales are estimated for the non-annual reporting periods using annual data from the Wisconsin Electric Utility Sales, by Economic Sector table in Chapter Two of this publication.

b Statewide sector sales are estimated for the non-annual reporting periods using annual data from the Wisconsin Natural Gas Use, by Economic Sector table in Chapter Two of this publication. Data from this chapter are converted from tBtus to Therms for the purpose of calculation.

c Annual, first-year energy savings are what an energy saving measure accomplished during the first year, as opposed to lifetime savings.

Source: Public Service Commission of Wisconsin, Focus on Energy Evaluation *Annual Report* (2010), revised June 17 2011, http://www.focusonenergy.com/Information_center/Evaluation_Reports/General_Reports.aspx

Focus on Energy Ranked Energy Savings Measures

2001-2010 ENERGY SAVING ACTIVITIES RANKED BY OVERALL SAVINGS

	Business Programs		Residential Programs	
Electricity	**Savings (Million kWh)**	**Percent Overall Savings**	**Savings (Million kWh)**	**Percent Overall Savings**
Compact Flouresent Lights (CFL)	259.05	12.5%	519.51	60.6%
ECM[a] Furnace			92.44	10.8%
High Bay Flourescent	226.93	10.9%		
Hot Water[b]			28.80	3.4%
Lighting (other than listed)[c]	351.83	17.0%	74.59	8.7%
Other[d]	284.65	13.7%	52.63	6.1%
T8/T5 Flourescent Lighting	230.97	11.1%		
Electric Total Verified kWh Savings – All Efforts	**2,073.88**		**857.49**	

	Business Programs		Residential Programs	
Natural Gas	**Savings (Therm)**	**Percent Overall Savings**	**Savings (Therm)**	**Percent Overall Savings**
Boiler Equipment/Other Heating	15,101,234	13.8%	5,934,203	28.8%
Building Shell			4,838,829	23.5%
Clothes Washer			1,145,744	5.6%
ECM[a] Furnace			2,226,100	10.8%
Energy Recovery[e]	17,260,206	15.7%		
Hot Water[b]			3,232,080	15.7%
HVAC	10,961,672	10.0%		
Process[f]	19,676,050	18.0%		
Other[g]	10,388,883	9.5%	2,109,447	10.2%
Natural Gas Total Verified kWh Savings – All Efforts	**109,591,045**		**20,582,576**	

a Electronically commutative motors (ECM) differ from conventional motors in their overall efficiency.

b Hot water refers to a variety of different measures to improve hot water heating and usage efficiency.

c Lighting improvements such as efficient lighting fixtures, torchieres, and ceiling fans, and motion/occupancy sensors.

d Other includes a wide variety of improvements.

e Recovery of exhaust heat from natural gas combustion.

f Process efforts include in-line energy efficiency and heat capture, primarily in industrial applications. May also include efficiency improvements to compressed air usage.

g Other includes steam team trap improvements to avoid loss of thermal energy.

Source: Public Service Commission of Wisconsin, Focus on Energy Evaluation *Annual Report* (2010), revised June 17 2011, http://www.focusonenergy.com/Information_center/Evaluation_Reports/General_Reports.aspx

The table shows the five energy savings efforts funded by Focus on Energy that reaped the largest energy savings benefit. The measures are different for the business and residential sectors, and are listed according to the saved energy (e.g., kWhs or therms).

As Focus on Energy has grown, energy savings across Wisconsin have increased. In 2010, verified gross savings are about one percent of annual sales of both electricity and natural gas. The work of Focus on Energy helps to reduce overall consumption of fossil-fuel based energy and increase energy efficiency across the state.

Energy Consumption by Major New Household Appliances

REFRIGERATOR

WASHING MACHINE

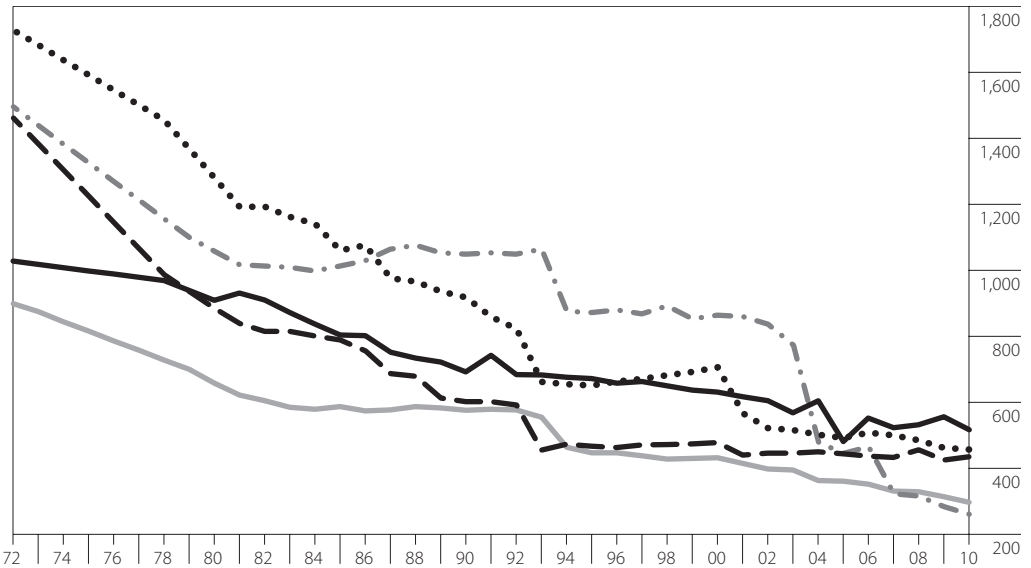
FREEZER

ROOM A/C

DISHWASHER

Since 1980, energy usage of new household appliances sold in the U.S. has decreased from 43.2 percent to 75.5 percent, depending upon the appliance. From 1994 to 2000, average usage remained essentially unchanged. However, changes in federal energy efficiency standards since 2000 have reduced average new appliance energy consumption from 9.0 percent for freezers to 70.0 percent for washing machines. Appliance data makes it easier to understand residential energy use trends.

1972-2010 AVERAGE kWh PER YEAR

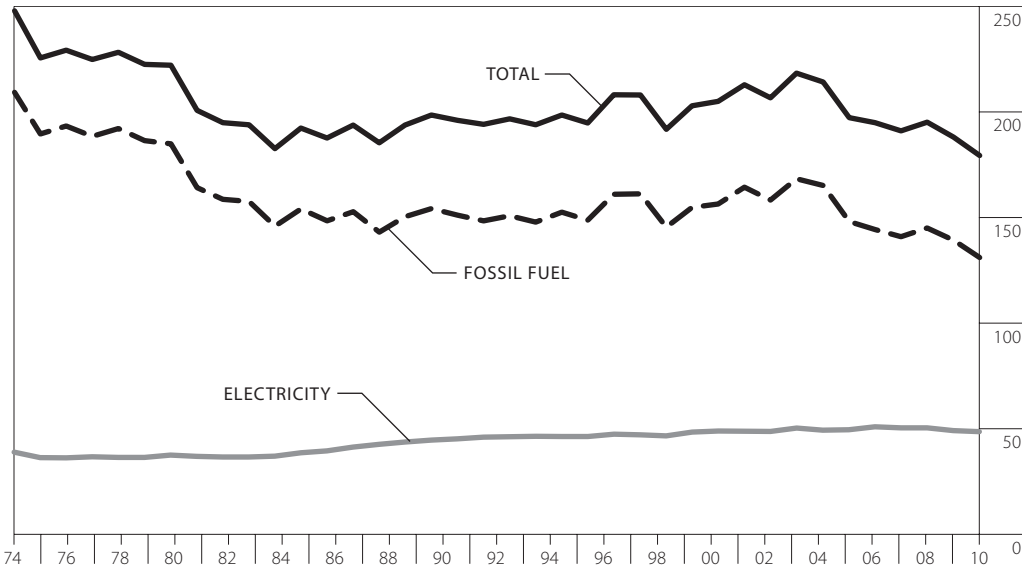


Year	Room A/C[a]	Washing Machine[b]	Dishwasher[b]	Refrigerator[c]	Freezer[c]
1972	1,026	1,494	897	1,726	1,460
1980	907	1,056	656	1,278	883
1985	802	1,011	585	1,058	787
1990	690	1,047	574	916	600
1995	670	870	445	649	465
2000[e]	629	862	430	704	476
2001[e]	615	858	413	565	438
2002	603	835	396	520	444
2003	566	772	393	514	444
2004[e]	602	478	361	500	448
2005	478	443	359	490	442
2006	550	463	350	506	435
2007[e]	521	321	329	498	431
2008	530	314	327	483	454
2009	554	282	312	460	423
2010[p]	**515**	**259**	**295**	**455**	**433**
Best Available[f]	**556**	**238**	**295**	**468**	**456**
Energy Star[d]	**500**	**122**	**180**	**429**	**403**

a Room air conditioner assumes 600 hours per year.
b Loads per year: washing machine (392), dishwasher (215) . Energy use assumes electric water heater.
c Refrigerator and freezer values estimated.
d U.S. Environmental Protection Agency (EPA) Energy Star efficiency values for average size appliance.
e Refrigerator and freezer standards increased July 1, 2001. Air conditioner standards increased October 1, 2000. Clothes waster standards increased January 1, 2004 and January 1, 2007. Dishwasher standards increased May 14, 1994 and January 1, 2010.
f Best available (most energy efficient) appliance that can be purchased for the average size and type sold today.
p Preliminary.
Source: Association of Home Appliance Manufacturers (AHAM) Information Center.

Energy Use in State Owned Buildings

1974-2010 THOUSANDS OF BTU PER GROSS SQUARE FOOT PER YEAR



Fiscal Year	Fossil Fuel	Electricity	Total Energy BTU/GSF	Total Energy Weather-Adjusted[a]	Million Gross Square Feet
1974	189.2	36.0	225.2		42.7
1975	193.0	35.9	228.9		43.6
1980	163.9	36.6	200.5		46.2
1985	148.1	39.2	187.3		47.9
1990	150.8	44.9	195.7		49.7
1995	148.4	46.0	194.4		52.6
2000	156.1	48.6	204.7		55.4
2001	164.0	48.5	212.5		56.6
2002[r]	157.9	48.4	206.3		58.0
2003[r]	168.0	50.0	218.0		59.0
2004[r]	164.9	49.0	213.9		59.4
2005[a,r]	147.8	49.2	197.0	197.0	67.2
2006[r]	144.0	50.6	194.6	196.5	67.9
2007[r]	140.6	50.1	190.7	190.2	69.3
2008[r]	144.7	50.1	194.8	187.3	70.6
2009[r]	139.0	48.8	187.8	179.6	71.4
2010[p]	**130.8**	**48.3**	**179.1**	**177.7**	**71.3**

a Weather-adjusted data are not available previous to 2005.
p Preliminary estimates.
r Revised.
Source: State of Wisconsin, Department of Administration, unpublished report.

TOTAL ENERGY USE PER GSF 4.6% IN 2010

In 2010, total energy use per gross square foot (GSF), adjusted for weather, decreased 1.1 percent from 2009. Since 1974, overall use per GSF in state owned buildings fell 20.5 percent. Electricity use has increased 34.2 percent per GSF between 1974 and 2010, while fossil fuel use decreased 30.9 percent.

Energy use in state-owned buildings was weather-corrected back to 2005. All data are based on the State Fiscal Year, July 1 – June 30, for example the data for 2010 are for the period July 1, 2009 to June 30, 2010.

Low Income Units Weatherized Through State- and Utility-Supported Programs

NUMBER OF UNITS WEATHERIZED
46.1%

The number of units weatherized[a] in 2010 increased by 46.1 percent over 2009. This is due in part to an increase in funding through the American Recovery and Reinvestment Act (ARRA) of 2009.

The Wisconsin Division of Energy Services, under the Department of Administration, contracts with various agencies throughout the state to provide weatherization[a] services to the low-income population. Agencies include community action agencies, housing authorities, tribes, local governments, and other non-profit organizations.

The Weatherization Assistance Program was created under Title IV of the Energy Conservation and Production Act of 1976, and was designed to cut heating bills and save imported oil.
See http://www.homeenergyplus.wi.gov/ for local information.

1980-2010

Year[d]	Department of Administration[b]	Wisconsin Utilities	Combined Totals
1980	5,811		5,811
1985	7,355	4,139	11,494
1990	9,302	3,384	12,686
1995	6,126	5,455	11,581
1996	4,575	6,651	11,226
1997	4,530	4,626	9,156
1998	3,854	4,848	8,702
1999	3,703	5,700	9,403
2000[c]	4,246	6,434	10,680
2001	4,867	3,378	8,245
2002[e]	5,948	1,493	7,441
2003	7,368	0	7,368
2004	8,027	0	8,027
2005	8,721	0	8,721
2006	9,057	0	9,057
2007	10,215	0	10,215
2008	8,645	0	8,645
2009	10,534	0	10,534
2010[p]	15,392	0	15,392
Total	**231,286**	**81,227**	**312,513**

a Weatherization is any job in which either the state or a utility, or both, installs envelope efficiency measures, appliance efficiency measures, heating equipment replacement/retrofits, or any combination of these.

b In July 1992, the Low Income Weatherization Assistance Program was transferred from the Department of Health and Family Services to the Department of Administration.

c Estimates.

d In 1992, the program year was changed to April-March.

e Wisconsin's Public Benefits Program began in October 2000. This program has transitioned responsibility for weatherizing low-income households from the utilities to the Department of Administration, Division of Energy. The transition was completed at the end of December 2002.

p Preliminary estimate.

Source: Public Service Commission of Wisconsin, Division of Energy Planning and Programs, unpublished annual data; Wisconsin Department of Health and Family Services, Energy Services Section, unpublished annual data; Department of Administration (DOA), Division of Energy Services, *Annual Weatherization Production*, report to U.S. DOE for 2008, and unpublished data (2010).

Reported Building Activity Affected by Wisconsin Energy Codes

1979-2010

Year	New One and Two Family Units[b]	New Manufactured Dwelling Units[c,f,g]	Manufactured Homes (HUD Certified)[f]	New & Altered Public and Commercial Buildings[d]	Existing Rental Properties[e]	Total
1979	NA	NA	NA	4,332		4,332
1980	3,302	906		3,818		8,026
1985	6,146	1,147		6,380	2,267	15,940
1990	10,286	1,253		7,378	4,849	23,766
1995	12,846	1,991		8,434	6,955	30,226
1996	14,051	2,108		8,088	7,162	31,409
1997	13,390	1,826		7,341	7,488	30,045
1998	14,662	1,856		6,793	7,616	30,927
1999	13,282	2,292		7,387	7,270	30,231
2000	14,799	2,085		6,606	7,510	31,000
2001	14,653	1,926		6,501	6,296	29,376
2002	15,479	1,933		6,516	6,318	30,246
2003	18,851	1,999		6,455	5,136	32,441
2004	18,641	2,141	2,016	6,658	5,221	34,677
2005	19,762	1,962	1,710	6,810	4,948	35,192
2006	14,767	1,596	1,124	8,932	4,181	30,600
2007[g]	13,393		698	6,034	3,538	23,663
2008	9,004		413	4,840	2,671	16,928
2009	6,911		207	3,565	2,680	13,363
2010[p]	**6,529**	**0**	**0**	**3,596**	**2,694**	**12,819**

BUILDINGS **CERTIFIED** IN 2010 DECREASED **4.1%**

In 2010, 12,819 buildings were certified as meeting Wisconsin's energy efficiency building codes[a], a decrease of 4.1 percent from 2009. The number of buildings certified peaked in 2005 with 35,192.

The codes, developed and enforced by the Wisconsin Department of Commerce or local code officials, establish minimum energy standards for new construction, major renovation and existing rental units.

a Includes Chapter Commerce 22 of the Uniform Dwelling Code; Chapter Commerce 63 of the Commercial Building Code; and Chapter Commerce 67 (State Rental Unit Energy Efficiency Standards).

b Based on Uniform Dwelling Code permits issued. Through 2004, communities with a population of fewer than 2,500 could opt out from code enforcement and may not have issued permits. Previous numbers may have included some manufactured dwelling units.

c Reporting is required for all manufactured dwelling units. These dwelling units meet state standards and are generally delivered to the dwelling site on a flatbed.

d Includes new building and alteration plans submitted and approved by the state under general building code provisions. Some projects are exempt from plan review or were locally approved instead.

e Properties certified as meeting code requirements during current year, regardless of year of actual transfer of ownership.

f These dwelling units meet federal HUD standards, which are lower than state standards, have a chassis and generally are towed to the dwelling site.

g From 2007 forward, these categories are fully captured in the One and Two Family Dwelling total.

p Preliminary.

NA – Not applicable. Rental Unit Energy Efficiency Code effective January 1, 1985 and Uniform Dwelling Code Effective June 1, 1980.

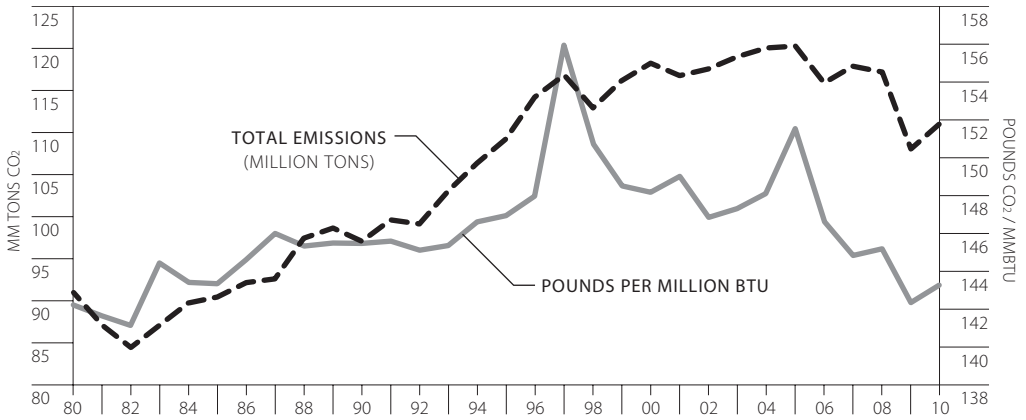
Source: Department of Commerce, Division of Safety and Buildings, internal data files.

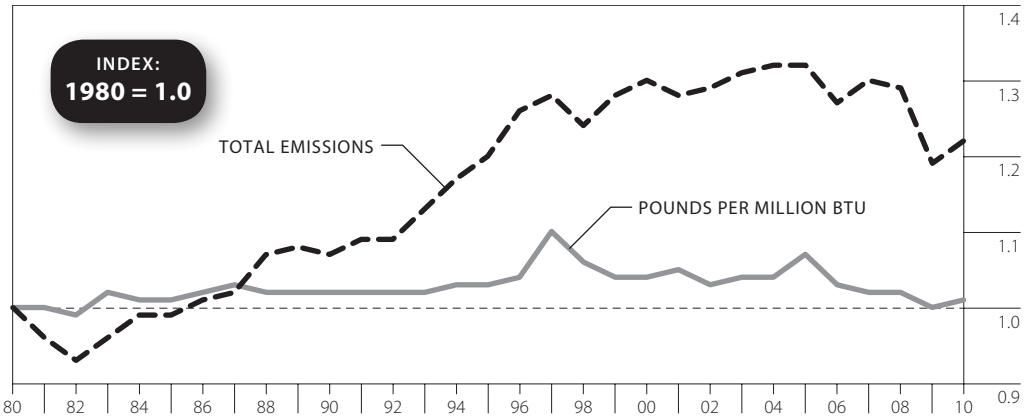
Wisconsin Carbon Dioxide Emissions from Energy Use

CO_2 EMISSIONS 2.0%

Wisconsin's CO_2 emissions from energy (pounds per MMBtu) decreased 2.0 percent in 2010. Since 1990, total CO_2 emissions, in millions of tons, have increased 11.27 percent, but 2010 levels reflect a decrease of 7.9 percent from 2009.

1980-2010 MILLIONS OF TONS AND POUNDS PER MILLION BTU[a]



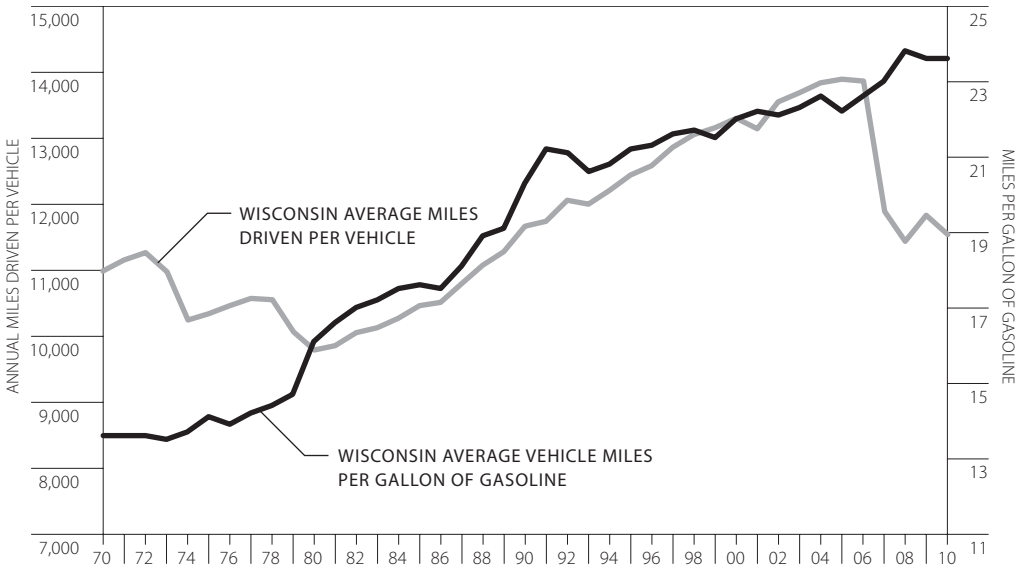


Year	Tons CO_2 (Millions)	Pounds CO_2 Per MMBtu
1980	90.9	142.2
1985	90.4	143.3
1990	97.0	145.4
1995	109.2	146.9
2000	118.2	148.1
2005	120.2	151.4
2006	115.8	146.6
2007	117.8	144.8
2008	117.1	145.1
2009	107.9	142.3
2010[p]	**110.9**	**143.2**

a Does not include electric imports.
p Preliminary estimates.
Source: Compiled from tables in this book for fuel use, and U.S. EPA emission factors.

Average Miles Driven Per Vehicle and Average Miles Per Gallon of Gasoline, Wisconsin and United States

1970-2010



	Average Annual Miles Per Vehicle[a,b,c]		Average Vehicle Miles Per Gallon of Gasoline[a,b,c]	
Year	Wisconsin	U.S.	Wisconsin	U.S.
1970	10,980	9,892	13.6	13.5
1975	10,332	9,309	14.1	14.0
1980	9,782	8,813	16.1	16.0
1985	10,455	9,419	17.6	17.5
1990	11,659	10,504	20.3	20.2
1995	12,435	11,203	21.2	21.1
2000	13,293	11,976	22.0	21.9
2001	13,132	11,831	22.2	22.1
2002	13,544	12,202	22.1	22.0
2003	13,681	12,325	22.3	22.2
2004	13,831	12,460	22.6	22.5
2005	13,886	12,510	22.2	22.1
2006	13,858	12,485	22.6	22.5
2007[r]	11,888	10,710	23.0	22.9
2008	11,422	10,290	23.8	23.7
2009	11,820	10,649	23.6	23.5
2010[p]	**11,534**	**10,391**	**23.6**	**23.5**

a Wisconsin and U.S. figures come from different sources and may not be directly comparable.
b "Passenger cars" does not include minivans, pickups or sport utility vehicles.
c Light Duty Vehicles, short wheel base includes passenger cars, light trucks, vans and sport utility vehicles with a wheelbase of less than 122 inches.
p Preliminary estimates.
r Revised.
Source: Wisconsin Department of Transportation, Division of Planning and Budget, Bureau of Policy Planning and Analysis, personal communication (1993); U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, table 1.8 [DOE/EIA-0035 (2010/03)] (March 2010) http://www.eia.gov/totalenergy/monthly; US Department of Transportation, Federal Highway Administration, Vehicle Miles of Travel, Table VM-1. www.fhwa.dot.gov/policyinformation/quickfinddata/qftravel.cfm .

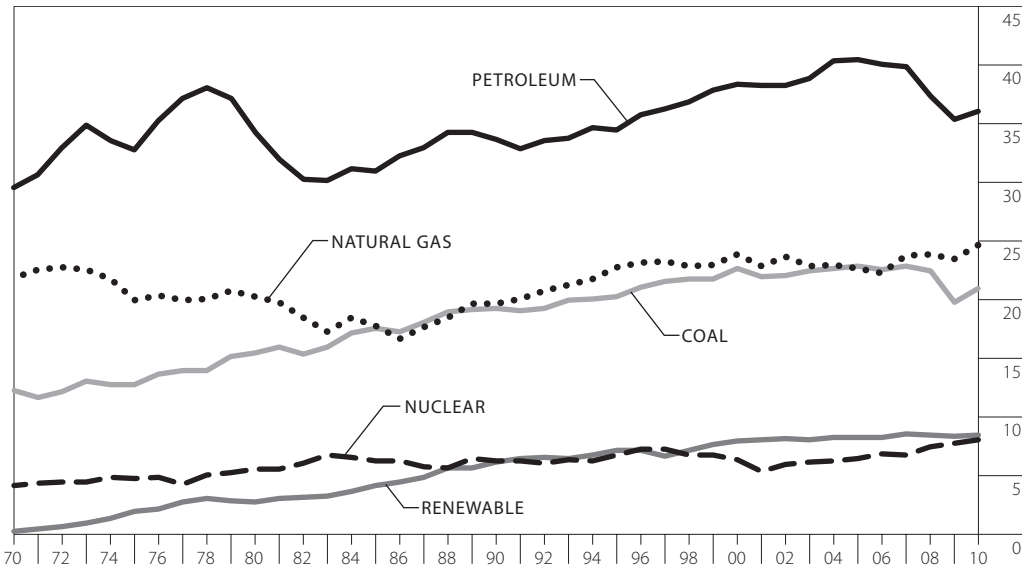
AVERAGE NUMBER OF MILES DRIVEN ANNUALLY 2.4%

The average number of miles driven annually per vehicle in Wisconsin decreased 2.4 percent in 2010. It is 17.9 percent higher than in 1980 and 11.0 percent higher than the U.S. average. Fuel efficiency has been relatively stagnant since 1991 because of the increasing number of less fuel efficient large cars sold each year. Wisconsin cars were 73.53 percent more fuel efficient in 2010 than in 1970.

The federal definition for 'auto' has been modified to include additional types of vehicles because of increased use of these larger vehicles by residential households.

United States Resource Energy Consumption, by Type of Fuel

1970-2010 QUADRILLIONS OF BTU



1970-2010 QUADRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Petroleum		Natural Gas		Coal		Nuclear		Renewable[a]		Total[b]
1970	29.5	*43.5%*	21.8	*32.1%*	12.2	*18.0%*	0.2	*0.4%*	4.1	*6.0%*	67.8
1975[r]	32.7	*45.5%*	19.9	*27.7%*	12.7	*17.6%*	1.9	*2.6%*	4.7	*6.6%*	72.0
1980[r]	34.2	*43.8%*	20.2	*25.9%*	15.4	*19.7%*	2.7	*3.5%*	5.5	*7.0%*	78.1
1985[r]	30.9	*40.4%*	17.7	*23.1%*	17.5	*22.8%*	4.1	*5.3%*	6.2	*8.1%*	76.5
1990[r]	33.6	*39.6%*	19.6	*23.2%*	19.2	*22.7%*	6.1	*7.2%*	6.2	*7.3%*	84.7
1995[r]	34.4	*37.8%*	22.7	*24.9%*	20.2	*22.1%*	7.1	*7.8%*	6.7	*7.4%*	91.2
2000[r]	38.3	*38.7%*	23.8	*24.1%*	22.6	*22.9%*	7.9	*7.9%*	6.3	*6.3%*	99.0
2001[r]	38.2	*39.6%*	22.8	*23.6%*	21.9	*22.8%*	8.0	*8.3%*	5.3	*5.5%*	96.3
2002[r]	38.2	*39.1%*	23.6	*24.1%*	22.0	*22.4%*	8.1	*8.3%*	5.9	*6.0%*	97.9
2003[r]	38.8	*39.5%*	22.8	*23.3%*	22.4	*22.8%*	8.0	*8.1%*	6.1	*6.3%*	98.1
2004[r]	40.3	*40.2%*	22.9	*22.8%*	22.6	*22.5%*	8.2	*8.2%*	6.2	*6.2%*	100.3
2005[r]	40.4	*40.2%*	22.6	*22.5%*	22.8	*22.7%*	8.2	*8.1%*	6.4	*6.4%*	100.4
2006[r]	40.0	*40.0%*	22.2	*22.3%*	22.5	*22.6%*	8.2	*8.2%*	6.8	*6.8%*	99.8
2007[r]	39.8	*39.2%*	23.7	*23.3%*	22.8	*22.4%*	8.5	*8.3%*	6.7	*6.6%*	101.5
2008[r]	37.3	*37.5%*	23.8	*23.9%*	22.4	*22.6%*	8.4	*8.5%*	7.4	*7.4%*	99.4
2009[r]	35.3	*37.3%*	23.4	*24.7%*	19.7	*20.9%*	8.3	*8.8%*	7.7	*8.2%*	94.6
2010[p]	**36.0**	***36.7%***	**24.6**	***25.1%***	**20.9**	***21.3%***	**8.4**	***8.6%***	**8.0**	***8.2%***	**98.1**

a Includes net imports of electricity.

b Totals vary slightly from US resource consumption totals elsewhere in this publication.

p Preliminary.

r Revised.

Source: U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, Table 1.3 [DOE/EIA-0035 (2011/08)] (July 2011). http://www.eia.doe.gov/emeu/mer Annual data in *Annual Energy Review*, Table 1.3 [DOE/EIA-0384 (2009)] (August 2010) http://www.eia.doe/gov/emeu/aer

U.S. ENERGY CONSUMPTION
3.7%

In 2010, total energy consumption in the United States increased 3.7 percent.

PETROLEUM
2.0%
COAL
5.8%
NATURAL GAS
5.5%
NUCLEAR
1.4%
RENEWABLES
3.9%

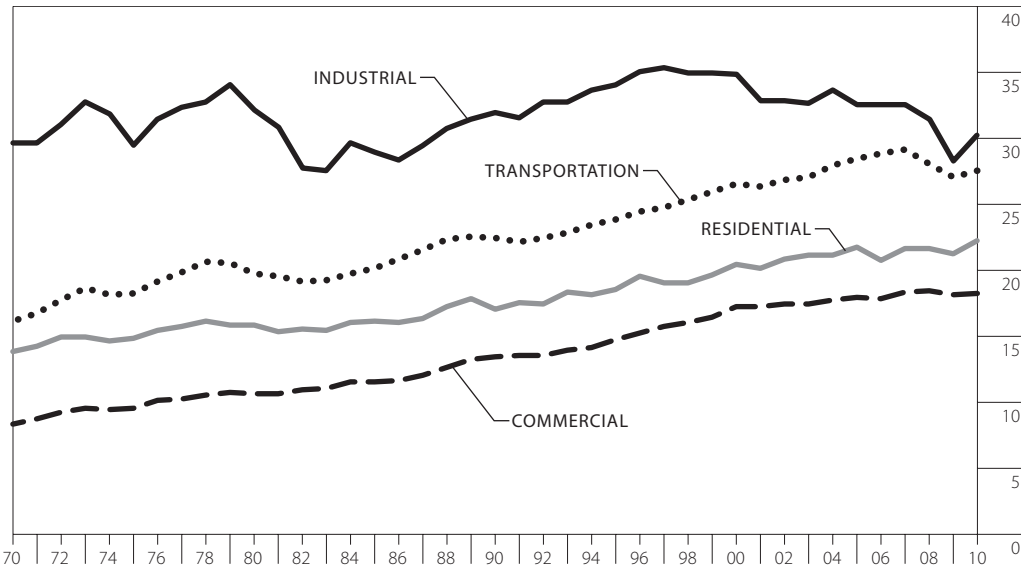
There were across-the-board increases in consumption for all fuels: petroleum, 2.0 percent; coal 5.8 percent; natural gas, 5.5 percent; nuclear, 1.4 percent; and renewables, 3.9 percent. This differs from 2009 where consumption decreased for all fuels except renewables.

United States Resource Energy Consumption, by Economic Sector

INDUSTRIAL
7.1%
COMMERCIAL
0.3%
RESIDENTIAL
4.5%
TRANSPORTATION
1.8%

During 2010, all sectors saw an increase in consumption. The industrial sector saw the largest increase (7.1 percent), while the commercial sector saw the smallest increase (0.3 percent). The residential and transportation sectors saw increases of 4.5 percent and 1.8 percent respectively.

1970-2010 QUADRILLIONS OF BTU



1970-2010 QUADRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Residential[a]		Commercial[a]		Industrial		Transportation		Total
1970[r]	13.8	*20.3%*	8.3	*12.3%*	29.6	*43.7%*	16.1	*23.7%*	67.8
1975[r]	14.8	*20.6%*	9.5	*13.2%*	29.4	*40.9%*	18.2	*25.3%*	72.0
1980[r]	15.8	*20.2%*	10.6	*13.6%*	32.1	*41.1%*	19.7	*25.2%*	78.1
1985[r]	16.1	*21.0%*	11.5	*15.0%*	28.9	*37.8%*	20.1	*26.3%*	76.5
1990[r]	17.0	*20.1%*	13.4	*15.8%*	31.9	*37.7%*	22.4	*26.5%*	84.7
1995[r]	18.5	*20.3%*	14.7	*16.2%*	34.0	*37.3%*	23.8	*26.2%*	91.2
2000[r]	20.4	*20.7%*	17.2	*17.4%*	34.8	*35.1%*	26.5	*26.8%*	99.0
2001[r]	20.1	*20.8%*	17.2	*17.8%*	32.8	*34.1%*	26.3	*27.3%*	96.3
2002[r]	20.8	*21.3%*	17.4	*17.8%*	32.8	*33.5%*	26.8	*27.4%*	97.9
2003[r]	21.1	*21.5%*	17.4	*17.7%*	32.6	*33.2%*	27.0	*27.5%*	98.1
2004[r]	21.1	*21.1%*	17.7	*17.7%*	33.6	*33.5%*	27.9	*27.8%*	100.3
2005[r]	21.7	*21.6%*	17.9	*17.8%*	32.5	*32.4%*	28.4	*28.2%*	100.4
2006[r]	20.7	*20.8%*	17.8	*17.8%*	32.5	*32.5%*	28.8	*28.9%*	99.8
2007[r]	21.6	*21.3%*	18.3	*18.0%*	32.5	*32.0%*	29.1	*28.7%*	101.5
2008[r]	21.6	*21.7%*	18.4	*18.5%*	31.4	*31.5%*	28.0	*28.2%*	99.4
2009[r]	21.2	*22.4%*	18.1	*19.2%*	28.2	*29.8%*	27.0	*28.6%*	94.6
2010[p]	**22.2**	***22.6%***	**18.2**	***18.6%***	**30.2**	***30.8%***	**27.5**	***28.1%***	**98.1**

a Numbers may not match with previous pages due to independent rounding.

p Preliminary.

r Revised.

Source: U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, Table 2.1 [DOE/EIA-0035 (2011/08)] (July 2011). http://www.eia.doe.gov/emeu/mer Annual data in *Annual Energy Review*, Table 2.1 [DOE/EIA-0384 (2009)] (August 2010) http://www.eia.doe/gov/emeu/aer

Sources of U.S. Crude Oil and Petroleum Products

1975-2010 THOUSANDS OF BARRELS PER DAY

Year	U.S. Petroleum Use	U.S. Field Production[a]	U.S. Crude Oil Production from Oil Wells	Natural Gas Plant Liquids from U.S. Natural Gas Wells[b]	Crude Oil from Wells in Lower 48 States	U.S. Crude Oil & Product Exports	U.S. Crude Oil & Product Imports (Total)[c]	U.S. Crude Oil and Product Imports from OPEC	Imports as a Percent of U.S. Petroleum Use	OPEC Imports as a Percent of U.S. Imports	Imports as a Percent of U.S. Crude Oil Production & Imports
1975	16,322	10,007	8,375	1,633	8,183	209	6,056	3,601	37.1%	59.5%	42.0%
1980	17,506	10,170	8,597	1,573	6,980	544	6,909	4,300	39.5%	62.2%	44.6%
1985	15,726	10,581	8,971	1,609	7,146	781	5,067	1,830	32.2%	36.1%	36.1%
1990	16,988	8,914	7,355	1,559	5,582	857	8,018	4,296	47.2%	53.6%	52.2%
1995	17,725	8,322	6,560	1,762	5,076	949	8,835	4,002	49.8%	45.3%	57.4%
1996	18,309	8,295	6,465	1,830	5,071	981	9,478	4,211	51.8%	44.4%	59.4%
1997	18,620	8,269	6,452	1,817	5,156	1,003	10,162	4,569	54.6%	45.0%	61.2%
1998	18,917	8,011	6,252	1,759	5,077	945	10,708	4,905	56.6%	45.8%	63.1%
1999	19,519	7,731	5,881	1,850	4,832	940	10,852	4,953	55.6%	45.6%	64.9%
2000	19,701	7,733	5,822	1,911	4,851	1,040	11,459	5,203	58.2%	45.4%	66.3%
2001	19,649	7,670	5,801	1,868	4,839	971	11,871	5,528	60.4%	46.6%	67.2%
2002	19,761	7,626	5,746	1,880	4,761	984	11,530	4,605	58.3%	39.9%	66.7%
2003	20,034	7,400	5,681	1,719	4,706	1,027	12,264	5,162	61.2%	42.1%	68.3%
2004	20,731	7,228	5,419	1,809	4,510	1,048	13,145	5,701	63.4%	43.4%	70.8%
2005	20,802	6,895	5,178	1,717	4,314	1,165	13,714	5,587	65.9%	40.7%	72.6%
2006	20,687	6,841	5,102	1,739	4,361	1,317	13,707	5,517	66.3%	40.2%	72.9%
2007	20,680	6,847	5,064	1,783	4,342	1,433	13,468	5,980	65.1%	44.4%	72.7%
2008	19,498	6,734	4,950	1,784	4,268	1,802	12,915	5,954	66.2%	46.1%	72.3%
2009	18,686	7,196	5,310	1,886	4,665	2,026	11,726	4,786	62.8%	40.8%	68.8%
2010[p]	**19,148**	**7,513**	**5,512**	**2,001**	**4,913**	**2,312**	**11,753**	**4,885**	**61.4%**	**41.6%**	**68.1%**

a Includes crude oil, natural gas plant liquids and a small amount of other hydrocarbons and alcohol.

b Natural gas liquids recovered from natural gas in gas processing plants and, in some situations, from natural gas field facilities.

c Includes crude oil imports for the Strategic Petroleum Reserve (SPR).

p Preliminary.

Source: U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, Tables 11.1a and 11.1b [DOE/EIA-0035 (2011/08)] (July 2011). http://www.eia.doe.gov/emeu/mer Annual data in *Annual Energy Review*, Tables 5.1, 5.4, 5.5 and 11.5 [DOE/EIA-0384 (2009)] (August 2010) http://www.eia.doe/gov/emeu/aer

U.S. PETROLEUM USE
2.5%

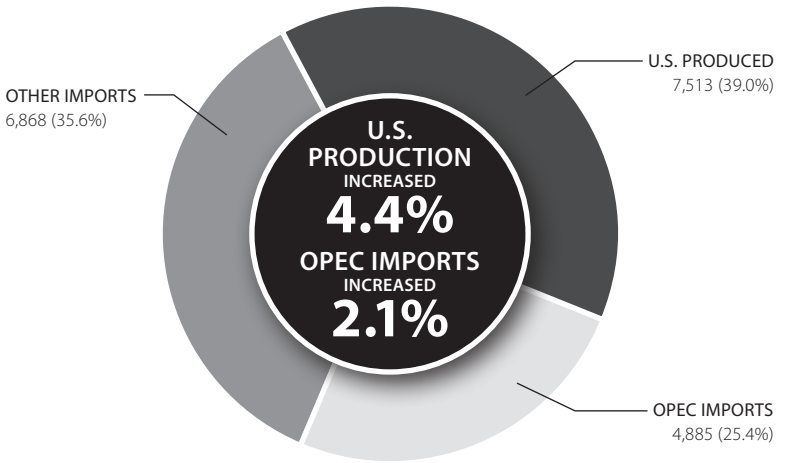
In 2010, U.S. petroleum use increased 2.5 percent after declining by 4.2 percent in 2009. U.S. imports of crude oil and petroleum products increased 0.23 percent, and imports from OPEC decreased 2.07 percent.

Since 1985, U.S. consumption of petroleum products has increased almost 21.8 percent. During this same period, U.S. crude oil production has decreased 38.6 percent (lower 48 production fell 31.3 percent). This resulted in a 132.0 percent increase in imports since 1985, with a corresponding 166.9 percent increase in imports from the Organization of Petroleum Exporting Countries (OPEC).

2010 U.S. Petroleum Use Domestically Produced and Imported

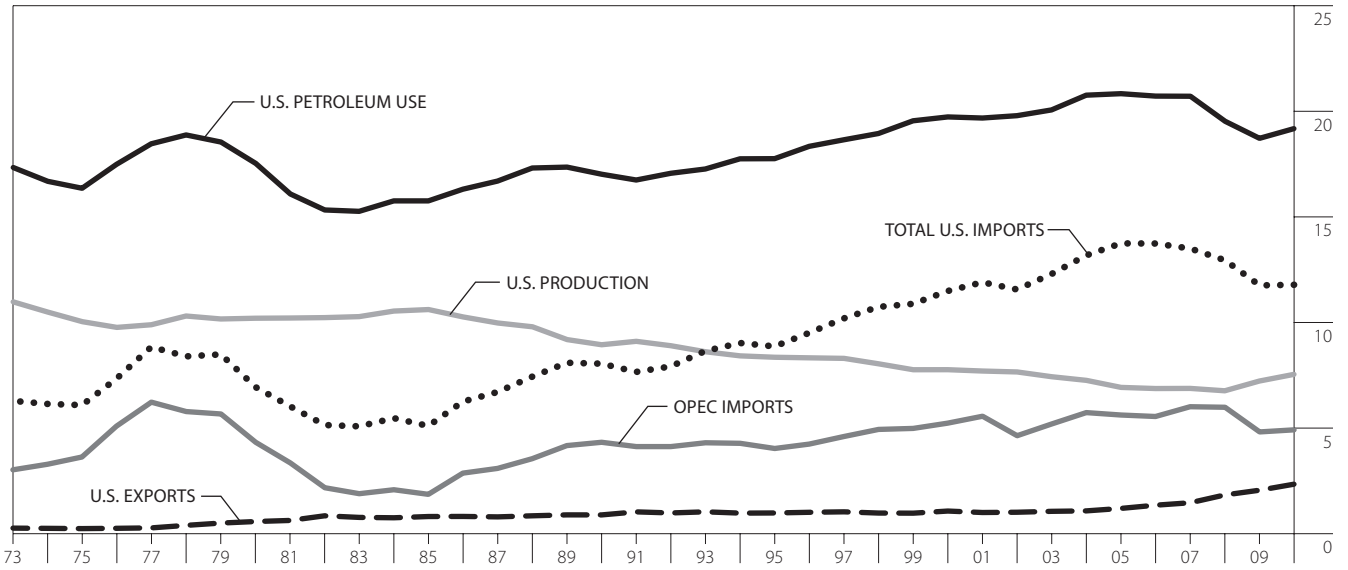
In 2010, U.S. petroleum production[a] increased 4.4 percent. OPEC imports increased 2.1 percent.

2010 THOUSANDS OF BARRELS PER DAY



U.S. Petroleum Use, Production, Imports and Exports

1973-2010 MILLIONS OF BARRELS PER DAY

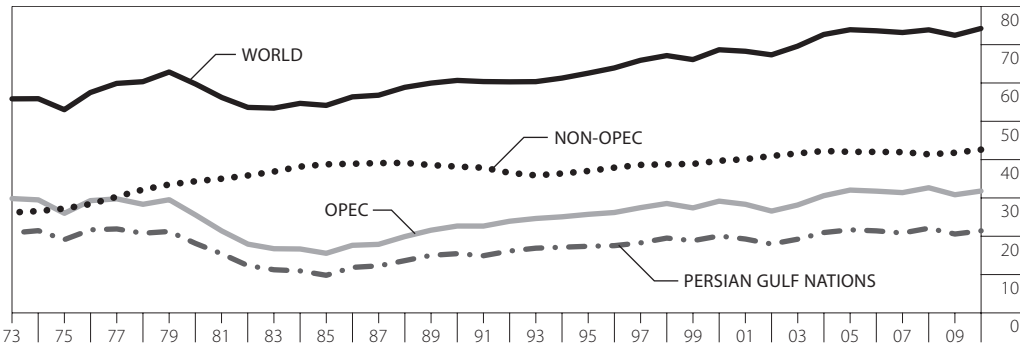


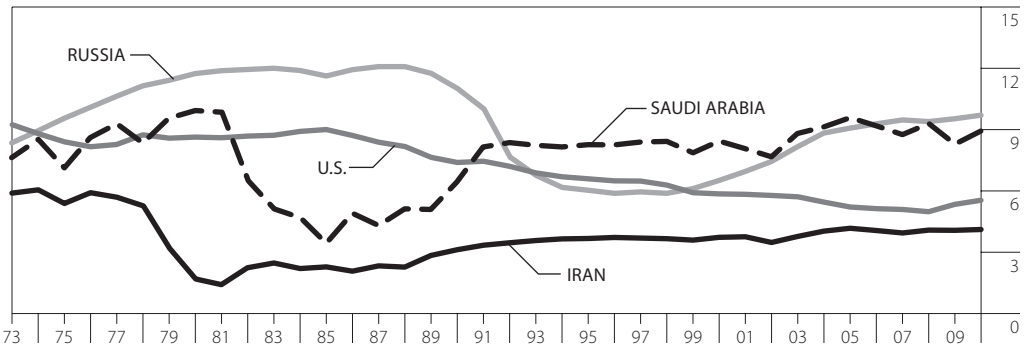
a Includes crude oil, natural gas plant liquids and a small amount of other hydrocarbons and alcohol.

Source: Table "Sources of US Crude Oil and Petroleum Products" in this publication.

World Crude Oil Production

1973-2010 MILLION BARRELS PER DAY





Year	World	Non-OPEC	OPEC[b]	Persian Gulf Nations[c]	Major Crude Oil Producers			
					U.S.	Saudi Arabia	Iran	Russia[a]
1973	55.68	26.02	29.66	20.67	9.21	7.60	5.86	8.32
1975	52.83	27.04	25.79	18.93	8.37	7.08	5.35	9.52
1980[r]	59.56	34.17	25.38	17.96	8.60	9.90	1.66	11.71
1985	53.97	38.60	15.37	9.63	8.97	3.39	2.25	11.59
1990	60.49	38.00	22.49	15.28	7.36	6.41	3.09	10.98
1995[r]	62.38	36.85	25.54	17.21	6.56	8.23	3.64	6.00
2000[r]	68.49	39.52	28.98	19.89	5.82	8.40	3.70	6.48
2005	73.72	41.85	31.87	21.50	5.18	9.55	4.14	9.04
2010[p]	**74.05**	**42.43**	**31.63**	**21.26**	**5.51**	**8.90**	**4.08**	**9.67**

a Prior to 1992, production was for the former U.S.S.R.

b The OPEC countries include the Persian Gulf nations (with the exception of Bahrain) and Algeria, Indonesia, Libya, Nigeria and Venezuela. Ecuador rejoined OPEC in 2007 while Indonesia left OPEC at the end of 2008.

c The Persian Gulf nations are Bahrain, Iran, Iraq, Kuwait, Qatar, Saudi Arabia, the United Arab Emirates, and the Neutral Zone.

d This figure does not include oil sands or other unconventional oil sources.

p Preliminary.

r Revised.

Source: U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review* Tables 11.1a and 11.1b [DOE/EIA-0035 (2011/08)] (July 2011). http://www.eia.doe.gov/emeu/mer Annual data in *Annual Energy Review*, Table 11.5 [DOE/EIA-0384 (2009)] (August 2010) http://www.eia.doe/gov/emeu/aer

WORLD CRUDE OIL
2.5%

In 2010, world production of crude oil was 74.05 million barrels per day, an increase of 2.5 percent from a year ago[d]. The Organization of Petroleum Exporting Countries (OPEC) produced 42.7 percent of the world's crude oil in 2010.

The top four producers of crude oil in 2010 were Russia (13.1 percent), Saudi Arabia (12.0 percent), the U.S. (7.4 percent) and Iran (5.5 percent).

United States Natural Gas Production, Imports, Consumption and Storage

CONSUMPTION
5.7%

In 2010, U.S. natural gas consumption increased 5.7 percent.

PRODUCTION
3.0%

Domestic natural gas production increased 3.0 percent.

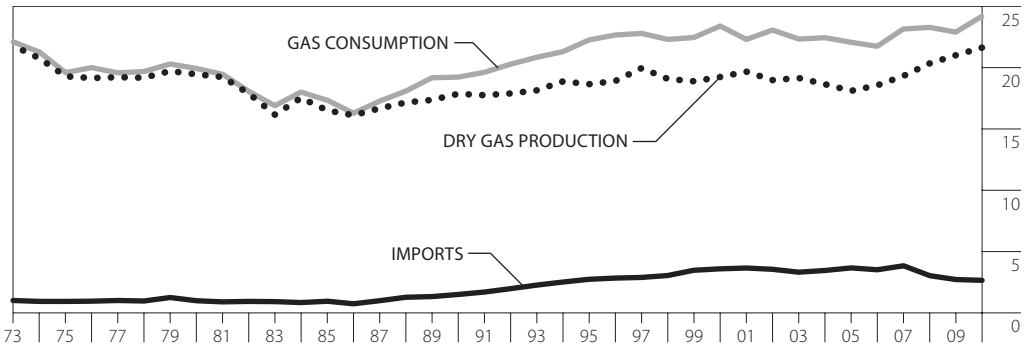
NET IMPORTS
2.9%

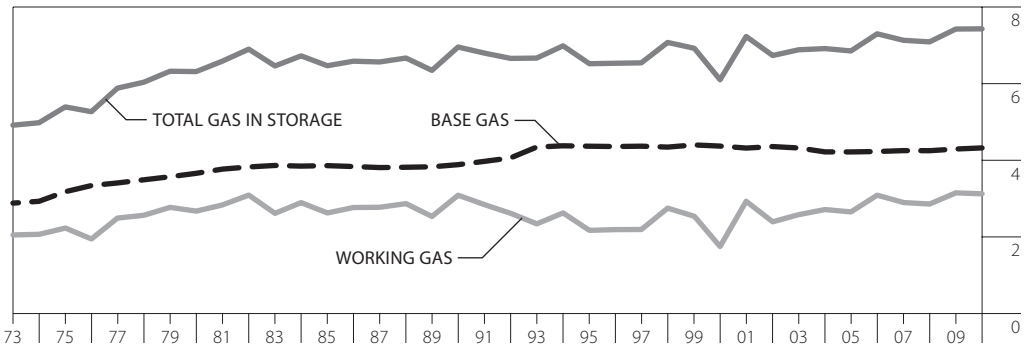
Net imports, primarily from Canada, decreased 2.9 percent.

GAS IN STORAGE
0.8%

Working gas[c] in storage decreased 0.8 percent.

1973-2010 TRILLIONS OF CUBIC FEET





Year	U.S. Dry Natural Gas Production[a]	Net Imports	Consumption	Natural Gas in Underground Storage – Year End		
				Base Gas[b]	Working Gas[c]	Total
1973	21.7	1.0	22.0	2.864	2.034	4.898
1975	19.2	0.9	19.5	3.162	2.212	5.374
1980	19.4	0.9	19.9	3.642	2.655	6.297
1985	16.5	0.9	17.3	3.842	2.607	6.449
1990	17.8	1.4	19.2	3.868	3.068	6.936
1995	18.6	2.7	22.2	4.349	2.153	6.502
2000	19.2	3.5	23.3	4.352	1.719	6.071
2005	18.1	3.6	22.0	4.200	2.635	6.835
2010[p]	**21.6**	**2.6**	**24.1**	**4.305**	**3.107**	**7.412**

a Dry Natural Gas Production is natural gas used to heat homes and buildings, and to power industry after the natural gas liquids, such as liquid propane, are removed.

b Base Gas is the volume of gas needed as permanent inventory to maintain adequate underground storage reservoir pressures and deliverability rates during the withdrawal season.

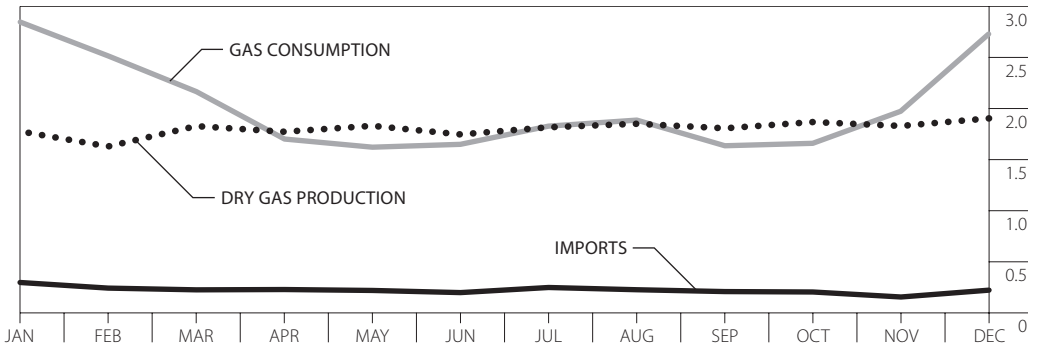
c Working Gas is the gas that can be withdrawn from storage to heat buildings and power industry.

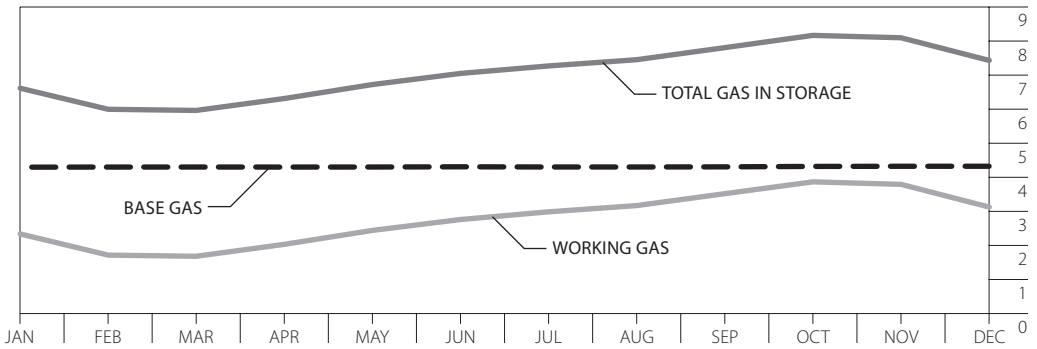
p Preliminary.

Source: U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review* Tables 4.1 and 4.4 [DOE/EIA-0035 (2011/08)] (July 2011). http://www.eia.doe.gov/emeu/mer Annual data in *Annual Energy Review*, Tables 6.1 and 6.6 [DOE/EIA-0384 (2009)] (August 2010) http://www.eia.doe/gov/emeu/aer

United States Monthly Natural Gas Production, Imports, Consumption and Storage

2010 TRILLIONS OF CUBIC FEET





2010	U.S. Dry Natural Gas Production[a]	Net Imports	Consumption		Natural Gas in Underground Storage – Month End: Base Gas[b]	Working Gas[c]	Total[d]
January	1.770	0.291	2.840		4.278	2.319	6.597
February	1.622	0.236	2.508		4.281	1.696	5.977
March	1.821	0.219	2.159		4.282	1.662	5.944
April	1.766	0.222	1.695		4.281	2.012	6.293
May	1.824	0.213	1.615		4.282	2.421	6.703
June	1.740	0.192	1.643		4.289	2.741	7.030
July	1.810	0.242	1.821		4.283	2.967	7.250
August	1.844	0.220	1.880		4.283	3.150	7.433
September	1.800	0.202	1.629		4.287	3.500	7.787
October	1.861	0.198	1.653		4.300	3.847	8.147
November	1.823	0.149	1.967		4.304	3.773	8.077
December	1.897	0.216	2.724		4.305	3.107	7.412
Total[d]	**21.578**	**2.600**	**24.134**	**Average**	**4.288**	**2.766**	**7.054**

a Dry Natural Gas Production is natural gas used to heat homes and buildings, and to power industry after the natural gas liquids, such as liquid propane, are removed.

b Base Gas is the volume of gas needed as permanent inventory to maintain adequate underground storage reservoir pressures and deliverability rates during the withdrawal season.

c Working Gas is the gas that can be withdrawn from storage to heat buildings and power industry.

d Totals may not add due to rounding.

Source: U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, Tables 4.1 and 4.4 [DOE/EIA-0035 (2011/08)] (July 2011). http://www.eia.doe.gov/emeu/mer Annual data in *Annual Energy Review*, Tables 6.1 and 6.6 [DOE/EIA-0384 (2009)] (August 2010) http://www.eia.doe/gov/emeu/aer

100
CUBIC FEET OF NATURAL GAS = 1 THERM

1 THERM = 100,000 BRITISH THERMAL UNITS (BTU)

Domestic natural gas production and imports remain relatively constant throughout the year. However, consumption increases significantly during the winter heating months. To provide sufficient natural gas for the winter heating months, the working gas in storage is withdrawn during these months, while natural gas is injected into storage during the non-heating months. Therefore, natural gas in storage generally peaks in October or November and is at a minimum in March.

United States Coal Production, Net Exports, Consumption and Sector Usage

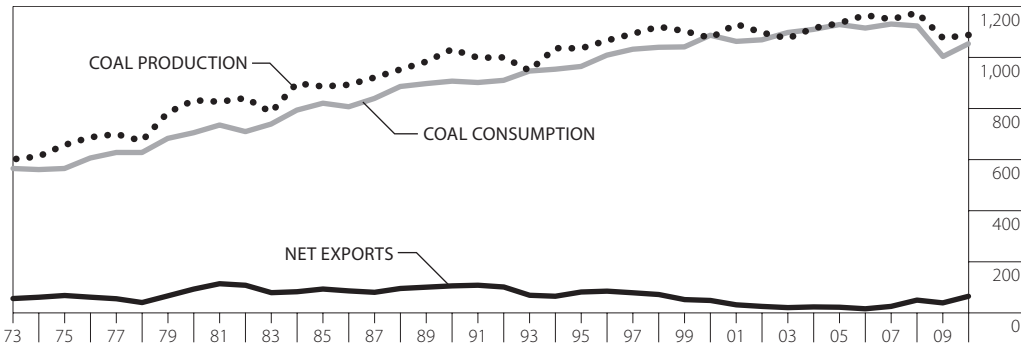
DOMESTIC PRODUCTION EXCEEDS DEMAND

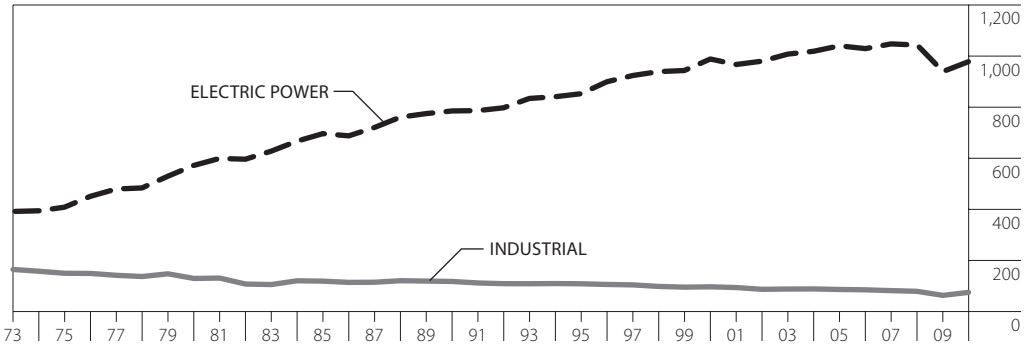
Unlike petroleum or natural gas, domestic production of coal exceeds demand, and the U.S. is a net exporter of coal.

IN THE U.S. 92.8% OF COAL GENERATES ELECTRIC POWER

Of the coal used in the U.S., 92.8 percent goes to generating electric power, and approximately 45 percent of U.S. electricity is generated with coal. The Industrial sector uses 6.9 percent, with the residential and commercial sectors combined using 0.29 percent of total domestic consumption.

1973-2010 MILLIONS OF TONS





				Coal Use by Sector		
Year	Coal Production	Net Exports	Consumption	Res. & Com.[a]	Industrial	Electric Power
1973[r]	598.6	53.5	562.6	11.1	162.1	389.2
1975[r]	654.6	65.4	562.6	9.4	147.2	406.0
1980[r]	829.7	90.5	702.7	6.5	127.0	569.3
1985[r]	883.6	90.7	818.0	7.8	116.4	693.8
1990[r]	1,029.1	103.1	904.5	6.7	115.2	782.6
1995[r]	1,033.0	79.1	962.1	5.8	106.1	850.2
2000[r]	1,073.6	46.0	1,084.1	4.1	94.1	985.8
2005[r]	1,131.5	19.5	1,126.0	4.7	83.8	1,037.5
2006[r]	1,162.7	13.4	1,112.3	3.2	82.4	1,026.6
2007[r]	1,146.6	22.8	1,128.0	3.5	79.3	1,045.1
2008[r]	1,171.8	47.3	1,120.5	3.5	76.5	1,040.6
2009[r]	1,072.8	36.5	1,000.4	3.2	60.7	936.5
2010[p]	**1,085.3**	**62.4**	**1,051.1**	**3.1**	**72.4**	**975.6**

a Res. & Com. represents residential and commercial.

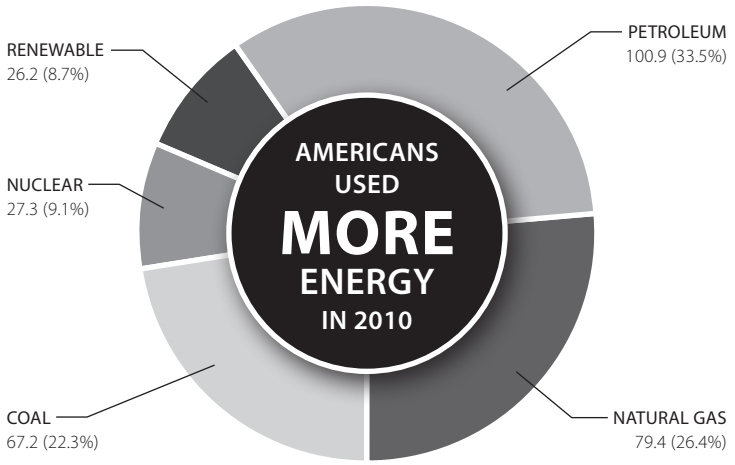
p Preliminary.

r Revised.

Source: U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, Tables 6.1 and 6.2, [DOE/EIA-0035 (2011/08)] (July 2011). http://www.eia.doe.gov/emeu/mer Annual data in *Annual Energy Review*, Tables 7.1 and 7.3 [DOE/EIA-0384 (2009)] (August 2010) http://www.eia.doe/gov/emeu/aer

United States Per Capita Resource Energy Consumption, by Type of Fuel

2010 MILLIONS OF BTU AND PERCENT OF TOTAL



U.S. PER CAPITA
ENERGY
CONSUMPTION
2.8%

In 2010, U.S. per capita energy consumption increased 2.8 percent.

1970-2010 MILLIONS OF BTU AND PERCENT OF TOTAL

Year	Petroleum[a]		Natural Gas		Coal		Nuclear		Renewables[b]		Total
1970[r]	126.1	*40.3%*	106.3	*33.9%*	59.8	*19.1%*	1.2	*0.4%*	19.9	*6.3%*	313.2
1975[r]	133.2	*42.3%*	92.4	*29.3%*	58.6	*18.6%*	8.8	*2.8%*	21.9	*6.9%*	314.8
1980[r]	128.0	*39.9%*	89.1	*27.7%*	67.9	*21.1%*	12.1	*3.8%*	24.1	*7.5%*	321.1
1985[r]	112.8	*37.2%*	74.4	*24.5%*	73.5	*24.2%*	17.1	*5.6%*	25.6	*8.4%*	303.4
1990[r]	113.9	*35.8%*	78.5	*24.7%*	76.8	*24.2%*	24.5	*7.7%*	24.2	*7.6%*	317.9
1995[r]	109.9	*34.2%*	85.1	*26.5%*	75.4	*23.4%*	26.6	*8.3%*	24.6	*7.7%*	321.7
2000[r]	116.0	*35.2%*	84.4	*25.6%*	80.0	*24.2%*	27.9	*8.4%*	21.6	*6.6%*	330.0
2001[r]	114.3	*36.0%*	79.9	*25.2%*	76.9	*24.2%*	28.2	*8.9%*	18.1	*5.7%*	317.4
2002[r]	113.3	*35.5%*	81.7	*25.6%*	76.2	*23.8%*	28.3	*8.9%*	19.9	*6.2%*	319.4
2003[r]	113.8	*35.8%*	78.7	*24.8%*	76.9	*24.2%*	27.4	*8.6%*	20.6	*6.5%*	317.5
2004[r]	116.4	*36.4%*	78.3	*24.4%*	76.7	*24.0%*	28.1	*8.8%*	20.8	*6.5%*	320.3
2005[r]	116.1	*36.5%*	76.4	*24.0%*	77.1	*24.2%*	27.6	*8.7%*	21.1	*6.6%*	318.3
2006[r]	113.4	*36.2%*	74.5	*23.8%*	75.2	*24.0%*	27.5	*8.8%*	22.3	*7.1%*	312.9
2007[r]	112.4	*35.6%*	78.6	*24.8%*	75.5	*23.9%*	28.1	*8.9%*	21.7	*6.8%*	316.2
2008[r]	105.3	*34.1%*	78.4	*25.4%*	73.6	*23.9%*	27.7	*9.0%*	23.6	*7.7%*	308.6
2009[r]	100.1	*34.2%*	76.3	*26.1%*	64.2	*21.9%*	27.2	*9.3%*	24.8	*8.5%*	292.7
2010[p]	**100.9**	***33.5%***	**79.4**	***26.4%***	**67.2**	***22.3%***	**27.3**	***9.1%***	**26.2**	***8.7%***	**301.0**

a To allow a more direct comparison with Wisconsin data, this figure excludes asphalt, road oil, lubricants, waxes, petroleum feedstocks and other petroleum products not used as energy sources.

b Renewables includes biomass, hydro power, wood, solar, wind and geothermal.

p Preliminary.

r Revised.

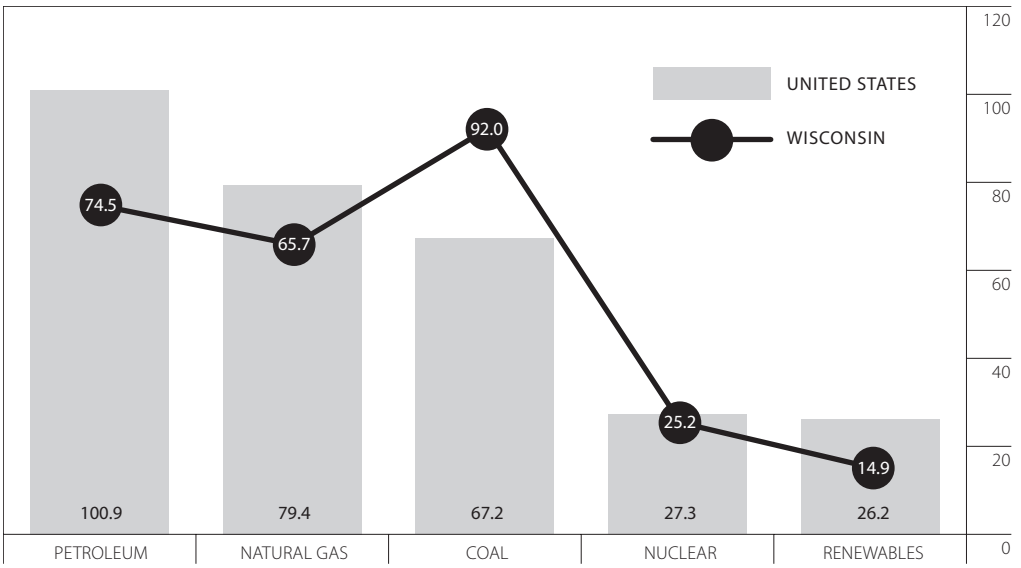
Source: U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review* [DOE/EIA-0035 (2011/08)] (July 2011) Table 3.6. http://www.eia.doe.gov/emeu/mer. Annual data in *Annual Energy Review*, Tables 1.3 and 5.12 [DOE/EIA-0384 (2009)] (August 2010) http://www.eia.doe/gov/emeu/aer. US Census Bureau, Population Division, Release 2/2011, *Table 1: Preliminary Annual Estimate of the Resident Population of the United States.* http://www.census.gov/popest/eval-estimates/eval-est2010.html

Wisconsin Per Capita Resource Energy Consumption as Percent of United States, by Type of Fuel

IN 2010 WISCONSIN USED **95.2%** AS MUCH ENERGY PER CAPITA AS THE NATIONAL AVERAGE

In 2010, Wisconsin used 95.2 percent as much energy per capita as the national average. Wisconsin used significantly more coal than the national average because of the state's high use of electricity generated from coal. Wisconsin used less petroleum, natural gas, renewable and nuclear energy per capita than the national average.

2010 PER CAPITA RESOURCE ENERGY CONSUMPTION – MILLIONS OF BTU



1970-2010 WISCONSIN PER CAPITA RESOURCE ENERGY CONSUMPTION AS A PERCENT OF U.S.

Year[r]	Petroleum[a]	Natural Gas	Coal	Nuclear	Renewables[b]	Total
1970	82.2	69.7	134.5	32.5	31.1	82.47
1975	78.1	87.3	98.0	276.7	29.4	85.27
1980	75.4	82.1	101.6	188.7	43.1	84.21
1985	77.0	86.2	107.4	145.9	42.8	87.49
1990	79.7	79.8	109.5	101.3	42.4	91.39
1995	83.9	87.2	119.7	86.9	39.2	97.42
2000	80.9	86.9	121.0	82.8	47.5	95.66
2001	81.8	83.3	125.4	81.5	55.1	98.26
2002	83.3	86.1	122.3	86.9	52.7	97.50
2003	80.3	91.1	124.6	87.5	52.2	97.49
2004	79.3	88.0	126.4	82.5	53.6	96.60
2005	77.0	96.6	123.4	53.0	53.0	96.30
2006	77.5	89.2	122.0	85.4	51.9	94.44
2007	78.4	90.4	121.0	88.0	59.4	97.90
2008	75.3	92.8	129.6	83.5	59.7	98.21
2009	74.5	90.1	132.9	88.5	57.1	97.16
2010[p]	**73.9**	**82.7**	**136.8**	**92.5**	**57.1**	**95.16**

a This list excludes asphalt, road oil, lubricants, waxes, petroleum feedstocks and other petroleum products not used as energy sources.

b Renewables includes biomass, biogas, hydro power, wood, solar and wind.

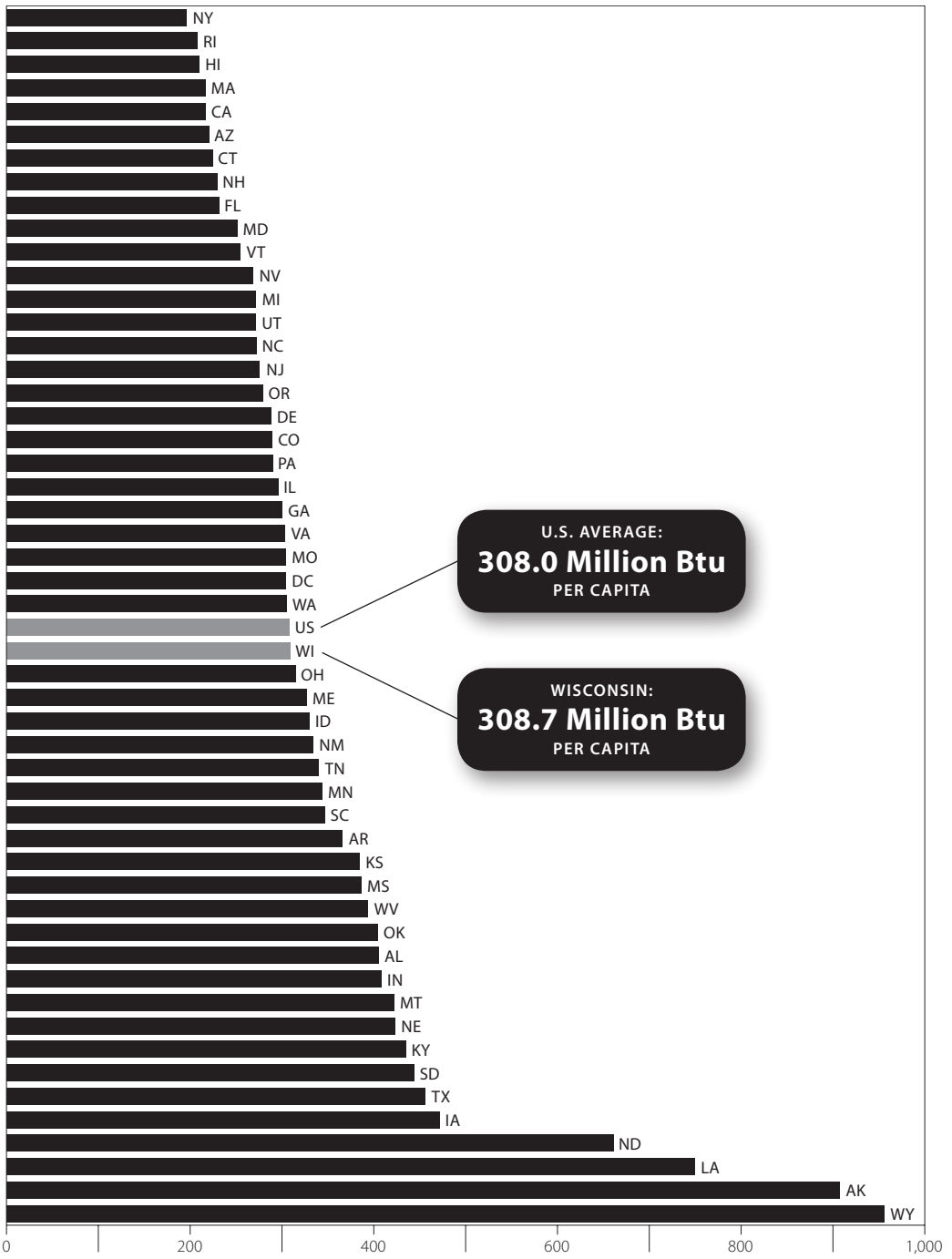
p Preliminary estimates.

r Revised. The numbers in this table are revised due to revisions conducted by the federal Bureau of Economic Activity as the benchmark year was moved from 2000 to 2005.

Source: Compiled from tables in this publication for United States and Wisconsin per capita resource energy use.

U.S. Per Capita Resource Energy Consumption, by State

2009 MILLIONS OF BTU PER CAPITA



In 2009, when non-energy uses of petroleum are included (such as road oil, asphalt and lubricants), Wisconsin was the 25th largest state user in the nation, including the District of Columbia, in per capita energy consumption[a]. At 308.7 Million BTU per capita, Wisconsin's consumption was 99.8 percent of the US consumption at 308.0 million BTU per capita. This is a decrease of 5.7 percent from 2008 when Wisconsin's per capita consumption was 101 percent of the US per capita consumption.

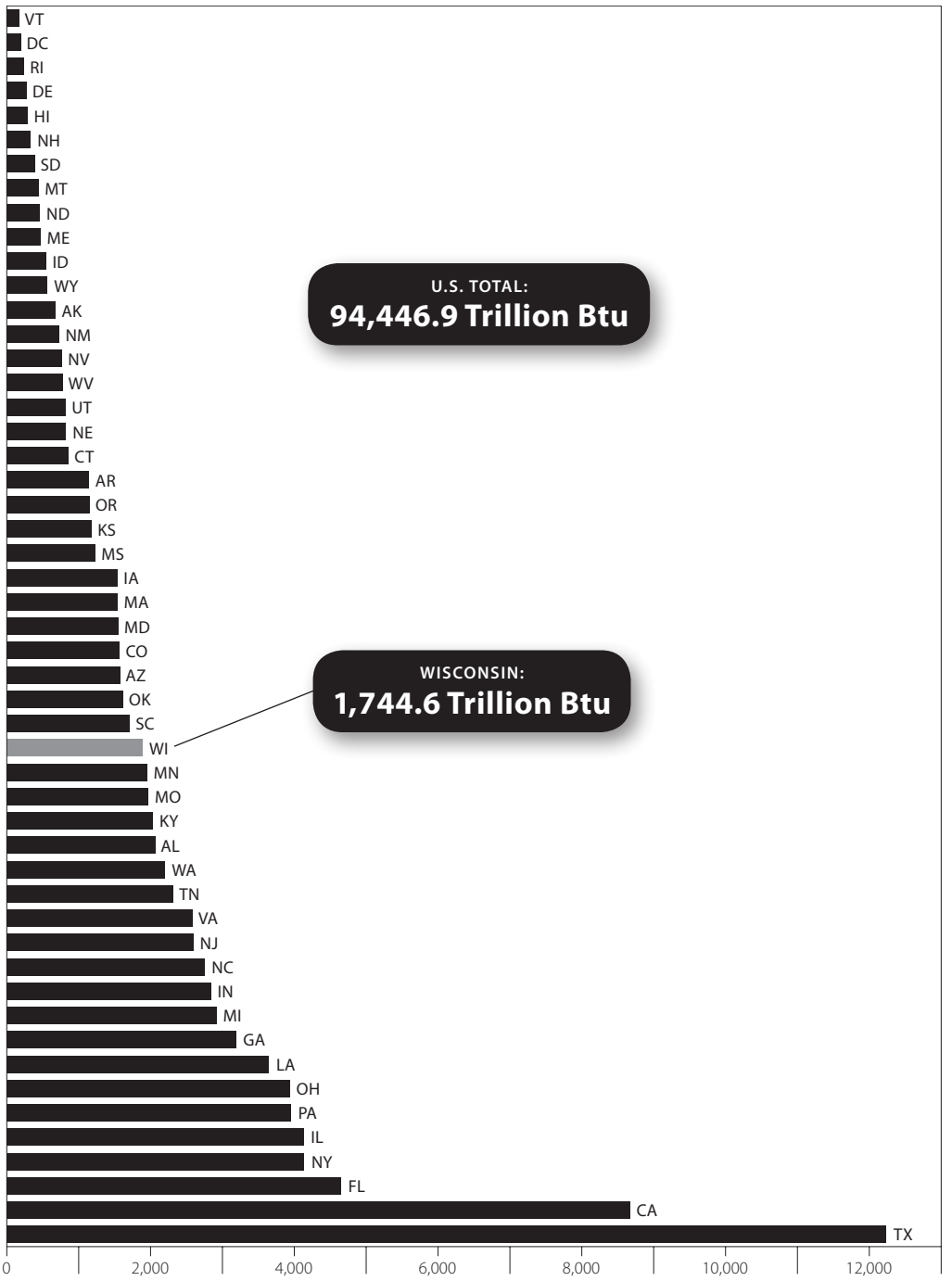
a Data reported in this table may differ from other tables because of different sources.

Source: U.S. Department of Energy, Energy Information Administration, State Energy Data 2009: Consumption, Table C11. http://www.eia.doe/gov/emeu/states/_seds.html

U.S. Resource Energy Consumption, by State

In 2009, when non-energy uses of petroleum are included (such as road oil, asphalt and lubricants), Wisconsin used 1.8 percent of total energy consumed in the United States[a]. This is a decrease over 2008 when Wisconsin used 1.9 percent of the total U.S. energy consumption.

2009 TRILLIONS OF BTU

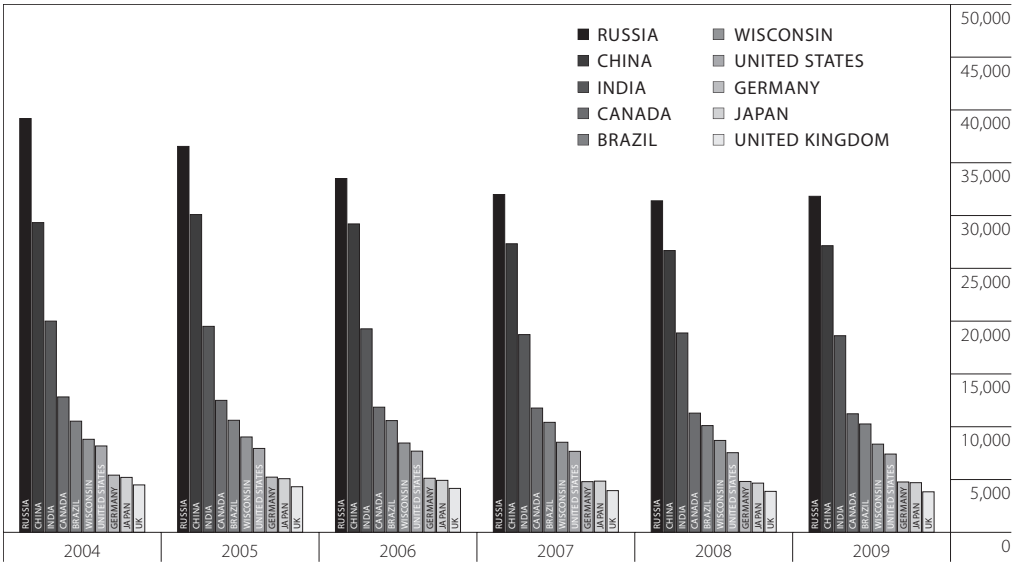


a Data reported in this table may differ from other tables because of different sources.

Source: U.S. Department of Energy, Energy Information Administration, State Energy Data 2009: Consumption, Table C10. http://www.eia.doe.gov/emeu/states/_seds.html

Primary Energy Intensity, by Country and Region

2004-2009 BTU PER 2005 U.S. DOLLARS



	2004	2005	2006	2007	2008	2009
State						
Wisconsin	8,810	9,031	8,458	8,530	8,702	8,352
Country						
Canada	12,821	12,497	11,850	11,769	11,289	11,225
United States	8,179	7,944	7,688	7,670	7,543	7,412
Brazil	10,525	10,611	10,582	10,416	10,109	10,262
France	5,446	5,325	5,198	5,047	5,057	4,936
Germany	5,415	5,226	5,121	4,799	4,818	4,768
Italy	4,633	4,547	4,415	4,372	4,320	4,275
United Kingdom	4,490	4,318	4,159	3,950	3,880	3,838
Russia	39,187	36,546	33,506	31,990	31,393	31,821
China	29,330	30,092	29,205	27,326	26,685	27,144
India	20,001	19,505	19,270	18,725	18,878	18,619
Japan	5,202	5,080	4,922	4,849	4,660	4,702
Region						
North America	8,516	8,295	8,039	8,017	7,850	7,742
Central and South America	12,017	11,826	11,735	11,190	11,116	10,990
Europe	5,876	5,736	5,583	5,431	5,350	5,289
Eurasia	43,395	40,703	37,078	35,207	34,333	33,142
Middle East	19,410	20,076	19,543	18,564	19,258	20,116
Africa	14,665	14,436	13,694	13,274	13,519	13,109
Asia and Oceania	13,084	13,443	13,483	13,310	13,412	14,188
World	**10,057**	**10,031**	**9,860**	**9,734**	**9,756**	**9,911**

Source: U.S. Department of Energy, Energy Information Administration, International Energy Statistics, (2011) http://tonto.eia.doe.gov/cfapps/ipdbproject/IEDIndex3.cfm.

WORLD WIDE AVERAGE 9.9 kBtu/$GDP

Energy intensity demonstrates the efficiency with which a country uses the energy it consumes, relative to its economic activity, the country's Gross Domestic Product (GDP).

The chart and graph show energy intensity as a factor of Btu per 2005 U.S. Dollars. The higher the intensity, the less efficiently energy is used, while lower intensity numbers show efficient energy consumption relative to other nations. Another way to describe energy intensity is that it measures how much energy a country requires to produce a dollar of GDP.

The world wide average is 9.9 kBtu/$GDP. The U.S. is more efficient than the world at 7.4 kBtu/$GDP. Wisconsin at 8.4 is a little less efficient than the national figure.

Primary Energy Usage and GDP, by Country and Region

Primary Resource energy use varies widely from country to country. Industrialized countries such as those in North America and Western Europe each use about 2 percent of the annual worldwide primary energy consumption, while the U.S. uses significantly more at 19.3 percent.

Developing nations such as Russia (5.6 percent), China (19.2 percent) and India (4.4 percent) use a significantly larger share of the annual, worldwide primary energy with a smaller Gross Domestic Product.

Although the U. S. has a much larger economy, uses more energy and is more developed in terms of economic activity, the countries of Western Europe use energy more efficiently to drive their economy.

2009 QUADRILLION BTUs AND BILLIONS OF 2005 U.S. DOLLARS

	2009		Gross Domestic Product[a]		Primary Energy Intensity
	Quadrillion Btu	Percent of Wold Total	Billions of 2005 U. S. Dollars	Percent of Wold Total	Btu per 2005 U. S. Dollars
Country					
Canada	13.1	2.7%	1,167	2.3%	11,225
United States	94.56	19.3%	12,758	25.4%	7,412
Brazil	10.43	2.1%	1,016	2.0%	10,262
France	10.73	2.2%	2,174	4.3%	4,936
Germany	13.52	2.8%	2,836	5.6%	4,768
Italy	7.35	1.5%	1,719	3.4%	4,275
United Kingdom	8.78	1.8%	2,288	4.5%	3,838
Russia	27.69	5.6%	870	1.7%	31,821
China	94.37	19.2%	3,477	6.9%	27,144
India	21.42	4.4%	1,150	2.3%	18,619
Japan	20.7	4.2%	4,402	8.8%	4,702
Region					
North America	114.62	23.4%	14,805	29.4%	7,742
Central and South America	25.28	5.2%	2,300	4.6%	10,990
Europe	81.22	16.6%	15,356	30.5%	5,289
Eurasia	40.37	8.2%	1,218	2.4%	33,142
Middle East	27.45	5.6%	1,365	2.7%	20,116
Africa	15.92	3.2%	1,214	2.4%	13,109
Asia and Oceania	182.71	37.2%	12,878	25.6%	14,188
World	**487.58**		**49,197**		**9,911**

a Gross Domestic Product is calculated using available data from the Energy Information Administration, International Energy Statistics data.

Source: U.S. Department of Energy, Energy Information Administration, International Energy Statistics, (2011) http://tonto.eia.doe.gov/cfapps/ipdbproject/IEDIndex3.cfm.

Wisconsin Energy Prices

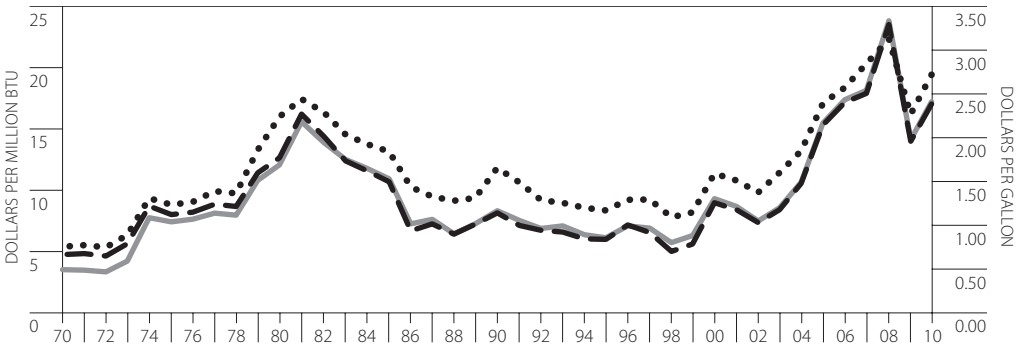
RESIDENTIAL

COMMERCIAL

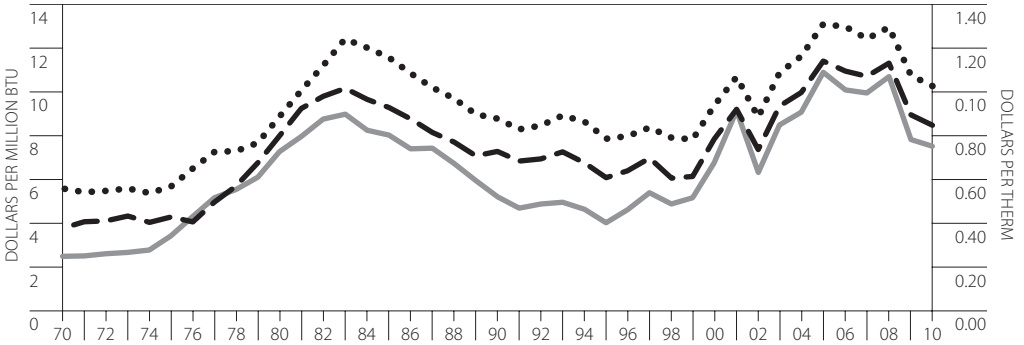
INDUSTRIAL

Historical prices can be presented in two ways—the current or nominal price, which was gathered during that year. The real or constant price which uses Gross Domestic Product price deflator for inflation. In other words, actual prices are adjusted to be comparable to 2010 prices, in "real" terms, with the effects of inflation removed. All prices are reported in current or nominal terms unless noted explicitly as being real, constant or adjusted.

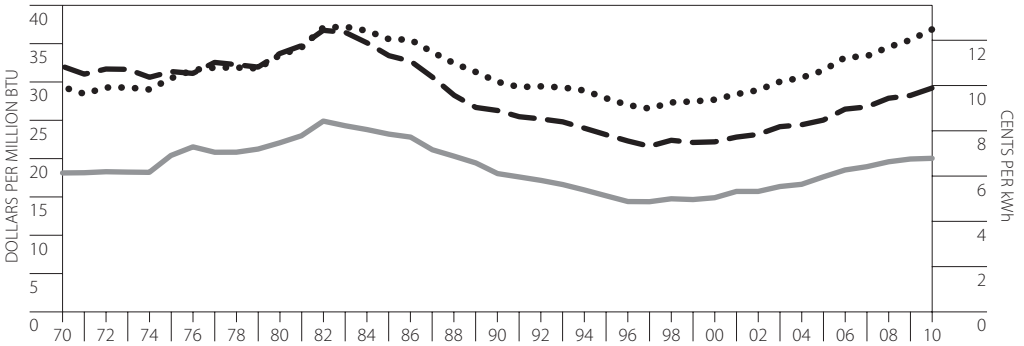
1970-2010 DISTILLATE PRICES (2010 DOLLARS)



1970-2010 NATURAL GAS PRICES (2010 DOLLARS)



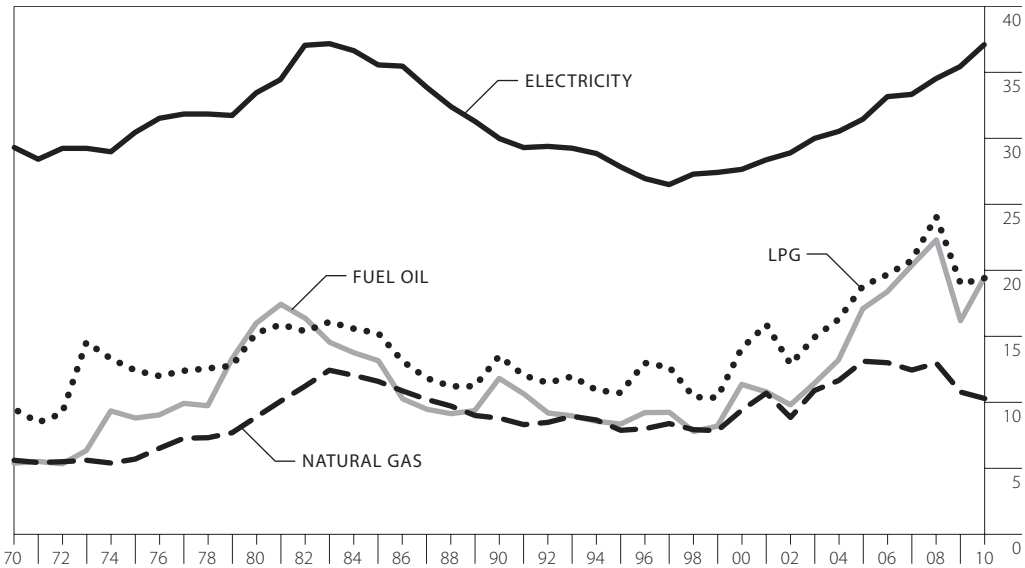
1970-2010 ELECTRICITY PRICES (2010 DOLLARS)



Source: Wisconsin State Energy Office.

Wisconsin Residential Energy Prices, by Type of Fuel

1970-2010 DOLLARS PER MILLION BTU (2010 DOLLARS)



1970-2010 DOLLARS PER MILLION BTU

	Current Dollars				2010 Dollars[a]			
Year	Fuel Oil	LPG	Natural Gas	Electricity	Fuel Oil	LPG	Natural Gas	Electricity
1970	1.17	2.07	1.22	6.42	5.34	9.44	5.56	29.26
1975	2.65	3.74	1.71	9.20	8.76	12.36	5.65	30.40
1980	6.87	6.55	3.81	14.39	15.96	15.21	8.85	33.41
1985	7.28	8.43	6.41	19.72	13.11	15.18	11.54	35.51
1990	7.65	8.75	5.70	19.48	11.75	13.44	8.75	29.93
1995	6.10	7.84	5.76	20.42	8.30	10.66	7.83	27.78
2000	9.03	11.22	7.48	22.06	11.30	14.04	9.36	27.60
2005	15.37	16.92	11.77	28.30	17.06	18.77	13.06	31.41
2006	17.04	18.26	12.04	30.79	18.33	19.63	12.95	33.11
2007	19.43	19.80	11.86	31.85	20.30	20.69	12.39	33.28
2008	21.73	23.43	12.63	33.72	22.21	23.95	12.91	34.47
2009[r]	15.87	18.69	10.61	34.98	16.05	18.90	10.73	35.39
2010[p]	**19.40**	**19.36**	**10.24**	**37.06**	**19.40**	**19.36**	**10.24**	**37.06**

a 2010 dollar values computed with Gross National Product Implicit Price Deflator. See the table on price indices at the end of the Pricing chapter.

p Preliminary estimates.

r Revised.

Source: U.S. Department of Energy, *State Btu Unit Price Data Base*, unpublished (May 1981); Wisconsin State Energy Office, periodic telephone surveys of fuel oil and LP gas distributors (2001-2010); American Gas Association, *Gas Facts* (1971-2001); Edison Electric Institute, *Statistical Year Book* (1971-2003); Public Service Commission of Wisconsin, PSC AF 2 (2001-2009); U.S. Department of Energy/Energy Information Administration, Natural Gas Annual [DOE/EIA-0131(12)] (March 2012); U.S. Department of Energy/Energy Information Administration, Electric Power Monthly [DOE/EIA-0226 (2012/02)] (February 2012).

REAL PRICE
IN 2010 DOLLARS
FUEL OIL
20.9%
LPG
2.5%
ELECTRICITY
4.7%

In 2010, residential energy real prices (2010 dollars) increased for fuel oil (20.9 percent), liquefied petroleum gas (LPG) (2.5 percent) and electricity (4.7 percent).

REAL PRICE
IN 2010 DOLLARS
NATURAL GAS
4.6%

Natural gas prices decreased by 4.6 percent from 2009. The last four columns in the table below show the prices after adjusting for inflation.

In 2010 dollars, natural gas prices have decreased by 21.6 percent over the 2005 peak price of $13.06/MMBtu. The 2010 electric prices continue a trend of increasing prices since 1998.

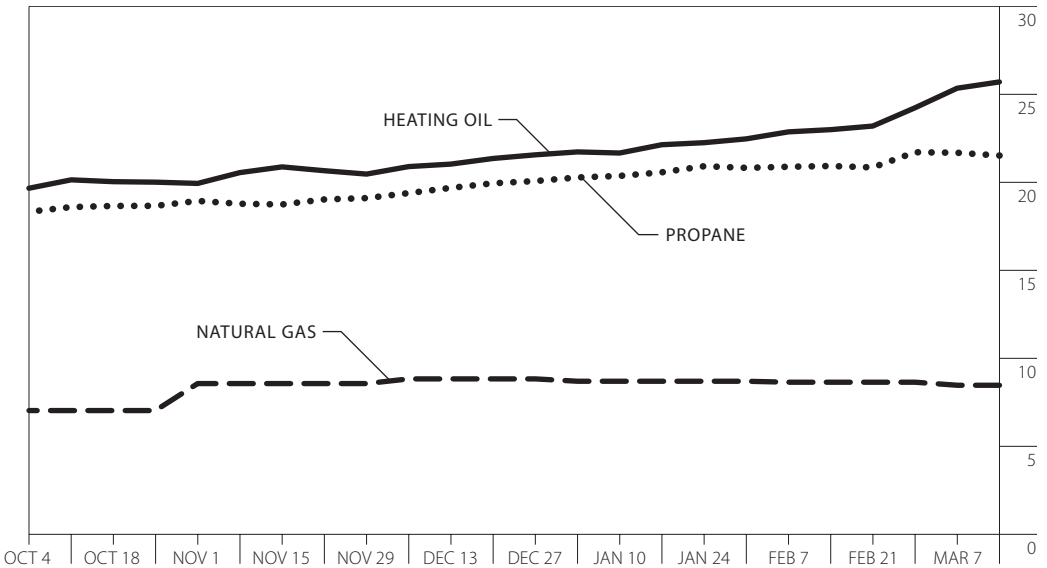
Wisconsin Residential Energy Prices, by Type of Fuel, Winter Heating Season

For the 2010-2011 winter heating season, heating oil peaked at the end of the season in March, propane prices peaked at the end of February, while natural gas prices peaked in December.

Natural gas pricing data presented here are different from other data in this book due to difference in data source and duration of the average. Heating Oil and LP data are from a weekly survey of federally-identified fuel wholesalers and retailers; data elsewhere in the book are derived from Public Service Commission utility data and the federal Energy Information Administration.

Most prices in the book are for the entire calendar year, while this is for the heating season (October – March).

2010-2011 DOLLARS PER MILLION BTU



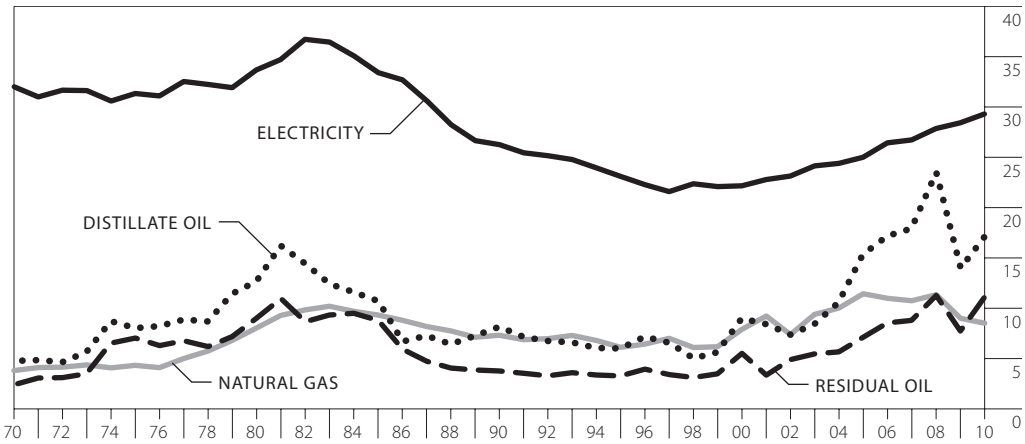
2010-2011 DOLLARS PER GALLON AND DOLLARS PER MILLION BTU

Date 2010-2011	Heating Oil		Propane		Natural Gas
	$/Gallon	$/MMBtu	$/Gallon	$/MMBtu	$/MMBtu
Oct. 4, 2010	2.72	19.63	1.75	18.29	6.99
Oct. 18, 2010	2.77	20.00	1.78	18.62	6.99
Nov. 1, 2010	2.76	19.90	1.80	18.91	8.53
Nov. 15, 2010	2.89	20.84	1.79	18.71	8.53
Nov. 29, 2010	2.83	20.43	1.82	19.07	8.53
Dec. 13, 2010	2.91	21.00	1.88	19.65	8.79
Dec. 27, 2010	2.99	21.52	1.91	20.03	8.79
Jan. 10, 2011	3.00	21.63	1.94	20.33	8.66
Jan. 24, 2011	3.08	22.22	1.99	20.88	8.66
Feb. 7, 2011	3.17	22.83	1.99	20.85	8.61
Feb. 21, 2011	3.21	23.16	1.99	20.81	8.61
Mar. 7, 2011	3.51	25.31	2.07	21.64	8.43
Average Price for the Heating Season	**3.01**	**21.70**	**1.90**	**19.90**	**8.35**

Source: Telephone survey of energy retailers conducted by the Office of Energy Independence throughout the winter heating season, starting October 4, 2010 and ending March 14, 2011; Wisconsin Natural Gas utility websites and public pricing information (2010-2011).

Wisconsin Commercial Energy Prices, by Type of Fuel

1970-2010 DOLLARS PER MILLION BTU (2010 DOLLARS)



1970-2010 DOLLARS PER MILLION BTU

	Current Dollars				2010 Dollars[a]			
Year	Distillate Oil	Residual Oil[b]	Natural Gas	Electricity	Distillate Oil	Residual Oil[b]	Natural Gas	Electricity
1970[r]	1.03	0.51	0.82	7.00	4.70	2.33	3.74	31.94
1975	2.41	2.11	1.29	9.46	7.96	6.97	4.26	31.27
1980	5.43	3.85	3.43	14.47	12.61	8.94	7.97	33.62
1982	7.17	4.29	4.88	18.31	14.35	8.59	9.77	36.65
1985[r]	5.91	4.85	5.14	18.52	10.65	8.73	9.26	33.35
1990[r]	5.26	2.41	4.72	17.05	8.09	3.70	7.25	26.19
1995	4.37	2.36	4.45	16.94	5.94	3.21	6.05	23.03
2000[r]	7.13	4.34	6.26	17.67	8.92	5.43	7.83	22.10
2005	13.77	6.35	10.24	22.47	15.29	7.05	11.37	24.94
2006[r]	15.92	7.88	10.16	24.52	17.12	8.48	10.92	26.37
2007	17.10	8.36	10.22	25.52	17.86	8.73	10.68	26.66
2008[r]	22.79	10.93	11.03	27.19	23.30	11.17	11.27	27.79
2009[r]	13.68	7.53	8.83	28.04	13.84	7.62	8.93	28.36
2010[p]	**17.01**	**11.00**	**8.45**	**29.24**	**17.01**	**11.00**	**8.45**	**29.24**

a 2010 dollar values computed with Gross National Product Implicit Price Deflator. See the table on price indices at the end of the Pricing chapter.

b Beginning in 2009, the Residual Fuel Oil (RFO) price is for the Petroleum Administration Defense District (PADD) II. The PADD II includes 15 Midwestern states including Wisconsin. State-specific pricing data for RFO is withheld or not available according to publishing policies used by the Energy Information Administration (EIA).

p Preliminary estimates.

r Revised.

Source: U.S. Department of Energy, "State Btu Unit Price Data Base", unpublished (May 1981); *Petroleum Marketing Monthly*, (January 1985 - March 2008), and unpublished analysis of Wisconsin residual oil prices (1985-2006); American Gas Association, *Gas Facts* (1971-2001); Edison Electric Institute, Statistical Year Book (1971-2001); U.S. Department of Energy, *Electric Sales and Revenue 1993-1997* [DOE/EIA-0540 (97)] (December 1999); *Electric Power Monthly* [DOE/EIA-0226 (03/10)] (March 2010); *Natural Gas Annual*, (1994-2012) [DOE/EIA-0131(12)] (March 2012); *Natural Gas Monthly*, (1994-2012) [DOE/EIA-0130(2010/04)] (April 2010); *Petroleum Marketing Annual* (2007-2012) [DOE/EIA-0487 (2009-2010)] (August 2010), Tables 35 and 38; Oil Daily/ Daily Oil and Gas Price Review, by subscription (2008-2009).

REAL PRICE
IN 2010 DOLLARS
DISTILLATE OIL
22.9%
RESIDUAL OIL
44.4%
ELECTRICITY
3.1%

In 2010, the real price of all fuels (in 2010 dollars) except natural gas increased: distillate oil (22.9 percent), residual oil (44.4 percent) and electricity (3.1 percent).

REAL PRICE
IN 2010 DOLLARS
NATURAL GAS
5.4%

The real price of natural gas decreased by 5.4 percent. Electricity, the major energy expense in the commercial sector, is 20.2 percent lower than its 1982 peak price, adjusted for inflation.

Wisconsin Industrial Energy Prices, by Type of Fuel

REAL PRICE
IN 2010 DOLLARS

DISTILLATE OIL
23.0%

RESIDUAL OIL
44.4%

ELECTRICITY
0.6%

In 2010, the real prices of all industrial fuels, except coal and natural gas, increased. The price for distillate oil, residual oil and electricity increased by 23.0, 44.4 and 0.6 percent respectively.

REAL PRICE
IN 2010 DOLLARS

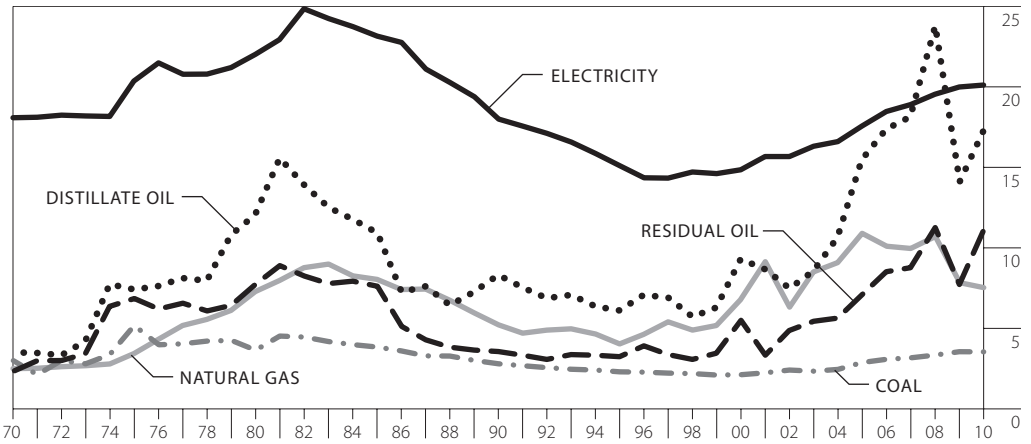
COAL
0.3%

NATURAL GAS
4.0%

Coal decreased by 0.3 percent, and natural gas by 4.0 percent, over 2009.

The real price of coal and electricity are 21.9 and 19.1 percent lower than their respective 1981 and 1982 price peaks, adjusted for inflation.

1970-2010 DOLLARS PER MILLION BTU (2010 DOLLARS)



1970-2010 DOLLARS PER MILLION BTU

	Current Dollars					2010 Dollars[a]				
Year	Distillate Oil	Residual Oil[b]	Natural Gas	Coal	Electricity	Distillate Oil	Residual Oil[b]	Natural Gas	Coal	Electricity
1970[r]	0.76	0.50	0.54	0.65	3.96	3.47	2.28	2.46	2.96	18.04
1975	2.23	2.06	1.03	1.55	6.15	7.37	6.81	3.40	5.12	20.33
1980	5.18	3.31	3.12	1.55	9.46	12.03	7.69	7.25	3.60	21.98
1981	7.30	4.17	3.74	2.11	10.78	15.50	8.85	7.94	4.48	22.90
1982	6.92	4.10	4.36	2.21	12.39	13.85	8.21	8.73	4.42	24.80
1985[r]	6.05	4.21	4.44	2.11	12.83	10.89	7.58	8.00	3.80	23.11
1990[r]	5.39	2.29	3.37	1.80	11.69	8.27	3.52	5.18	2.76	17.96
1995	4.46	2.35	2.93	1.66	11.08	6.07	3.20	3.99	2.26	15.06
2000[r]	7.39	4.34	5.40	1.66	11.84	9.25	5.43	6.75	2.08	14.81
2005	13.92	6.35	9.78	2.56	15.79	15.45	7.05	10.85	2.84	17.53
2006	16.13	7.88	9.36	2.83	17.14	17.34	8.48	10.06	3.04	18.43
2007	17.33	8.36	9.49	3.00	18.05	18.11	8.73	9.92	3.13	18.86
2008[r]	23.09	10.93	10.42	3.23	19.07	23.60	11.17	10.65	3.30	19.50
2009[r]	13.82	7.53	7.71	3.47	19.72	13.97	7.62	7.80	3.51	19.95
2010[p]	**17.20**	**11.00**	**7.49**	**3.50**	**20.07**	**17.20**	**11.00**	**7.49**	**3.50**	**20.07**

a 2010 dollar values computed with Gross National Product Implicit Price Deflator. See the table on price indices at the end of the Pricing chapter.

b Beginning in 2009, the Residual Fuel Oil (RFO) price is for the Petroleum Administration Defense District (PADD) II. The PADD II includes 15 midwestern states including Wisconsin. State-specific pricing data for RFO is withheld or not available according to publishing policies used by the Energy Information Administration (EIA).

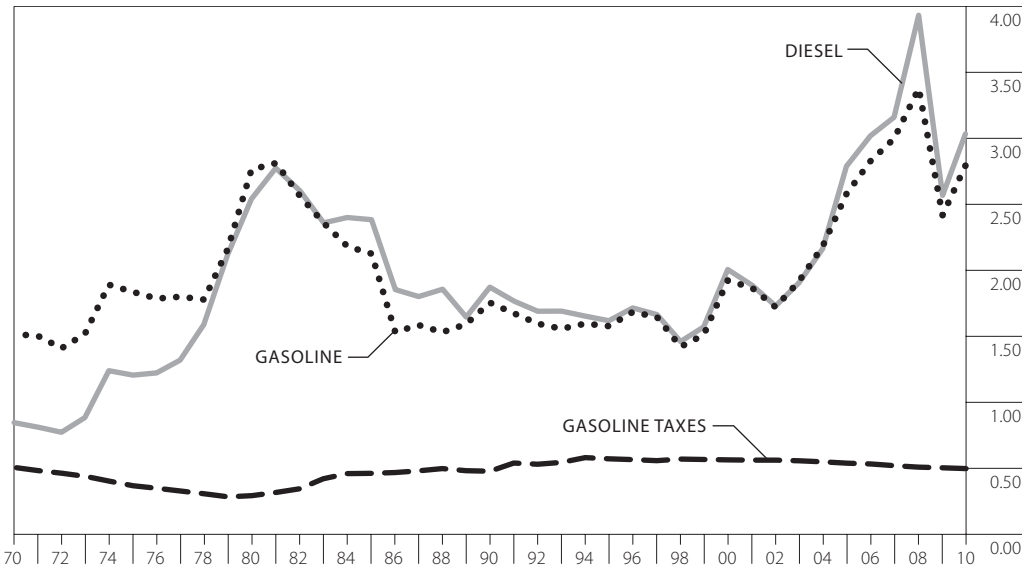
p Preliminary estimates.

r Revised.

Source: U.S. Department of Energy, "State Btu Unit Price Data Base", unpublished (May 1981); *State Energy Consumption, Price and Expenditure Report 1960-2008* http://www.eia.doe.gov/emeu/states/_seds.html, (June 2010); *Petroleum Marketing Monthly* (January 1985-March 2012); *Quarterly Coal Report*, Table 27 [DOE/EIA-0121], http://www.eia.doe.gov/cneaf/coal/quarterly/qcr.pdf; *Natural Gas Annual*, (1994-2012) [DOE/EIA-0131(12)] (March 2012); and *Natural Gas Monthly*, (1994-2012) [DOE/EIA-0130]; *Petroleum Marketing Annual* (2007-2012) [DOE/EIA-0487], Tables 35 and 38; Oil Daily/Daily Oil and Gas Price Review, by subscription (2008-2009).

Wisconsin Motor Gasoline and Diesel Fuel Retail Prices, by Grade and Type of Service

1970-2010 DOLLARS PER GALLON (2010 DOLLARS)



1970-2010 DOLLARS PER GALLON

Year	Current Dollars				2010 Dollars		
	Regular Unleaded Gasoline (Self-Service)[a]	Regular Reformulated Gasoline	Diesel Fuel[b]	Federal and State Taxes on Gasoline[c]	Regular Unleaded Gasoline (Self-Service)[a]	Diesel Fuel[b]	Federal and State Taxes on Gasoline[c]
1970	0.332		0.185	0.110	1.512	0.841	0.502
1975	0.554		0.363	0.110	1.831	1.201	0.363
1980	1.188		1.093	0.124	2.759	2.538	0.288
1985	1.178		1.321	0.254	2.122	2.379	0.457
1990	1.139		1.215	0.308	1.749	1.866	0.473
1995	1.156	1.181	1.186	0.417	1.572	1.613	0.567
2000	1.532	1.556	1.598	0.447	1.917	1.999	0.559
2005	2.321	2.338	2.510	0.481	2.576	2.786	0.534
2006	2.626	2.639	2.804	0.491	2.823	3.015	0.528
2007	2.867	2.849	3.021	0.493	2.995	3.157	0.515
2008	3.289	3.085	3.821	0.493	3.362	3.905	0.504
2009	2.374	2.384	2.518	0.493	2.401	2.547	0.499
2010	**2.791**	**2.784**	**3.032**	**0.493**	**2.791**	**3.032**	**0.493**

a Since 1991, more than 99 percent of the gasoline sold in Wisconsin has been unleaded. The price is for full service gasoline until 1979 when the price is changed to represent self-service gasoline.

b From 1970 to 1988, the price is the full service price. Beginning in 1989 the price is the self-service price.

c A state petroleum inspection fee is also charged. In 2010, this fee was 3 cents per gallon.

d Nonattainment Areas are a designation of the federal Environmental Protection Agency. See http://dnr.wi.gov/air/aq/ozone/nonattainment.htm for additional information.

Source: Wisconsin Division of the American Automobile Association, *Fuel Gauge Report*.

REAL PRICE
IN 2010 DOLLARS
GASOLINE
16.2%
FROM 2009

The real price of gasoline in 2010 was 16.2 percent higher than in 2009. Real gas prices in 2008 were the highest on record since data for this book were compiled in 1970. The real price of diesel fuel increased by 19.0 percent since 2009.

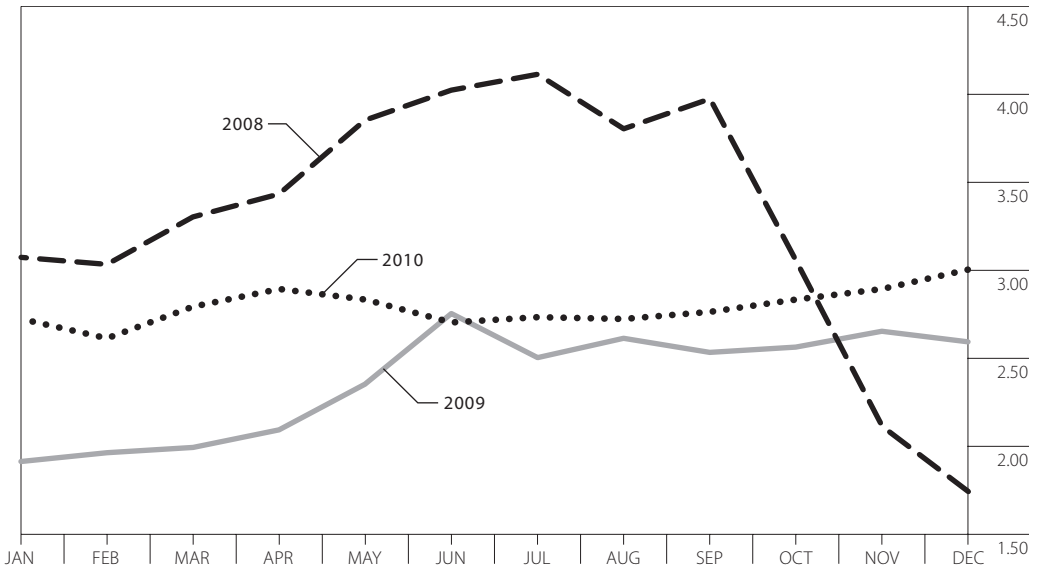
Starting on January 1, 1995, only reformulated gasoline could be sold in Wisconsin's Nonattainment Area—10 eastern and southeastern Wisconsin counties[d]—in order to improve air quality.

Wisconsin Retail and Wholesale Self-Service Unleaded Motor Gasoline Prices, by Month

2010 WHOLESALE PRICE UNLEADED GASOLINE 23.0%

The retail and wholesale prices are for unleaded, regular grade gasoline. The wholesale price of unleaded gasoline (before taxes and retail mark-up) increased 23.0 percent in 2010, while the statewide retail price increased 17.6 percent.

2008-2010 DOLLARS PER GALLON – RETAIL



2008-2010 DOLLARS PER GALLON

	2008		2009		2010	
Month	Retail[a]	Wholesale[b]	Retail[a]	Wholesale[b]	Retail[a]	Wholesale[b]
January	3.073	2.424	1.907	1.342	2.720	2.093
February	3.025	2.425	1.958	1.356	2.613	2.056
March	3.298	2.624	1.991	1.418	2.793	2.220
April	3.432	2.856	2.093	1.479	2.894	2.336
May	3.850	3.167	2.351	1.812	2.829	2.201
June	4.017	3.356	2.747	2.098	2.705	2.157
July	4.112	3.304	2.496	1.921	2.731	2.147
August	3.798	3.118	2.611	2.027	2.724	2.127
September	3.965	3.062	2.533	1.888	2.763	2.116
October	3.048	2.189	2.558	2.002	2.825	2.236
November	2.114	1.409	2.651	2.042	2.894	2.244
December	1.741	1.134	2.593	2.029	3.004	2.397
Average	**3.289**	**2.589**	**2.374**	**1.785**	**2.791**	**2.194**

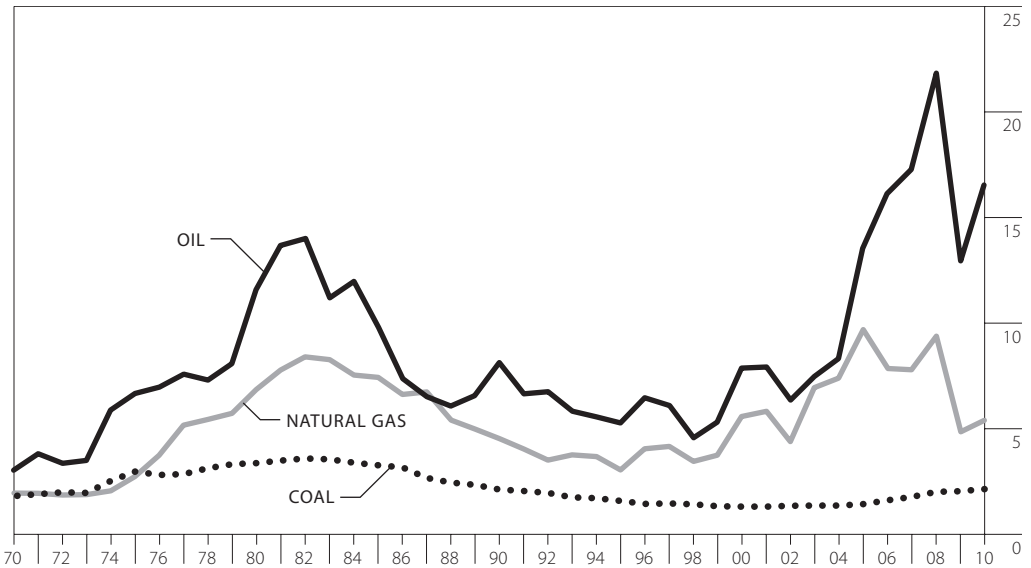
a The retail and wholesale prices are for a blend of regular, unleaded conventional and reformulated gasolines.

b The wholesale price refers to the delivered dealer tank wagon price.

Source: U. S. Department of Energy, Energy Information Administration, *Petroleum Marketing Annual* 1993-2012, Table 29. http://www.eia.doe.gov/oil_gas/petroleum/data_publications/petroleum_marketing_annual/pma.html; Wisconsin Division of the American Automobile Association, *Fuel Gauge Report* (1993-2010).

Wisconsin Electric Utility Average Costs of Fuel

1970-2010 DOLLARS PER MILLION BTU (2010 DOLLARS)



1970-2010 DOLLARS PER MILLION BTU

	Current Dollars[b,c]			2010 Dollars[a]		
Year	Oil	Natural Gas	Coal	Oil	Natural Gas	Coal
1970[r]	0.66	0.42	0.39	3.01	1.92	1.78
1975	2.01	0.82	0.89	6.64	2.71	2.94
1980	4.98	2.94	1.44	11.57	6.83	3.34
1982	6.98	4.18	1.78	13.97	8.37	3.56
1985	5.43	4.11	1.80	9.78	7.40	3.24
1990	5.26	2.93	1.36	8.08	4.50	2.09
1995	3.85	2.21	1.14	5.24	3.01	1.55
2000	6.27	4.44	1.02	7.84	5.55	1.28
2005	12.19	8.68	1.26	13.53	9.63	1.40
2006	14.98	7.27	1.47	16.11	7.82	1.58
2007	16.52	7.43	1.67	17.26	7.76	1.74
2008	21.20	9.11	1.94	21.67	9.31	1.98
2009[r]	12.65	4.76	1.99	12.80	4.81	2.01
2010[p]	**16.53**	**5.37**	**2.11**	**16.53**	**5.37**	**2.11**

a 2010 dollar values computed with Gross National Product Implicit Price Deflator. See the table on price indices at the end of the Pricing chapter.

b Beginning in 1988, the U.S. DOE data source has been used.

c Beginning in 1990, Statistical Yearbook natural gas data has been used.

p Preliminary estimates.

r Revised.

Source: Edison Electric Institute, *Statistical Yearbook* (1971-1996); American Gas Association, *Gas Facts* (1971-1990); U.S. Department of Energy, Energy Information Administration, *Electric Power Annual*, 1990-2000, [DOE/EIA-0348(2000)/1] (August 2001); *Electric Power Monthly*, Table 4.10B, 4.11B, and 4.13B [DOE/EIA-0226(2011/03) (March 2011)] www.eia.gov/cneaf/electricity/epm/epm_sum.html

REAL COST IN 2010 DOLLARS

COAL
4.8%

NATURAL GAS
11.5%

OIL
29.2%

In 2010, the real (2010 dollars) cost of all electric utility fuels increased. Coal cost increased by 4.8 percent, natural gas by 11.5 percent, and oil by 29.2 percent. Adjusted for inflation, coal prices are 40.8 percent down from their peak in 1982, also the peak year for oil prices. Natural gas prices peaked in 2008. Coal remained the lowest cost electric utility fossil fuel.

Wisconsin Electric Utility Coal Costs and Sulfur Content of Coal, by Utility Plant

WISCONSIN UTILITY COAL HAS 63% LESS SULFUR AND COSTS 4.7% LESS IN CENTS PER MMBTU THAN THE AVERAGE COAL USED IN THE U.S.

Wisconsin utility coal has 63 percent less sulfur and costs 4.7 percent less, in cents per MMBtu, than the average coal used in the United States. Wisconsin utilities have been very successful in meeting and maintaining the 1993 goals of Wisconsin's acid rain control law through increased use of low sulfur coal. In 2010, the average Wisconsin coal cost, in cents per million Btu, increased 10.74 percent, while sulphur content decreased 2.63 percent.

2010

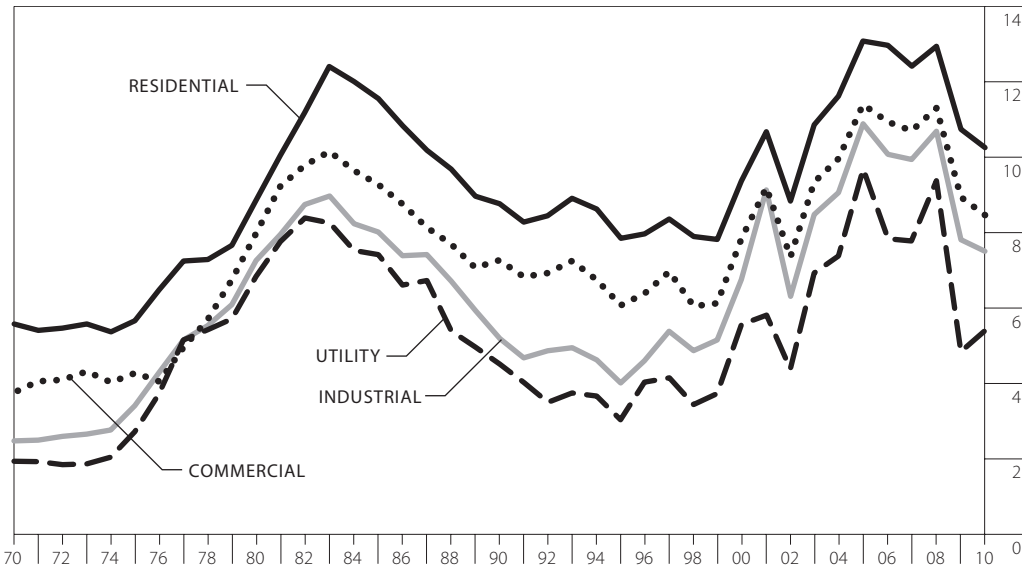
Plant	Consumption Thousand Tons	Average Btu Per Pound	Average Cents Per Million Btu	Average Dollars Per Ton	Average Percent Sulfur[a]
Dairyland Power Cooperative	2,381	9,061	242.7	47.62	0.58%
Alma - Madgett	1,441	8,951	243.4	43.58	0.53%
Genoa 3	940	9,222	291.7	53.81	0.65%
Madison Gas and Electric Co.	9	14,104	96.5	27.21	1.42%
Blount Street	9	14,104	96.5	27.21	1.42%
Manitowoc Public Utilities	149	13,558	164.2	44.52	1.41%
Manitowoc	149	13,558	164.2	44.52	1.41%
Northern States Power Co.	63	8,677	390.7	67.81	0.19%
Bay Front	63	8,677	390.7	67.81	0.19%
Wisconsin Electric Power Co.	9,882	9,032	222.9	40.27	0.36%
Elm Road	449	12,981	277.4	72.02	1.95%
Oak Creek	2,761	8,727	245.7	42.88	0.20%
Pleasant Prairie	4,730	8,346	166.7	27.82	0.32%
Presque Isle	1,461	9,761	241.9	47.22	0.27%
Valley	481	11,637	417.5	97.16	0.46%
Wisconsin Power and Light Co.	7,736	8,552	195.2	33.39	0.32%
Columbia	4,544	8,426	162.9	27.45	0.34%
Edgewater	2,571	8,461	242.0	40.95	0.28%
Nelson Dewey	621	9,853	231.2	45.56	0.31%
Wisconsin Public Service Corp.	4,804	8,663	213.0	36.91	0.35%
Pulliam	946	8,670	218.8	37.94	0.27%
Weston	3,858	8,661	211.6	36.65	0.37%
Wisconsin	**25,024**	**8,844**	**216.5**	**38.29**	**0.37%**
United States	**721,431**	**9,976**	**227.2**	**45.33**	**1.00%**

a Percent by weight.

Source: U.S. Department of Energy, EIA, *Electric Power Monthly*, [DOE/EIA-0226(2010/03)] (March 2010), Tables 2.5 and 4.2, http://www.eia.doe.gov/cneaf/electricity/epm/epm_sum.html; Annual reports of Wisconsin electric generating utilities (2009), http://psc.wi.gov/apps/annlreport/default.aspx; Dairyland Power Cooperative, Rural Utility Service (RUS) report for 2009 (April 2010).

Wisconsin Natural Gas Prices, by Economic Sector

1970-2010 DOLLARS PER MILLION BTU (2010 DOLLARS)



IN 2010 NATURAL GAS PRICES DECREASED IN **ALL SECTORS** EXCEPT UTILITY

In 2010, natural gas prices decreased in all sectors except utility. On average, the price decreased 5.18 percent.

1970-2010 DOLLARS PER MILLION BTU

	Current Dollars					2010 Dollars				
Year	Residential	Commercial	Industrial	Utility	Average	Residential	Commercial	Industrial	Utility	Average
1970r	1.22	0.82	0.54	0.42	0.79	5.56	3.74	2.46	1.92	3.60
1975	1.71	1.29	1.03	0.82	1.30	5.65	4.26	3.40	2.71	4.30
1980	3.81	3.43	3.12	2.94	3.43	8.85	7.97	7.25	6.83	7.97
1985	6.41	5.14	4.44	4.11	5.37	11.54	9.26	8.00	7.40	9.67
1990	5.70	4.72	3.37	2.93	4.55	8.75	7.25	5.18	4.50	6.99
1995	5.76	4.45	2.93	2.21	4.30	7.83	6.05	3.99	3.01	5.85
2000r	7.48	6.26	5.40	4.44	6.27	9.36	7.83	6.75	5.55	7.84
2001r	8.69	7.48	7.40	4.73	7.71	10.63	9.15	9.06	5.79	9.43
2002	7.29	6.06	5.18	3.60	6.07	8.78	7.30	6.24	4.33	7.31
2003r	9.21	7.92	7.18	5.87	8.00	10.85	9.33	8.47	6.92	9.43
2004r	10.12	8.68	7.89	6.43	8.76	11.61	9.95	9.05	7.37	10.05
2005	11.77	10.24	9.78	8.68	10.37	13.06	11.37	10.85	9.63	11.51
2006	12.04	10.16	9.36	7.27	10.19	12.95	10.92	10.06	7.82	10.96
2007	11.86	10.22	9.49	7.43	10.17	12.39	10.68	9.92	7.76	10.63
2008	12.63	11.03	10.42	9.11	11.22	12.91	11.27	10.65	9.31	11.47
2009r	10.61	8.83	7.71	4.76	8.69	10.73	8.93	7.80	4.81	8.79
2010p	**10.24**	**8.45**	**7.49**	**5.37**	**8.24**	**10.24**	**8.45**	**7.49**	**5.37**	**8.24**

p Preliminary estimates.
r Revised.
Source: Tables in this publication.

Wisconsin Natural Gas Prices, by Public Service Commission of Wisconsin Sector

AVERAGE PRICE OF NATURAL GAS 4.2%

The prices of utility gas for all customer classes decreased in 2010. The average price of natural gas in 2010 decreased by 4.2 percent from 2009. Prices for commercial and industrial gas do not include the price of transport gas but represent the cost of gas purchased directly from the utility.

1970-2010 DOLLARS PER MILLION BTU

	Residential		Commercial and Industrial			
Year	General	Space Heating	Firm	Interruptible	Space Heating	Average
1970	1.55	1.18	0.73	0.49	0.92	0.81
1975	2.13	1.68	1.16	1.00	1.40	1.31
1980	4.34	3.77	3.22	3.07	3.49	3.44
1985	7.53	6.36	4.98	4.23	5.28	5.36
1990	6.78	5.67	4.28	3.00	4.49	4.85
1995	7.01	5.77	4.14	2.47	4.63	4.72
1996	7.00	5.95	4.26	3.30	4.75	5.08
1997	7.47	6.39	4.68	3.63	5.17	5.56
1998	7.48	6.08	4.16	3.15	4.74	5.25
1999	7.61	6.10	4.93	2.84	4.71	5.33
2000	8.86	7.48	7.32	4.63	6.05	6.78
2001	10.01	8.63	7.11	5.17	7.27	7.86
2002	8.79	7.29	6.19	3.91	5.92	6.50
2003	10.09	9.14	8.00	5.59	7.75	8.37
2004	11.20	10.03	8.80	6.94	8.56	9.27
2005	13.34	11.70	11.24	8.92	10.18	10.83
2006	13.71	11.95	10.44	8.17	10.09	10.97
2007	13.57	11.79	9.64	7.96	10.12	10.86
2008	14.35	12.57	10.69	9.27	10.95	11.76
2009	11.94	10.55	7.90	5.87	8.78	9.64
2010p	**11.85**	**10.20**	**7.98**	**5.69**	**8.32**	**9.24**

p Preliminary estimates.

Source: Public Service Commission of Wisconsin, Accounts and Finance Division, *Statistics of Wisconsin Public Utilities*, Bulletin #8 (1971-1993), and from form PSC-AF 2 (1994-2010).

Wisconsin Electricity Prices, by Economic Sector

1970-2010 CENTS PER kWh

	Public Service Commission of Wisconsin Sectors				Energy Information Administration[c]			
Year	Residential	Commercial & Industrial	Rural[a]	Average[b]	Residential	Commercial	Industrial	Average[b]
1970	2.13	1.69	2.41	1.89	2.19	2.39	1.35	1.91
1975	3.22	2.60	3.42	2.85	3.14	3.23	2.10	2.80
1980	4.80	3.91	4.80	4.24	4.91	4.94	3.23	4.31
1985	6.70	5.15	6.38	5.67	6.73	6.32	4.38	5.75
1990	6.55	4.68	6.29	5.27	6.65	5.82	3.99	5.38
1995	6.91	4.55	6.61	5.27	6.97	5.78	3.78	5.36
1996	6.81	4.43	6.40	5.15	6.88	5.68	3.66	5.25
1997	6.81	4.40	6.27	5.11	6.88	5.60	3.72	5.22
1998	7.16	4.61	6.42	5.35	7.17	5.87	3.86	5.44
1999	7.31	4.69	6.56	5.46	7.31	5.88	3.89	5.53
2000	7.55	4.83	6.84	5.65	7.53	6.03	4.04	5.71
2001	7.93	5.18	7.23	6.01	7.90	6.34	4.36	6.08
2002	8.19	5.34	7.59	6.26	8.18	6.54	4.43	6.28
2003	8.73	5.63	8.27	6.60	8.67	6.97	4.71	6.64
2004	9.11	5.84	8.73	6.81	9.07	7.24	4.93	6.88
2005	9.72	6.36	9.23	7.38	9.66	7.67	5.39	7.48
2006	10.57	7.01	10.22	8.08	10.51	8.37	5.85	8.13
2007	10.90	7.30	10.56	8.38	10.87	8.71	6.16	8.48
2008[r]	11.56	7.67	10.90	8.84	11.51	9.28	6.51	9.00
2009[r]	11.92	8.03	11.04	9.24	11.94	9.57	6.73	9.38
2010[p]	**12.67**	**8.30**	**12.10**	**9.66**	**12.65**	**9.98**	**6.85**	**9.78**

a Rural, as listed by utilities.

b Utilities' average revenue per kWh.

c Historically, these data were from the Edison Electric Institute which began using U.S. Department of Energy electricity prices from the Energy Information Administration (EIA) in 1996.

p Preliminary estimates.

r Denotes year where numbers have been revised based on cited data sources.

Source: Public Service Commission of Wisconsin, Accounts and Finance Division, *Statistics of Wisconsin Public Utilities*, Bulletin #8 (1971-1994); Edison Electric Institute, *Statistical Yearbook* (1971-1996); U.S. Department of Energy, Energy Information Administration, *Electric Sales and Revenue* 1993-2000 [DOE/EIA-0540 (2000)] (November 2001), and *Electric Power Monthly*, Table 5.6.B, [DOE/EIA-0226 (2011/03)] (March 2011). www.eia.doe.gov/cneaf/electricity/epm/epm_sum.html

IN 2010
ELECTRICITY INCREASED IN
ALL SECTORS

Electricity prices increased across all sectors in 2010. The Public Service Commission of Wisconsin and the federal Department of Energy, Energy Information Administration (EIA) both report electricity prices for Wisconsin economic sectors. Because of differences in sector definitions, accounting methods and inclusion of cooperative utilities, their prices do not match.

Average Utility Electricity and Natural Gas Prices, by Economic Sector, for Selected Midwestern States

WISCONSIN'S AVERAGE ELECTRICITY PRICE WAS 0.5% LESS THAN THE NATIONAL AVERAGE BUT 2nd HIGHEST IN THE MIDWEST

In 2010, Wisconsin's average electricity price was 0.5 percent less than the national average but the second highest in the Midwest. Wisconsin's residential and industrial electricity prices were higher than the national averages for the same sectors by 9.6 and 1.2 percent respectively.

Michigan and Ohio lead the Midwest with the highest City Gate natural gas prices which are 14.4 and 11.2 percent above the national average.

2010 ELECTRICITY (CENTS PER kWh)

State	Average	Residential	Commercial	Industrial
Wisconsin	**9.78**	**12.65**	**9.98**	**6.85**
Illinois	9.13	11.52	8.88	6.82
Indiana	7.67	9.56	8.38	5.87
Iowa	7.66	10.42	7.91	5.36
Michigan	9.88	12.46	9.81	7.08
Minnesota	8.41	10.59	8.38	6.29
Ohio	9.83	11.54	10.19	6.77
U.S. Average	**9.88**	**11.58**	**10.26**	**6.79**

2010 NATURAL GAS (DOLLARS PER 1,000 CUBIC FEET)

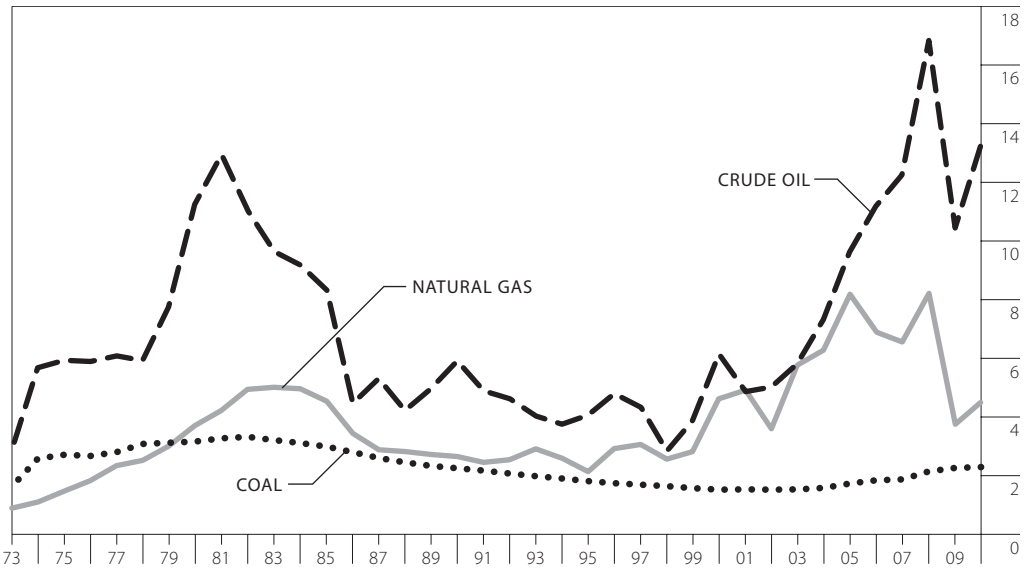
State	City Gate[a]	Residential	Commercial	Industrial
Wisconsin	**6.14**	**10.34**	**8.53**	**7.56**
Illinois	5.52	9.39	8.76	7.13
Indiana	5.52	8.62	7.54	5.65
Iowa	5.69	9.57	7.81	6.1
Michigan	7.07	11.32	8.95	9.25
Minnesota	5.48	8.76	7.6	5.58
Ohio	6.87	11.13	9.25	7.4
U.S. Average	**6.18**	**11.39**	**9.47**	**5.49**

a City Gate is the point where a pipeline or distribution company delivers natural gas to the natural gas utility serving the city and the surrounding area.

Source: U.S. Department of Energy, EIA, *Electric Power Monthly*, Table 5.6.B [DOE/EIA-0226 (2012/02)] (February 2012) www.eia.doe.gov/cneaf/electricity/epm/epm_sum.html and *Natural Gas Monthly*, Tables 17, 18, 19 and 20 [DOE/EIA-0130 (2012/02)] (February 2012) http://www.eia.doe.gov/pub/oil_gas/natural_gas/data_publications/natural_gas_monthly/historical/2010/2010_02/ngm_2010_02.html

U.S. Energy Prices

1973-2010 DOLLARS PER MILLION BTU (2010 DOLLARS)



1973-2010 DOLLARS PER MILLION BTU

	Current Dollars				2010 Dollars		
Year	Crude Oil Refiners Cost[a] $/Barrel	Crude Oil Refiners Cost $/MMBtu	Natural Gas Wellhead[b] $/MMBtu	Coal Utility Cost[c] $/MMBtu	Crude Oil Refiners Cost $/MMBtu	Natural Gas Wellhead $/MMBtu	Coal Utility Cost $/MMBtu
1973	4.15	0.72	0.22	0.41	2.82	0.87	1.60
1975	10.38	1.79	0.44	0.81	5.91	1.45	2.69
1980	28.07	4.84	1.59	1.35	11.24	3.69	3.14
1985	26.75	4.61	2.51	1.65	8.31	4.52	2.97
1990	22.22	3.83	1.71	1.46	5.88	2.63	2.23
1995	17.23	2.97	1.55	1.32	4.04	2.11	1.79
2000	28.26	4.87	3.68	1.20	6.10	4.60	1.50
2005	50.24	8.66	7.33	1.54	9.61	8.14	1.71
2010[p]	**76.69**	**13.22**	**4.48**	**2.27**	**13.22**	**4.48**	**2.27**

a Refiners cost of crude oil is the composite price for domestic and imported crude oil. Most of this crude oil is purchased under contract as opposed to the spot market.

b U.S. DOE natural gas price information is reported in dollars per 1,000 cubic feet. This table assumes: (1) 5.8 MMBtu per one barrel of crude oil, and (2) 1,000 cubic feet = 1 MMBtu.

c Includes cost of delivery to utilities.

d Assumes 5.8 MMBtu/barrel.

p Preliminary estimates.

Source: U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review* Tables 9.1, 9.10 and 9.11 [DOE/EIA-0035(2012/05)] (May 2012); www.eia.doe.gov/total energy/data/monthly/

REAL COST IN 2010 DOLLARS

CRUDE OIL **27.9%**

NATURAL GAS **20.7%**

COAL **1.5%**

In 2010, the real (2010 dollars) cost of oil and gas increased[d]—27.9 percent for crude oil and 20.7 percent for natural gas. The cost of coal increased by 1.5 percent.

COST OF CRUDE OIL 116.9% SINCE 2000

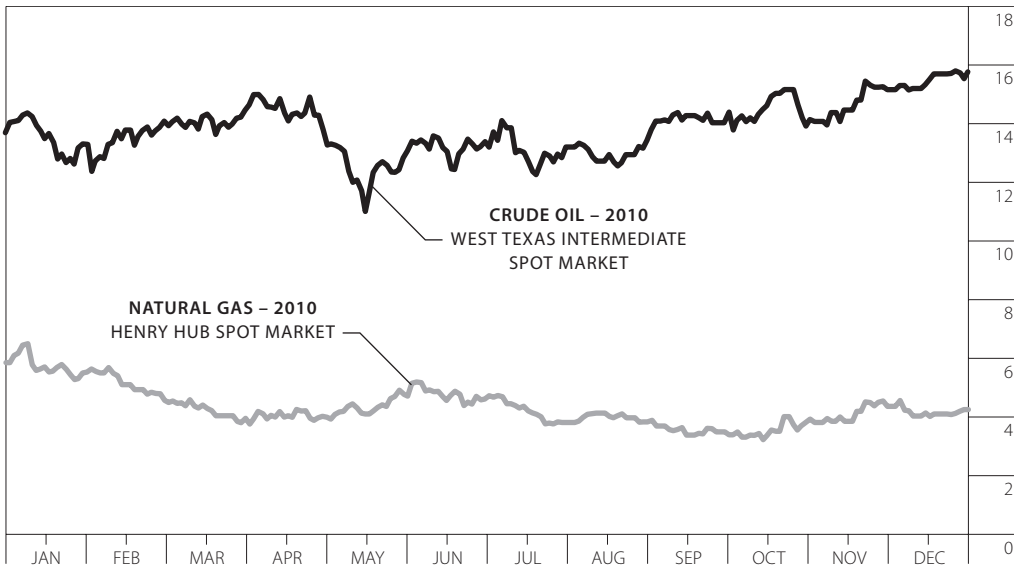
Since 2000, the cost of crude oil has increased by 116.9 percent.

U.S. Spot Market Prices of Crude Oil & Natural Gas

WEST TEXAS INTERMEDIATE
26.1%
HENRY HUB
10.4%

In 2010, the average West Texas Intermediate crude oil spot market price increased 26.1 percent, while the Henry Hub[b] spot market price of natural gas increased 10.4 percent.

2010 DOLLARS PER MILLION BTU (2010 DOLLARS)[a]



2007-2010 DOLLARS PER MILLION BTU

	Crude Oil West Texas Intermediate				Natural Gas Henry Hub			
Month	2007	2008	2009	2010	2007	2008	2009	2010
Jan.	9.39	16.03	7.19	13.62	6.54	7.99	5.24	5.81
Feb.	10.22	16.44	6.74	13.21	8.03	8.54	4.51	5.12
Mar.	10.41	18.18	8.27	13.96	7.11	9.42	3.96	4.33
Apr.	11.04	19.41	8.56	14.52	7.60	10.18	3.49	4.03
May	10.93	21.62	10.18	12.88	7.64	11.27	3.83	4.10
Jun.	11.61	23.09	12.01	12.97	7.35	12.69	3.80	4.76
Jul.	12.77	23.01	11.06	13.12	6.22	11.09	3.38	4.61
Aug.	12.47	20.12	12.25	13.04	6.23	8.26	3.14	4.20
Sep.	13.77	17.91	11.97	12.95	6.07	7.63	2.99	3.93
Oct.	14.76	13.22	13.05	14.11	6.73	6.74	4.01	3.48
Nov.	16.30	9.90	13.48	14.49	7.11	6.68	3.70	3.75
Dec.	15.74	7.14	12.82	15.40	7.14	5.86	5.30	4.22
Average $/MMBtu	**12.45**	**17.17**	**10.63**	**13.69**	**6.98**	**8.86**	**3.95**	**4.36**
Average $/Barrel	**72.21**	**99.60**	**61.66**	**79.39**				

a Graph is plotted with daily 2010 data.

b Henry Hub is a natural gas pipeline hub in Louisiana.

Source: Oil Daily, electronically received data (2006-2008); WTI information also from http://www.eia.gov/dnav/pet/pet_pri_spt_s1_d.htm (2008); Henry Hub data also from http://www.neo.ne.gov/statshtml/124_20081203.htm (2008); Bloomberg.com Energy Prices (2008-2010); U.S. Department of Energy, Energy Information Administration, *Residual Fuel Oil Prices by Sales Type*, PADD II, http:/pronto.eia.doe.gov/dnav/pet/pet_pri_resid_dcu_nus_m.htm.

National Indices of Price Inflation

1970-2010 ANNUAL RATE OF INFLATION

Year	Gross Domestic Product[a,r]		Producer Price Index[b]		Personal Consumption Expenditures[c,r]		Consumer Price Index[d]	
1970	24.34	5.3%	36.9	3.7%	23.67	4.7%	38.8	5.7%
1975	33.59	9.4%	58.4	9.2%	32.18	8.4%	53.8	9.1%
1980	47.79	9.1%	89.8	14.1%	46.64	10.7%	82.4	13.5%
1985	61.63	3.0%	103.2	-0.5%	59.88	3.3%	107.6	3.6%
1990	72.26	3.9%	116.3	3.7%	72.18	4.6%	130.7	5.4%
1995	81.61	2.1%	124.7	3.6%	82.08	2.2%	152.4	2.8%
1996	83.16	1.9%	127.7	2.4%	83.86	2.2%	156.9	3.0%
1997	84.63	1.8%	127.6	-0.1%	85.43	1.9%	160.5	2.3%
1998	85.58	1.1%	124.4	-2.5%	86.25	1.0%	163.0	1.6%
1999	86.84	1.5%	125.5	0.9%	87.64	1.6%	166.6	2.2%
2000	88.72	2.2%	132.7	5.7%	89.82	2.5%	172.2	3.4%
2001	90.73	2.3%	134.2	1.1%	91.53	1.9%	177.1	2.8%
2002	92.20	1.6%	131.1	-2.3%	92.78	1.4%	179.9	1.6%
2003	94.14	2.1%	138.1	5.3%	94.66	2.0%	184.0	2.3%
2004	96.79	2.8%	146.7	6.2%	97.12	2.6%	188.9	2.7%
2005	100.00	3.3%	157.4	7.3%	100.00	3.0%	195.3	3.4%
2006	103.23	3.2%	164.7	4.6%	102.72	2.7%	201.6	3.2%
2007	106.23	2.9%	172.6	4.8%	105.50	2.7%	207.3	2.8%
2008	108.58	2.2%	189.6	9.8%	108.94	3.3%	215.3	3.9%
2009[r]	109.73	1.1%	172.9	-8.8%	109.17	0.2%	214.5	-0.4%
2010[p]	**110.99**	**1.1%**	**184.7**	**6.8%**	**111.11**	**1.8%**	**218.1**	**1.7%**

a Gross Domestic Product Implicit Price Deflator, 2005 = 100, used in other tables to deflate residential, commercial, industrial, motor fuel and electric utility prices.

b All commodities, 1982 = 100, BLS series ID: WPU00000000.

c Implicit Price Deflator, 2005 = 100.

d All items, all urban consumers, 1982-1984 = 100, BLS series ID: CUUR0000SA0.

p Preliminary estimates.

r Revised.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, *Economic Indicators* (March 2012) http://www.bea.gov/national/nipaweb/TableView.asp, *Survey of Current Business* (March 2012); Bureau of Labor Statistics, (March 2012), http://data.bls.gov/cgi-bin/surveymost.

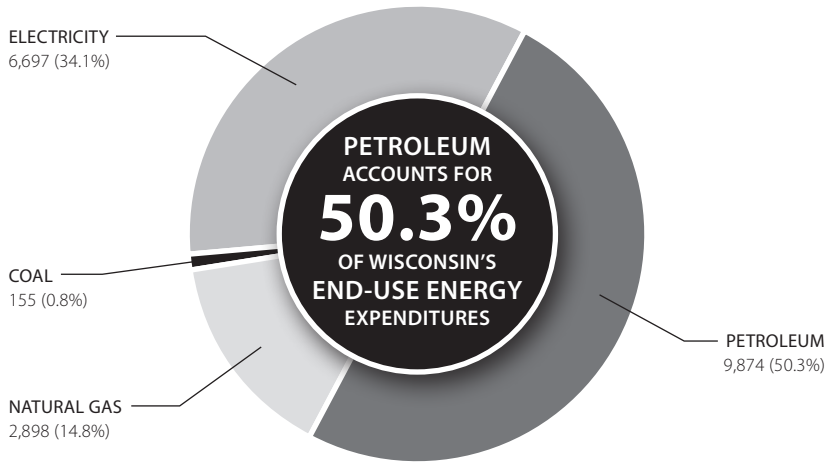
PRODUCER PRICE INDEX
6.8%

Price inflation indices are a measure of how much prices have changed from year to year. Each index is the ratio of prices in a given year to the base year. Each different index is normalized to 100 in different years. See footnotes for specific years. The percentage figure is the percent change from the previous year.

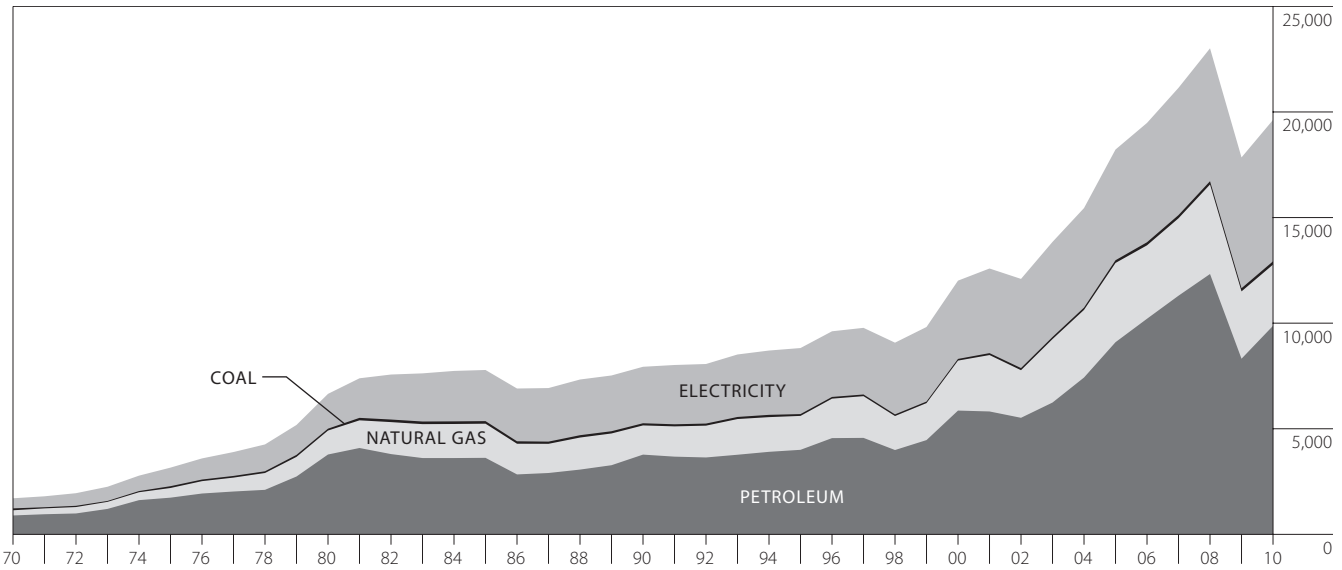
Using the broadest measure of inflation, in 2010 the Gross Domestic Product index increased 1.1 percent compared to the 20 year average from 1990 to 2010 of 2.2 percent.

Wisconsin End-Use Energy Expenditures, by Type of Fuel

2010 MILLIONS OF DOLLARS AND PERCENT OF TOTAL



1970-2010 MILLIONS OF DOLLARS



Source: Wisconsin State Energy Office.

Wisconsin End-Use Energy Expenditures, by Type of Fuel

WISCONSIN'S
OVERALL
ENERGY BILL
10.0%

In 2010, Wisconsin's overall energy bill increased by 10.0 percent—from $17.85 billion in 2009 to $19.62 billion. This increase of $1.78 billion brings Wisconsin's energy expenditures to 2006 levels.

Expenditures increased for all fuels except natural gas. Petroleum increased by $1.56 billion (18.7 percent), coal by $5.6 million (3.8 percent), and electricity $504 million (8.1 percent). Natural Gas expenditures decreased by $290.3 million (9.1 percent). Since 2000, Wisconsin's total energy expenditures increased by $7.61 billion (63.4 percent).

The tables in this chapter show annual expenditures for the major energy resources used by Wisconsin's residential, commercial, industrial, agricultural and transportation sectors since 1970. Because consistent and reliable historic prices of wood, waste fuels and biogas are not available, expenditures for these fuels are excluded from the tables.

1970-2010 MILLIONS OF DOLLARS AND PERCENT OF TOTAL

Year	Petroleum		Natural Gas		Coal		Electricity		Total
1970[r]	894.0	*52.4%*	244.6	*14.3%*	90.1	*5.3%*	477.6	*28.0%*	1,706.3
1975	1,734.2	*54.9%*	457.1	*14.5%*	86.2	*2.7%*	879.3	*27.9%*	3,156.7
1980	3,772.9	*56.8%*	1,133.8	*17.1%*	89.0	*1.3%*	1,648.0	*24.8%*	6,643.7
1985[r]	3,615.1	*46.5%*	1,616.8	*20.8%*	121.6	*1.6%*	2,420.9	*31.1%*	7,774.5
1990[r]	3,767.3	*47.5%*	1,381.6	*17.4%*	102.9	*1.3%*	2,674.5	*33.7%*	7,926.3
1995	3,999.2	*45.3%*	1,606.5	*18.2%*	85.6	*1.0%*	3,127.5	*35.5%*	8,818.8
1996[r]	4,555.4	*47.4%*	1,868.7	*19.4%*	81.3	*0.8%*	3,108.1	*32.3%*	9,613.5
1997[r]	4,568.1	*46.7%*	1,975.2	*20.2%*	80.3	*0.8%*	3,155.2	*32.3%*	9,778.8
1998[r]	3,993.1	*44.0%*	1,608.8	*17.7%*	78.3	*0.9%*	3,395.6	*37.4%*	9,075.9
1999[r]	4,463.3	*45.5%*	1,752.3	*17.8%*	74.3	*0.8%*	3,530.2	*35.9%*	9,820.1
2000[r]	5,861.3	*48.8%*	2,366.0	*19.7%*	80.1	*0.7%*	3,705.5	*30.8%*	12,012.9
2001[r]	5,819.3	*46.2%*	2,671.1	*21.2%*	90.9	*0.7%*	4,007.5	*31.8%*	12,588.8
2002[r]	5,518.9	*45.6%*	2,252.8	*18.6%*	101.5	*0.8%*	4,222.1	*34.9%*	12,095.4
2003[r]	6,240.6	*45.1%*	3,005.2	*21.7%*	98.7	*0.7%*	4,502.4	*32.5%*	13,846.9
2004[r]	7,426.2	*48.1%*	3,201.8	*20.7%*	109.2	*0.7%*	4,712.4	*30.5%*	15,449.6
2005	9,099.5	*49.9%*	3,752.3	*20.6%*	128.3	*0.7%*	5,241.7	*28.8%*	18,221.8
2006[r]	10,208.8	*52.4%*	3,476.0	*17.8%*	146.2	*0.8%*	5,650.4	*29.0%*	19,481.4
2007	11,300.4	*53.4%*	3,666.0	*17.3%*	151.7	*0.7%*	6,025.1	*28.5%*	21,143.2
2008[r]	12,327.2	*53.6%*	4,238.3	*18.4%*	155.8	*0.7%*	6,291.9	*27.3%*	23,013.2
2009[r]	8,315.9	*46.6%*	3,188.2	*17.9%*	149.6	*0.8%*	6,192.5	*34.7%*	17,846.2
2010[p]	**9,874.3**	***50.3%***	**2,897.9**	***14.8%***	**155.2**	***0.8%***	**6,696.7**	***34.1%***	**19,624.1**

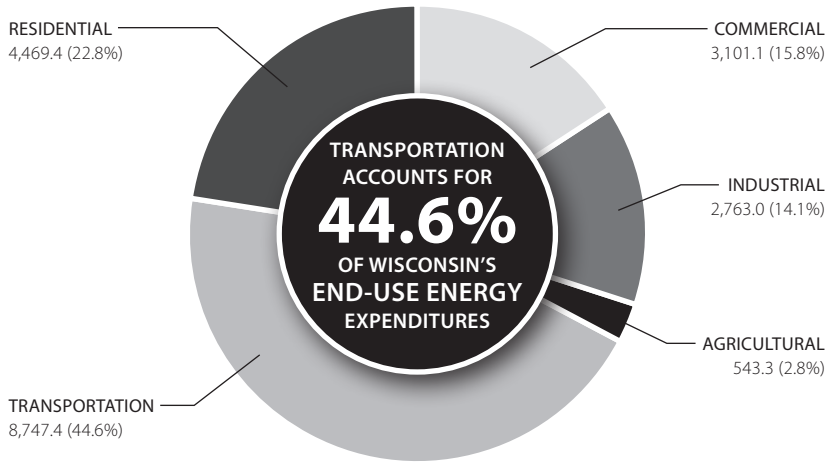
p Preliminary estimates.

r Revised due to revisions in price and consumption data.

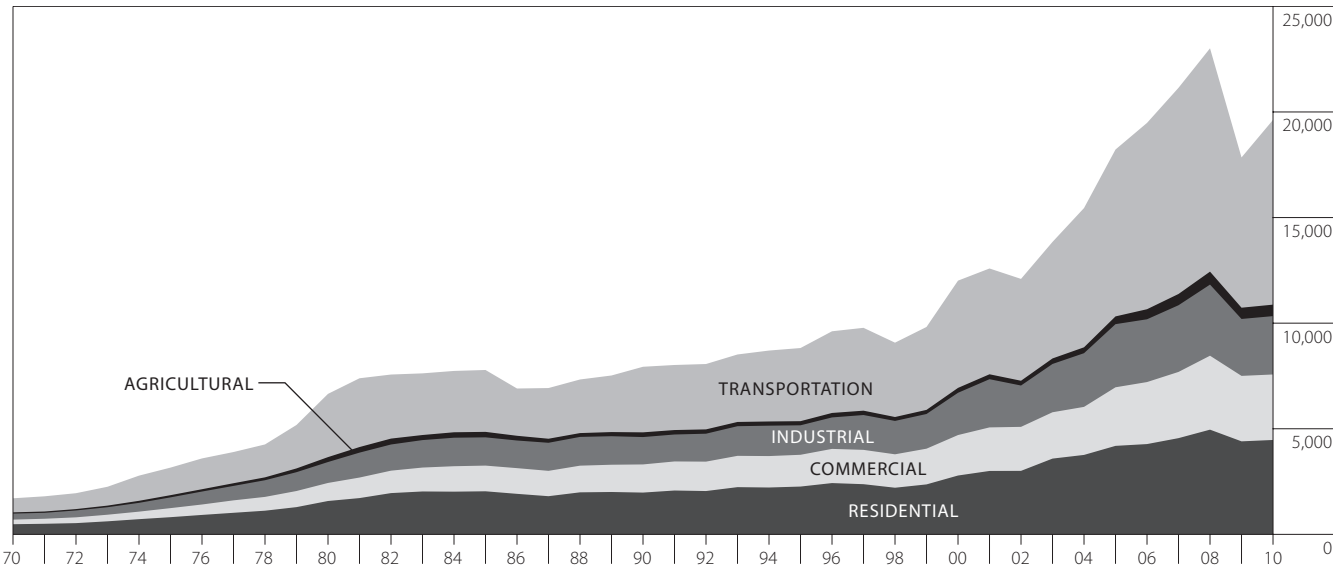
Source: Compiled from tables in this publication for Wisconsin petroleum, natural gas, coal and electricity use and prices, by economic sector.

Wisconsin End-Use Energy Expenditures, by Economic Sector

2010 MILLIONS OF DOLLARS AND PERCENT OF TOTAL



1970-2010 MILLIONS OF DOLLARS



Source: Wisconsin State Energy Office.

Wisconsin End-Use Energy Expenditures, by Economic Sector

WISCONSIN'S END-USE ENERGY EXPENDITURES INCREASED OR STAYED LEVEL IN ALL SECTORS

In 2010, end-use energy expenditures increased or stayed level in all sectors, with total expenditures increasing $1.78 billion or 10.0 percent.

Expenditures in the residential sector increased by $65.4 million (1.5 percent), in the industrial sector by $67.9 million (2.5 percent), in the agricultural sector by $10 million (1.9 percent), and the transportation sector saw an increase of $1.63 billion (23.0 percent). The commercial sector expenditures remained essentially level from 2009, with a comparably small $1 million increase.

1970-2010 MILLIONS OF DOLLARS AND PERCENT OF TOTAL

Year	Residential		Commercial		Industrial		Agricultural		Transportation		Total
1970[r]	480.5	*28.2%*	217.9	*12.8%*	285.2	*16.7%*	58.7	*3.4%*	663.9	*38.9%*	1,706.3
1975	813.7	*25.8%*	428.4	*13.6%*	509.4	*16.1%*	104.2	*3.3%*	1,301.0	*41.2%*	3,156.7
1980	1,579.5	*23.8%*	855.2	*12.9%*	990.3	*14.9%*	232.7	*3.5%*	2,985.9	*44.9%*	6,643.7
1985[r]	2,039.2	*26.2%*	1,216.5	*15.6%*	1,338.2	*17.2%*	258.8	*3.3%*	2,921.8	*37.6%*	7,774.5
1990[r]	1,978.1	*25.0%*	1,333.0	*16.8%*	1,296.0	*16.4%*	222.8	*2.8%*	3,096.5	*39.1%*	7,926.3
1995	2,263.4	*25.7%*	1,504.6	*17.1%*	1,396.2	*15.8%*	195.2	*2.2%*	3,459.4	*39.2%*	8,818.8
1996[r]	2,428.4	*25.3%*	1,618.2	*16.8%*	1,490.1	*15.5%*	211.7	*2.2%*	3,865.1	*40.2%*	9,613.5
1997[r]	2,375.5	*24.3%*	1,625.1	*16.6%*	1,649.7	*16.9%*	206.2	*2.1%*	3,922.4	*40.1%*	9,778.8
1998[r]	2,207.7	*24.3%*	1,582.7	*17.4%*	1,580.3	*17.4%*	185.3	*2.0%*	3,519.9	*38.8%*	9,075.9
1999[r]	2,365.3	*24.1%*	1,691.7	*17.2%*	1,642.6	*16.7%*	194.2	*2.0%*	3,926.1	*40.0%*	9,820.1
2000[r]	2,785.8	*23.2%*	1,916.9	*16.0%*	2,000.2	*16.7%*	231.8	*1.9%*	5,078.0	*42.3%*	12,012.9
2001[r]	3,002.2	*23.8%*	2,062.3	*16.4%*	2,282.5	*18.1%*	232.4	*1.8%*	5,009.4	*39.8%*	12,588.8
2002[r]	3,006.5	*24.9%*	2,083.8	*17.2%*	1,956.8	*16.2%*	226.0	*1.9%*	4,822.2	*39.9%*	12,095.4
2003[r]	3,587.1	*25.9%*	2,194.5	*15.8%*	2,287.0	*16.5%*	260.6	*1.9%*	5,517.7	*39.8%*	13,846.9
2004[r]	3,761.6	*24.3%*	2,274.6	*14.7%*	2,541.6	*16.5%*	278.7	*1.8%*	6,593.1	*42.7%*	15,449.6
2005	4,189.8	*23.0%*	2,774.0	*15.2%*	2,989.3	*16.4%*	367.0	*2.0%*	7,901.8	*43.4%*	18,221.8
2006[r]	4,274.9	*21.9%*	2,936.4	*15.1%*	2,972.6	*15.3%*	476.0	*2.4%*	8,821.4	*45.3%*	19,481.4
2007	4,555.8	*21.5%*	3,135.4	*14.8%*	3,157.5	*14.9%*	532.8	*2.5%*	9,761.8	*46.2%*	21,143.2
2008[r]	4,957.5	*21.5%*	3,501.3	*15.2%*	3,367.3	*14.6%*	612.9	*2.7%*	10,574.2	*45.9%*	23,013.2
2009[r]	4,403.9	*24.7%*	3,100.0	*17.4%*	2,695.1	*15.1%*	533.2	*3.0%*	7,114.0	*39.9%*	17,846.2
2010[p]	**4,469.4**	***22.8%***	**3,101.1**	***15.8%***	**2,763.0**	***14.1%***	**543.3**	***2.8%***	**8,747.4**	***44.6%***	**19,624.1**

p Preliminary estimates.

r Revised due to revisions in price and consumption data.

Source: Compiled from tables in this publication for Wisconsin residential, commercial, industrial, agricultural and transportation energy use and prices, by type of fuel.

Wisconsin Resource Use Energy Expenditures, Estimated Dollars Leaving Wisconsin

Of all petroleum energy expenditures, 85 percent are estimated to leave the state because petroleum refining operations are not located in Wisconsin, with the exception of Murphy Oil in Superior. The 15 percent estimated to stay in the state is due to Wisconsin-based gasoline and diesel blenders and retailers, LP and heating oil businesses, and utility revenues. Natural Gas production occurs out-of-state and natural gas pipelines are owned by out-of-state companies. The 15 percent estimated to stay in Wisconsin is attributed to in-state natural gas distribution businesses, LP businesses, and utility revenues.

Ninety-five percent of all expenditures on coal leave Wisconsin because this is an out-of-state resource. The five percent of expenditures estimated to stay in-state are attributed to utility revenues. All of the expenditures on imported electricity are necessarily attributed to out-of-state expenditures because this electricity is purchased from generation sources not based in Wisconsin.

This page estimates the amount of money spent on energy in Wisconsin that leaves the state. In 2010, $12.86 billion left the state, comprising 65.5 percent of Wisconsin's $19.62 billion in end-use energy expenditures.

Like the other tables in this chapter, these dollar amounts do not include specific expenditures on renewable energy. The exceptions are where imported electricity is generated by renewable sources, and in-state ethanol sales.

1970-2010 MILLIONS OF DOLLARS

	Petroleum		Natural Gas		Coal		Imported Electricity		Total
Year	Expenditures	Expenditure Leaving State	Expenditures	Expenditure Leaving State	Expenditures	Expenditure Leaving State	Expenditures	Expenditure Leaving State	Expenditure Leaving State
1970[r]	900.3	765.3	257.6	219.0	177.1	168.2	-47.7	-47.7	1,104.8
1975[r]	1,753.8	1,490.7	473.3	402.3	273.5	259.8	-50.5	-50.5	2,102.3
1980[r]	3,804.9	3,234.2	1,175.3	999.0	476.9	453.1	-24.6	-24.6	4,661.6
1985[r]	3,630.9	3,086.3	1,622.6	1,379.2	693.4	658.8	-9.2	-9.2	5,115.1
1990[r]	3,781.2	3,214.0	1,388.7	1,180.4	585.4	556.1	417.4	417.4	5,367.9
1995[r]	4,006.1	3,405.2	1,628.8	1,384.5	555.8	528.0	583.4	583.4	5,901.1
1996[r]	4,561.8	3,877.5	1,891.0	1,607.3	546.4	519.1	372.4	372.4	6,376.3
1997[r]	4,575.3	3,889.0	2,038.2	1,732.5	583.9	554.7	602.1	602.1	6,778.3
1998[r]	3,999.8	3,399.8	1,672.7	1,421.8	558.6	530.7	518.6	518.6	5,870.8
1999[r]	4,471.5	3,800.8	1,816.6	1,544.1	543.1	516.0	489.0	489.0	6,349.9
2000[r]	5,871.2	4,990.5	2,461.0	2,091.9	560.9	532.8	495.9	495.9	8,111.1
2001[r]	5,827.6	4,953.5	2,778.0	2,361.3	586.1	556.8	654.2	654.2	8,525.8
2002[r]	5,530.1	4,700.6	2,327.3	1,978.2	604.3	574.1	557.9	557.9	7,810.9
2003[r]	6,248.6	5,311.3	3,147.8	2,675.6	637.3	605.4	510.7	510.7	9,103.0
2004[r]	7,437.3	6,321.7	3,339.4	2,838.5	672.2	638.6	572.1	572.1	10,370.9
2005[r]	9,121.9	7,753.6	4,267.9	3,627.7	735.3	698.5	825.1	825.1	12,905.0
2006[r]	10,229.6	8,695.2	3,799.5	3,229.6	828.4	787.0	582.6	582.6	13,294.3
2007[r]	11,331.5	9,631.8	4,073.9	3,462.8	928.9	882.5	910.0	910.0	14,887.1
2008[r]	12,349.9	10,497.4	4,618.2	3,925.5	1,111.4	1,055.9	834.2	834.2	16,313.0
2009[r]	8,323.1	7,074.6	3,386.2	2,878.3	1,027.8	976.5	817.9	817.9	11,747.3
2010[p]	**9,882.8**	**8,400.3**	**3,129.3**	**2,659.9**	**1,165.2**	**1,107.0**	**693.0**	**693.0**	**12,860.3**

p Preliminary estimates.

r Revised.

Source: Compiled from tables in this publication for Wisconsin petroleum, natural gas, coal and electricity use and prices, by economic sector.

Wisconsin Expenditures for Residential Energy, by Type of Fuel

WISCONSIN'S **OVERALL** RESIDENTIAL ENERGY EXPENDITURES **1.5%**

In 2010, overall residential energy expenditures increased by 1.5 percent ($65.4 million) over 2009. Expenditures for all fuel types decreased, with the exception of electricity which saw a 10.4 percent increase.

Increases in electricity expenditures can be attributed to the increased use of air conditioning during the summer months. This corresponds to the increased number of Cooling Degree Days (CDD) in 2010. See the last chapter for additional information about CDDs.

1970-2010 MILLIONS OF DOLLARS AND PERCENT OF TOTAL

Year	Petroleum		Natural Gas		Coal		Electricity		Total[a]
1970	142.6	*29.7%*	130.5	*27.2%*	15.5	*3.2%*	191.9	*39.9%*	480.5
1975	250.5	*30.8%*	209.4	*25.7%*	11.8	*1.5%*	342.0	*42.0%*	813.7
1980	483.8	*30.6%*	472.4	*29.9%*	9.0	*0.6%*	614.4	*38.9%*	1,579.5
1985	393.6	*19.3%*	749.6	*36.8%*	3.8	*0.2%*	892.2	*43.8%*	2,039.2
1990	342.9	*17.3%*	653.6	*33.0%*	1.3	*0.1%*	980.2	*49.6%*	1,978.1
1995	282.7	*12.5%*	791.9	*35.0%*	1.1	*0.0%*	1,187.7	*52.5%*	2,263.4
1996	357.9	*14.7%*	892.9	*36.8%*	1.0	*0.0%*	1,176.5	*48.4%*	2,428.4
1997	336.1	*14.1%*	873.3	*36.8%*	1.0	*0.0%*	1,165.1	*49.0%*	2,375.5
1998	237.8	*10.8%*	712.7	*32.3%*	0.9	*0.0%*	1,256.3	*56.9%*	2,207.7
1999	265.3	*11.2%*	787.7	*33.3%*	0.8	*0.0%*	1,311.6	*55.4%*	2,365.3
2000	394.1	*14.1%*	1,020.6	*36.6%*	0.7	*0.0%*	1,370.4	*49.2%*	2,785.8
2001	402.8	*13.4%*	1,098.5	*36.6%*	0.7	*0.0%*	1,500.2	*50.0%*	3,002.2
2002	358.9	*11.9%*	1,008.4	*33.5%*	0.7	*0.0%*	1,638.5	*54.5%*	3,006.5
2003[r]	416.6	*11.6%*	1,317.6	*36.7%*	0.6	*0.0%*	1,852.3	*51.6%*	3,587.1
2004[r]	472.1	*12.5%*	1,373.4	*36.5%*	0.6	*0.0%*	1,915.6	*50.9%*	3,761.6
2005	558.9	*13.3%*	1,564.5	*37.3%*	0.6	*0.0%*	2,065.8	*49.3%*	4,189.8
2006	628.2	*14.7%*	1,467.6	*34.3%*	0.5	*0.0%*	2,178.6	*51.0%*	4,274.9
2007	646.0	*14.2%*	1,577.3	*34.6%*	0.4	*0.0%*	2,332.0	*51.2%*	4,555.8
2008	741.7	*15.0%*	1,800.3	*36.3%*	0.0	*0.0%*	2,415.5	*48.7%*	4,957.5
2009[r]	528.5	*12.0%*	1,432.8	*32.5%*	0.0	*0.0%*	2,442.7	*55.5%*	4,403.9
2010[p]	**493.7**	***11.0%***	**1,278.3**	***28.6%***	**0.0**	***0.0%***	**2,697.4**	***60.4%***	**4,469.4**

a Does not include renewable energy, except those renewable fuels used in electricity production.
p Preliminary estimates.
r Revised due to revisions in price and consumption data.
Source: Compiled from tables in this publication for Wisconsin residential energy use and prices.

Wisconsin Expenditures for Commercial Energy, by Type of Fuel

1970-2010 MILLIONS OF DOLLARS AND PERCENT OF TOTAL

Year	Petroleum		Natural Gas		Coal		Electricity		Total[a]
1970[r]	34.7	*15.9%*	34.6	*15.9%*	11.5	*5.3%*	137.1	*62.9%*	217.9
1975	70.8	*16.5%*	73.5	*17.2%*	11.0	*2.6%*	273.0	*63.7%*	428.4
1980	82.4	*9.6%*	210.6	*24.6%*	6.8	*0.8%*	555.4	*64.9%*	855.2
1985[r]	91.9	*7.6%*	307.4	*25.3%*	9.3	*0.8%*	807.9	*66.4%*	1,216.5
1990[r]	90.0	*6.8%*	314.8	*23.6%*	8.2	*0.6%*	920.0	*69.0%*	1,333.0
1995	73.7	*4.9%*	381.8	*25.4%*	6.2	*0.4%*	1,042.8	*69.3%*	1,504.6
1996[r]	96.3	*6.0%*	458.4	*28.3%*	7.8	*0.5%*	1,055.8	*65.2%*	1,618.2
1997[r]	85.6	*5.3%*	474.5	*29.2%*	7.7	*0.5%*	1,057.3	*65.1%*	1,625.1
1998[r]	57.6	*3.6%*	382.2	*24.2%*	7.9	*0.5%*	1,134.9	*71.7%*	1,582.7
1999[r]	66.5	*3.9%*	395.3	*23.4%*	8.0	*0.5%*	1,221.9	*72.2%*	1,691.7
2000[r]	104.1	*5.4%*	513.9	*26.8%*	8.0	*0.4%*	1,290.8	*67.3%*	1,916.9
2001[r]	104.3	*5.1%*	579.0	*28.1%*	8.6	*0.4%*	1,370.3	*66.4%*	2,062.3
2002[r]	91.8	*4.4%*	525.4	*25.2%*	8.8	*0.4%*	1,457.8	*70.0%*	2,083.8
2003[r]	92.2	*4.2%*	695.2	*31.7%*	9.2	*0.4%*	1,397.9	*63.7%*	2,194.5
2004[r]	104.7	*4.6%*	715.4	*31.5%*	10.0	*0.4%*	1,444.5	*63.5%*	2,274.6
2005	182.8	*6.6%*	894.0	*32.2%*	12.2	*0.4%*	1,684.9	*60.7%*	2,774.0
2006[r]	174.0	*5.9%*	888.0	*30.2%*	13.6	*0.5%*	1,860.8	*63.4%*	2,936.4
2007	194.4	*6.2%*	923.3	*29.4%*	11.6	*0.4%*	2,006.1	*64.0%*	3,135.4
2008[r]	272.5	*7.8%*	1,087.6	*31.1%*	8.9	*0.3%*	2,132.4	*60.9%*	3,501.3
2009[r]	168.8	*5.4%*	819.4	*26.4%*	6.8	*0.2%*	2,104.9	*67.9%*	3,100.0
2010[p]	**145.2**	***4.7%***	**701.4**	***22.6%***	**7.7**	***0.2%***	**2,246.9**	***72.5%***	**3,101.1**

a Does not include renewable energy, except those renewable fuels used in electricity production.
p Preliminary estimates.
r Revised due to revisions in price and consumption data.
Source: Compiled from tables in this publication for Wisconsin commercial energy use and prices.

WISCONSIN EXPENDITURES FOR COMMERCIAL ENERGY STAYED LEVEL

In 2010, commercial sector energy expenditures were essentially level with 2009 figures, with a slight increase of $1 million. Commercial energy expenditures are dominated (72.5 percent) by electricity used for lighting, cooling, ventilation and office equipment.

Increases in electricity expenditures can be attributed to the increased use of air conditioning during the summer months. This corresponds to the increased number of Cooling Degree Days (CDD) in 2010. See the last chapter for additional information about CDDs.

Wisconsin Expenditures for Industrial Energy, by Type of Fuel

WISCONSIN EXPENDITURES FOR **INDUSTRIAL** ENERGY **2.5%**

In 2010, industrial energy expenditures increased 2.5 percent ($67.87 million). Industrial energy use is dominated by electricity (58.1 percent) and natural gas (33.2 percent). Electricity expenditures increased by 6.6 percent ($99.6 million) while natural gas expenditures decreased by 1.9 percent ($17.7 million). Of the other fuels used in the industrial sector, coal saw an increase in expenditures of 3.4 percent ($4.8 million) while petroleum saw a decrease of 17.2 percent ($18.8 million).

1970-2010 MILLIONS OF DOLLARS AND PERCENT OF TOTAL

Year	Petroleum		Natural Gas		Coal		Electricity		Total[a]
1970[r]	18.7	*6.5%*	79.4	*27.8%*	63.1	*22.1%*	124.0	*43.5%*	285.2
1975	46.7	*9.2%*	174.2	*34.2%*	63.4	*12.4%*	225.1	*44.2%*	509.4
1980	64.1	*6.5%*	450.8	*45.5%*	73.2	*7.4%*	402.1	*40.6%*	990.3
1985[r]	59.3	*4.4%*	559.9	*41.8%*	108.5	*8.1%*	610.6	*45.6%*	1,338.2
1990[r]	110.9	*8.6%*	413.2	*31.9%*	93.5	*7.2%*	678.5	*52.4%*	1,296.0
1995	80.4	*5.8%*	432.8	*31.0%*	78.3	*5.6%*	804.8	*57.6%*	1,396.2
1996[r]	114.5	*7.7%*	517.4	*34.7%*	72.5	*4.9%*	785.8	*52.7%*	1,490.1
1997[r]	106.0	*6.4%*	627.4	*38.0%*	71.7	*4.3%*	844.6	*51.2%*	1,649.7
1998[r]	84.5	*5.3%*	513.9	*32.5%*	69.5	*4.4%*	912.5	*57.7%*	1,580.3
1999[r]	102.9	*6.3%*	569.2	*34.7%*	65.5	*4.0%*	905.0	*55.1%*	1,642.6
2000[r]	147.0	*7.3%*	831.4	*41.6%*	71.3	*3.6%*	950.5	*47.5%*	2,000.2
2001[r]	168.6	*7.4%*	993.7	*43.5%*	81.6	*3.6%*	1,038.7	*45.5%*	2,282.5
2002	121.0	*6.2%*	719.0	*36.7%*	92.0	*4.7%*	1,024.8	*52.4%*	1,956.8
2003[r]	64.7	*2.8%*	992.4	*43.4%*	88.9	*3.9%*	1,141.0	*49.9%*	2,287.0
2004[r]	86.3	*3.4%*	1,113.0	*43.8%*	98.6	*3.9%*	1,243.7	*48.9%*	2,541.6
2005	212.1	*7.1%*	1,293.9	*43.3%*	115.5	*3.9%*	1,367.8	*45.8%*	2,989.3
2006	241.0	*8.1%*	1,120.4	*37.7%*	132.0	*4.4%*	1,479.2	*49.8%*	2,972.6
2007	285.6	*9.0%*	1,165.4	*36.9%*	139.7	*4.4%*	1,566.9	*49.6%*	3,157.5
2008[r]	263.8	*7.8%*	1,350.4	*40.1%*	147.0	*4.4%*	1,606.1	*47.7%*	3,367.3
2009[r]	109.5	*4.1%*	936.0	*34.7%*	142.7	*5.3%*	1,506.8	*55.9%*	2,695.1
2010[p]	**90.7**	***3.3%***	**918.3**	***33.2%***	**147.5**	***5.3%***	**1,606.5**	***58.1%***	**2,763.0**

a Does not include renewable energy, except those renewable fuels used in electricity production.
p Preliminary estimates.
r Revised due to revisions in price and consumption data.
Source: Compiled from tables in this publication for Wisconsin industrial energy use and prices.

Wisconsin Expenditures for Agricultural Energy, by Type of Fuel

1970-2010 MILLIONS OF DOLLARS AND PERCENT OF TOTAL

Year	Motor Gasoline	Diesel Fuel[a]	LPG	Other Fuel[b]	Total Petroleum		Electricity		Total[c]
1970	19.1	9.8	5.2		34.1	*58.1%*	24.6	*41.9%*	58.7
1975	30.1	24.1	10.8		65.1	*62.5%*	39.1	*37.5%*	104.2
1980	39.0	94.8	22.9		156.7	*67.3%*	76.0	*32.7%*	232.7
1985	22.4	98.3	27.8		148.5	*57.4%*	110.3	*42.6%*	258.8
1990	11.8	93.3	21.9		127.1	*57.0%*	95.7	*43.0%*	222.8
1995[r]	8.3	72.0	22.7		103.0	*52.8%*	92.2	*47.2%*	195.2
1996	8.1	79.7	33.9		121.7	*57.5%*	90.0	*42.5%*	211.7
1997	8.0	79.2	30.8		118.0	*57.2%*	88.2	*42.8%*	206.2
1998	7.0	68.1	18.4		93.4	*50.4%*	91.9	*49.6%*	185.3
1999	7.6	74.0	21.0		102.5	*52.8%*	91.7	*47.2%*	194.2
2000	8.8	102.0	27.2		138.0	*59.5%*	93.8	*40.5%*	231.8
2001	8.6	96.6	28.9		134.2	*57.7%*	98.3	*42.3%*	232.4
2002	8.3	92.3	24.3		125.0	*55.3%*	101.0	*44.7%*	226.0
2003[r]	9.7	112.2	27.5		149.4	*57.3%*	111.2	*42.7%*	260.6
2004	10.9	126.5	32.6		170.0	*61.0%*	108.7	*39.0%*	278.7
2005	72.6	130.7	36.5	4.0	243.8	*66.4%*	123.2	*33.6%*	367.0
2006	68.1	224.0	47.1	5.1	344.3	*72.3%*	131.7	*27.7%*	476.0
2007	84.9	269.0	53.7	5.1	412.7	*77.5%*	120.1	*22.5%*	532.8
2008[r]	77.6	320.4	71.2	5.8	475.0	*77.5%*	137.9	*22.5%*	612.9
2009	70.1	247.1	67.4	10.5	395.1	*74.1%*	138.1	*25.9%*	533.2
2010[p]	**69.2**	**270.6**	**53.0**	**4.3**	**397.3**	***73.1%***	**146.0**	***26.9%***	**543.3**

WISCONSIN'S **AGRICULTURAL** ENERGY BILL **1.9%**

Wisconsin's agricultural energy expenditures increased by 1.9 percent, $10 million, over 2009.

a Includes fuel oil and kerosene.
b The fuel is primarily distillate and kerosene, but may include small amounts of coal and wood.
c Does not include renewable energy, except those renewable fuels used in electricity production.
p Preliminary estimates.
r Revised due to revisions in price and consumption data.
Source: Compiled from tables in this publication for Wisconsin agricultural energy use and prices.

Wisconsin Expenditures for Transportation Energy, by Type of Fuel

WISCONSIN'S TRANSPORTATION ENERGY BILL
23.0%

Wisconsin's transportation energy bill increased 23.0 percent ($1.63 billion dollars) over 2009. Vehicle gasoline accounts for 73.9 percent of all transportation expenditures, costing motorists $6.47 billion.

1970-2010 MILLIONS OF DOLLARS AND PERCENT OF TOTAL

Year	Vehicle Gasoline[a]		Diesel Fuel		Aviation Gasoline		Jet Fuel		Middle Distillate		Total
1970	626.2	*94.3%*	23.0	*3.5%*	2.4	*0.4%*	5.9	*0.9%*	6.3	*1.0%*	663.9
1975	1,187.1	*91.2%*	74.4	*5.7%*	4.5	*0.3%*	21.2	*1.6%*	13.8	*1.1%*	1,301.0
1980	2,531.3	*84.8%*	335.7	*11.2%*	8.4	*0.3%*	72.7	*2.4%*	37.8	*1.3%*	2,985.9
1985[r]	2,369.2	*81.1%*	470.2	*16.1%*	5.2	*0.2%*	52.6	*1.8%*	24.6	*0.8%*	2,921.8
1990[r]	2,429.2	*78.5%*	570.9	*18.4%*	5.3	*0.2%*	68.0	*2.2%*	23.1	*0.7%*	3,096.5
1995[r]	2,661.8	*76.9%*	724.5	*20.9%*	5.6	*0.2%*	45.0	*1.3%*	22.6	*0.7%*	3,459.4
1996[r]	2,974.6	*77.0%*	798.0	*20.6%*	6.0	*0.2%*	57.3	*1.5%*	29.1	*0.8%*	3,865.1
1997[r]	3,006.1	*76.6%*	830.4	*21.2%*	6.1	*0.2%*	55.0	*1.4%*	24.7	*0.6%*	3,922.4
1998[r]	2,692.2	*76.5%*	761.4	*21.6%*	5.3	*0.2%*	41.6	*1.2%*	19.4	*0.5%*	3,519.9
1999[r]	2,993.6	*76.2%*	852.1	*21.7%*	6.0	*0.2%*	49.3	*1.3%*	25.1	*0.6%*	3,926.1
2000[r]	3,850.2	*75.8%*	1,101.7	*21.7%*	8.0	*0.2%*	81.3	*1.6%*	36.8	*0.7%*	5,078.0
2001[r]	3,842.3	*76.7%*	1,054.9	*21.1%*	7.5	*0.1%*	70.3	*1.4%*	34.4	*0.7%*	5,009.4
2002[r]	3,718.4	*77.1%*	997.5	*20.7%*	5.6	*0.1%*	69.1	*1.4%*	31.6	*0.7%*	4,822.2
2003[r]	4,284.1	*77.6%*	1,113.4	*20.2%*	5.7	*0.1%*	80.8	*1.5%*	33.8	*0.6%*	5,517.7
2004[r]	5,034.0	*76.4%*	1,387.8	*21.0%*	6.7	*0.1%*	118.7	*1.8%*	45.9	*0.7%*	6,593.1
2005	5,946.8	*75.3%*	1,684.1	*21.3%*	8.6	*0.1%*	194.6	*2.5%*	67.8	*0.9%*	7,901.8
2006	6,550.7	*74.3%*	1,964.8	*22.3%*	8.7	*0.1%*	214.2	*2.4%*	83.1	*0.9%*	8,821.4
2007	7,348.0	*75.3%*	2,083.0	*21.3%*	8.0	*0.1%*	218.9	*2.2%*	103.8	*1.1%*	9,761.8
2008[r]	7,469.2	*70.6%*	2,662.3	*25.2%*	9.0	*0.1%*	322.7	*3.1%*	111.1	*1.1%*	10,574.2
2009[r]	5,365.2	*75.4%*	1,528.7	*21.5%*	6.0	*0.1%*	156.3	*2.2%*	57.8	*0.8%*	7,114.0
2010[p]	**6,468.3**	***73.9%***	**1,982.4**	***22.7%***	**7.1**	***0.1%***	**220.7**	***2.5%***	**69.0**	***0.8%***	**8,747.4**

a Includes ethanol.
p Preliminary estimates.
r Revised due to revisions in price and consumption data.
Source: Compiled from tables in this publication for Wisconsin transportation energy use and prices.

CHAPTER 8

Miscellaneous

United States Energy Use and Gross Domestic Product

ENERGY USE PER DOLLAR OF GDP
44.0%
SINCE 1980

Until the early 1970s, energy use kept pace with the growth in the nation's economy. Economic growth during the 1970s and early 1980s was accompanied by slower growth in energy use due to increases in efficiency and a shift away from energy intensive industries.

Efficiency, in terms of decreasing energy required to produce a dollar of Gross Domestic Product, continues to increase slowly.

The ratio between electric sales and Gross Domestic Product increased 5.4 percent since 2009, and decreased 17.3 percent since 1980. Energy use per dollar of Gross Domestic Product increased 0.7 percent since 2009 and declined 44.0 percent since 1980.

The federal Bureau of Economic Analysis (BEA) periodically adjusts the base year for economic data. These data represent the most recent revision of BEA data to 2005 as the base year.

1970-2010

Year	Resident Population (Thousands)[a,r]	Gross Domestic Product (Bil. of 2005$)	Resource Energy Consumption (Quad. Btu)[c]	Electric Sales to Ultimate Customers (Bil. of kWh)[d]	Resource Energy Per GDP (Thous. Btu/2005$)	Electric Sales Per GDP (kWh/2005$)
1970[r]	205,052	4,266.3	67.84	1,392.0	15.90	0.3263
1975[r]	215,973	4,875.4	72.00	1,747.1	14.77	0.3583
1980[r]	227,225	5,834.0	78.12	2,094.4	13.39	0.3590
1985[r]	237,924	6,843.4	76.49	2,324.0	11.18	0.3396
1990[r]	249,623	8,027.1	84.65	2,712.6	10.55	0.3379
1995[r]	266,278	9,086.0	91.17	3,013.3	10.03	0.3316
1996[r]	269,394	9,425.8	94.17	3,101.1	9.99	0.3290
1997[r]	272,647	9,845.9	94.76	3,145.6	9.62	0.3195
1998[r]	275,854	10,274.7	95.18	3,264.2	9.26	0.3177
1999[r]	279,040	10,770.7	96.81	3,312.1	8.99	0.3075
2000[r]	282,166	11,216.4	98.97	3,421.4	8.82	0.3050
2001[r]	285,050	11,337.5	96.32	3,394.5	8.50	0.2994
2002[r]	287,746	11,543.1	97.85	3,465.5	8.48	0.3002
2003[r]	290,242	11,836.4	98.13	3,493.7	8.29	0.2952
2004[r]	292,936	12,246.9	100.31	3,547.5	8.19	0.2897
2005[r]	295,618	12,623.0	100.45	3,661.0	7.96	0.2900
2006[r]	298,432	12,958.5	99.79	3,670.0	7.70	0.2832
2007[r]	301,394	13,206.4	101.53	3,765.0	7.69	0.2851
2008[r]	304,177	13,161.9	99.40	3,733.0	7.55	0.2836
2009[r]	306,656	12,703.1	94.58	3,575.0	7.45	0.2814
2010[p]	**309,051**	**13,088.0**	**98.06**	**3,884.0**	**7.49**	**0.2968**

a As of July 1.
c Quadrillions of Btu.
d Beginning in 1975, the DOE data source has been used.
p Preliminary.
r Revised.

Source: U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review* (April 2011), http://www.eia.doe.gov/mer/; Tables 1.3 and 7.1 (1970-2010); Wisconsin Department of Administration Demographic Services resident, national population estimates as of July 1 (1970-2010). Bureau of Economic Analysis, Regional Economic Accounts, http://www.bea.gov/bea/regional/ (1970-2010).

Wisconsin Population, Households, Gross State Product and Personal Income

Data in this table are provided as a reference point for making per capita comparisons. To explain recent increases in residential energy use, personal income per capita and per household are shown in current and constant 2010 dollars.

1970-2010

Year	GDP Deflator	Population[c,r] (Thousands)	No. of Households[a,c,r] (Thousands)	Gross State Product (Million 2010 Dollars)	Personal Income[b,r] (Current Dollars)			Personal Income[b,r] (2010 Dollars)		
					Total (Million Dollars)	Dollars Per Capita	Dollars Per Household	Total (Million Dollars)	Dollars Per Capita	Dollars Per Household
1970[r]	24.34	4,417.8	1,328.8	92,091	17,621	3,989	13,261	18,191	60,478	60,346
1975[r]	33.59	4,565.8	1,486.8	106,708	27,830	6,095	18,718	20,140	61,847	61,712
1980[r]	47.79	4,705.6	1,652.3	122,855	47,519	10,098	28,760	23,453	66,794	66,649
1985[r]	61.63	4,744.7	1,720.4	132,947	65,132	13,727	37,860	24,723	68,184	68,037
1990[r]	72.26	4,891.8	1,822.1	153,959	88,213	18,033	48,412	27,698	74,359	74,197
1995[r]	81.61	5,134.1	1,946.3	184,035	116,074	22,608	59,639	30,749	81,114	80,937
1996[r]	83.16	5,182.0	1,971.6	191,450	122,953	23,727	62,362	31,668	83,233	83,053
1997[r]	84.63	5,233.9	1,998.4	198,776	130,478	24,929	65,292	32,695	85,631	85,445
1998[r]	85.58	5,280.0	2,024.5	208,291	141,019	26,708	69,658	34,637	90,337	90,141
1999[r]	86.84	5,323.7	2,053.9	217,292	147,462	27,699	71,795	35,402	91,759	91,559
2000[r]	88.72	5,363.7	2,084.6	222,223	156,603	29,197	75,125	36,525	93,981	93,777
2001[r]	90.73	5,412.7	2,115.7	224,477	162,773	30,072	76,935	36,789	94,119	93,914
2002[r]	92.20	5,460.9	2,147.3	229,016	167,708	30,711	78,103	36,971	94,025	93,821
2003[r]	94.14	5,498.0	2,170.9	233,531	173,248	31,511	79,804	37,154	94,094	93,845
2004[r]	96.79	5,540.5	2,197.4	239,989	180,303	32,543	82,055	37,319	94,097	93,827
2005[r]	100.00	5,584.5	2,223.5	242,985	186,545	33,404	83,897	37,075	93,118	92,836
2006[r]	103.23	5,618.8	2,242.5	246,368	198,556	35,338	88,543	37,994	95,199	94,887
2007[r]	106.23	5,647.2	2,254.8	247,797	206,648	36,593	91,647	38,234	95,757	95,405
2008[r]	108.58	5,669.6	2,265.7	244,455	213,317	37,625	94,152	38,459	96,241	95,917
2009[r]	109.73	5,680.2	2,275.5	242,369	211,337	37,206	92,875	37,634	93,943	93,757
2010[p]	**110.99**	**5,687.0**	**2,279.8**	**248,265**	**218,564**	**38,432**	**95,871**	**38,432**	**95,871**	**95,871**

a Household numbers for intercensal years estimated on basis of Public Service Commission of Wisconsin reports of electric utility residential customers. Starting in 2000, estimates are from the Department of Administration, Wisconsin Demographic Services Center.

b Personal Income data are revised back to 1970 based on federal BEA adjustments (2011).

c Population and Households revised for 2000-2010.

p Preliminary estimates.

r Revised.

Source: U.S. Department of Commerce, Bureau of Census, Population Division, *2000 Census of Population and Housing*, CPH-1-51 (August 2001) and Preliminary Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico: April 1, 2000 to July 1, 2010 (NST-PEST2010-01) (February 2011); Final Official Population Estimates and Census Counts for Wisconsin Counties: 1970 – 2008; Department of Administration, Wisconsin Demographic Services Center (1970-2010) and Intercensally Revised Annual Estimates of Residents,Housing Units and Households in Wisconsin, 1990-2010 (May 2011); U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Accounts, http://www.bea.gov/bea/regional/ (1970-2010).

HOUSEHOLD INCOME
IN 2010 DOLLARS
1.3%
ANNUALLY
SINCE 1990

Wisconsin's population and number of households continue to grow. The number of households has grown faster than the population, as the number of persons per household has declined.

The per household income (in constant 2010 dollars) increased by 2.3 percent, after declining in 2009 for the first time since 1970.

Household income growth, in constant 2010 dollars, has been about 1.3 percent annually over the 20-year period since 1990. Gross State Product in 2010 dollars increased by 2.4 percent in 2010 compared to a decrease of 0.9 percent in 2009.

Wisconsin Employment, by Type

WISCONSIN LABOR FORCE 0.2%

In 2010, Wisconsin's working age labor force increased 0.2 percent.

WISCONSIN EMPLOYMENT 0.8%

Employment in the state decreased 0.8 percent (22,047 jobs).

Employment in all sectors decreased. In the goods producing sector, by 2.5 percent, in the services producing sector by 0.2 percent, and by 0.6 percent in the nonfarm sector. Most Wisconsin jobs are classified as services producing.

1970-2010 THOUSANDS

Year	Working Age 18-64	Total Employment[a]	Percent Working Age Employed	Total NonFarm[c,f]	Goods Producing[c,d]	Services Producing[c,e]
1970	2,362.6	1,530.5	64.8%		Data Not Available[b]	
1975	2,572.5	1,677.0	65.2%		Data Not Available[b]	
1980	2,783.7	1,938.1	69.6%		Data Not Available[b]	
1985	2,858.3	1,983.1	69.4%		Data Not Available[b]	
1990	2,949.3	2,486.1	84.3%	2,291.5	614.8	1,676.7
1995	3,122.9	2,773.6	88.8%	2,558.6	672.5	1,886.1
1996	3,157.5	2,600.6	82.4%	2,600.6	567.6	1,921.4
1997	3,194.8	2,655.8	83.1%	2,655.8	579.2	1,960.9
1998	3,228.6	2,718.0	84.2%	2,718.0	593.2	2,004.6
1999	3,261.0	2,784.0	85.4%	2,784.0	594.8	2,063.5
2000	3,292.4	2,894.9	87.9%	2,833.8	723.0	2,110.8
2001[r]	3,332.7	2,897.9	87.0%	2,813.9	689.5	2,124.3
2002[r]	3,372.3	2,860.9	84.8%	2,782.4	656.2	2,126.1
2003[r]	3,406.3	2,862.6	84.0%	2,143.4	631.9	2,143.4
2004[r]	3,443.8	2,867.1	83.3%	2,807.1	633.3	2,173.8
2005[r]	3,487.5	2,890.1	82.9%	2,842.1	636.4	2,205.7
2006[r]	3,516.8	2,932.5	83.4%	2,866.4	637.2	2,229.3
2007[r]	3,538.8	2,951.0	83.4%	2,884.4	630.9	2,253.5
2008[r]	3,554.9	2,936.7	82.6%	2,878.1	614.7	2,263.4
2009[r]	3,564.8	2,829.3	79.4%	2,752.4	541.1	2,211.3
2010[p]	**3,570.2**	**2,807.3**	**78.6%**	**2,735.3**	**527.5**	**2,207.8**

a Nonfarm wage and salary employment.

b Industry employment data prior to 1990 are not available due to a change in coding from the Standard Industrial Classification (SIC) system to the North American Industrial Classification System (NAICS).

c These data categories represent numbers of jobs, not numbers of individuals.

d Goods Producing is a compilation of the Mining, Natural Resources, and Construction industries.

e Services Producing is a compilation of all non-farm jobs that do not produce goods.

f Total Non-Farm job is a compilation of many non-farm job categories, which includes Goods Producing and Services Producing.

p Preliminary.

r Revised.

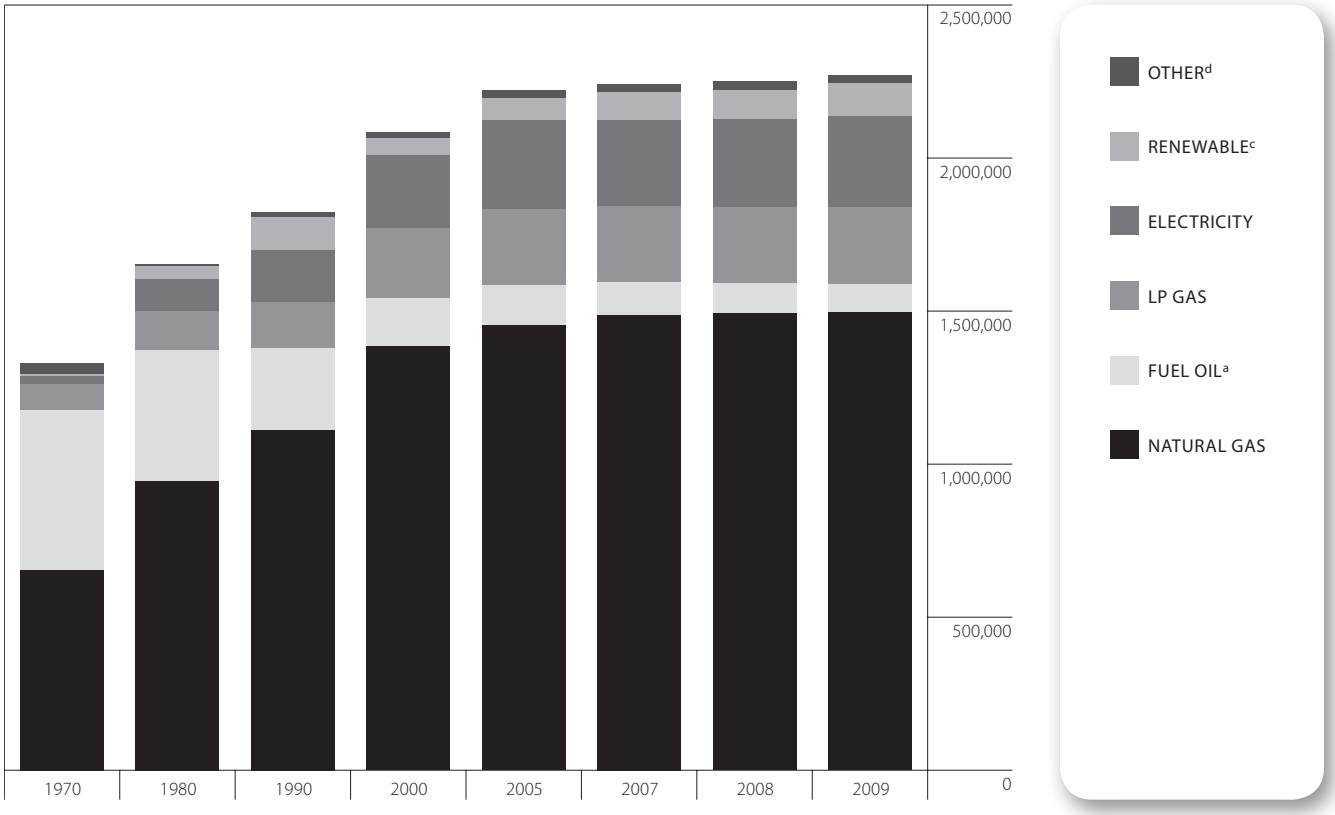
Source: Wisconsin Department of Administration, Demographic Services Center, *Single Year of Age Projections, 2000-2010, Broad Age Groups, Intercensal Revision Controlled to State Estimates (May 2011)*; Wisconsin Department of Workforce Development, Labor Market information Section, Current Employment Statistics (CES) http://worknet.wisconsin.gov/worknet/daces.aspx?menuselection=da (1990-2010) and Local Area Unemployment Statistics (LAUS) http://worknet.wisconsin.gov/worknet/dalaus.aspx?menuselection=da (1980-2010).

Wisconsin Occupied Dwelling Units, by Type of Fuel for Space Heating

1970, 1980, 1990, 2000, 2005 AND 2009 NUMBER OF UNITS AND PERCENT OF TOTAL

Fuel	1970		1980		1990		2000		2005		2009	
Natural Gas	654,851	*49.3%*	945,092	*57.2%*	1,111,733	*61.0%*	1,384,230	*66.4%*	1,453,768	*65.5%*	1,496,275	*65.8%*
Fuel Oil[a]	521,256	*39.2%*	425,622	*25.8%*	265,600	*14.6%*	158,499	*7.6%*	129,925	*5.9%*	91,036	*4.0%*
LP Gas	85,549	*6.4%*	130,476	*7.9%*	152,823	*8.4%*	228,408	*11.0%*	250,739	*11.3%*	251,847	*11.1%*
Electricity	24,763	*1.9%*	101,489	*6.1%*	168,615	*9.3%*	236,755	*11.4%*	288,829	*13.0%*	297,475	*13.1%*
Wood	6,795	*0.5%*	42,783	*2.6%*	107,239	*5.9%*	56,862	*2.7%*	72,452	*3.3%*	106,575	*4.7%*
Coal or Coke	29,708	*2.2%*	2,591	*0.2%*	787	*0.0%*	330	*0.0%*	583	*0.0%*	416	*0.0%*
Solar Energy	NA		NA		NA		NA		456	*0.0%*	436	*0.0%*
Other	5,334	*0.4%*	3,578	*0.2%*	11,294	*0.6%*	13,839	*0.7%*	16,850	*0.8%*	20,292	*0.9%*
None	548	*0.0%*	630	*0.0%*	4,027	*0.2%*	5,621	*0.3%*	5,969	*0.3%*	7,922	*0.3%*
Total[b]	**1,328,804**		**1,652,261**		**1,822,118**		**2,084,544**		**2,219,571**		**2,272,274**	

1970-2009 NUMBER OF UNITS



a Includes kerosene.

b Number of households data may not match due to different data sources.

c Includes wood and solar energy.

d Includes Coal/coke, no fuel or other fuel as defined by the American Community Survey.

Source: U.S. Department of Commerce, Bureau of the Census, *Census of Housing* (1970, 1980, 1990 and 2000) and American Community Survey (2005 and 2009).

Wisconsin Motor Vehicle Registrations, by Type of Vehicle

TOTAL VEHICLE REGISTRATIONS
0.12%

In 2010, total vehicle registrations decreased by 0.12 percent; auto registrations decreased by 0.34 percent. The truck category includes vans, sports utility vehicles and light trucks.

These data are provided as a factor to help compare the use of motor vehicle fuels across the years.

1970-2010

Year	Autos	Trucks	Buses	Motorcycles	Trailers	Total[a,b]
1970	1,762,681	317,096	8,178	53,642	64,065	2,210,492
1975	2,023,427	426,756	11,422	96,629	81,378	2,644,681
1980	2,248,951	665,012	13,375	169,329	93,288	3,215,302
1985	2,310,024	771,264	10,325	176,037	101,030	3,406,196
1990	2,456,175	1,053,280	14,518	149,281	152,712	3,825,966
1995	2,419,389	1,399,236	14,940	161,773	240,841	4,281,803
1996	2,398,351	1,464,366	15,413	136,794	205,177	4,260,959
1997	2,370,453	1,537,241	12,497	161,509	213,415	4,339,088
1998	2,402,019	1,668,241	17,061	151,391	231,934	4,513,250
1999	2,396,072	1,735,326	14,546	171,839	242,849	4,605,088
2000	2,405,408	1,822,078	15,587	160,927	256,890	4,703,294
2001	2,413,001	1,922,916	16,259	192,312	269,931	4,860,457
2002	2,404,081	2,012,847	17,061	183,890	285,471	4,948,282
2003	2,401,816	2,103,643	17,555	215,231	303,852	5,091,716
2004	2,387,459	2,176,903	14,099	207,592	334,898	5,170,728
2005	2,384,717	2,280,170	12,418	278,055	365,435	5,320,795
2006	2,427,905	2,354,954	13,222	266,195	396,374	5,458,650
2007	2,427,882	2,404,895	14,110	324,833	419,816	5,591,536
2008	2,391,300	2,400,680	10,736	307,808	411,871	5,522,395
2009	2,340,991	2,429,194	12,738	345,737	417,031	5,545,691
2010	**2,333,029**	**2,449,286**	**13,410**	**317,387**	**426,092**	**5,539,204**

a As of June 30.

b Total includes motor homes, mopeds and municipal vehicles; it does not equal sum of registration types shown before 2005. From 2005 on, motor homes, mopeds and municipal vehicles are included in trucks, motorcycles and autos, respectively.

Source: Wisconsin Department of Transportation (March 2011).

Wisconsin New Single and Two Family Building Permits

1990-2010[a]

	1990		2000		2005		2009		2010	
Type										
Single Family	10,663	94.9%	17,548	93.5%	20,380	94.0%	6,910	96.3%	6,375	96.7%
Two Family	578	5.1%	1,219	6.5%	1,306	6.0%	269	3.7%	218	3.3%
Heating Equipment										
Forced Air	10,299	91.6%	16,972	95.6%	19,256	88.1%	5,846	66.9%	5,615	74.6%
Radiant Electric	225	2.0%	343	1.9%	515	2.4%	236	2.7%	186	2.5%
Heat Pump	15	0.1%	50	0.3%	199	0.9%	272	3.1%	174	2.3%
Boiler	113	1.0%	385	2.2%	1,017	4.7%	516	5.9%	410	5.4%
Not Specified	589	5.2%	10	0.1%	871	4.0%	1,872	21.4%	1,144	15.2%
AC Equipped										
Yes	2,699	24.0%	10,820	57.7%	14,208	65.5%	4,010	55.8%	4,009	60.6%
No	8,542	76.0%	7,947	42.3%	7,499	34.5%	3,175	44.2%	2,604	39.4%
Space Heating Source										
Natural Gas	8,518	75.8%	11,640	61.9%	13,061	60.2%	3,750	52.2%	3,696	55.9%
LP Gas	1,395	12.4%	3,733	19.8%	4,703	21.7%	1,790	24.9%	1,539	23.3%
Oil	109	1.0%	49	0.3%	33	0.2%	12	0.2%	3	0.0%
Electric	240	2.1%	175	0.9%	265	1.2%	274	3.8%	219	3.3%
Solid	51	0.5%	51	0.3%	83	0.4%	149	2.1%	142	2.1%
Solar	0	0.0%	51	0.3%	83	0.4%	30	0.4%	12	0.2%
Not Specified	928	8.3%	3,117	16.6%	3,477	16.0%	1,180	16.4%	1,002	15.2%
Water Heating Source										
Natural Gas	8,326	74.1%	11,690	62.3%	12,348	56.9%	3,466	48.2%	3,455	52.2%
LP Gas	1,082	9.6%	2,746	14.6%	3,484	16.1%	1,243	17.3%	1,037	15.7%
Oil	22	0.2%	12	0.1%	12	0.1%	3	0.0%	1	0.0%
Electric	667	5.9%	1,495	8.0%	2,058	9.5%	1,359	18.9%	1,163	17.6%
Solid	12	0.1%	27	0.1%	58	0.3%	34	0.5%	36	0.5%
Solar	0	0.0%	1	0.0%	36	0.2%	10	0.1%	11	0.2%
Not Specified	1,132	10.1%	2,796	14.9%	3,709	17.1%	1,070	14.9%	910	13.8%
Living Area (Sq. Ft)										
1-1,000	394	3.6%	654	3.7%	591	2.8%	430	6.3%	363	5.7%
1,001-1,800	4,784	44.0%	7,681	43.4%	7,764	37.2%	3,004	44.0%	2,671	42.2%
1,801-2,400	3,153	29.0%	4,874	27.5%	6,091	29.2%	1,655	24.2%	1,543	24.4%
2,401-Greater	2,550	23.4%	4,496	25.4%	6,444	30.8%	1,738	25.5%	1,758	27.8%
Total	10,881		17,705		20,890		6,827		6,335	
Average (Sq. Ft)	1,980		1,945		2,148		1,961		2,025	

a These statistics are incomplete before January 1, 2005, as not all municipalities who issue building permits reported this information.

Source: Wisconsin Department of Commerce, Division of Safety and Buildings http://www.commerce.state.wi.us/SB/SB-StatsUDCStatisticsList.html; Amerifax Data Corporation, http://www.home2000.com/adc/welcome.htm (1970-2010).

SINGLE FAMILY PERMITS **7.7%** FROM 2009 TO 2010

From 2009 to 2010, there was a 7.7 percent decrease in construction for single family building permits,

TWO-FAMILY PERMITS **19.0%** FROM 2009 TO 2010

and a 19.0 percent decrease for two-family building permits.

There was a 60.0 percent decrease for solar space heating, and a 10.0 percent decrease in solar for water heating. Natural gas and propane remain the most commonly used fuels for space and water heating.

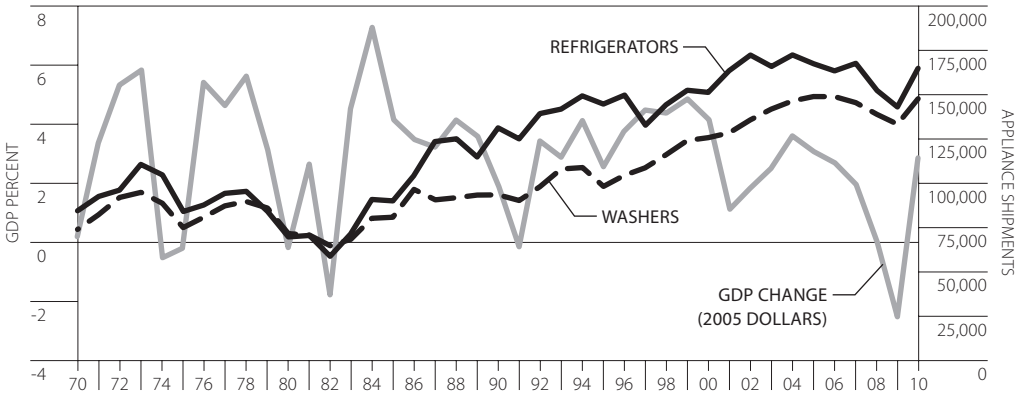
Wisconsin Appliance Shipments, by Type, Cooling Degree Days and Gross National Product

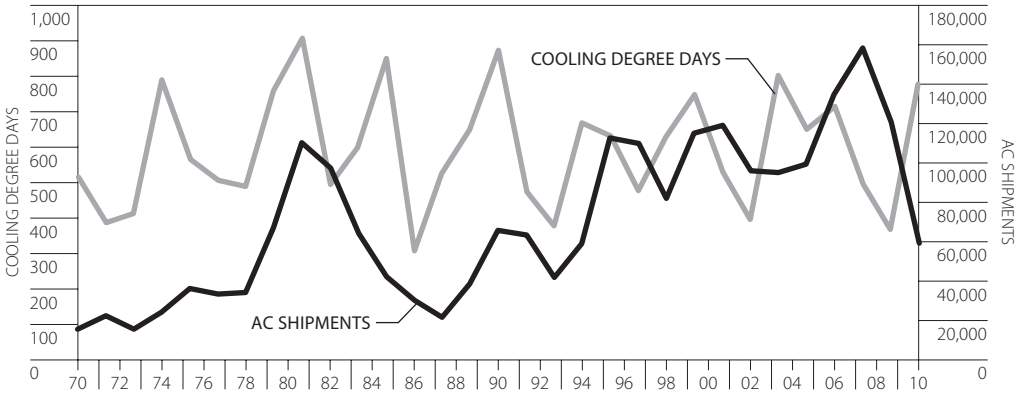
The first graph plots shipments of refrigerators and washing machines against the annual percent change in the U.S. Gross Domestic Product (GDP) in constant 2005 U.S. dollars. This graph illustrates the relationship between large appliance purchases, the national economy and energy consumption.

The second graph plots appliance shipments of room air conditioners (RACs) against Wisconsin's Cooling Degree Days (CDDs)[a] to demonstrate the relationship between appliance purchases, energy consumption and the weather.

1970-2010

Year	Cooling Degree Days	Percent Change in GDP	Refrigerators	Room Air Conditioners	Washers
1970		0.19%	84,180	62,715	73,666
1975		-0.21%	83,658	31,297	74,547
1980	515	-0.27%	69,380	15,290	71,230
1985	505	4.14%	89,700	33,100	80,500
1990	598	1.88%	130,800	64,100	93,100
1995	866	2.51%	144,300	65,400	97,800
2000	473	4.14%	150,900	109,600	125,400
2005	797	3.05%	167,062	94,773	148,563
2006	648	2.67%	163,019	99,097	148,519
2007	712	1.95%	167,234	134,569	145,139
2008	495	0.00%	152,087	157,601	138,575
2009	363	-2.63%	142,502	120,597	132,900
2010	**777**	**2.86%**	**164,700**	**59,200**	**147,500**

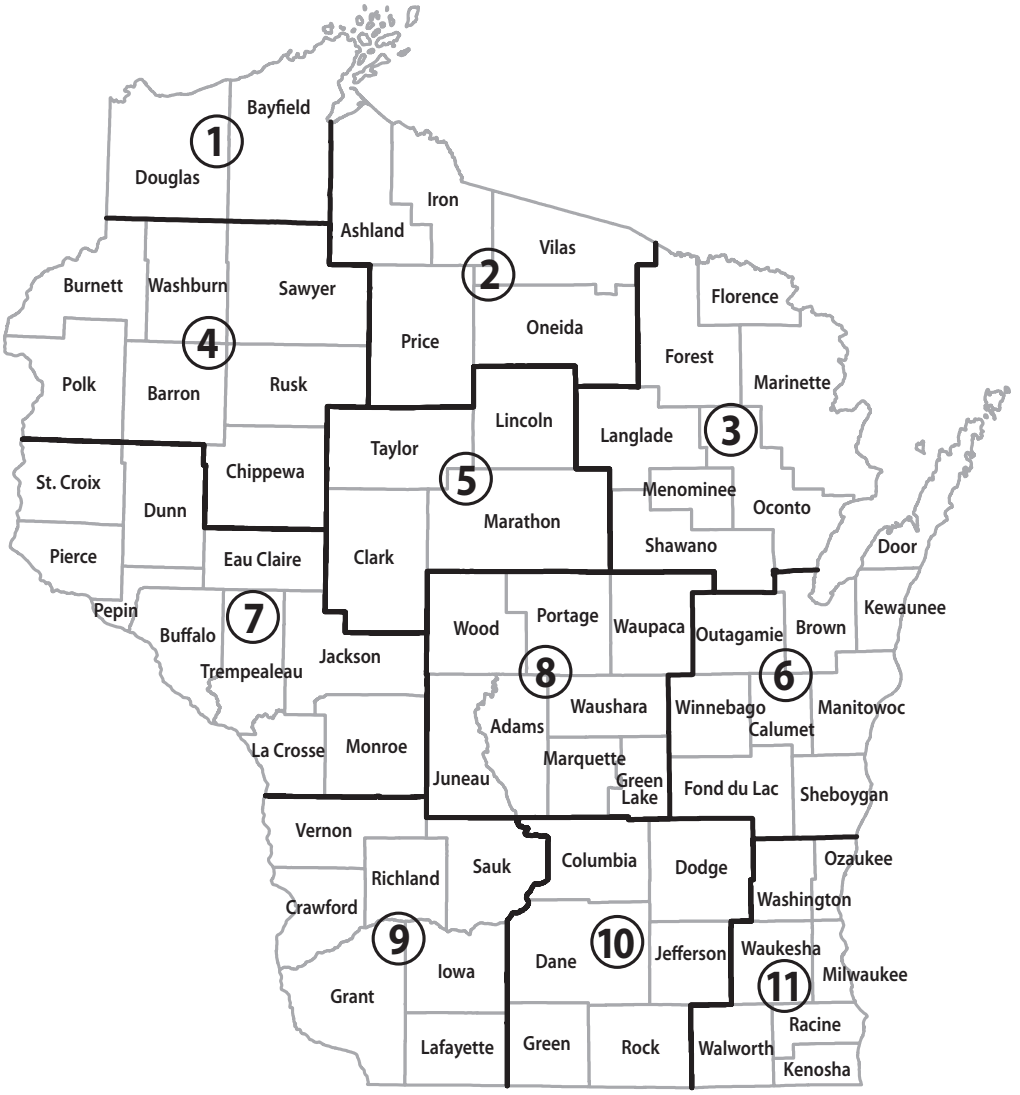




a Additional information about degree days can be found at the end of this chapter.

Source: Association of Home Appliance Manufacturers, *Distributor Sales by State–2010*. Compiled from tables in this chapter on Cooling Degree Days and the Gross Domestic Product.

Wisconsin Degree Day Zones



The energy needed to heat and cool homes and other buildings strongly depends on the outdoor temperature. The next few pages provide a set of tables listing typical and historic degree day figures throughout Wisconsin in eleven degree day zones—shown in the map.

Heating and cooling degree days are relative measures of outdoor air temperature, and are defined as deviations of the mean daily temperature below or above a base temperature of 65 degrees Fahrenheit. Data for this section are collected through a partnership with the Wisconsin State Climatology Office.

Heating and cooling degree days are provided as population-weighted averages for the state, to provide a point of reference for comparing the severity of winters and summers to statewide energy use.

Source: Wisconsin Office of Energy Independence.

Wisconsin Normal Heating Degree Days, by Zone and Month

Heating degree days are relative measurements of outdoor air temperature and are defined as deviations of the mean daily temperature below a base temperature (65 degrees Fahrenheit, by convention). For example, a weather station recording a mean daily temperature of 40 degrees Fahrenheit would report 25 heating degree days. The normal heating degree days for each zone and month are the 30-year averages, from 1971 through 2000.

Month	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10	Zone 11	State[a]
January	1,715	1,688	1,612	1,678	1,654	1,537	1,647	1,635	1,568	1,490	1,384	**1,507**
February	1,374	1,371	1,321	1,317	1,329	1,270	1,301	1,311	1,233	1,209	1,132	**1,223**
March	1,182	1,176	1,120	1,088	1,107	1,065	1,064	1,086	997	978	949	**1,016**
April	768	725	682	621	637	638	601	629	576	576	611	**616**
May	412	367	334	286	316	301	263	301	263	261	318	**300**
June	138	128	106	83	79	85	58	71	51	63	86	**79**
July	48	50	35	27	18	19	16	20	13	12	13	**17**
August	71	83	60	53	57	38	31	50	42	33	18	**33**
September	267	283	246	218	232	208	197	208	171	183	134	**180**
October	614	640	590	555	572	540	551	535	501	504	443	**505**
November	1,044	1,057	991	1,018	1,012	925	997	986	937	892	808	**900**
December	1,517	1,512	1,431	1,508	1,480	1,350	1,470	1,450	1,378	1,298	1,200	**1,323**
Total	**9,150**	**9,080**	**8,528**	**8,452**	**8,493**	**7,976**	**8,196**	**8,282**	**7,730**	**7,499**	**7,096**	**7,699**

a Population-weighted statewide average, based on 2000 census.

Source: National Oceanic and Atmospheric Administration, "Monthly Normals of Temperature, Precipitation, and Heating and Cooling Degree Days, 1971-2000 Wisconsin" *Climatology of the United States No. 81 (by State)*, (December 2000).

Wisconsin Normal Cooling Degree Days, by Zone and Month

Cooling degree days are relative measurements of outdoor air temperature and are defined as deviations of the mean daily temperature above a base temperature (65 degrees Fahrenheit, by convention). For example, a weather station recording a mean daily temperature of 90 degrees Fahrenheit would report 25 cooling degree days. The normal cooling degree days for each zone and month are the 30-year averages, from 1971 through 2000.

Month	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10	Zone 11	State[a]
April	0	0	1	1	1	3	1	1	1	6	5	**3**
May	10	25	25	38	29	24	44	36	35	33	27	**30**
June	31	52	73	85	88	95	111	92	108	123	114	**105**
July	116	117	147	164	166	177	214	164	200	214	222	**199**
August	83	83	105	121	125	126	155	120	163	154	180	**151**
September	10	11	23	20	16	36	28	27	35	48	63	**44**
October	0	0	1	0	0	2	1	1	1	4	5	**3**
Total	**250**	**288**	**375**	**429**	**425**	**463**	**554**	**441**	**543**	**582**	**616**	**535**

a Population-weighted statewide average, based on 2000 census.

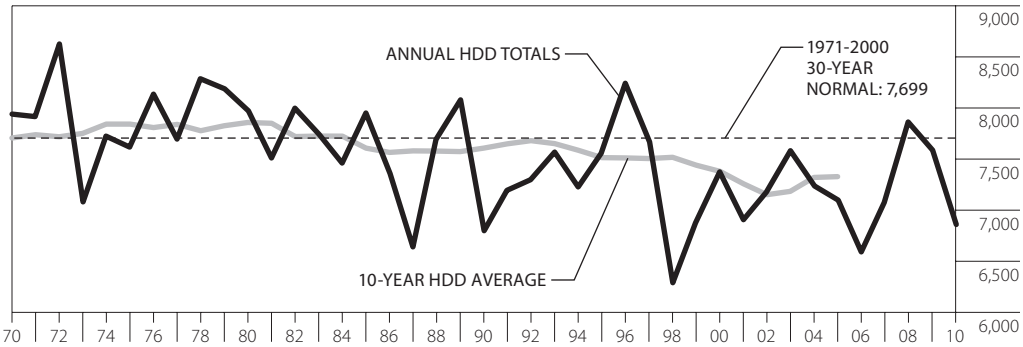
Source: National Oceanic and Atmospheric Administration, "Monthly Normals of Temperature, Precipitation, and Heating and Cooling Degree Days, 1971-2000 Wisconsin" *Climatology of the United States No. 81 (by State)*, (December 2000).

Wisconsin Population-Weighted Heating Degree Days

1970-2010

What significance does the number of HDDs have on energy use? Increased HDDs means that space heating is used more because the temperature is cooler. Fewer HDDs means that space heating is used less because the temperature is warmer. Fluctuations in HDDs can also influence such variables as price and volume of winter heating fuels (e.g., propane, heating oil, natural gas).

The 10-year average and 30-year normal[b] are presented here as a point of reference for the variation in HDDs. The 10-year average is plotted in the middle of an 11-year period, averaging the five years previous to, and five years after, the plotted year. For example, the number plotted on the graph at 2003 is the average of 1998 through 2008. The 10-year average is not plotted for 2006 through 2010 because these averages cannot yet be calculated.



Month	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Normal	**1,507**	**1,223**	**1,016**	**616**	**300**	**79**	**17**	**33**	**180**	**505**	**900**	**1,323**	**7,699**
1970	1,715	1,292	1,116	565	295	81	15	15	179	430	889	1,343	7,935
1975	1,375	1,246	1,212	790	221	74	23	17	258	412	713	1,268	7,609
1980	1,465	1,378	1,141	582	240	116	8	14	177	634	867	1,345	7,967
1985	1,614	1,296	883	474	189	107	7	32	194	486	993	1,660	7,935
1990	1,141	1,119	880	532	361	52	19	18	131	497	708	1,321	6,779
1995	1,344	1,197	890	682	254	38	8	1	213	455	1,097	1,375	7,554
2000	1,428	1,057	758	626	245	86	26	15	189	384	909	1,636	7,359
2005	1,436	1,043	1,073	491	331	20	9	12	75	425	811	1,369	7,095
2006	1,044	1,203	949	441	265	46	3	7	190	598	761	1,068	6,575
2007	1,282	1,398	852	615	201	35	11	13	130	319	879	1,337	7,072
2008	1,451	1,378	1,111	579	350	42	7	11	107	478	861	1,477	7,852
2009	1,689	1,160	977	607	264	106	34	50	96	607	671	1,323	7,584
2010	**1,446**	**1,161**	**812**	**422**	**232**	**37**	**1**	**5**	**176**	**396**	**795**	**1,374**	**6,858**

a Population-weighted heating degree days are derived by multiplying the number of heating degree days in each degree day zone by the population in that degree day zone, adding the products, then dividing by the total state population (based on 2000 census data).

b The 30-year normal runs from 1971 to 2000 and is developed by the National Oceanographic and Atmospheric Agency (NOAA).

Source: Wisconsin Office of Energy Independence, degree day data based on daily data from the University of Wisconsin-Madison, Wisconsin State Climatology Office (http://www.aos.wisc.edu/~sco/) (1970-2010).

2010 HDD
10.9%
BELOW THE 30-YEAR NORMAL

Using population-weighted[a] heating degree days (HDDs) as an index, the winter for 2010 was warmer than the winter of 2009, with 9.6 percent fewer HDDs. In 2010, the number of HDDs (6,858) was 10.9 percent below the 30-year normal (7,699).

The 10-year average is plotted using area-weighted HDDs. The state climatologist uses area to weight these data, where the rest of the HDD data in this publication is weighted by population to better illustrate the connection between degree days and energy consumption.

2009 Wisconsin Heating Degree Days, by Zone and Month

Month	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10	Zone 11	State[a]
January	1,884	1,893	1,833	1,974	1,821	1,773	1,844	1,783	1,794	1,681	1,517	**1,689**
February	1,314	1,342	1,279	1,331	1,238	1,215	1,276	1,211	1,162	1,153	1,051	**1,160**
March	1,166	1,190	1,120	1,122	1,084	1,049	1,053	1,043	926	918	890	**977**
April	754	718	677	634	621	636	589	650	583	569	589	**607**
May	424	377	347	311	265	302	255	262	259	210	249	**264**
June	214	163	144	142	109	116	114	104	71	63	108	**106**
July	109	85	63	71	44	33	33	64	61	34	15	**34**
August	124	93	81	79	53	59	47	54	59	42	37	**50**
September	138	130	133	97	106	126	97	102	120	94	72	**96**
October	757	752	701	751	711	634	700	674	697	597	512	**607**
November	783	790	748	793	734	690	736	716	713	677	598	**671**
December	1,516	1,512	1,454	1,577	1,434	1,375	1,468	1,361	1,405	1,318	1,187	**1,323**
Total	**9,183**	**9,045**	**8,580**	**8,882**	**8,220**	**8,008**	**8,212**	**8,024**	**7,850**	**7,356**	**6,825**	**7,584**

a Population-weighted statewide average, based on 2000 census.

Source: Office of Energy Independence, degree day data based on daily data from the University of Wisconsin-Madison, State Climatology Office (http://www.aos.wisc.edu/~sco/).

2010 Wisconsin Heating Degree Days, by Zone and Month

Month	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10	Zone 11	State[a]
January	1,557	1,515	1,487	1,717	1,514	1,444	1,600	1,557	1,622	1,486	1,313	**1,446**
February	1,319	1,276	1,237	1,403	1,204	1,180	1,280	1,262	1,298	1,167	1,044	**1,161**
March	917	891	869	866	816	835	783	848	817	802	787	**812**
April	576	535	496	448	415	441	372	422	333	382	432	**422**
May	346	305	277	277	261	241	256	251	203	215	212	**232**
June	133	104	82	84	56	49	41	29	5	15	27	**37**
July	4	3	3	0	0	2	0	1	0	0	1	**1**
August	31	18	14	19	12	7	7	9	6	4	0	**5**
September	335	310	268	310	243	212	220	221	148	147	117	**176**
October	531	509	488	512	436	451	462	466	372	393	313	**396**
November	960	953	891	980	894	819	915	859	814	787	696	**795**
December	1,478	1,466	1,433	1,580	1,461	1,386	1,531	1,514	1,515	1,401	1,241	**1,374**
Total	**8,187**	**7,885**	**7,545**	**8,196**	**7,312**	**7,067**	**7,467**	**7,439**	**7,133**	**6,799**	**6,183**	**6,858**

a Population-weighted statewide average, based on 2000 census.

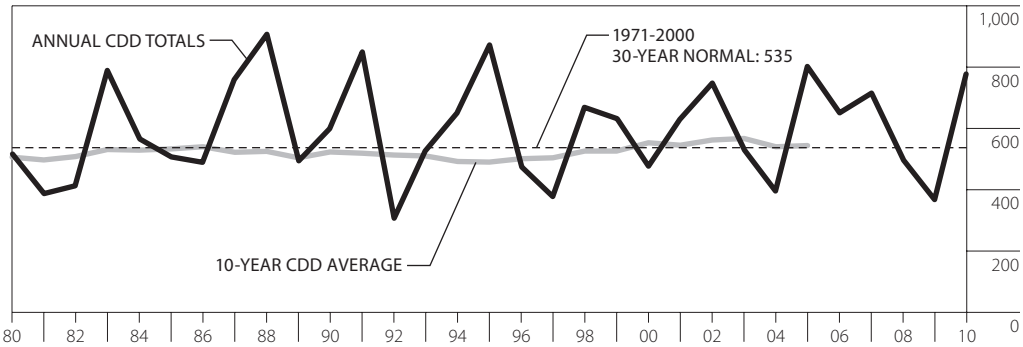
Source: Office of Energy Independence, degree day data based on daily data from the University of Wisconsin-Madison, State Climatology Office (http://www.aos.wisc.edu/~sco/).

Wisconsin Population-Weighted Cooling Degree Days

1980-2010

What significance does the number of CDDs have on energy use? Increased CDDs means that air conditioning may be used more because the temperature is warmer. Fewer CDDs means that air conditioning may be used less because the temperature is cooler. Fluctuations in CDDs can also influence such variables as peak electric demand and the wholesale price of electricity.

The 10-year average and 30-year normal[c] are presented here as a point of reference for the variation in CDDs. The 10-year average is plotted in the middle of an 11-year period, averaging the five years previous to, and five years after, the plotted year. For example, the number plotted on the graph at 2003 is the average of 1998 through 2008. The 10-year average is not plotted for 2006 through 2010 because these averages cannot yet be calculated.



Month	April[b]	May	June	July	August	September	October[b]	Total
Normal	**3**	**30**	**105**	**199**	**151**	**44**	**3**	**535**
1980	9	33	71	218	156	27	0	515
1985	31	28	60	185	98	102	0	505
1990	32	3	120	176	164	99	4	598
1995	0	8	223	273	310	47	5	866
2000	0	37	88	136	154	53	5	473
2005	3	4	211	228	200	119	32	797
2006	1	52	94	301	169	25	3	648
2007	8	48	132	201	195	90	37	712
2008	0	1	93	195	150	52	4	495
2009	0	14	114	80	123	32	0	363
2010	**8**	**59**	**110**	**284**	**278**	**36**	**2**	**777**

a Population-weighted cooling degree days are derived by multiplying the number of cooling degree days in each degree day zone by the population in that degree day zone, adding the products, then dividing by the total state population (based on 2000 census data).

b Includes March for the years 2001 and 2007. For 1990, the October column also includes November.

c The 30-year normal runs from 1971 to 2000 and is developed by the National Oceanographic and Atmospheric Agency (NOAA).

Source: Office of Energy Independence, degree day data based on daily data from the University of Wisconsin-Madison, State Climatology Office (http://www.aos.wisc.edu/~sco/) (1970-2010).

2010 CDD
45.3%
ABOVE THE 30-YEAR NORMAL

Using population-weighted[a] cooling degree days (CDD) as an index, the summer of 2010 was warmer than the summer of 2009, with 114.0 percent more cooling degree days. In 2010, the number of cooling degree days (777) was 45.3 percent above the 30-year normal (535).

The 10-year average is plotted on the graph using area-weighted CDDs. The state climatologist uses area to weight these data, where the rest of the CDD data in this publication is weighted by population to better illustrate the connection between degree days and energy consumption.

In 2010, the number of CDDs increased because the summer was warmer than previous years. 2008 and 2009 represented a slight departure from a trend since 2005 of hotter summers with more CDDs.

2009 Wisconsin Cooling Degree Days, by Zone and Month

Month	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10	Zone 11	State[a]
January	0	0	0	0	0	0	0	0	0	0	0	**0**
February	0	0	0	0	0	0	0	0	0	0	0	**0**
March	0	0	0	0	0	0	0	0	0	0	0	**0**
April	0	0	0	0	0	0	2	0	1	0	0	**0**
May	0	10	8	7	16	6	19	25	9	16	15	**14**
June	34	83	98	100	107	106	113	114	107	130	119	**114**
July	23	18	38	40	46	50	60	34	35	62	134	**80**
August	53	61	80	83	92	92	99	108	71	139	162	**123**
September	15	18	22	45	31	22	36	29	12	21	45	**32**
October	0	0	0	0	0	0	0	0	0	0	0	**0**
November	0	0	0	0	0	0	0	0	0	0	0	**0**
December	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	**125**	**190**	**246**	**275**	**292**	**276**	**329**	**310**	**235**	**368**	**475**	**363**

a Population-weighted statewide average, based on 2000 census.

Source: Office of Energy Independence, degree day data based on daily data from the University of Wisconsin-Madison, State Climatology Office (http://www.aos.wisc.edu/~sco/).

2010 Wisconsin Cooling Degree Days, by Zone and Month

Month	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10	Zone 11	State[a]
January	0	0	0	0	0	0	0	0	0	0	0	**0**
February	0	0	0	0	0	0	0	0	0	0	0	**0**
March	0	0	0	0	0	0	0	0	0	0	0	**0**
April	0	0	5	0	0	9	0	0	5	5	16	**8**
May	21	58	59	57	63	55	66	81	71	69	50	**59**
June	53	53	66	63	79	67	88	96	143	128	142	**110**
July	169	173	214	195	220	243	256	234	293	307	339	**284**
August	159	174	217	196	209	248	267	245	265	280	331	**278**
September	9	4	13	5	16	20	7	15	38	36	63	**36**
October	0	0	0	1	0	0	1	0	10	4	3	**2**
November	0	0	0	0	0	0	0	0	0	0	0	**0**
December	0	0	0	0	0	0	0	0	0	0	0	**0**
Total	**411**	**462**	**574**	**517**	**587**	**642**	**685**	**671**	**825**	**829**	**944**	**777**

a Population-weighted statewide average, based on 2000 census.

Source: Office of Energy Independence, degree day data based on daily data from the University of Wisconsin-Madison, State Climatology Office (http://www.aos.wisc.edu/~sco/).

Energy Definitions

DEFINITIONS

Energy is the ability to do work. It is stored in various forms including chemical energy in biomass, coal and oil, nuclear energy in uranium, gravitational energy in water used in hydroelectric plants, the wind and the sun.

There are two common ways to account for energy use; **resource energy** consumption and **end-use** energy consumption. End-use refers to the energy content of electricity and other fuels at the point of use by customers. Resource energy includes all energy resources used to generate electricity, including the energy content of the coal, petroleum, nuclear and renewable fuels.

One **British thermal unit (Btu)** is the amount of energy in the form of heat which will raise the temperature of one pound of water one degree Fahrenheit.

One **calorie** is the amount of energy in the form of heat which will raise the temperature of one gram of water one degree Centigrade.

One **Btu** is equal to 252 calories.

One **watt** is a unit of power, or rate of energy delivery, of one joule per second, or equivalently, one ampere of electric current delivered across a potential of one volt. One kilowatt (kW) is 1,000 watts. Ten 100-watt light bulbs require 1,000 watts or 1 kW of power to stay lit at any point in time.

One **kilowatt-hour (kWh)** is one kilowatt of electric power delivered for one hour (or the equivalent). One kilowatt-hour is 1,000 watt-hours. Ten 100-watt light bulbs burning for one hour consume 1,000 watt-hours or 1 kWh.

Heating degree days are relative measurements of outdoor air temperature and are obtained by subtracting the mean daily temperature from an established base temperature of 65 degrees Fahrenheit.

Cooling degree days are relative measurements of outdoor air temperature and are obtained by subtracting an established base temperature of 65 degrees Fahrenheit from the mean daily temperature.

MEASUREMENT OF ENERGY SUPPLIES

Petroleum products are measured in either gallons or barrels. A barrel contains 42 gallons. Petroleum is refined from crude oil into various products such as kerosene, diesel fuel, home heating oil (No. 1 and No. 2 oils), and other heating oils (No. 3 - No. 6), gasoline and liquefied petroleum gas (propane). The energy content of a gallon of each product is listed in the conversion table.

Natural Gas is measured in either Mcf (1,000 cubic feet) or in therms. One Mcf contains approximately ten therms or one million Btu.

Coal is measured in tons. The three broad classifications of coal, in order of greatest energy content, are bituminous, sub-bituminous and lignite.

Wood is usually measured in either tons or cords. A cord is an amount of stacked wood measuring 8 feet x 4 feet x 4 feet. The weight of a cord of wood varies according to the type of wood and its moisture content, but is estimated at 1.5 to 2 tons. A face cord is the 8 feet x 4 feet face of a stacked cord but of shorter width. Common usage is three face cords to a full cord.

Conversion Factors

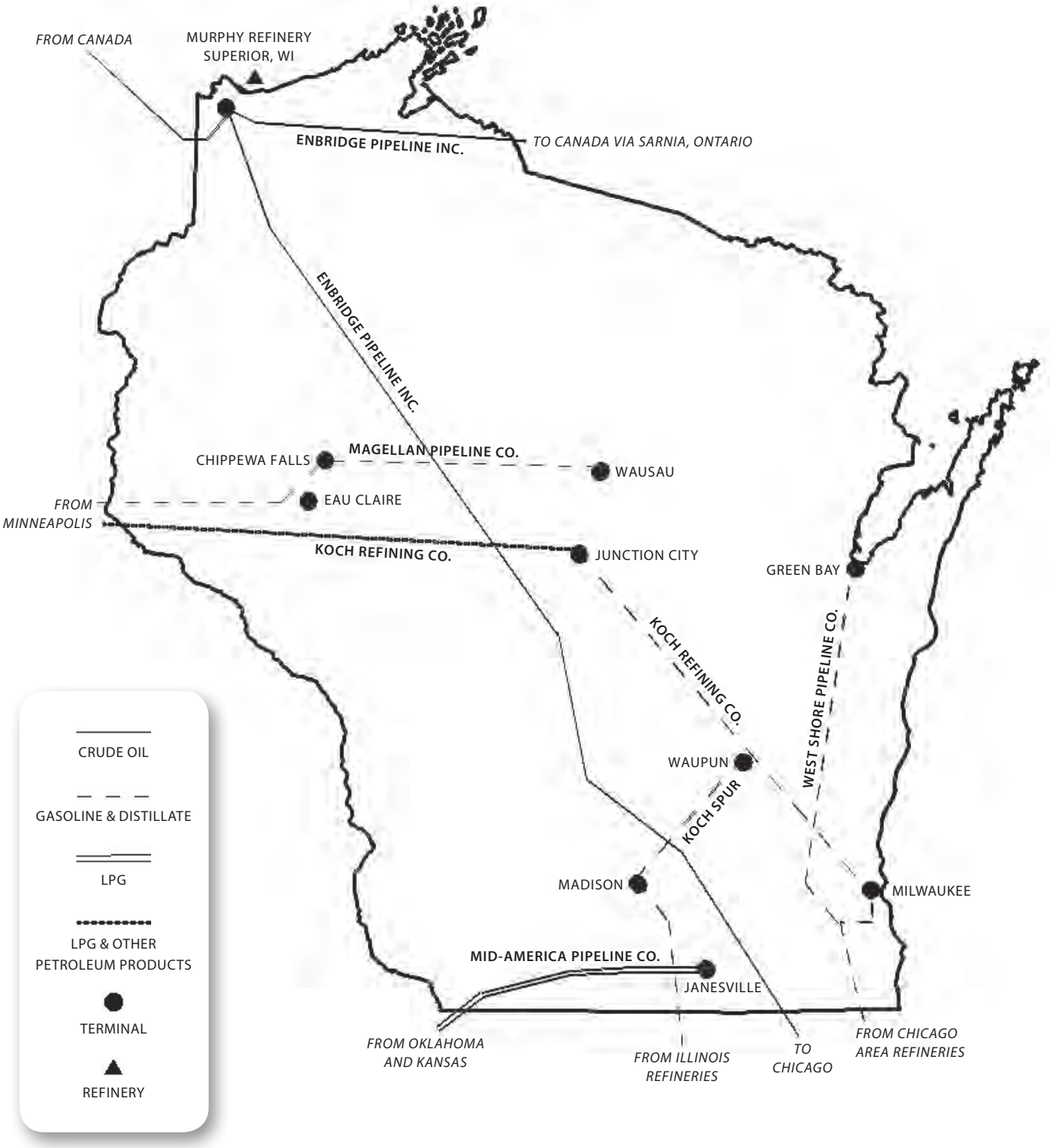
AVERAGE ENERGY CONTENT OF VARIOUS FUELS

1 kilowatt-hour of electricity	3,413 Btu
1 cubic foot of natural gas	1,008 to 1,034 Btu
1 therm of natural gas	100,000 Btu
1 gallon of liquefied petroleum gas (LPG)	95,475 Btu
1 gallon of crude oil	138,095 Btu
1 barrel of crude oil	5,800,000 Btu
1 gallon of kerosene or light distillate oil	135,000 Btu
1 gallon of middle distillate or diesel fuel oil	138,690 Btu
1 gallon of residual fuel oil	149,690 Btu
1 gallon of gasoline	125,000 Btu
1 gallon of ethanol	84,400 Btu
1 gallon of methanol	62,800 Btu
1 gallon of gasohol (10% ethanol, 90% gasoline)	120,900 Btu
1 pound of coal	8,100 to 13,000 Btu
1 ton of coal	16,200,000 to 26,000,000 Btu
1 ton of coke	26,000,000 Btu
1 ton of wood	9,000,000 to 17,000,000 Btu
1 standard cord of wood	18,000,000 to 24,000,000 Btu
1 face cord of wood	6,000,000 to 8,000,000 Btu
1 pound of low pressure steam (recoverable heat)	1,000 Btu

MEASUREMENT CONVERSIONS

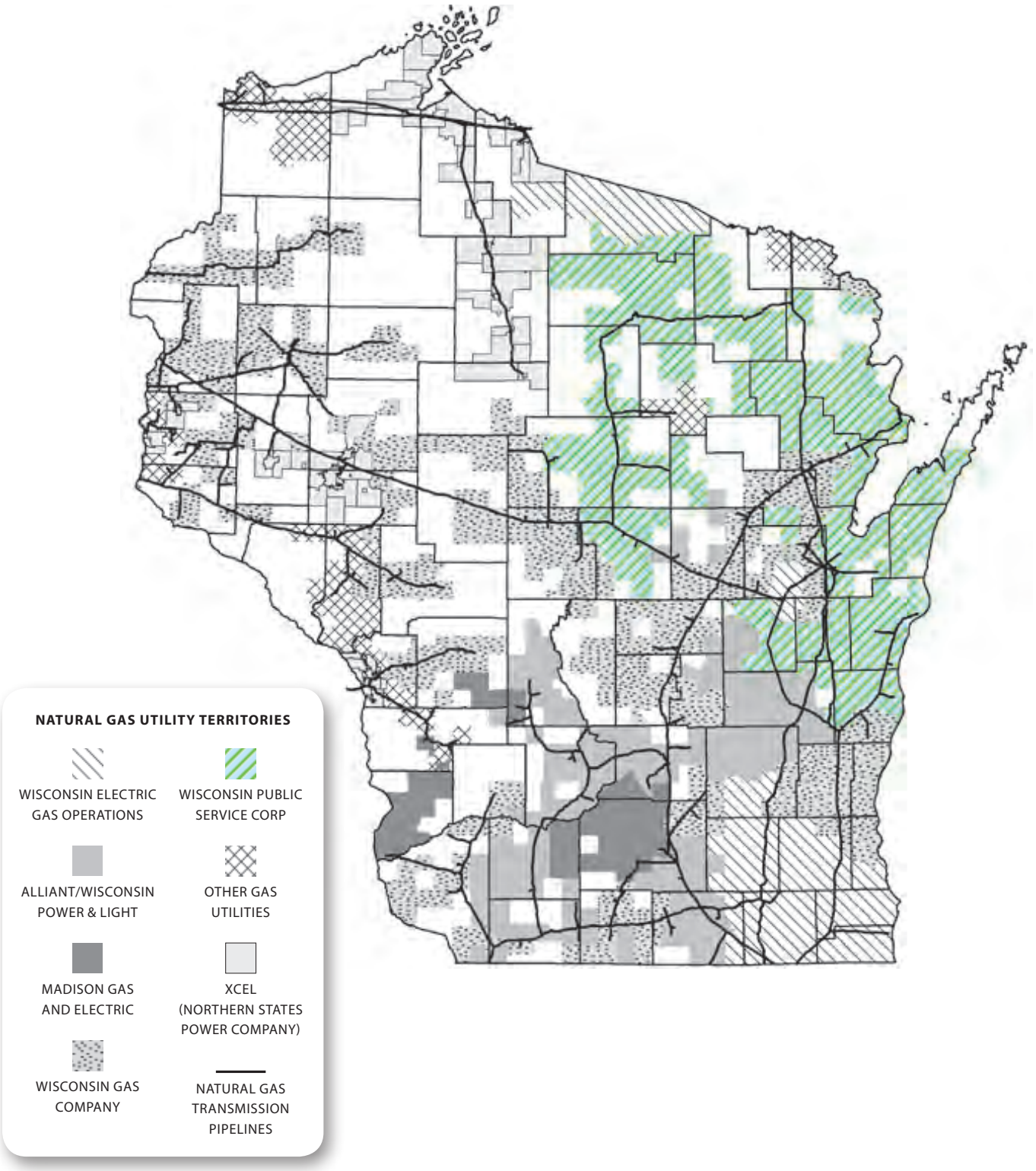
1 short ton (ton) = 2,000 pounds = 6.65 barrels (crude oil)
1 metric ton (tonn) = 2,200 pounds
1 barrel (bbl) = 42 gallons = 5.615 cubic feet = 159.0 liters
1 Mcf = 1,000 cubic feet
1 therm = 10^5 Btu = 100,000 Btu
1 thousand Btu (KBtu) = 1,000 Btu
1 million Btu (MMBtu) = 1,000,000 Btu
1 quad = 10^{15} (quadrillion) Btu or 1,000,000,000 MMBtu
1 kilowatt-hour (kWh) = 1,000 watt-hours
1 megawatt-hour (MWh) = 1,000 kWh or 1,000,000 watt-hours
1 gigawatt-hour (GWh) = 1,000 MWh or 1,000,000,000 watt-hours
1 gallon = 4.524 pounds liquefied petroleum gas
1 standard cord of wood = 8 feet x 4 feet x 4 feet = 128 cubic feet = approx. 3,000-4,000 lbs.
1 face cord of wood = 8 feet x 4 feet x 16 inches = 42.7 cubic feet = approx. 1,333 lbs.

Wisconsin Petroleum Pipelines



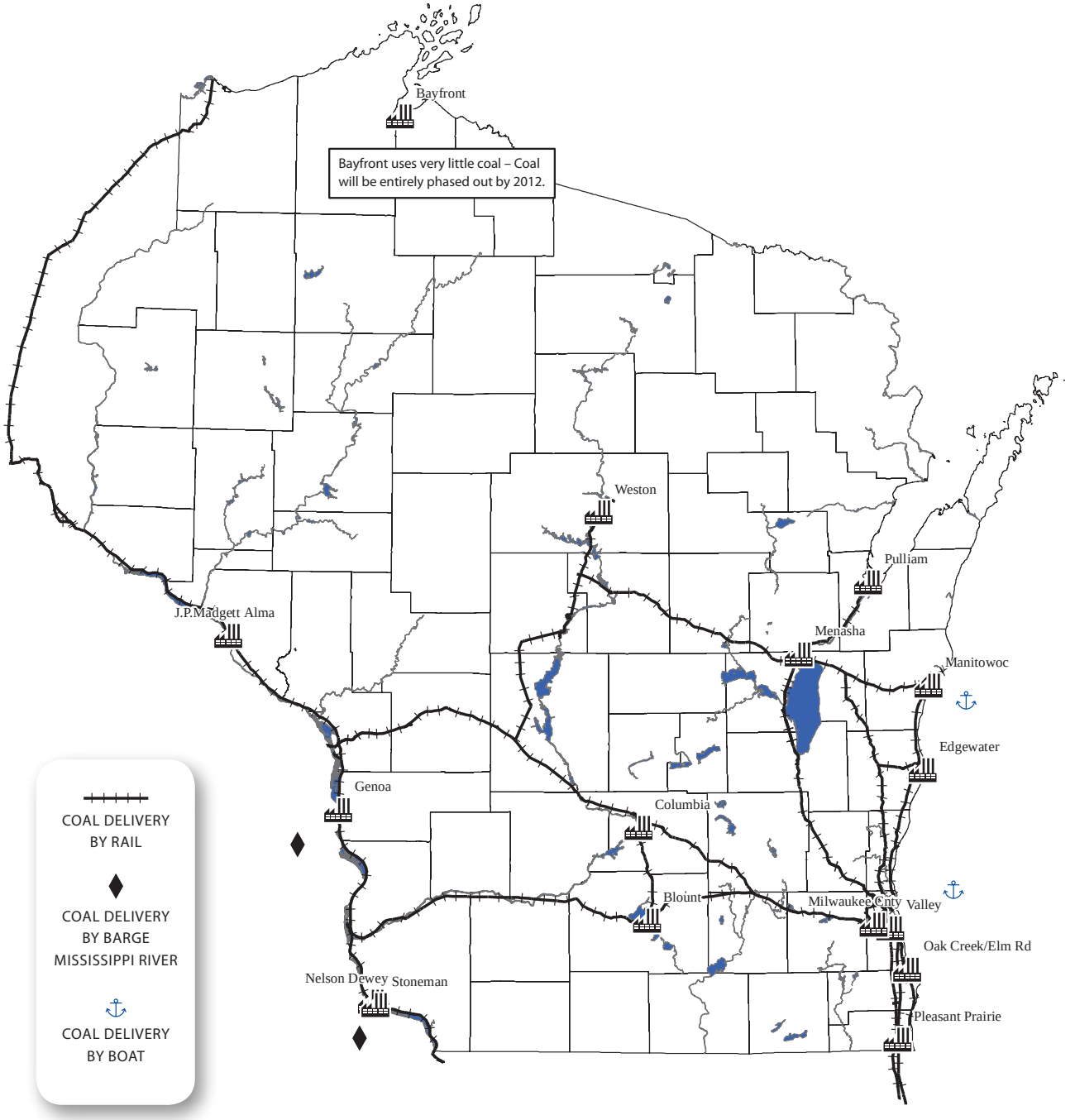
Source: Wisconsin Office of Energy Independence.

Wisconsin Natural Gas Company Territories and Major Pipelines



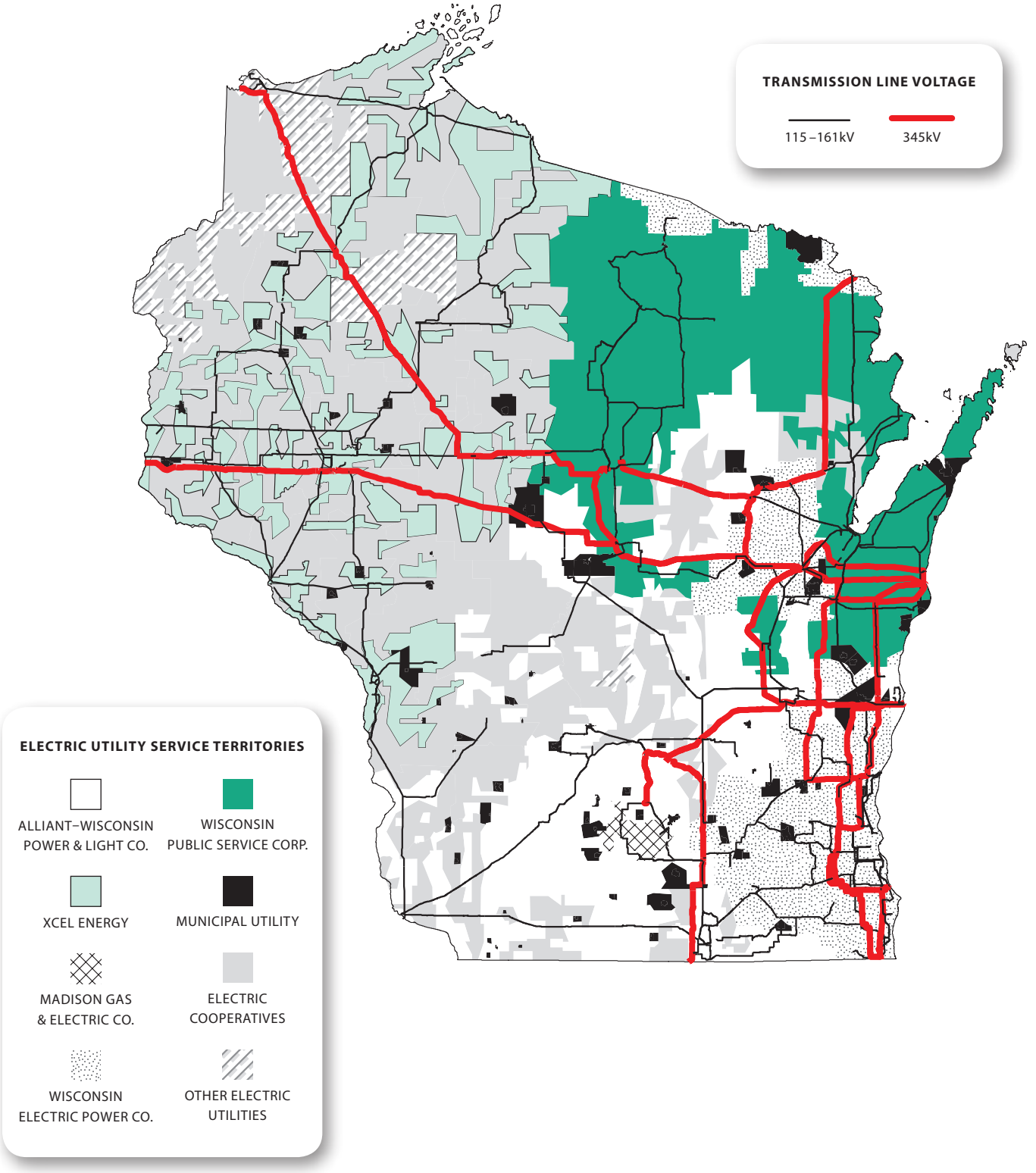
Source: Public Service Commission of Wisconsin.

Coal Transportation Routes in Wisconsin and Major Coal-Fired Power Plants, 2010



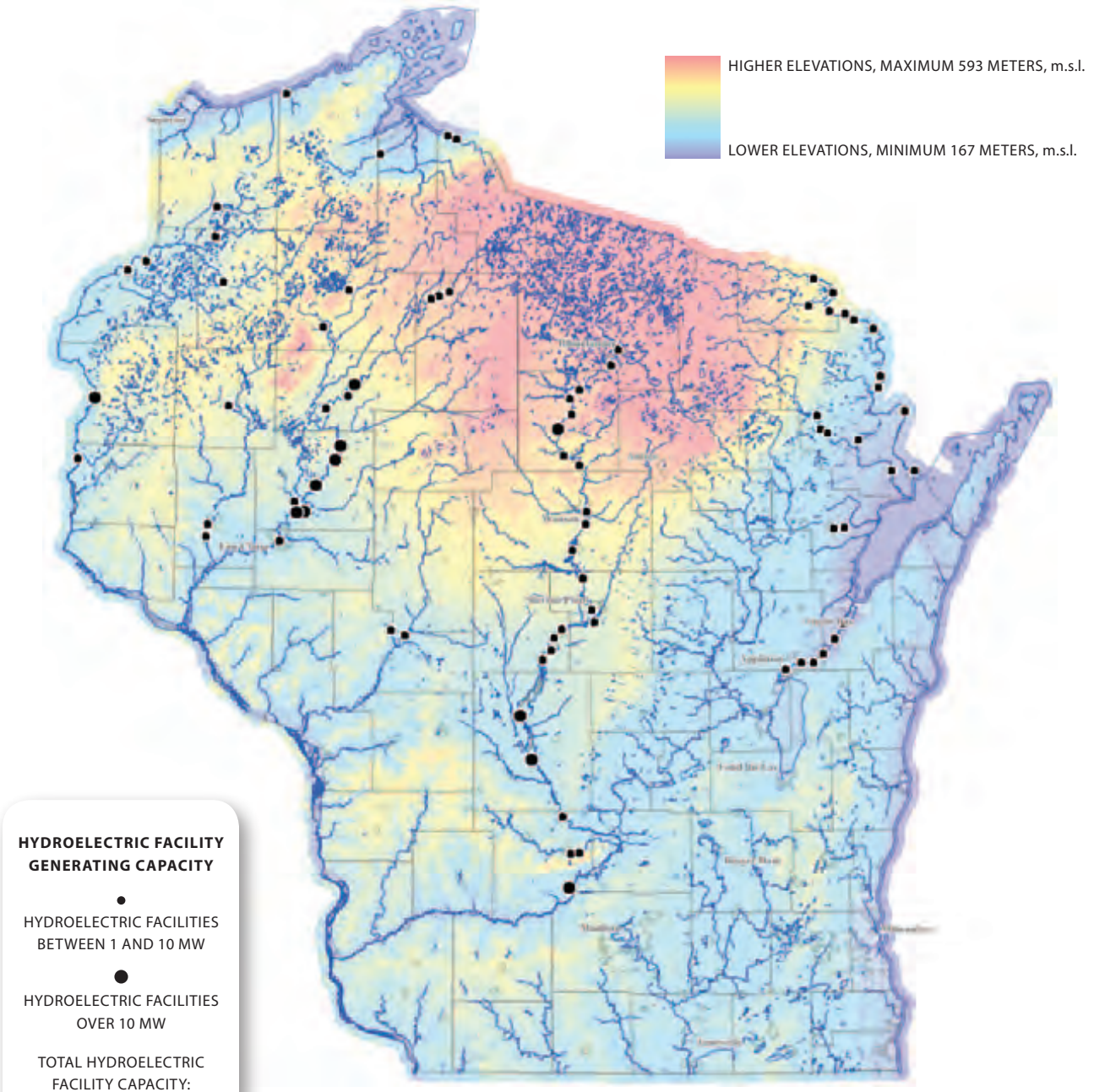
Source: Wisconsin Office of Energy Independence

Major Electric Lines and Service Territories



Source: Public Service Commission of Wisconsin–2010.

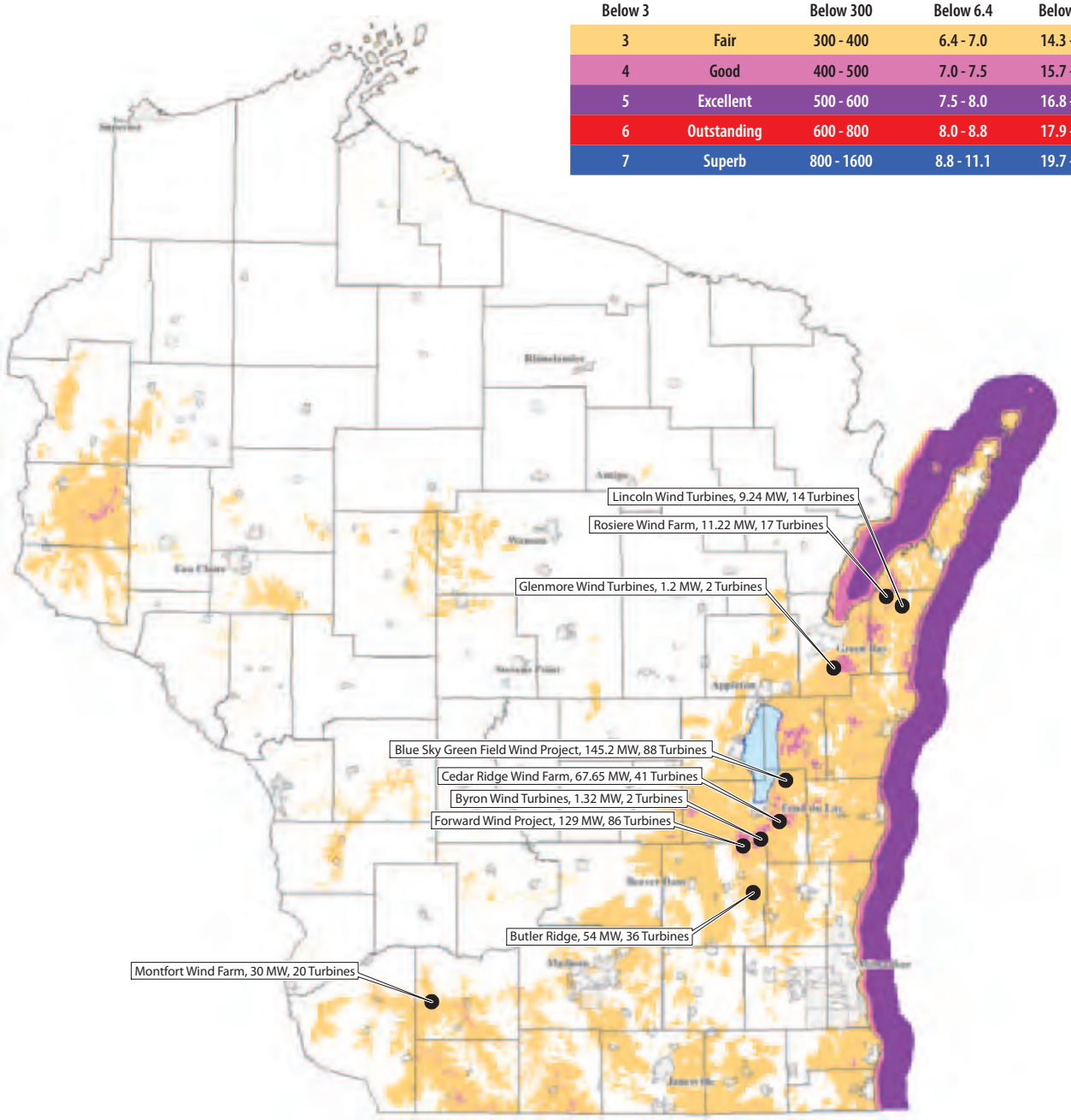
Hydroelectric Generation Sites in Wisconsin, 2010



Capacity and Energy Data Source: Commission of Wisconsin, Gas and Energy Division. Includes hydroelectric generation sites in Wisconsin owned by utilities, merchants, cooperatives, and other nonutilities.
Hydroelectric Facility GIS Data Source: Wisconsin Department of Administration, Division of Energy.

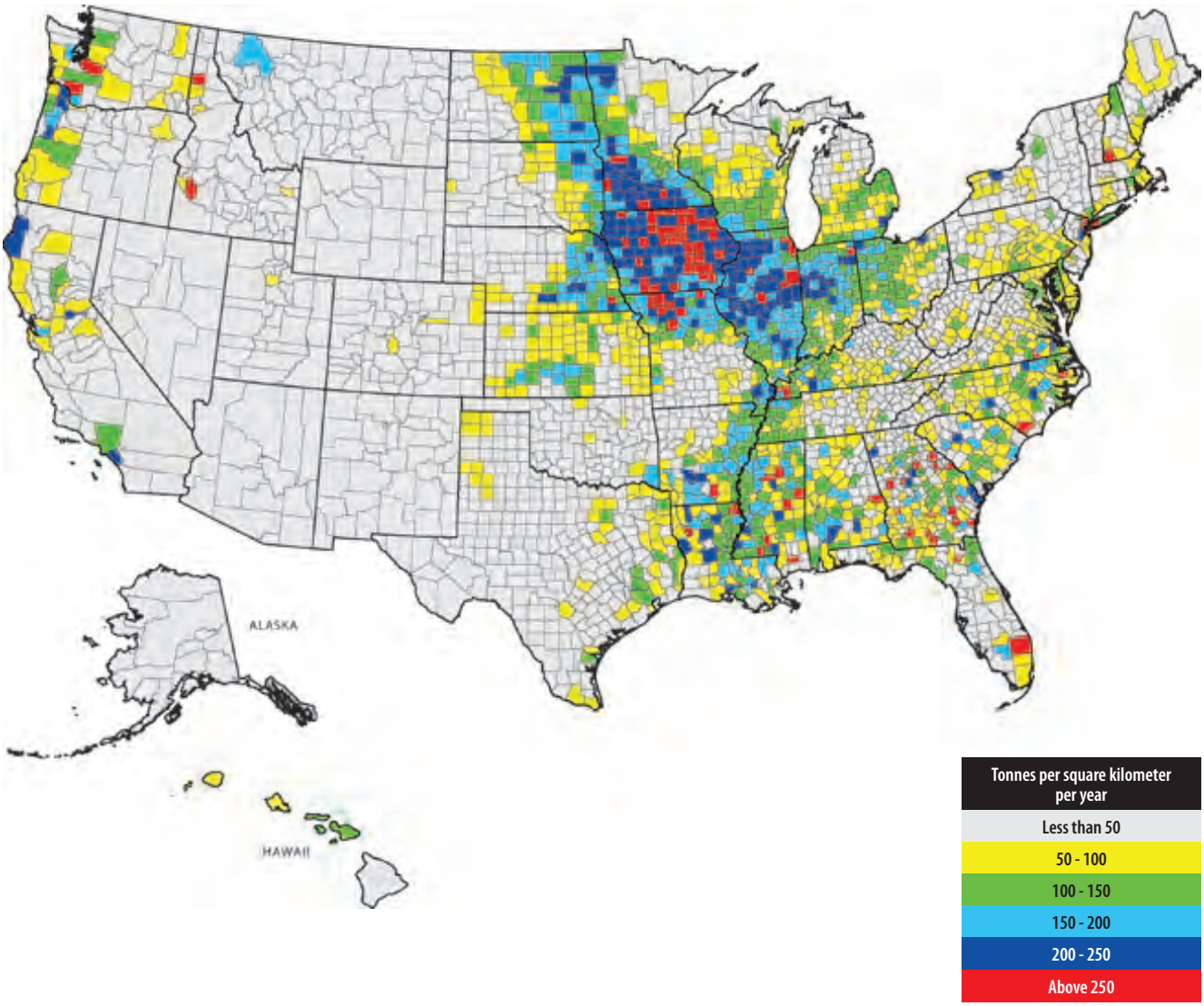
Estimated Wind Power Energy Potential (at 70 meters) and Existing Wind Development Locations, 2010

Wind Power Classification	Resource Potential	Wind Power Density at 70 m (watts/square meter)	Wind Speed at 70 m (m/s)	Wind Speed at 70 m (mph)
Below 3		Below 300	Below 6.4	Below 14.3
3	Fair	300 - 400	6.4 - 7.0	14.3 - 15.7
4	Good	400 - 500	7.0 - 7.5	15.7 - 16.8
5	Excellent	500 - 600	7.5 - 8.0	16.8 - 17.9
6	Outstanding	600 - 800	8.0 - 8.8	17.9 - 19.7
7	Superb	800 - 1600	8.8 - 11.1	19.7 - 24.8



Wind Data Source: AWS Truewind, 2008

Biomass Resources Available in the United States



Based on the map titled "Biomass Resources Available in the United States," distributed by the National Renewable Energy Laboratory (NREL), http://www.nrel.gov/.

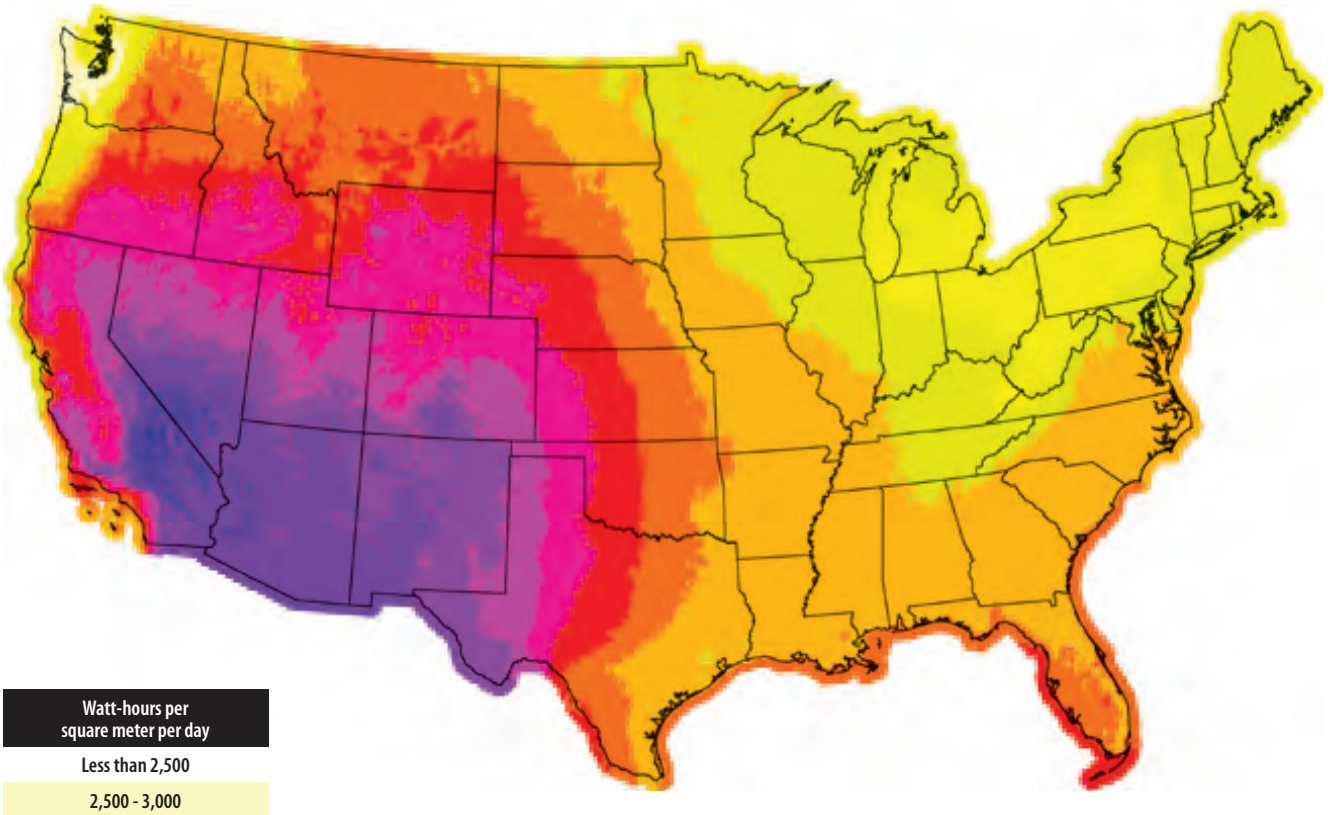
GIS Data Source: http://www.nrel.gov/.

GIS Data Metadata: None available.

Notes from the original NREL map: This study estimates the technical biomass resources currently available in the United States by county. It includes the following feedstock categories:

- Agricultural residues (crops and animal manure).
- Wood residues (forest, primary mill, secondary mill, and urban wood).
- Municipal discards (methane emissions from landfills and domestic wastewater treatment).
- Dedicated energy crops (on Conservation Reserve Program and Abandoned Mine Lands).

Estimated Solar Insulation for the United States, Two-Axis Tracker



Watt-hours per square meter per day
Less than 2,500
2,500 - 3,000
3,000 - 3,500
3,500 - 4,000
4,000 - 4,500
4,500 - 5,000
5,000 - 5,500
5,500 - 6,000
6,000 - 6,500
6,500 - 7,000
7,000 - 7,500
7,500 - 8,000
Above 8,000

GIS Data Source: http://www.nrel.gov/

Purpose: Provide information on the solar resource potential for the 48 contiguous states. The insolation values represent the average solar energy available to a concentrating collector on a 2-axis tracker, such as a dish or a power tower.