Michigan Renewable Energy Program

2006 Data Report

to the Michigan Public Service Commission

October 1, 2007

Data on Michigan Renewable Energy Production and Consumption

This report presents data on Michigan renewable energy production and consumption. The data reported includes:

1. The amount of power generated from renewable sources within Michigan and the percentage and absolute change indicators of renewable energy penetration in Michigan;
2. The percentage of power purchased by Michigan customers that is obtained from renewable energy sources;
3. The number of customers producing power with their own renewable energy installations including net metering;
4. The number and aggregate capacity of renewable energy generators receiving third-party certification;
5. The number of customers participating in utility green pricing programs;
6. Recommendations regarding MREP data collection and reporting.

Data gathered by the MREP Staff and from MREP Collaborative participants is presented in this report.[1]

1. The amount of power generated from renewable sources within Michigan and the percentage and absolute change indicators of renewable energy penetration in Michigan.

Table 1 shows the amount and percentage of power generated from Michigan renewable sources for 1990, 2000, and each year 2001 through 2005. Data for 2006 was not available at the time of final report preparation. Not including existing hydroelectric generation, the amount of new Michigan renewable energy doubled from 1990 to 2005. Almost all the growth came from wood-burning power plants in the 1990s. Despite that growth, however, the percentage of renewable energy generated in Michigan has stayed fairly constant in recent years, around 3.5%, as electricity sales increased by roughly 1% to 2% each year.[2]

Table 2 compares Michigan electric generation fuel types to the national average.

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[1] Previous reports are available on the MPSC website. See Michigan Renewable Energy Program 2004-2005 Annual Report, at http://efile.mpsc.cis.state.mi.us/efile/docs/14345/0002.pdf, and Michigan Renewable Energy Program [2003] Annual Report, at http://efile.mpsc.cis.state.mi.us/efile/docs/12915/0116.pdf.

[2] With the exception of a small quantity of wind electric generation, since 2000 almost all new electric capacity added in Michigan has been fueled by natural gas. Generally speaking, hydroelectric power generation varies in step with changes in annual rainfall and snowfall. For more details about Michigan's existing generating plants, see page 43 (p. 50 of the PDF file) of the *21st Century Electric Energy Plan Appendix-Volume II*, http://www.michigan.gov/documents/mpsc/energyplan_appendix2_185279_7.pdf.

Table 1: Michigan Net Renewable Generation (1990 and 2000-2005)

Renewable Energy Source	Net Generation (MWh)[1]						
	1990	2000	2001	2002	2003	2004	2005
Renewables	1,408,805	2,889,594	2,507,545	2,501,404	2,806,807	2,837,272	2,819,931
Hydroelectric	1,627,918	1,427,679	1,561,923	1,669,252	1,385,823	1,539,584	1,461,708
Total	**3,036,723**	**4,317,273**	**4,069,468**	**4,170,656**	**4,192,630**	**4,376,856**	**4,281,639**
Statewide Renewable Energy %	**3.0%**	**4.1%**	**3.6%**	**3.5%**	**3.7%**	**3.7%**	**3.5%**

Source: Electric Power Annual Database 1990-2005: Net Generation by State by Type of Producer by Energy Source (EIA-906; http://www.eia.doe.gov/cneaf/electricity/epa/generation_state.xls).

[1] Net generation is the quantity of gross generation less electrical energy consumed at the generating station(s) for station service or auxiliary energy. *Note*: Electricity required for pumping at pumped-storage plants is regarded as electricity for station service and is deducted from gross generation. (From Energy Information Administration website glossary; http://www.eia.doe.gov/glossary/glossary_n.htm.)

Table 2: Michigan and U.S. Electric Generation by Fuel Type, 2004 and 2005

	Michigan		United States	
Fuel Type	**2004**	**2005**	**2004**	**2005**
Coal	57.4%	57.3%	49.7%	49.6%
Nuclear	25.6%	26.8%	19.8%	19.3%
Natural Gas	12.6%	11.1%	17.8%	18.7%
Other Gases[1]	0.0%	0.6%	0.4%	0.4%
Renewable Power[2]	2.4%	2.3%	2.3%	2.3%
Petroleum	0.7%	0.7%	3.0%	3.0%
Hydro	1.3%	1.2%	6.7%	6.6%

Source: US Department of Energy, Energy Information Administration;
http://www.eia.doe.gov/cneaf/electricity/epa/generation_state.xls

[1] Other Gasses includes manufactured gas, coke-oven gas, blast-furnace gas, and refinery gas. Manufactured gas is obtained by distillation of coal, by the thermal decomposition of oil, or by the reaction of steam passing through a bed of heated coal or coke.

[2] The Energy Information Administration definition of Renewable Energy includes: wood, black liquor (from paper manufacturing), municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, biomass, geothermal, solar thermal, solar photovoltaic (PV), and wind.

2. The percentage of power purchased by Michigan customers that is obtained from renewable energy sources.

Table 3 is a new table for this year's report, created to show the quantity of renewable energy supplied to Michigan retail customers by each regulated Michigan utility.

The Staff wishes to publicly acknowledge the significant efforts from utility personnel to obtain and report the data required to complete this table. This data was difficult for some utilities to determine. There is no current requirement for utilities to record this information, and some supply contracts do not specify the percentage that is produced from renewable resources. Another issue that arose was how to allocate a utility's renewable generation when wholesale sales are made to other utilities. For many Michigan utilities, the quantity of renewable energy provided to wholesale customers has not been specified and is not readily known. In both of these kinds of circumstances, if utilities were not in a position to know precisely how much renewable energy was included in a purchase or sale, estimates were used based on average renewable resources contributions to the respective utility system. Many lessons were learned while working with the utilities to gather this data. It was not possible to collect data that was completely consistent across all utilities. The notes associated with Table 3 (p. 7) describe differences in the data reported.

Based on the data in Table 3, the statewide renewable energy percentage in Michigan's regulated utility retail supply portfolio is 2.9% for 2005 and 3.1% for 2006. Please note that in Table 2, Michigan's generation by renewable fuel type for 2005 was 3.5% while Table 3 shows about 3% renewable energy deliveries to Michigan retail customers. Some electricity generated by renewable energy may be going out of the state or to municipal utility customers, however; an unknown amount may be included in supply contracts where the amount of renewable energy is not tracked. Additionally, both Consumers Energy and Detroit Edison purchase electricity from the MISO market. The amount of renewable energy included in those purchases is unknown. Because of the lack of data on the renewable energy fraction present in wholesale sales and purchases, however, it is likely that the actual percentage of renewable energy provided to retail customers, for at least some Michigan utilities, is somewhat higher than shown in the table. It is likely that the actual percentage of renewable energy delivered to Michigan's retail customers is much closer to 3.5% as shown in Table 2.

MREP has been reporting this data since the first MREP report to the Commission in 2003. Data was compiled for each year, beginning with 2000. Looking at the data for 2001 through 2004, no particular trend was evident. Historical data for 2001 through 2004 is shown in Table 4. Data was not available from eight Michigan utilities until 2005. Among the others reporting, there was practically no change to the percentage contributed from renewable energy, because there was very little in the way of new capacity added in Michigan.[3] The only noticeable changes in

[3] The one visible exception, in the way of new added renewable energy capacity, was the two wind turbines near Mackinaw City, that began operating in late 2003. The output from those wind generators, however, directly serves the Consumers Energy *GreenGeneration*^{SM} program. Data on the output from those turbines that is purchased by subscribers to the *GreenGeneration* program is reported in Section 6 of this report, on page 12 and <continued>

renewable energy contributions from 2000 through 2005 appeared to be due to variations in precipitation that would be reflected in annual hydroelectric capability (affecting Alpena, Cloverland, Consumers Energy, Edison Sault, UPPCo, cooperative distribution companies who are customers of Wolverine Power Supply Coop., and Xcel).

There was also a significant change in UPPCo in 2003, due to the failure of its hydroelectric facility on the Dead River. Upper Peninsula Power Company's (UPPCO's) renewable energy production was seriously impacted in 2003 when, in May of that year, a fuse plug at the Silver Lake reservoir owned by UPPCO was breached. This breach caused flooding downstream on the Dead River, which resulted in a loss of hydroelectric generation. UPPCO has announced its decision to restore Silver Lake as a reservoir for power generation, pending approval by the Federal Energy Regulatory Commission (FERC) of a license amendment and an economically feasible design. FERC has required that a board of consultants evaluate and oversee the design approval process. UPPCO is developing a timeline for the project, provided the FERC approves an economically feasible design. Once work is done, Silver Lake is expected to take approximately two years to refill, based upon natural precipitation, and it will take that long for UPPCO's hydroelectric energy production to return to pre-flood levels.

Wisconsin Public Service Corp. appears to be the only utility company serving Michigan customers where modest but consistent growth in the renewable energy percentage increased that company's percentage from 2.1 in 2000 to 2.9 in 2004, an average of 0.2% growth per year. At least in part, that growth appears in concert with the state of Wisconsin's renewable portfolio standard, which first became law in 1999.[4]

<continued> would not be included in Table 3, based on the Commission's May 18, 2004 Order in Cases Nos. U-12915 & U-13843. In that order (pp. 3-4), the Commission stated:

> [T]he utilities' annual disclosure requirements should accurately reflect that green power customers are paying additional costs for renewable and environmentally-friendly energy and…utilities should not represent in future reports that they are providing these services to all rate classes.

[4] See http://psc.wi.gov/utilityinfo/electric/newsInfo/renewableResource.htm. The Wisconsin statute was amended and its renewable portfolio standard increased in 2006. See http://www.dsireusa.org.

Table 3: Regulated Utility Renewable Energy Supplied to Michigan Retail Customers, 2005 and 2006 (Green Pricing Program Sales Excluded)

Regulated Utility Company	(Col 1) Renewable Energy Purchased or Generated for Michigan Customers from Michigan Generation (MWh)		(Col 2) Renewable Energy Purchased or Generated for Michigan Customers from Non-Michigan Generation (MWh)		(Col 3) Total Renewable Energy Purchased or Generated for Michigan Customers (Wholesale sales excluded) (MWh) Col 1 + Col 2		(Col 4) Total Energy Purchased or Generated for Michigan Customers (Wholesale sales excluded) (MWh)		(Col 5) Renewable Energy Percentage of Supplies to Retail Customers (%) Col 3 ÷ Col 4	
	2005	**2006**	**2005**	**2006**	**2005**	**2006**	**2005**	**2006**	**2005**	**2006**
Alger Delta Co-op	Unknown	Unknown	Unknown	Unknown	7,516	7,652	68,329	68,318	11.0	11.2
Alpena Power	26,844	0	0	0	26,844	0	332,060	338,888	8.1	0
American Electric (Indiana Michigan) Power Co.	8,371	10,534	5,744	6,026	14,115	16,560	3,395,423	3,285,554	0.4	0.5
Cherryland Electric Co-op	2,912	2672	1,420	1,318	4,333	3,990	355,138	356,337	1.22	1.12
Cloverland Electric Co-op	Unknown	97,500	Unknown	0	115,808	97,500	221,065	239,994	52.4	40.6
Consumers Energy	1,672,369	1,985,504	0	0	1,672,369	1,985,504	36,819,309	36,543,836	4.5	5.4
Detroit Edison	524,967	575,412	0	0	524,967	575,412	47,724,161	50,956,675	1.1	1.12
Edison Sault	257,691	220,561	0	0	257,691	220,561	655,225	650,747	39.3	33.9
Great Lakes Energy Co-op	10,844	10,028	5,290	4,947	16,134	14,975	1,322,477	1,337,049	1.22	1.12
Midwest Energy Co-op	Unknown	Unknown	Unknown	Unknown	13,927	9,096	557,084	535,078	2.5	1.7
Ontonagon County REA	Unknown	Unknown	Unknown	Unknown	3,391	3,287	30,824	29,350	11.0	11.2
Presque Isle Electric & Gas Co-op	2,116	1,911	1,032	942	3,148	2,853	258,090	254,743	1.22	1.12
Thumb Electric Co-op	Unknown	Unknown	Unknown	Unknown	1,588	1,748	158,826	158,902	1.0	1.1
Tri-County Electric Co-op	2,496	2,303	1,218	1,136	3,714	3,439	304,376	307,106	1.22	1.12
Upper Peninsula Power Co.	75,298	66,488	5,565	10,077	80,863	76,565	772,167	816,862	10.5	9.4
We Energies	53,027	57,975	n/a	n/a	53,027	57,975	3,037,536	2,737,312	1.8	2.1
Wisconsin Public Service Corp.	942	916	8,930	12,034	9,872	12,950	332,775	300,923	3.0	4.3
Xcel Energy	81	77	20,912	24,237	20,993	24,314	135,441	135,075	15.5	18.0
Regulated Utility Totals & Averages					2,830,300	3,114,381	96,480,306	99,052,749	**2.9%**	**3.1%**

See table notes on next page.

Notes for Table 3:

Many of the companies purchase supply through contractual arrangements where the quantity of renewable energy is not known. Michigan utilities are not required to track this information. It is very likely that, for at least some of the companies, the actual percentage of renewable energy provided to retail customers is higher than shown in the table. Please note that in Table 2, Michigan's generation by fuel type for 2005 was 3.5% while this table shows about 3% renewable energy deliveries to Michigan retail customers. Some of this electricity generated by renewable energy may be going out of the state, however; an unknown amount may be included in supply contracts where the amount of renewable energy is not tracked.

Alger Delta, Midwest, Ontonagon, and Thumb renewable data shown in Cols 1,2, and 3 is an estimate using fuel mix information provided by the companies. For both 2005 and 2006, the fuel mix calculations are based on 12 month periods that are out of sync with calendar years 2005 and 2006. Line loss and company use quantities have been included in the total energy purchased or generated numbers reported in Column 4 based on annual reports filed by the coops.

Alpena's contract for Thunder Bay hydroelectric power ended and the power is now sold in the MISO market. Line loss and company use quantities have been included in the total energy purchased or generated numbers reported in Column 4 based on Alpena's annual reports.

Wolverine has "all requirements" supply contracts with **Cherryland, Great Lakes, Tri-County, and Presque Isle**. The renewable percentage for this total supply was provided by Wolverine as well as the ratio for in-state and out-of-state generation and purchases. Renewable energy quantities for Cols 1 through 3 were calculated by multiplying the renewable energy percentage by the total energy purchased or generated numbers in Col 4. Line loss and company use quantities have been included in the total energy purchased or generated numbers reported in Col. 4 based on annual reports filed by the coops.

Renewable energy for **Cloverland** was reported by **Edison Sault**.

Data provided by **Consumers Energy**.

Data provided by **Detroit Edison**.

Indiana & Michigan Power provided numbers based on an allocation of 15% of total company use and line losses to Michigan.

UPPCO "Inside MI" (Col 1) equals total hydro generation with the removal of the allocated wholesale generation based on the % sales mix in each year. "Outside MI" (Col 2) represents allocated portion of the "slice" of energy purchased from WPSC under the W2 Interruptible contract. "Total Energy" (Col 4) for both **WPSC & UPPCO** represents Retail sales excluding NatureWise with an allocation of retail energy losses added back.

We Energies allocates renewable energy to MI based on percentage of retail sales in both WI and MI. Percentage is calculated using WI Act 141 methodology. We Energies total energy purchased and generated for Michigan retail customers was less in 2006 due to a drop in retail sales to mine customers. We's data provided in Column 4 has not been increased to reflect line losses and company use.

WPSC "Inside MI" (Col 1) represents the allocated output from Grand Rapids Hydro based on the % sales in MI vs WI. "Outside MI" (Col 2) represents the allocated output from WPSC Renewables (excl Grand Rapids Hydro) based on the % sales in MI vs WI.

Xcel renewable data is for the 12 months ended April 30th. Energy sales data is for calendar years. Xcel's data provided in Column 4 has not been increased to reflect line losses and company use.

Table 4: Historical Percentage of Renewable Power Purchased by Michigan Customers

Company	Percentage of Renewable Sources, by Year				
	2000	2001	2002	2003	2004[1]
Alpena Power	11.2	13.0	13.3	11.4	12.5
American Electric Power (Indiana Michigan Power Co.) [2]	N/A	0.7	0.7	1.0	1.0
Cloverland Electric Co-op	49.7	45.5	45.3	43.0	46.3
Consumers Energy	3.8	4.8	4.6	4.5	5.0
Detroit Edison	N/A	1.4	1.4	1.2	1.1
Edison Sault	42	38.3	39.5	37.1	39.5
Upper Peninsula Power Co. [3]	12.0	12.0	17.0	12.0	11.0
We Energies	N/A	2.0	2.4	2.2	2.2
Wolverine Power Supply Co-op[4]	N/A	1.1	0.7	0.9	1.2
Wisconsin Public Service Corp.	2.1	2.2	2.6	2.8	2.9
Xcel Energy[5]	13.6	15.3	14.3	13.6	16.1
Regional Average[6]	N/A	1.4	1.4	1.4	1.0

Notes:
[1] In its May 18, 2004 Order in Cases Nos. U-12915 & U-13843, the Commission stated, "[T]he utilities' annual disclosure requirements should accurately reflect that green power customers are paying additional costs for renewable and environmentally-friendly energy and…utilities should not represent in future reports that they are providing these services to all rate classes." (Order, pp. 3-4). Data in Table 6, beginning with the 2004 reporting year, represents percentages of renewable sources for customers who are not participating in special voluntary green rate programs. Data on the green rate programs is presented elsewhere in this report.

[2] Includes hydroelectric and 0.1% or less from other renewable fuels. Data presented in MREP 2003 Report did not include hydroelectric.

[3] Upper Peninsula Power Co. renewable energy was significantly reduced in 2003 due to the failure of its hydroelectric facility near Marquette. See p. 5.

[4] Wolverine Power Supply Cooperative is the sole supplier of electric generation service to four of Michigan's cooperative (member-owned) electric distribution companies: Cherryland Electric Cooperative, Great Lakes Energy, HomeWorks Tri-County Electric Cooperative, and Presque Isle Electric and Gas Co-op. Wolverine data for 2003 includes 0.51% and 2004 includes 0.66% of hydroelectricity. Previous years did not include hydroelectricity.

[5] Includes generation and purchases in Wisconsin. Data for Xcel reflects fiscal years, ending in October each year.

[6] The Regional Average Fuel Mix is calculated each year by MPSC Staff, as directed by the Commission in its orders in Case No. U-12487, dated June 5, 2001 and December 20, 2001. See http://www.dleg.state.mi.us/mpsc/electric/restruct/regional_disclosure/regional_notice.htm.

3. The number of customers producing power with their own renewable energy installations including net metering.

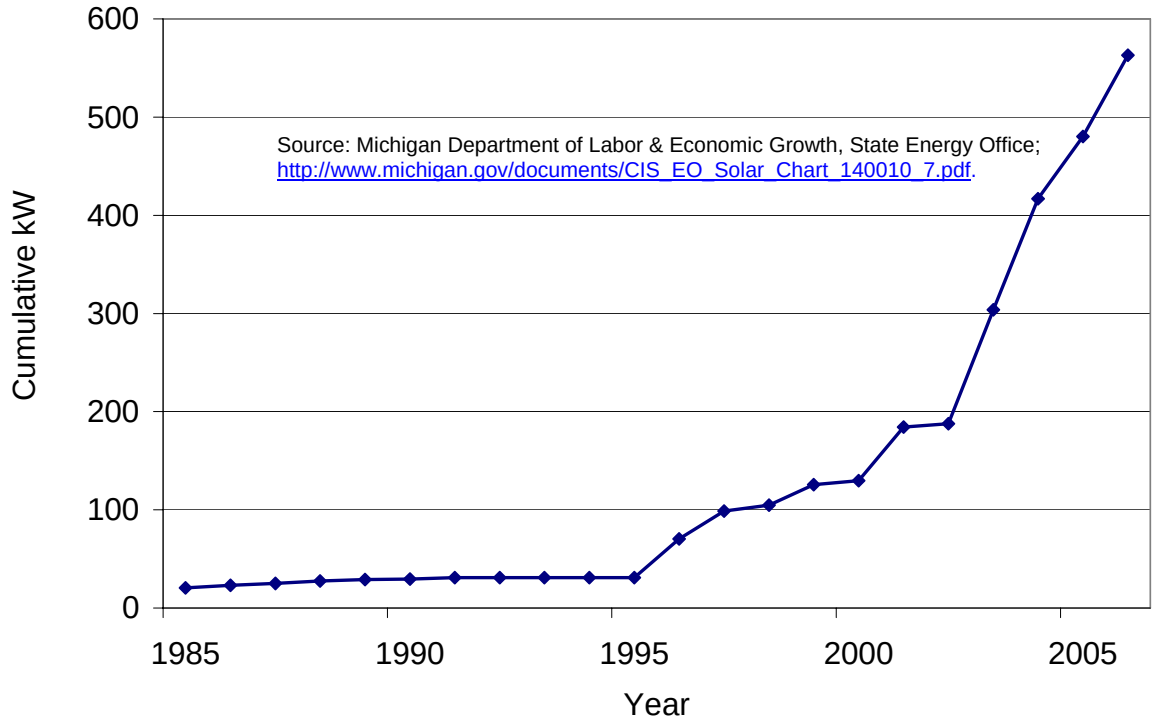
There is no formal system in Michigan for obtaining data on all renewable energy installations. Much of the existing data is obtained by utilities for systems that are interconnected with the

electric grid, and some is collected by the State Energy Office, often as a result of customers participating in state grant programs in the past.[5]

As of June 30, 2006, regulated utilities in Michigan had 8 customers participating in net metering.[6] However, most utilities are reporting that interest in the program is growing based on increased numbers of customer inquiries. An MREP *2006 Net Metering Program Report* will be posted on the MREP Website.

The Energy Office identifies 563 kW of solar photovoltaic (PV) systems installed in Michigan by the end of 2006. The chart below indicates cumulative kW installed. PV installations started increasing in 1996 and rapid growth continues.

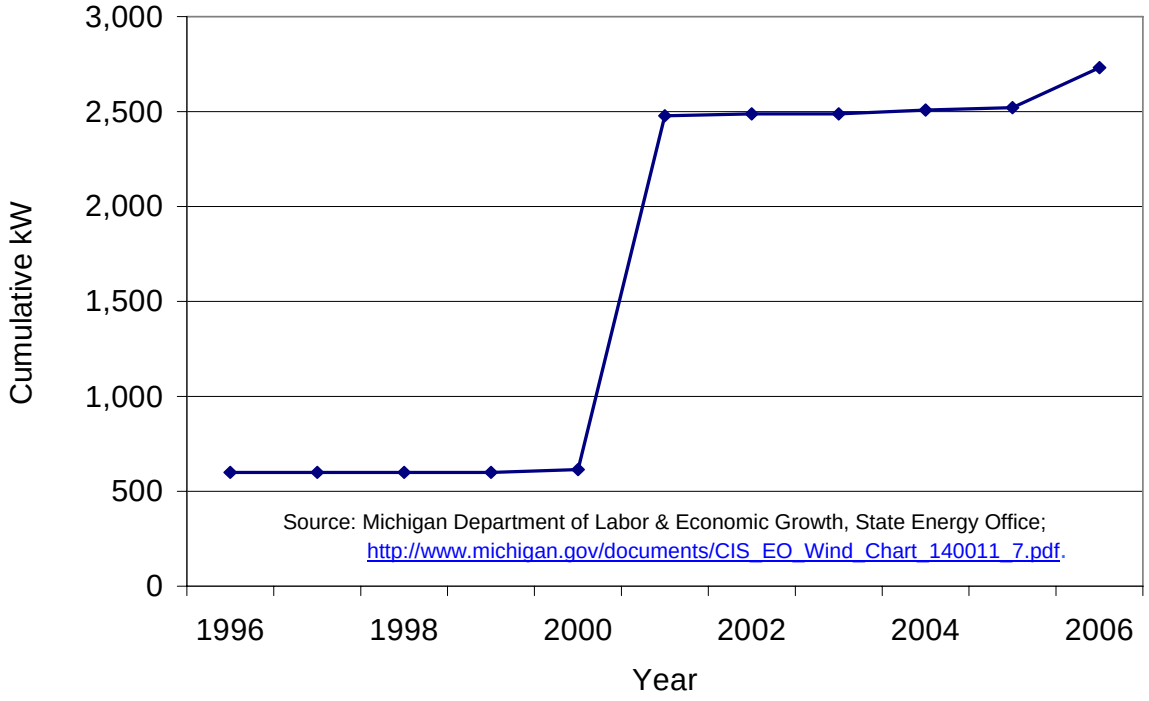
Figure 1: Solar Electric Power Installed in Michigan (cumulative nameplate ratings in kW)



[5] See more information at the State Energy Office website for renewable energy, http://www.michigan.gov/eorenew.
[6] Net metering is an accounting mechanism whereby retail electric utility customers who generate a portion or all of their own retail electricity needs are billed for generation (or energy) by their electric utility for only their net energy consumption during each billing period. Net energy consumption during a billing period is defined as the amount of energy delivered by the utility and used by the customer, minus the amount of energy, if any, generated by the retail customer and delivered to the utility at the location of the eligible unit.

The Energy Office identified 2,732 kW of wind energy systems installed in Michigan by the end of 2006. The charts below indicate the cumulative kW installed. In 1996 a 600 kW wind generator was installed near Traverse City and in 2001 two 900 kW wind generators were installed near Mackinaw City. The additional 111 kW represent several small wind generators installed at Michigan homes and farms.

Figure 2: Wind Power Installed in Michigan (cumulative nameplate ratings in kW)



4. The number and aggregate capacity of renewable energy generators receiving third-party certification.

MREP Staff is not yet aware of any source for obtaining this data, except insofar as Michigan utilities are utilizing independent certification agents for green pricing programs.[7] Staff will work with utilities, independent certification agents, and the nascent Midwest Renewable Energy Tracking System (MRETS),[8] in order to try to establish a mechanism whereby this data can be collected and reported.

[7] Data on the utility green pricing programs is presented in this report, beginning on page 5. In the future, MREP Staff plans to make available on the MREP website the utility annual reports to the Commission on green pricing programs.
[8] Learn more about MRETS at http://www.m-rets.com/.

5. The number of customers participating in Michigan utility green pricing programs.

The Commission has been working with utilities on a voluntary approach to the expansion of renewable energy production and consumption in Michigan. There are 7 different Commission-approved utility "green pricing" or "green rate" tariffs, which allow customers to volunteer to pay a small price premium in order to receive greater percentages of their power from renewable resources.[9] In addition to those Commission-approved programs, this report includes information on three programs offered by Michigan municipal electric utilities: Traverse City Light & Power, Lansing Board of Water & Light, and Wyandotte Municipal Services.[10]

The typical residential price premium has been on the order of $2.50 to $12.50 per month, with the added price of renewable energy ranging from about 2.0 to 3.0 cents per kilowatt hour. The price premium in the Consumers Energy program is 1.667 cents/kWh. The new Detroit Edison program, approved by the Commission in its April 3, 2007 Order in Case No. U-14569, is expected to have similar costs.[11]

Table 6: Michigan Regulated Utility Green Pricing Programs Sales and Customer Totals (2005 and 2006)

Utility	Sales (MWh)		Customers at year-end	
Year	**2005**	**2006**	**2005**	**2006**
Cloverland	63	57	19	21
Consumers Energy	3,655[1]	18,107[2]	715	6,686
Edison Sault	117	113	38	32
UPPco	77	112	39	72
We Energies	717	656	330	325
WPSC	13	28	4	12
Total	**4,642**	**19,073**	**1,145**	**7,148**

[1] A total of 3,655 MWhs were supplied for green pricing programs in 2005, including 1,345 MWhs for the Green Power Pilot Program and 2,310 MWhs for the *Green Generation* program. Of the 2,310 MWhs supplied for the *Green Generation* program, only 811 (or 35%) were subscribed by program participants.

[2] A total of 28,020 MWhs were supplied for the *Green Generation* program in 2006. The company sold 93.6 MWhs of RECs to reduce the 2005/2006 *Green Generation* program surplus to 11,318 MWhs of unsubscribed renewable energy.

[9] The most comprehensive source for information on U.S. utility green pricing programs is the U.S. Department of Energy Green Power Markets website, at http://www.eere.energy.gov/greenpower/markets/pricing.shtml?page=0. See the Library at http://www.eere.energy.gov/greenpower/resources/publications.shtml. An annual Green Power Marketing Conference is co-sponsored by U.S. DOE, U.S. EPA, and the non-profit Center for Resource Solutions. See http://www.eere.energy.gov/greenpower/conference/.

[10] In Michigan, municipal electric utilities are not regulated by the Public Service Commission.

[11] See http://efile.mpsc.cis.state.mi.us/efile/viewcase.php?casenum=14569. Document 0206 is the Order, and 0207 is the Commission Press Release on that Order.

Cloverland Electric Cooperative

Cloverland's renewable energy program parallels Edison Sault's program in its entirety. As of December 2006, there were 21 Cloverland customers participating in the program.[12]

Consumers Energy Company – Green Generation℠ Program

The Commission approved Consumers Energy's Renewable Resources Tariff on April 28, 2005. Consumers calls its program *Green Generation*.[13] *Green Generation* replaced an earlier Consumers Energy Green Power Pilot Program, which operated from July 2001 until *Green Generation* began in 2005. By year-end 2004, the Green Power Pilot Program had attracted something less than 500 subscribers, with a bit more than 95% being residential customers.[14]

At year-end 2006, Consumers Energy had 6,686 participants in its *Green Generation* program (an increase of 5,971 from year-end 2005), of which the vast majority (99%) are residential customers. The amount of renewable energy subscribed by the participants for the year totaled 18,107 MWh (18,107,000 kWh). Residential customers account for 80% of the total energy subscriptions. The average residential participant subscribed to 392 kWhs a month (or 2.61 blocks) of renewable energy (as of December 2006), representing a typical residential monthly premium of $6.53. This represents, very roughly, about half of the average monthly use of a typical Consumers Energy residential customer.

Table 7: Consumers Energy Green Pricing Programs
Customer Enrollments by Customer Class (2004-2006)

Year	Residential	Commercial	Industrial	Total
2004[1]	423	19	3	445
2005	715	8	1	718
2006	6,644	37	5	6,686

[1] 2004 program data as of Nov 1, 2004. 2005 and 2006 data represent year-end totals.

Marketing and promotion expenses during 2006 totaled $561,000, which equates to $90 per enrollment for the year.[15] Consumers Energy promoted *Green Generation* during 2006 primarily

[12] See http://efile.mpsc.cis.state.mi.us/cgi-bin/efile/viewcase.pl?casenum=13949.
[13] See http://www.consumersenergy.com/welcome.htm?/products/index-nomargin.asp?asid=672&xx=SSID=100.
[14] See *Michigan Renewable Energy Program 2004-2005 Annual Report to the Michigan Public Service Commission*, pp. 54-56, at http://efile.mpsc.cis.state.mi.us/efile/docs/14345/0002.pdf, and *Michigan Renewable Energy Program [2003] Annual Report to the Michigan Public Service Commission*, pp. 10-11, at http://efile.mpsc.cis.state.mi.us/efile/docs/12915/0116.pdf.
[15] Bird and Brown (2006, pp. 18-22; http://www.nrel.gov/docs/fy07osti/40777.pdf) includes a statistical analysis and discussion of U.S. utility green pricing programs marketing and administrative spending, with data through 2005.

through press releases and by discussing the program with Michigan news media. Over 110 related news articles were published in 2006. The Company also sponsored public radio and television programs and advertised in targeted publications whose audiences are known to be receptive to resource conservation issues. Two direct response channels were used to solicit program enrollment; targeted mailings and bill inserts. During 2006, over 6,200 new participants enrolled. Direct mail accounted for 70%, and in addition the Company received over 800 enrollments through its web-based enrollment option.

All but two contracted suppliers for the *Green Generation* program had achieved commercial operation prior to December 31, 2006.[16] Renewable energy deliveries in 2006 for *Green Generation* totaled 28,020 MWh, 9,913 MWh more than the subscribed purchases.

For 2006, contributions from *Green Generation* customers totaled $297,685. Applying Consumers Energy's average power supply cost to renewable energy deliveries resulted in a Power Supply Cost Recovery accounting credit of $990,846 for the associated renewable energy deliveries. This resulted in total credits of $1,290,091. Program expenses, including purchasing the renewable energy supply, marketing and administrative expenses, totaled $2,299,077. This left a balance of $1,008,985 to be recovered from the Consumers Energy Renewable Resource Program (RRP) fund, and the year-end balance of the RRP fund was $8,723,423.[17]

Consumers Energy announced on August 20, 2007 that enrollment in the *Green Generation* program had reached 10,000 customers.

Detroit Edison Company – GreenCurrents℠ Program

Detroit Edison did not have an active green pricing program in 2006. The Commission approved a new program for Detroit Edison customers in its April 3, 2007 Order in Case No. U-14569. [18] Detroit Edison calls the new program, *GreenCurrents*.[19]

Under direction from the Commission in its November 23, 2004 Order in Case No. U-13808 (Detroit Edison Rate Case), on July 1, 2005 Detroit Edison filed in Case No. U-14569 the Company's proposal for a new renewable energy program. The Commission issued an order on September 20, 2005, requesting comments on the proposal. Comments were received from 18 organizations and individuals. On September 26, 2006, the Commission issued an order rejecting the Company's proposal and directing Detroit Edison to modify and resubmit its revised proposal by March 30, 2007. On December 15, 2006, the Company submitted its revised proposal. On December 21, 2006, the Commission issued an order inviting comments on the revised application. This time, 176 comments were received. The Commission approved the

[16] The purchase power agreements (PPAs) were approved by the Commission in its October 18, 2005 Order in Case No. U-14626. See http://efile.mpsc.cis.state.mi.us/efile/viewcase.php?casenum=14626. The PPA contracts are attached to the Application (documents 0001 and 0002).
[17] A Consumers Energy Renewable Resource Program (RRP) fund, up to $5 million per year, was established by the Commission in its January 25, 2005 Order in Case No. U-14331, pp. 32-33. See http://efile.mpsc.cis.state.mi.us/efile/viewcase.php?casenum=14031, where the order is document 0187.
[18] See http://efile.mpsc.cis.state.mi.us/efile/viewcase.php?casenum=14569. The Commission Order approving the new Detroit Edison *GreenCurrents* program is document 0206.
[19] See http://my.dteenergy.com/products/greenCurrents/index.html.

GreenCurrents program in its order of April 3, 2007, and Detroit Edison began enrolling customers soon thereafter. Under the Commission Order (pp. 5-6), Detroit Edison will be filing annual reports, with the first one due by March 31, 2008. On September 5, 2007, Detroit Edison issued a press release highlighting that enrollment in the *GreenCurrents* program had reached a milestone of 4,000 participants.

Edison Sault Electric Company and We Energies – Energy for Tomorrow® Program

Edison Sault has an updated experimental renewable energy rider approved by the MPSC on May 10, 2006 (see Edison Sault's tariff sheet 11.01). Renewable energy rates for Edison Sault (like Cloverland Electric Cooperative) are unique, because hydroelectric generation already represents approximately 40 percent of those companies' total supplies. Edison Sault customers who want to have an even greater portion of their power served from renewable sources can elect to receive either 60, 80, or 100 percent renewable energy. The May 10, 2006 Order allowed Edison Sault to reduce the renewable energy premium from 2.04 cents/kWh to 1.37 cents/kWh for the customers' increased portion above the 40% hydroelectric base. Edison Sault purchases its renewable energy from its affiliated company, We Energies.

Edison Sault's participation rate is fairly low as the utility currently has 32 customers (about 0.2%) on the experimental tariff. Edison Sault attributes the modest customer response to high satisfaction with its large hydroelectric power base and standard rates that are among the lowest in the State.

We Energies *Energy for Tomorrow*® renewable energy program has become one of the largest and most successful utility green pricing programs in the country, as ranked by the US DOE's National Renewable Energy Laboratory.[20] We Energies has over 13,000 customers in Wisconsin and the Upper Peninsula of Michigan enrolled in *Energy for Tomorrow*. Currently, 325 of We Energies' Michigan Upper Peninsula customers are participating.

Energy for Tomorrow customers pay a premium of 2.04 ¢/kWh for 100% renewable electricity, 1.02 ¢/kWh for 50%, and 0.51 ¢/kWh for 25%. Business customers can also purchase renewable electricity in blocks of 100 kWh, for 2.04 ¢/kWh. More information is available at www.we-energies.com/eft.

Lansing Board of Water & Light – GreenWise Electric Power® Program

The Lansing Board of Water & Light (BWL) launched a renewable energy program in July of 2001. Marketed under the name *GreenWise Electric Power*, the portfolio includes a total of one megawatt of electricity produced from renewable energy generators. Half the supply is from two small hydroelectric plants owned by Tower Kleber in Cheboygan County and the other half is from landfill gas provided by Granger Electric in Lansing. Both power providers were required to be certified by the Michigan Independent Power Producers Association, based on criteria developed by a panel of ten state and local environmental organizations. The certification

[20] See http://www.eere.energy.gov/greenpower/markets/pricing.shtml?page=3.

process included an audit of each facility based on PURPA's definition of a "Small Power Production Facility," review of emissions and any environmental violations, and a verification of fuel type and amount of power available.

The *GreenWise* program offers customers 250-kWh blocks for $7.50 per month (3¢/kWh). A total of 2,742 "blocks" of energy are available through the program (a total of one megawatt). Sales fluctuate between 605-740 blocks, or approximately 22-27% of the renewable energy purchased. Residential customer participation has been greater (84% of participating customers) compared to the commercial sector (16%).

The power supply contracts for the *GreenWise* program expired at the end of 2006. An RFP was issued in fall 2006, and since January 1, 2007, the GreenWise program portfolio consists of 1.7 MW from hydroelectric plants owned by Tower Kleber,in Cheboygan County.

On January 23, 2007, the Lansing Board of Water and Light adopted a Renewable Energy Portfolio Standard that sets goals for the utility to acquire electricity from renewable energy sources; to serve all its customers, not just *GreenWise* customers. It is believed that the BWL is the first Michigan-based utility to adopt such a policy. To meet this RPS, renewable energy from solar, wind, hydroelectric power plants and biomass, such as from gases found in landfills, will be eligible. The policy specifically sets in place these goals for acquiring electricity from renewable energy sources:

- Generate or purchase 2% of BWL electric retail sales by December 31, 2008.
- Generate or purchase 5% of BWL electric retail sales by December 31, 2012.
- Generate or purchase 7% of BWL electric retail sales by December 31, 2016.

Traverse City Light & Power – Green Rate Program

In 1996, Traverse City Light & Power (TCL&P) became the first Michigan municipal electric utility, and one of the first in the U.S., to install a utility-scale wind turbine. At the time of construction, the 660 kW wind turbine was the largest in the country. It produces about 750,000 kWh of electricity a year, which meets the needs of the 125 residential and business customers on TCL&P's green rate. TCL&P recently celebrated the 10 year anniversary of its wind turbine operation. With the combined benefits of the federal production incentive and the customer premium of 1.58 cents per kWh, the wholesale cost of electricity from the wind turbine has been practically the same as the other power purchased by the utility. The typical TCL&P green tariff customer pays a monthly premium of approximately $7.85. Several TCL&P customers are on a waiting list to join the green rate, if current subscribers leave the program. TCL&P reports that few customers have left the program, except for those who have moved away from the TCL&P service territory. See: http://www.tclp.org/uploaded_files/TCLP-1096-GreenWeb.pdf.

Table 7: TCL&P Wind Generator Production, 2000-2006

Year	Net kWh Generated	Percent of TCL&P Annual Total Generation & Power Purchases
2000	754,452	0.27%
2001	857,792	0.24%
2002	895,800	0.30%
2003	760,669	0.23%
2004	709,715	0.23%
2005	635,767	0.20%
2006	760,646	0.23%

Upper Peninsula Power Co. and Wisconsin Public Service Corp. – NatureWise Program

Upper Peninsula Power Company (UPPCo) and Wisconsin Public Service Corporation (WPSC) both have voluntary renewable energy programs called *NatureWise*.

The UPPCo program became available following the Commission's December 20, 2002 Order in Case No. U-13497. Seventy-two customers were participating by the end of 2006. Each 100 kWh block costs a premium of $4.00 (4¢/kWh) above the normal cost of electric service from UPPCO. Customers can purchase as many blocks as they choose and can discontinue at any time. The renewable power comes from wind turbines located in eastern Wisconsin, power purchased from a Wisconsin dairy farmer who generates electricity from on-site manure, using an anaerobic digester, and landfill gas from a Wisconsin landfill. See http://www.uppco.com/rates/naturewise_home.asp.

At the end of 2006, WPSC had 12 *NatureWise* customers in Michigan.

Wyandotte Municipal Services – *Nature's Energy*® Program

In November 2004 Wyandotte Municipal Services electric utility initiated a partnership with American Municipal Power – Ohio (AMP–Ohio; http://www.amp-ohio.org/) and Green Mountain Energy Company (http://www.greenmountain.com) for a "green pricing" program. Green Mountain Energy provides a 100% renewable product option consisting of wind, landfill gas, and hydroelectric power.

Wyandotte's 12,800 electric customers can enroll in the *Nature's Energy* program. The price premium is 1.5 cents/kWh, or approximately $8-$10 per month for the average residential customer. Commercial customers can also participate by purchasing 1-MWh blocks for $15 each (1.5¢/kWh). A portion of the power for the program comes from the AMP-Ohio/Green Mountain Energy wind farm located near Bowling Green, Ohio. Wyandotte estimates that participating customers purchasing 750 kilowatt-hours a month will avoid the release of an estimated 4.5 tons of CO_2 per year, equivalent to not driving a car nearly 10,000 miles.

Wyandotte Municipal Services will retain 0.2 cents/kWh of the price premium. Those funds will be used for renewable energy installation in Wyandotte. The first proposed project is a combined solar thermal and solar photovoltaic (PV) system at a Wyandotte public school.

Green Mountain is responsible for the energy supply and program management.

Wyandotte Municipal Services was recently awarded a grant from the Department of Energy, which supports the Wyandotte Brownfield Initiative. Assuming all environmental and wildlife impact studies are positive, and wind monitoring indicates sufficient wind availability, Wyandotte could install as many as three utility scale wind turbines on brownfield sites within the city.

At the end of 2006, 90 customers (about 0.7%) were participating in the Wyandotte program, and program sales for 2006 totaled 592 MWh.

6. Recommendations regarding MREP Data Collection and Reporting

This final section of this report provides MREP Staff recommendations regarding the ongoing collection and reporting of Michigan renewable energy statistical data.

Net Metering program data will be available annually based on reports from Michigan utilities that will be submitted to Commission Staff by September 30 each year, reporting on the most recent 12 months ending June 30. That data can be reported as soon as possible after receipt from the utilities and collation by MREP Staff.

Annual utility production and consumption data is generally available to Commission Staff by May each year. MREP Staff propose to gather such data from the utilities, collate it, and report it, as soon as possible after its receipt.

All MREP data will be posted on the MREP Website, and will be updated annually.