

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.

As generation from coal decreases, generation from natural gas increases, and petroleum continues to be the primary transportation fuel in the state, each of these fuels represents approximately one-quarter of the state's resource energy use: natural gas, 26.0 percent; coal, 26.3 percent; and petroleum, 28.5 percent.

The balance of resource energy fuels in Wisconsin are: renewables (5.7 percent), nuclear energy (6.7 percent) and imported electricity (6.8 percent).

In 2012, renewables increased by 0.2 percent. This category includes hydroelectric generation, solar (photovoltaic and solar thermal), biomass (e.g., wood and wood by-products), biogas (e.g., agricultural manure digesters, 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 (24.2 percent), industrial (26.8 percent) and transportation (26.7 percent) sectors each account for about one-quarter of Wisconsin's resource energy consumption. The commercial and agricultural sectors account for 20.0 percent and 2.3 percent, respectively.

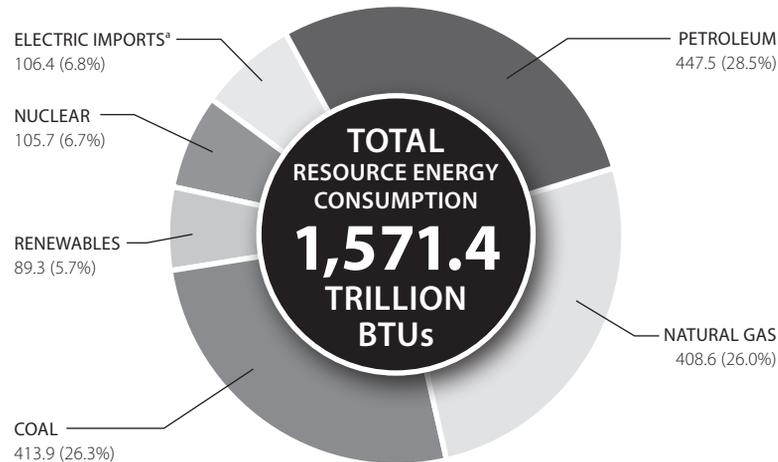
In 2012, end-use energy consumption decreased in all sectors except transportation and agriculture. The residential sector saw a 9.4 percent decrease, the commercial sector a 5.1 percent decrease, and the industrial sector, a decrease of 2.8 percent. End-use consumption increased by 7.2 and 1.8 percent for the agriculture and transportation sectors respectively.

RESOURCE Energy Consumption	2012	Percent of Wisconsin's Resource Energy Consumption
Resource Energy Consumption	↓ 2.7% overall	
BY FUEL		
Coal Consumption, Utilities	↓ 15.7%	26.3%
Petroleum Consumption	↑ 0.3%	28.5%
Natural Gas Consumption	↑ 3.0%	26.0%
Electricity Imports	↑ 59.9%	6.8%
Renewables	↑ 0.2%	5.7%
BY ECONOMIC SECTOR		
Transportation	↑ 1.9%	26.7%
Industrial	↓ 2.5%	26.8%
Residential	↓ 7.4%	24.2%
Commercial	↓ 3.7%	20.0%
Agricultural	↑ 7.8%	2.3%

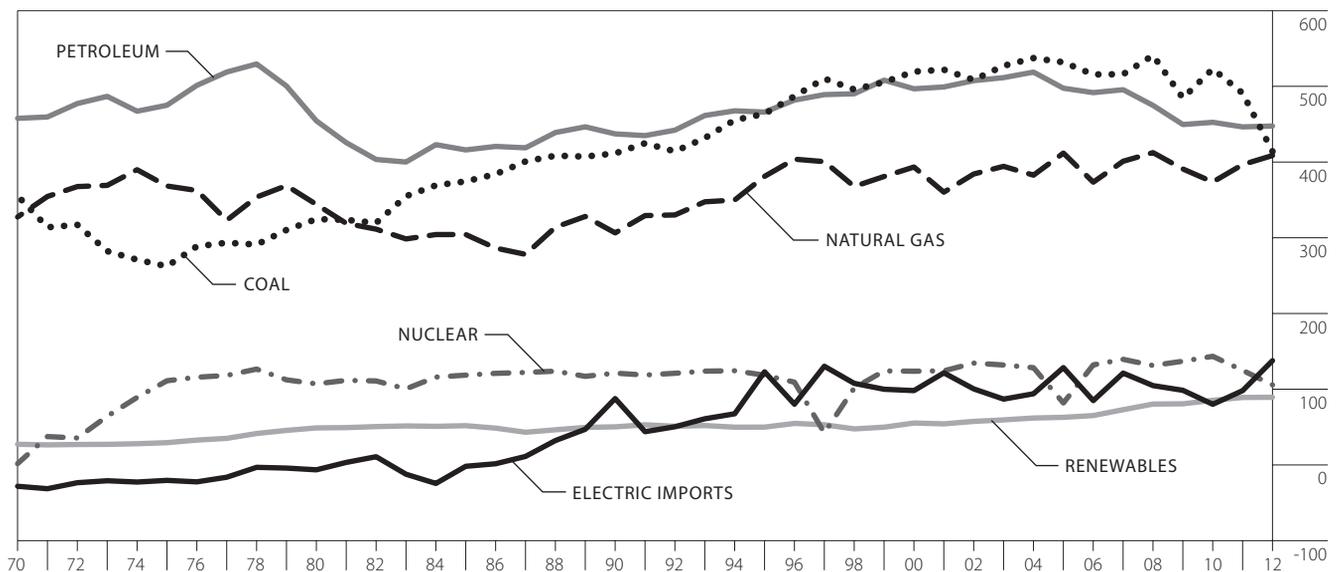
END-USE Energy Consumption	2012	Percent of Wisconsin's End-Use Energy Consumption
End-Use Energy Consumption	↓ 2.8% overall	
BY FUEL		
Petroleum Consumption	↑ 0.2%	40.1%
Natural Gas Consumption	↓ 8.1%	28.7%
Electricity Consumption	↑ 0.3%	21.1%
Renewables Consumption	↑ 1.2%	6.9%
Coal Consumption, Non-Utilities	↓ 14.8%	3.3%
BY ECONOMIC SECTOR		
Transportation	↑ 1.8%	37.7%
Industrial	↓ 2.8%	23.8%
Residential	↓ 9.4%	21.6%
Commercial	↓ 5.1%	14.6%
Agricultural	↑ 7.2%	2.3%

Wisconsin Resource Energy Consumption, by Type of Fuel

2012 TRILLIONS OF BTU AND PERCENT OF TOTAL



1970-2012 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

RESOURCE
ENERGY
CONSUMPTION
2.7%

Resource energy consumption decreased 2.7 percent in 2012. Petroleum use increased 0.3 percent; natural gas, increased 3.0 percent; coal, decreased 15.7 percent; and renewables increased 0.2 percent.

1970-2012 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Petroleum		Natural Gas		Coal ^a		Renewables ^b		Nuclear ^d		Electric Imports ^c		Total
1970 ^r	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 ^r	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 ^r	416.0	32.9%	304.2	24.1%	374.4	29.6%	51.8	4.1%	118.6	9.4%	-1.8	-0.1%	1,263.2
1990 ^r	437.2	30.9%	306.4	21.7%	411.4	29.1%	50.3	3.6%	121.2	8.6%	87.7	6.2%	1,414.2
1995 ^r	465.9	29.1%	381.1	23.8%	463.7	28.9%	49.9	3.1%	118.5	7.4%	123.0	7.7%	1,602.1
1996 ^r	481.8	29.8%	403.8	25.0%	486.9	30.1%	54.8	3.4%	109.3	6.8%	80.2	5.0%	1,616.7
1997 ^r	489.0	30.1%	400.5	24.6%	510.1	31.4%	53.0	3.3%	42.3	2.6%	130.3	8.0%	1,625.3
1998 ^r	490.1	30.4%	367.7	22.8%	495.8	30.8%	47.6	3.0%	101.5	6.3%	107.7	6.7%	1,610.4
1999 ^r	508.1	30.5%	380.9	22.8%	505.5	30.3%	49.9	3.0%	124.1	7.4%	99.9	6.0%	1,668.4
2000 ^r	496.7	29.4%	393.4	23.3%	519.4	30.8%	55.3	3.3%	123.8	7.3%	98.1	5.8%	1,686.7
2001 ^r	499.1	29.7%	360.2	21.4%	521.9	31.0%	54.2	3.2%	124.3	7.4%	121.6	7.2%	1,681.3
2002 ^r	507.4	30.0%	384.2	22.7%	508.5	30.0%	57.5	3.4%	134.4	7.9%	100.4	5.9%	1,692.5
2003 ^r	511.4	29.9%	394.3	23.0%	527.0	30.8%	59.5	3.5%	132.0	7.7%	86.9	5.1%	1,711.1
2004 ^r	518.7	30.1%	382.6	22.2%	537.2	31.2%	62.0	3.6%	128.4	7.5%	94.0	5.5%	1,723.0
2005 ^r	497.4	29.1%	411.8	24.0%	531.7	31.1%	62.8	3.7%	81.8	4.8%	125.4	7.3%	1,711.0
2006 ^r	491.6	30.1%	373.4	22.8%	515.7	31.6%	65.2	4.0%	132.1	8.1%	56.6	3.5%	1,634.7
2007 ^r	495.5	28.9%	401.0	23.4%	515.9	30.1%	72.9	4.3%	139.4	8.1%	88.3	5.2%	1,713.1
2008 ^r	474.8	27.8%	412.4	23.9%	540.8	31.7%	80.4	4.7%	131.3	7.7%	72.3	4.2%	1,711.9
2009 ^r	449.5	28.0%	390.8	24.1%	484.5	30.1%	80.7	5.0%	137.0	8.5%	68.2	4.2%	1,610.6
2010 ^r	452.4	27.8%	373.6	22.9%	523.0	32.2%	85.3	5.2%	143.4	8.8%	48.6	3.0%	1,626.4
2011 ^r	446.4	27.7%	396.6	24.4%	490.8	30.5%	89.1	5.5%	124.8	7.7%	66.5	4.1%	1,614.3
2012 ^p	447.5	28.5%	408.6	25.9%	413.9	26.4%	89.3	5.7%	105.7	6.7%	106.4	6.8%	1,571.4

^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.

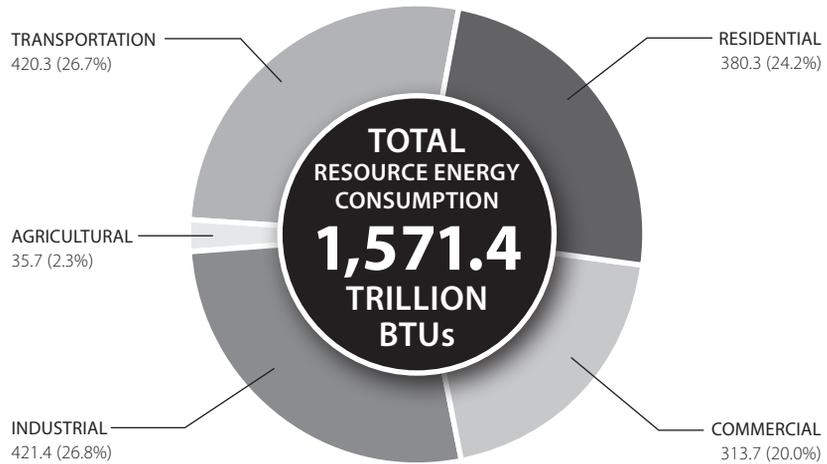
^r Preliminary estimates.

^p Revised due to revisions in contributing tables.

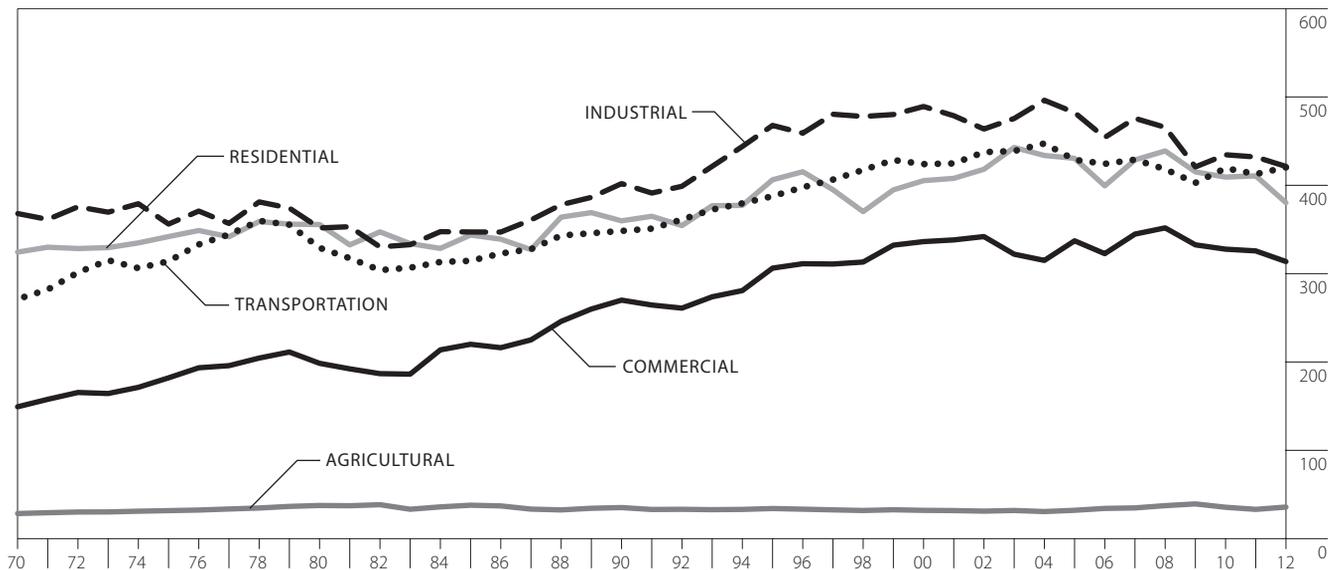
Source: Compiled from tables in this publication for Wisconsin petroleum, natural gas, coal, renewable resources and electricity use, by economic sector, and for Wisconsin electric utility energy use.

Wisconsin Resource Energy Consumption, by Economic Sector

2012 TRILLIONS OF BTU AND PERCENT OF TOTAL



1970-2012 TRILLIONS OF BTU



Source: Wisconsin State Energy Office.

Wisconsin Resource Energy Consumption, by Economic Sector

RESOURCE
ENERGY
CONSUMPTION
2.7%

Total resource energy consumption decreased 2.7 percent in 2012. The transportation and agricultural sectors saw increases of 1.9 and 7.8 percent, respectively. Other sectors saw decreases of 7.4 percent (residential), 3.7 percent (commercial) and 2.5 percent (industrial).

1970-2012 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Residential		Commercial		Industrial		Agricultural ^a		Transportation		Total
1970 ^r	324.3	28.4%	149.3	13.1%	368.0	32.2%	28.4	2.5%	271.2	23.8%	1,141.3
1975 ^r	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 ^r	343.7	27.2%	220.0	17.4%	347.1	27.5%	37.9	3.0%	314.5	24.9%	1,263.2
1990 ^r	359.8	25.4%	270.0	19.1%	401.9	28.4%	35.2	2.5%	348.3	24.6%	1,415.2
1995 ^r	406.3	25.4%	306.4	19.1%	467.8	29.2%	34.1	2.1%	387.7	24.2%	1,602.2
1996 ^r	415.4	25.9%	311.2	19.4%	459.0	28.6%	33.4	2.1%	397.7	24.8%	1,616.7
1997 ^r	395.0	24.7%	310.9	19.4%	480.4	30.0%	32.6	2.0%	406.4	25.4%	1,625.3
1998 ^r	370.2	23.1%	313.1	19.5%	477.9	29.8%	31.9	2.0%	417.3	26.0%	1,610.4
1999 ^r	394.8	24.6%	332.2	20.7%	480.1	30.0%	32.7	2.0%	428.6	26.7%	1,668.4
2000 ^r	405.3	25.3%	336.2	21.0%	489.2	30.5%	32.0	2.0%	424.0	26.5%	1,686.7
2001 ^r	407.9	25.5%	338.5	21.1%	478.7	29.9%	31.8	2.0%	424.8	26.5%	1,681.6
2002 ^r	418.1	26.1%	341.9	21.3%	463.7	28.9%	31.2	1.9%	437.5	27.3%	1,692.4
2003 ^r	442.8	27.6%	322.0	20.1%	475.6	29.7%	31.9	2.0%	438.8	27.4%	1,711.1
2004 ^r	433.7	27.1%	315.0	19.7%	496.2	31.0%	30.7	1.9%	447.3	27.9%	1,723.0
2005 ^r	430.5	26.9%	337.2	21.0%	482.3	30.1%	32.1	2.0%	428.9	26.8%	1,711.0
2006 ^r	399.4	24.9%	322.6	20.1%	454.2	28.3%	34.2	2.1%	424.3	26.5%	1,634.7
2007 ^r	428.7	26.8%	344.7	21.5%	475.8	29.7%	34.8	2.2%	429.0	26.8%	1,713.1
2008 ^r	438.9	27.4%	351.8	22.0%	465.7	29.1%	37.4	2.3%	418.2	26.1%	1,711.9
2009 ^r	415.2	25.9%	332.6	20.8%	420.8	26.3%	39.3	2.5%	402.8	25.1%	1,610.6
2010 ^r	409.3	25.5%	327.7	20.5%	434.6	27.1%	35.5	2.2%	419.4	26.2%	1,626.5
2011 ^r	410.7	25.6%	325.7	20.3%	432.1	27.0%	33.2	2.1%	412.7	25.8%	1,614.3
2012 ^p	380.3	23.7%	313.7	19.6%	421.4	26.3%	35.7	2.2%	420.3	26.2%	1,571.4

^a Beginning in 2005, the Wisconsin 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.

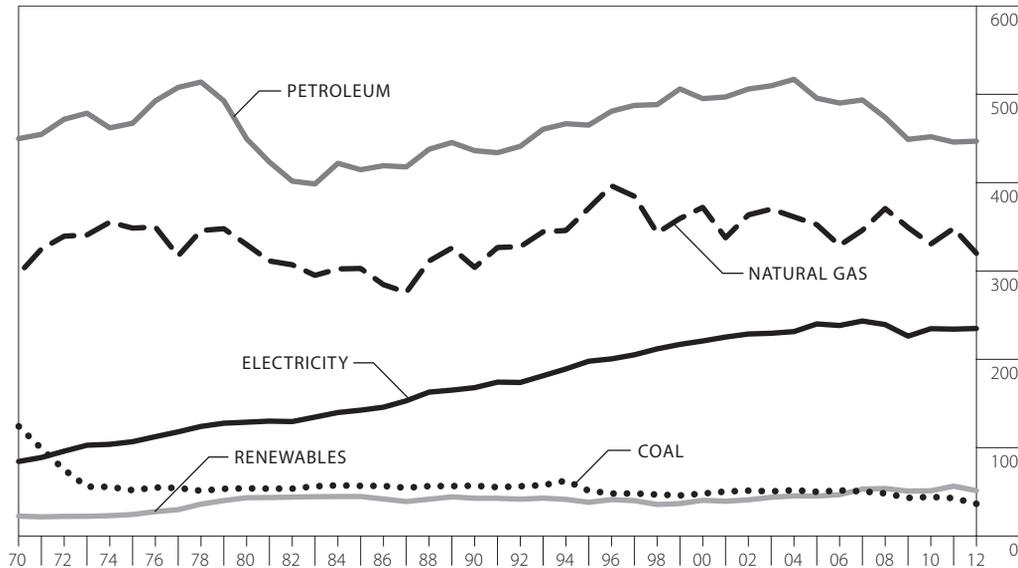
^p Preliminary estimates.

^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.

Wisconsin End-Use Energy Consumption, by Type of Fuel

1970-2012 TRILLIONS OF BTU



1970-2012 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Petroleum		Natural Gas		Coal		Renewables		Electricity		Total
1970 ^r	449.8	46.0%	296.3	30.3%	124.3	12.7%	22.5	2.3%	84.4	8.6%	977.2
1975 ^r	467.2	46.8%	348.5	34.9%	51.8	5.2%	24.3	2.4%	106.7	10.7%	998.6
1980 ^r	449.6	44.7%	329.9	32.8%	53.9	5.4%	43.3	4.3%	128.8	12.8%	1,005.6
1985 ^r	414.6	43.1%	302.8	31.5%	56.7	5.9%	44.8	4.7%	142.4	14.8%	961.4
1990 ^r	436.2	43.3%	304.0	30.1%	56.9	5.6%	43.4	4.3%	167.9	16.7%	1,008.4
1995 ^r	465.1	41.3%	371.1	32.9%	51.3	4.5%	42.2	3.7%	197.8	17.5%	1,127.5
2000 ^r	495.1	41.8%	372.0	31.4%	48.0	4.1%	48.3	4.1%	220.8	18.6%	1,184.2
2005 ^r	495.6	41.5%	352.4	29.5%	50.0	4.2%	55.6	4.7%	240.1	20.1%	1,193.6
2006 ^r	490.1	42.0%	328.9	28.2%	51.6	4.4%	57.8	5.0%	238.3	20.4%	1,166.7
2007 ^r	493.6	41.1%	346.1	28.8%	50.5	4.2%	66.7	5.6%	243.4	20.3%	1,200.2
2008 ^r	473.7	39.3%	370.7	30.8%	48.2	4.0%	72.1	6.0%	239.3	19.9%	1,204.0
2009 ^r	449.0	39.5%	349.2	30.7%	43.1	3.8%	70.2	6.2%	226.2	19.9%	1,137.7
2010 ^r	451.9	39.8%	330.5	29.1%	44.3	3.9%	72.7	6.4%	234.6	20.7%	1,134.2
2011 ^r	445.9	38.9%	348.2	30.4%	42.8	3.7%	75.5	6.6%	234.2	20.4%	1,146.6
2012 ^p	446.9	40.1%	320.0	28.7%	36.5	3.3%	76.5	6.9%	234.9	21.1%	1,114.7

^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.

END-USE ENERGY
2.8%
IN 2012

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.

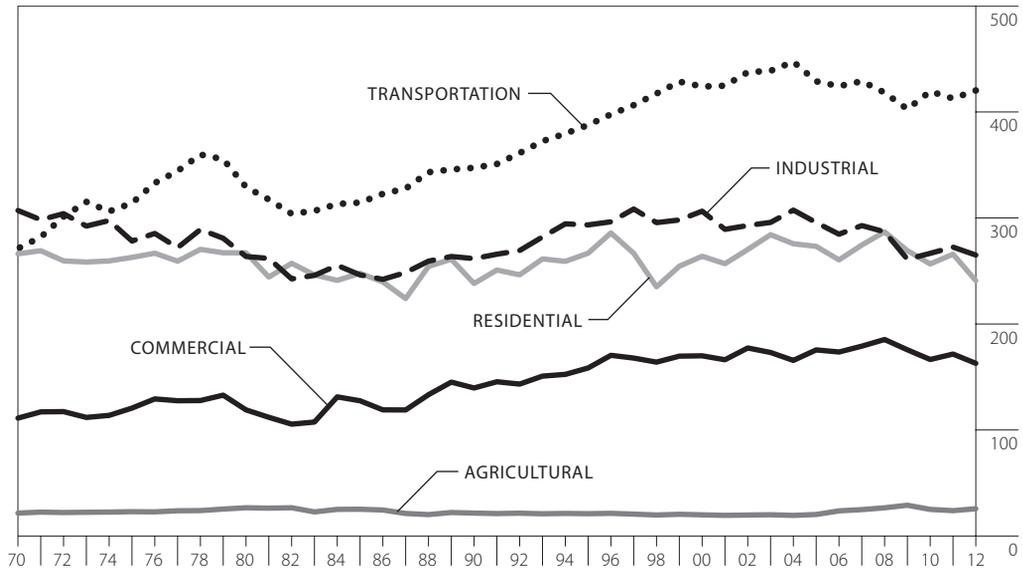
End use energy decreased by 2.8 percent overall in 2012, after increasing by 1.1 percent in 2011. Petroleum continues to be the most-used end use energy source in Wisconsin (40.1 percent).

Wisconsin End-Use Energy Consumption, by Economic Sector

END-USE ENERGY
2.8%
IN 2012

End use energy consumption decreased 2.8 percent in 2012. The transportation sector continues to be the largest consumer of end use energy in Wisconsin (37.7 percent).

1970-2012 TRILLIONS OF BTU



1970-2012 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Residential		Commercial		Industrial		Agricultural		Transportation		Total
1970 ^r	266.2	27.2%	111.2	11.4%	307.0	31.4%	21.6	2.2%	271.2	27.8%	977.2
1975 ^r	262.8	26.3%	120.6	12.1%	278.2	27.9%	22.9	2.3%	314.0	31.4%	998.6
1980 ^r	267.1	26.6%	119.0	11.8%	263.6	26.2%	26.7	2.7%	329.2	32.7%	1,005.6
1985 ^r	247.8	25.8%	127.6	13.3%	246.3	25.6%	25.2	2.6%	314.5	32.7%	961.4
1990 ^r	238.2	23.6%	139.6	13.8%	261.7	25.9%	21.6	2.1%	347.3	34.4%	1,008.4
1995 ^r	266.8	23.7%	158.7	14.1%	293.4	26.0%	21.0	1.9%	387.7	34.4%	1,127.5
2000 ^r	263.9	22.3%	170.0	14.4%	306.4	25.9%	20.0	1.7%	424.0	35.8%	1,184.2
2005 ^r	273.2	22.9%	175.6	14.7%	295.7	24.8%	20.3	1.7%	428.9	35.9%	1,193.6
2006 ^r	260.4	22.3%	173.6	14.9%	284.7	24.4%	23.7	2.0%	424.3	36.4%	1,166.7
2007 ^r	274.4	22.9%	179.1	14.9%	292.8	24.4%	24.9	2.1%	429.0	35.7%	1,200.2
2008 ^r	286.9	23.8%	185.4	15.4%	286.9	23.8%	26.6	2.2%	418.2	34.7%	1,204.0
2009 ^r	269.2	23.7%	175.6	15.4%	261.1	22.9%	29.0	2.6%	402.7	35.4%	1,137.7
2010 ^r	256.6	22.6%	166.5	14.7%	266.6	23.5%	25.1	2.2%	419.4	37.0%	1,134.2
2011 ^r	265.8	23.2%	171.6	15.0%	272.5	23.8%	23.9	2.1%	412.7	36.0%	1,146.6
2012 ^p	240.9	21.6%	162.9	14.6%	265.0	23.8%	25.7	2.3%	420.3	37.7%	1,114.7

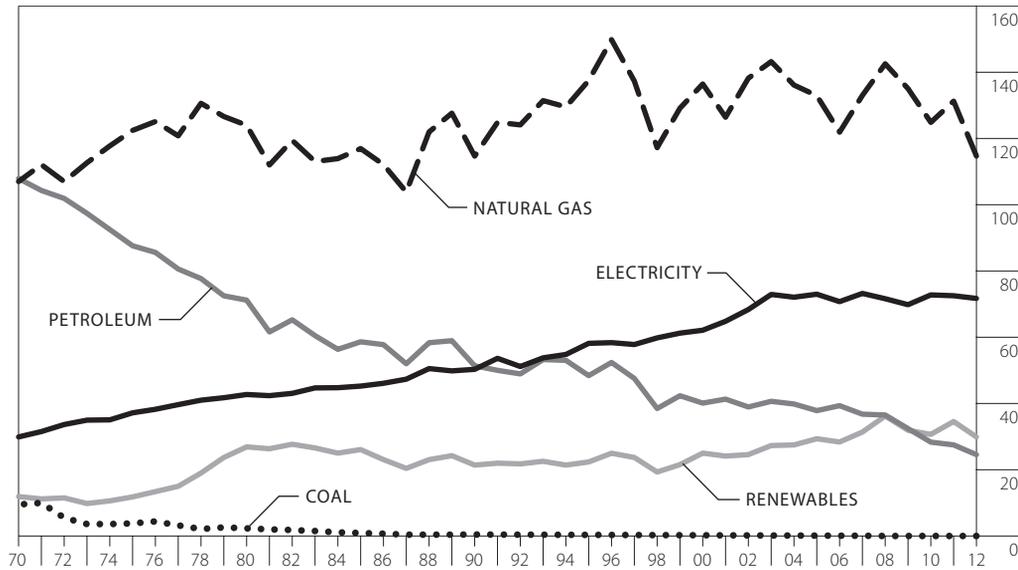
^p Preliminary estimates.

^r Revised due to revisions in contributing tables.

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Wisconsin Residential Energy Use, by Type of Fuel

1970-2012 TRILLIONS OF BTU



1970-2012 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Petroleum ^c	Natural Gas	Coal	Renewables ^a	Electricity	Total End Use	Total Resource ^b
1970 ^r	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 ^r	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 ^r	58.6 23.7%	116.9 47.2%	0.9 0.4%	26.1 10.5%	45.2 18.3%	247.8	343.7
1990 ^r	51.4 21.6%	114.7 48.1%	0.4 0.2%	21.4 9.0%	50.3 21.1%	238.2	359.8
1995 ^r	48.4 18.1%	137.5 51.5%	0.3 0.1%	22.4 8.4%	58.2 21.8%	266.8	406.3
2000 ^r	40.1 15.2%	136.4 51.7%	0.2 0.1%	25.0 9.5%	62.1 23.5%	263.9	405.3
2005 ^r	37.8 13.9%	132.9 48.7%	0.1 0.0%	29.4 10.7%	73.0 26.7%	273.2	430.5
2006 ^r	39.3 15.1%	121.9 46.8%	0.1 0.0%	28.4 10.9%	70.7 27.2%	260.4	399.4
2007 ^r	36.8 13.4%	133.0 48.5%	0.1 0.0%	31.4 11.4%	73.2 26.7%	274.4	428.7
2008 ^r	36.5 12.7%	142.5 49.7%	0.0 0.0%	36.2 12.6%	71.6 25.0%	286.9	438.9
2009 ^r	32.4 12.0%	135.0 50.2%	0.0 0.0%	31.9 11.9%	69.8 25.9%	269.2	415.2
2010 ^r	28.3 11.0%	124.9 48.7%	0.0 0.0%	30.7 12.0%	72.8 28.4%	256.6	409.3
2011 ^r	27.5 10.3%	131.3 49.4%	0.0 0.0%	34.6 13.0%	72.5 27.3%	265.8	410.7
2012 ^p	24.6 10.2%	114.7 47.6%	0.0 0.0%	29.9 12.4%	71.7 29.8%	240.9	380.3

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

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

c Changes in petroleum consumption figures are due in-part to a historical revision of propane consumption data. The propane dataset was revised to bring it in line with federal volumes.

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.

RESIDENTIAL
END-USE
ENERGY
9.4%
IN 2012

Residential end use energy decreased 9.4 percent in 2012. Natural gas continues to be the dominant fuel used in Wisconsin homes (47.6 percent), providing just under half of the end use energy used.

Consumption of all fuels in the residential sector declined in 2012—electricity, 1.1 percent; renewables, 13.5 percent; natural gas, 12.6 percent; and petroleum, 10.7 percent.

Between 1970 and 2012, petroleum use in the residential sector declined 77.2 percent.

Wisconsin Commercial Energy Use, by Type of Fuel

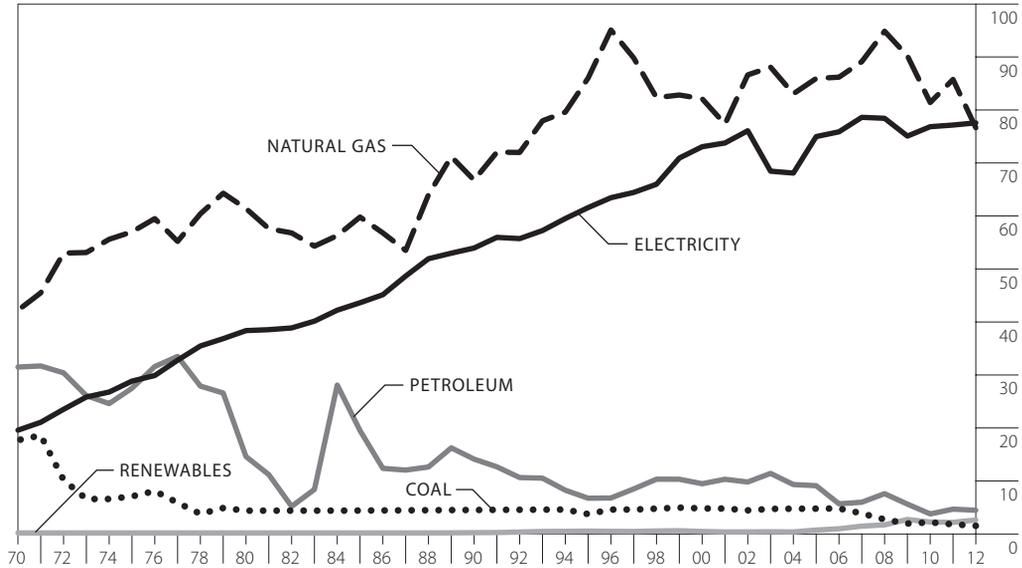
**COMMERCIAL
END-USE
ENERGY
5.1%
IN 2012**

In 2012, commercial sector end use energy decreased 5.1 percent. Since 1980, commercial end use energy has increased 36.9 percent. Electricity energy use more than doubled (102.1 percent) over the same period.

The commercial sector saw decreases in renewables (2.8 percent) and coal (13.3 percent), and increases in every other sector: petroleum (10.6 percent), natural gas (5.2 percent), and electricity (0.3 percent).

In 2012, electricity overtook natural gas as the major energy source, comprising 47.6 percent of commercial sector energy.

1970-2012 TRILLIONS OF BTU



1970-2012 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Petroleum ^c		Natural Gas		Coal		Renewables ^a		Electricity		Total End Use	Total Resource ^b
1970 ^r	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 ^r	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 ^r	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 ^r	19.5	15.3%	59.8	46.9%	4.4	3.5%	0.2	0.2%	43.6	34.2%	127.6	220.0
1990 ^r	14.1	10.1%	66.8	47.8%	4.5	3.2%	0.3	0.2%	54.0	38.6%	139.6	270.0
1995 ^r	6.7	4.3%	86.0	54.2%	3.8	2.4%	0.6	0.3%	61.6	38.8%	158.7	306.4
2000 ^r	9.5	5.6%	82.1	48.3%	4.8	2.8%	0.5	0.3%	73.1	43.0%	170.0	336.2
2005 ^r	9.1	5.2%	85.9	49.0%	4.8	2.7%	0.7	0.4%	75.0	42.7%	175.6	337.2
2006 ^r	5.7	3.3%	86.2	49.7%	4.8	2.8%	1.0	0.6%	75.9	43.7%	173.6	322.6
2007 ^r	6.0	3.3%	89.1	49.8%	3.9	2.2%	1.5	0.8%	78.6	43.9%	179.1	344.7
2008 ^r	7.6	4.1%	94.9	51.2%	2.7	1.5%	1.7	0.9%	78.4	42.3%	185.4	351.8
2009 ^r	5.6	3.2%	90.2	51.4%	2.0	1.1%	2.7	1.6%	75.1	42.7%	175.6	332.6
2010 ^r	3.8	2.3%	81.4	48.9%	2.2	1.3%	2.3	1.4%	76.8	46.2%	166.5	327.7
2011 ^r	4.7	2.7%	85.8	50.0%	1.8	1.1%	2.2	1.3%	77.2	45.0%	171.6	325.7
2012 ^p	4.5	2.8%	76.6	47.1%	1.5	0.9%	2.6	1.6%	77.6	47.6%	162.9	313.7

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

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

c Changes in petroleum consumption figures are due in-part to a historical revision of propane consumption data. The propane dataset was revised to bring it in line with federal volumes.

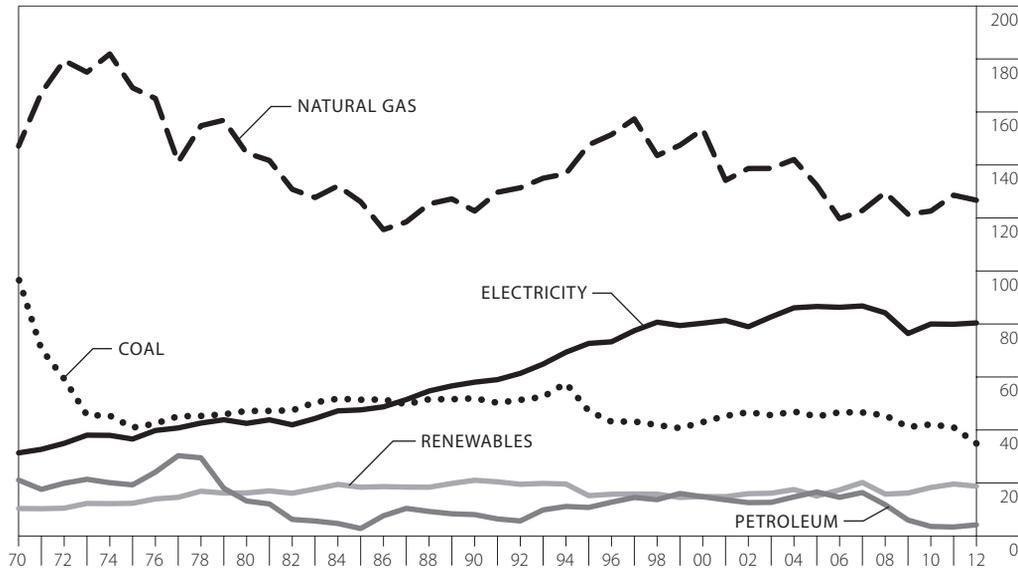
p Preliminary estimates.

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 Industrial Energy Use, by Type of Fuel

1970-2012 TRILLIONS OF BTU



1970-2012 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Petroleum ^c		Natural Gas		Coal		Renewables ^a		Electricity		Total End Use	Total Resource ^b
1970 ^r	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 ^r	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 ^r	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 ^r	2.8	1.1%	126.1	51.2%	51.4	20.9%	18.4	7.5%	47.6	19.3%	246.3	347.1
1990 ^r	8.1	3.1%	122.6	46.9%	51.9	19.8%	21.0	8.0%	58.0	22.2%	261.7	401.9
1995 ^r	10.8	3.7%	147.6	50.3%	47.2	16.1%	15.2	5.2%	72.7	24.8%	293.4	467.8
2000 ^r	14.8	4.8%	153.4	50.1%	43.0	14.0%	14.9	4.9%	80.3	26.2%	306.4	489.2
2005 ^r	16.6	5.6%	132.3	44.7%	45.1	15.3%	15.1	5.1%	86.6	29.3%	295.7	482.3
2006 ^r	14.6	5.1%	119.7	42.0%	46.7	16.4%	17.4	6.1%	86.3	30.3%	284.7	454.2
2007 ^r	16.4	5.6%	122.8	41.9%	46.6	15.9%	20.2	6.9%	86.8	29.6%	292.8	475.8
2008 ^r	11.8	4.1%	129.6	45.2%	45.5	15.9%	15.8	5.5%	84.2	29.3%	286.9	465.7
2009 ^r	6.0	2.3%	121.4	46.5%	41.1	15.8%	16.2	6.2%	76.4	29.3%	261.1	420.8
2010 ^r	3.6	1.3%	122.6	46.0%	42.1	15.8%	18.3	6.8%	80.0	30.0%	266.6	434.6
2011 ^r	3.4	1.2%	128.6	47.2%	41.0	15.0%	19.6	7.2%	79.9	29.3%	272.5	432.1
2012 ^p	4.2	1.6%	126.7	47.8%	34.9	13.2%	18.8	7.1%	80.4	30.3%	265.0	421.4

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

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

c Changes in petroleum consumption figures are due in-part to a historical revision of propane consumption data. The propane dataset was revised to bring it in line with federal volumes.

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.

INDUSTRIAL
END-USE
ENERGY
2.8%
IN 2012

End use energy consumption in the industrial sector decreased 2.8 percent in 2012, following an increase of 2.2 percent in 2011.

The major industrial energy sources are natural gas (47.8 percent) and electricity (30.3 percent), trailed by coal (13.2 percent), renewables (7.1 percent) and petroleum (1.6 percent).

The use of natural gas, coal and renewables declined in the industrial sector by 1.5, 14.8 and 4.0 percent, respectively. Electricity consumption increased by 0.7 percent, and petroleum saw a 22.6 percent jump.

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

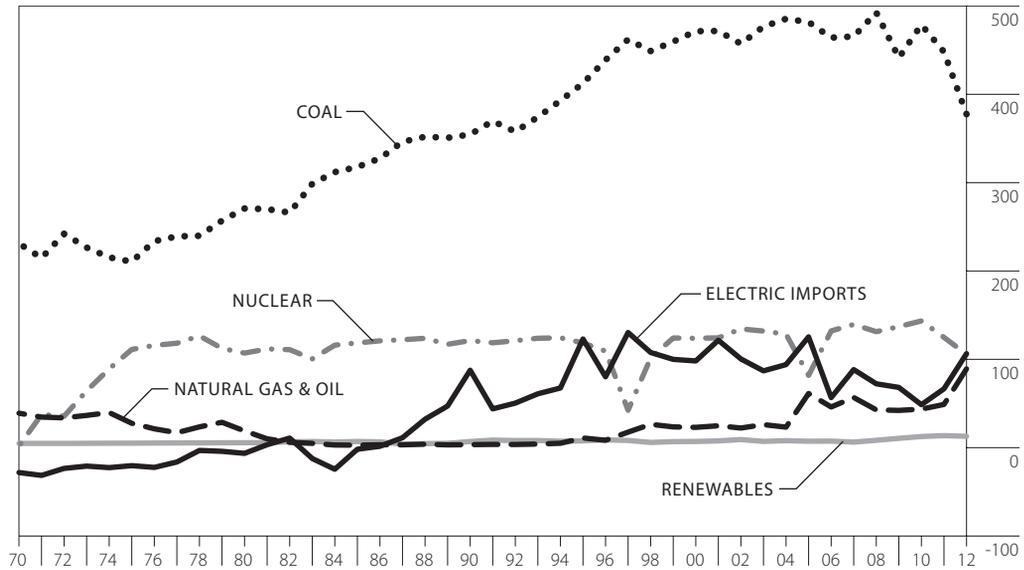
ENERGY USE FOR ELECTRIC GENERATION

1.5%
IN 2012

Wisconsin's energy use for electric generation decreased by 1.5 percent in 2012. Since the early 1980s, coal and nuclear power have been dominate fuels for electricity generation, with 54.6 and 15.3 percent respectively. In 2012, natural gas is closing in on nuclear power with 12.8 percent of all fuels used to generate electricity.

Petroleum use increased by 17.6 percent while natural gas saw a whopping 83.1 percent increase as utilities switch from coal to natural gas at some power plants.

1970-2012 TRILLIONS OF BTU



1970-2012 TRILLIONS OF BTU AND PERCENT OF TOTAL

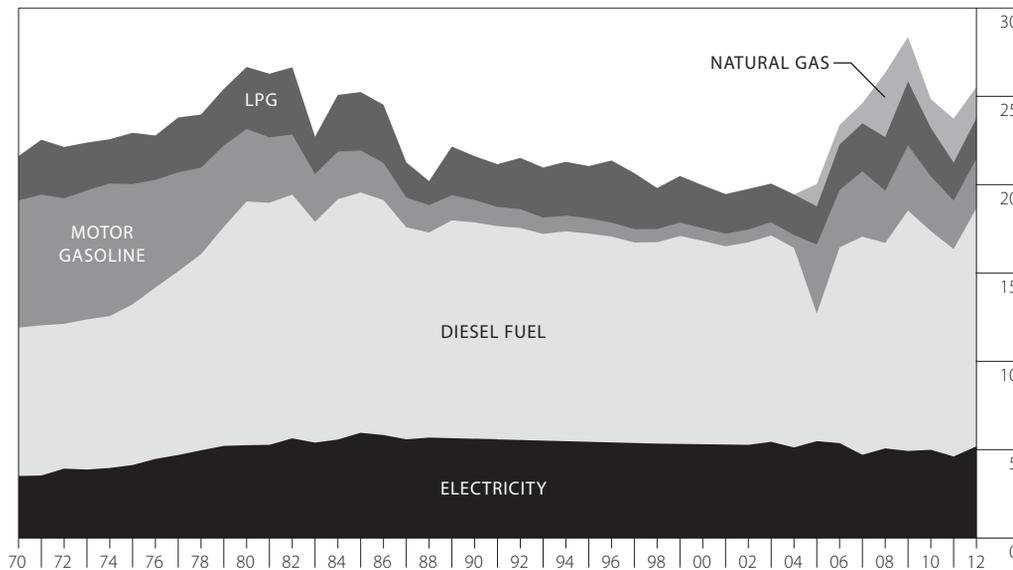
Year	Petroleum	Natural Gas	Coal ^a	Renewables	Nuclear ^b	Electric Imports ^c	Hydro	Total ^d
1970	7.9 3.2%	31.1 12.5%	231.1 93.0%	4.8 1.9%	1.7 0.7%	-28.2 -11.4%	4.8 1.9%	248.4
1975	7.8 2.3%	19.8 5.9%	210.5 63.0%	5.1 1.5%	111.2 33.3%	-20.4 -6.1%	5.1 1.5%	333.9
1980	4.8 1.2%	14.1 3.6%	270.7 68.4%	5.6 1.4%	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	1.9 0.2%	59.4 7.8%	481.7 63.6%	7.2 1.0%	81.8 10.8%	125.4 16.6%	5.1 0.7%	757.4
2010	0.5 0.1%	43.1 5.9%	478.7 65.9%	12.6 1.7%	143.4 19.7%	48.6 6.7%	6.9 1.0%	726.9
2011 ^r	0.5 0.1%	48.4 6.9%	448.0 63.8%	13.6 1.9%	124.8 17.8%	66.5 9.5%	6.6 0.9%	701.9
2012 ^p	0.6 0.1%	88.6 12.8%	377.5 54.6%	12.8 1.9%	105.7 15.3%	106.4 15.4%	4.6 0.7%	691.6

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.
d Percentage totals may not add to 100 due to rounding.
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 (1971-2012); American Gas Association, *Gas Facts* (1970-1995); U.S. Department of Energy, Energy Information Administration, *Electric Power Monthly*, [DOE/EIA-0226(2013/05)] (May 2013); Public Service Commission of Wisconsin, unpublished data (2005-2012); telephone survey of wastewater treatment facilities and landfills on biogas production (2007-2012).

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

1970-2012 TRILLIONS OF BTU



1970-2012 TRILLIONS OF BTU AND PERCENT OF TOTAL

Year	Motor Gasoline	Diesel Fuel ^a	LPG	Other Fuel ^b	Total Petroleum	Electricity ^c	Natural Gas ^d	Total End Use	Total Resource Use
1970	7.2	8.4	2.5		18.1	3.5		21.6	28.4
1975	6.8	9.1	2.9		18.8	4.1		22.9	31.7
1980	4.1	13.8	3.5		21.4	5.3		26.7	37.5
1985	2.4	13.6	3.3		19.3	6.0		25.2	37.9
1990	1.3	12.3	2.5		16.0	5.6		21.6	35.2
1995	0.9	11.8	3.0		15.6	5.4		21.0	34.1
2000	0.7	11.5	2.4		14.7	5.3		20.0	32.0
2005 ^e	3.9	7.2	2.2	0.3	13.6	5.5	1.3	20.3	32.1
2010	3.1	12.4	2.7	0.2	18.4	5.0	1.6	25.1	35.5
2011 ^f	2.7	11.7	2.2	0.2	16.8	4.6	2.5	23.9	33.2
2012 ^p	2.8	13.5	2.3	0.1	18.7	5.2	1.8	25.7	35.7

^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.
^d Natural gas consumption for 2008 reflects the high price of natural gas in that year, as well as the inclusion of nurseries and greenhouses in the sample.
^e 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.
^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 (1991-2012); National Agriculture Statistics Service, unpublished expenditure data (2005-2012); United States Department of Agriculture, Economic Research Service data, <http://www.ers.usda.gov/data/FarmIncome> (2005-2012); Energy Information Administration, petroleum navigator, <http://www.eia.gov/petroleum/data.cfm> (2005-2012).

AGRICULTURAL
 END-USE
 ENERGY
7.1%
 IN 2012

Agricultural energy end use increased by 7.1 percent in 2012.

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 2.3 percent of total end use energy in Wisconsin.

2011 reflects the first year that natural gas is reported in the agriculture sector. Natural gas is used primarily for space heating and crop drying, along with liquefied propane gas (LPG).

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

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 (72.9 percent).

1970-2012 MILLIONS OF GALLONS AND MILLIONS OF kWh

Year	Motor Gasoline	Diesel ^a	LPG	Other Fuels ^b	Total Petroleum	Electricity (Millions of kWh)
1970	58.0	60.7	26.2		144.9	1,028
1975	54.3	65.8	30.1		150.2	1,210
1980	33.0	99.3	36.9		169.2	1,539
1985	19.1	97.8	34.6		151.5	1,745
1990	10.1	88.5	25.9		124.5	1,645
1995	6.9	85.0	30.9		122.8	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	84.9	27.6		118.6	1,560
2000	5.8	83.1	25.3		114.2	1,555
2001	5.7	81.0	23.5		110.2	1,550
2002	5.8	82.7	24.0		112.6	1,545
2003	6.0	84.2	22.8		113.0	1,595
2004	5.8	81.5	24.1		111.4	1,501
2005 ^c	31.2	52.1	22.6	1.9	107.9	1,606
2006	25.9	80.0	27.1	2.2	135.2	1,574
2007	29.6	89.1	28.4	1.9	149.0	1,379
2008	23.6	83.9	31.8	2.0	141.3	1,486
2009	29.5	98.1	37.8	4.8	170.3	1,443
2010	24.8	89.3	28.7	1.7	144.5	1,463
2011 ^r	21.9	84.6	22.5	1.5	130.5	1,351
2012^p	22.4	97.2	24.0	0.9	144.5	1,520

a Fuel oil and kerosene, through 2004.

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

c 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.

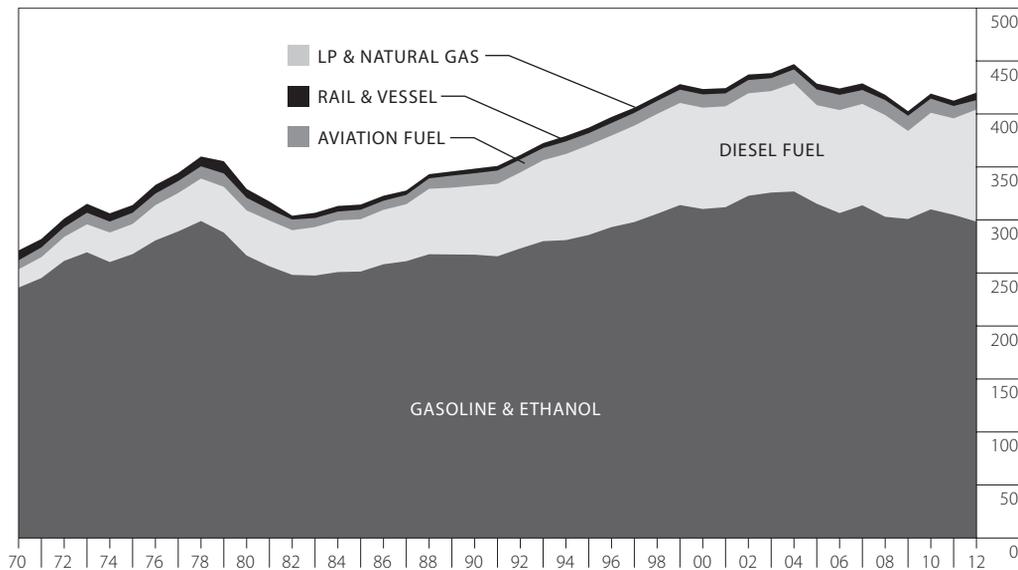
p Preliminary estimates.

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, *Motor Vehicle Fuel Tax Statistics* (1991-2012); National Agriculture Statistics Service, unpublished expenditure data (2005-2012); United States Department of Agriculture, Economic Research Service data, <http://www.ers.usda.gov/data/FarmIncome> (2005-2012); Energy Information Administration, petroleum navigator, <http://www.eia.gov/petroleum/data.cfm> (2005-2012).

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

1970-2012 TRILLIONS OF BTU



TRANSPORTATION ENERGY USE

1.9%

ETHANOL USE

31.0%

MOTOR GASOLINE USE

4.3%

Transportation energy use increased 1.9 percent in 2012. Motor gasoline use decreased 4.3 percent, while ethanol use increased 31.0 percent, following 2011 which saw the first decrease in ethanol consumption since ethanol was introduced to Wisconsin in 1982.

Diesel fuel is used primarily for trucking freight. Diesel fuel use increased 16.1 percent. Transportation activities consume 37.7 percent of Wisconsin's total end use energy, accounting for 88.3 percent of petroleum use.

Year	Motor Gasoline ^a	Ethanol	Diesel Fuel	Aviation		Rail Distillate & Residual	LPG	Natural Gas ^b	Total
				Gasoline	Jet Fuel				
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	251.2	0.1	49.3	0.6	8.4	4.8	NA		314.5
1990	266.6	0.7	65.2	0.6	11.0	4.3	NA		348.3
1995	281.8	4.1	84.7	0.7	10.6	5.2	0.6		387.7
2000	302.4	7.9	95.6	0.8	11.7	5.0	0.5		424.0
2005	304.9	10.4	93.1	0.5	14.3	5.5	0.3	0.0238	428.9
2006	295.5	11.0	97.2	0.4	13.9	5.9	0.3	0.0247	424.3
2007	300.2	13.6	95.6	0.4	12.8	6.2	0.2	0.0237	429.0
2008	284.7	18.3	96.0	0.3	13.8	4.8	0.2	0.0199	418.2
2009	281.5	19.4	83.1	0.2	14.1	4.2	0.2	0.0204	402.8
2010	288.4	21.6	91.1	0.3	13.1	4.6	0.2	0.0346	419.4
2011 ^r	285.7	19.2	91.0	0.3	11.3	5.0	0.2	0.0630	412.7
2012 ^p	273.4	25.1	105.7	0.4	8.5	7.0	0.2	0.1698	420.3

^a Excludes ethanol.

^b Compressed natural gas shown in gasoline gallon equivalents (GGE). Assumes energy content of one standard GGE is 114,818.76 Btus.

^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* (1970-2012) and *Petroleum Supply Annual*, DOE/EIA-3340 (1982-2012); U.S. Department of Energy, Form EIA-782C, "Monthly Report of Petroleum Products Sold for Consumption" (1983-2012); Wisconsin State Energy Office surveys of airport fixed base operators (2007-2009) and railways (2007-2012).

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

AVERAGE
PRICE OF
GASOLINE
\$.095
PER GALLON

In 2012, the average statewide price of gasoline increased by \$.095 a gallon, to \$3.624/ 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).

Wisconsin is seeing a growing use of alternative vehicle fuels. Compressed natural gas (CNG), which burns cleaner than gasoline and is used primarily in heavy-duty fleets, saw a 175.0 percent increase over 2011, while propane (LPG) saw an increase of 3.1 percent.

CNG can be produced from fossil fuel sources, or from biological sources as BioCNG. CNG and BioCNG are measured in gasoline gallon equivalents (GGE), and are available from a variety of fueling stations across the state. See <http://www.stateenergyoffice.wi.gov> for more information on natural gas as a transportation fuel.

1970-2012 MILLIONS OF GALLONS

Year	Motor Gasoline ^a	Ethanol	Diesel Fuel	Aviation		Distillate & Residual		LPG	Natural Gas ^b	Total
				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	3,383.0	
2006	2,364.1	130.4	702.6	3.5	102.9	37.2	0.0	3.2	3,344.2	
2007	2,401.7	161.2	691.3	2.8	94.6	43.2	0.0	2.3	3,397.4	
2008	2,277.3	217.0	693.9	2.6	102.4	34.7	0.0	2.4	3,330.5	
2009	2,252.3	229.7	600.4	1.8	104.7	30.1	0.0	2.2	3,221.4	
2010	2,307.6	255.4	658.8	2.3	96.9	33.3	0.0	2.3	3,356.8	
2011 ^r	2,285.5	227.1	657.9	2.5	84.0	35.8	0.0	1.6	3,295.0	
2012 ^p	2,186.9	297.5	764.1	3.2	62.8	50.2	0.0	1.6	3,367.8	

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

^b Compressed natural gas shown in gasoline gallon equivalents (GGE). Assumes that the energy content of one standard GGE is 114,818.76 Btus.

^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* (1970-2012) and *Petroleum Supply Annual*, DOE/EIA-3340 (1982-2012); U.S. Department of Energy, Form EIA-782C, "Monthly Report of Petroleum Products Sold into States for Consumption" (1983-2012); Wisconsin State Energy Office surveys of airport fixed base operators (2000-2009) and railways (2000-2012).