Michigan Renewable Energy Program

2007 Data Report

to the Michigan Public Service Commission

December 2008

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 net power generated from Michigan renewable sources for 1990, 2000, and each year 2004 through 2006. Not including existing hydroelectric generation, the amount of new Michigan renewable energy increased approximately 75% from 1990 to 2006. 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, between 3 and 4 percent.[2] Please note that renewable percentages for prior years have been revised due to incorrectly counting generation in the "Other" category as renewable.

Table 2 compares Michigan electric generation fuel types to the national average for the 2004 through 2006. Regulated utilities are directed by Commission Order to provide fuel mix information to their customers twice per year.[3]

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[1] Previous reports are available on the MPSC website. See www.michigan.gov/mrep, 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.

[3] See http://www.cis.state.mi.us/mpsc/electric/download/fuelmix.pdf and http://efile.mpsc.cis.state.mi.us/efile/docs/12487/0001.pdf for the order.

Table 1: Michigan Net Renewable Generation (1990, 2000 and 2004 through 2006)

Renewable Energy Source	Net Generation[1] (MWh)				
	1990	**2000**	**2004**	**2005**	**2006**
All Other Renewables[2]	1,408,805	2,889,594	2,545,410	2,520,267	2,452,028
Hydroelectric[3]	1,627,918	1,427,679	1,539,584	1,461,708	1,520,353
Total	**3,036,723**	**4,317,273**	**4,084,994**	**3,981,975**	**3,972,381**
Statewide Renewable Energy %	**3.0%**	**4.1%**	**3.4%**	**3.3%**	**3.5%**

Source: Electric Power Annual Database 1990-2006: Net Generation by State by Type of Producer by Energy Source EIA-906; http://www.eia.doe.gov/cneaf/electricity/epa/generation_state.xls and http://www.eia.doe.gov/cneaf/electricity/epa/epat1p1.html.

[1] Net generation: The amount of gross generation less the electrical energy consumed at the generating station(s) for station service or auxiliaries. Note: Electricity required for pumping at pumped-storage plants is regarded as electricity for station service and is deducted from gross generation.

[2] All Other Renewables: Wood, black liquor, other wood waste, municipal solid waste, landfill gas, sludge waste, tires, agriculture byproducts, other biomass, geothermal, solar thermal, photovoltaic energy and wind.

[3] Hydroelectric: Conventional hydroelectric power excluding pumped storage facilities.

Table 2: Michigan and U.S. Net Electric Generation[1] by Fuel Type, 2004 through 2006

	Michigan			United States		
Fuel Type	**2004**	**2005**	**2006**	**2004**	**2005**	**2006**
Coal	57.9%	57.8%	60.2%	49.8%	49.6%	49.0%
Nuclear	25.8%	27.0%	25.8%	19.9%	19.3%	19.3%
Natural Gas	12.8%	11.2%	10.0%	17.8%	18.7%	20.0%
Other Gases[2]	0.0%	0.6%	0.5%	0.4%	0.4%	0.4%
Renewable Power[3]	2.2%	2.1%	2.2%	2.1%	2.2%	2.4%
Hydro[4]	1.3%	1.2%	1.4%	6.8%	6.7%	7.1%
Petroleum	0.8%	0.7%	0.4%	3.0%	3.0%	1.6%
Other[5]	0.2%	0.2%	0.5%	0.4%	0.3%	0.3%
Pumped Storage[6]	-0.9%	-0.9%	-0.9%	-0.2%	-0.2%	-0.2%

Source: US Department of Energy, Energy Information Administration;
http://www.eia.doe.gov/cneaf/electricity/epa/generation_state.xls and
http://www.eia.doe.gov/cneaf/electricity/epa/epat1p1.html.

[1] Net generation: The amount of gross generation less the electrical energy consumed at the generating station(s) for station service or auxiliaries. Note: Electricity required for pumping at pumped-storage plants is regarded as electricity for station service and is deducted from gross generation.

[2] Other Gases: Blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels. 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.

[3] Renewable Power: 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.

[4] Hydroelectric: Conventional hydroelectric power excluding pumped storage facilities.

[5] Other: Non-biogenic municipal solid waste, batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, tire-derived fuels and miscellaneous technologies.

[6] Pumped Storage: Output from a hydroelectric pumped storage facility represents production minus energy used for pumping.

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

Table 3 is intended to show an estimate of the quantity of renewable energy supplied to Michigan retail customers by each regulated Michigan utility. Renewable energy supplied to customers under utility green pricing programs is excluded from this table and reported in Section 5 of this report.

The Staff wishes to again publicly acknowledge the significant efforts from utility personnel to obtain and report the data required to complete this table for the second year. This data was difficult for some utilities to determine because there is no current requirement for utilities to record and track 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. 8) 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, 3.1% for 2006, and back to 2.9% for 2007. Please note that in Table 2, Michigan's generation by renewable fuel type for 2006 was 3.5% while Table 3 shows about 3.1% renewable energy deliveries in 2006 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, 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. Also, the 59,349 MWh of renewable energy attributable to utility green pricing programs during 2007 is not included in renewable energy totals reported in Table 3.

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. Historical data for 2001 through 2004 is shown in Table 4. Looking at the data for 2001 through 2004, no particular trend was evident. 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.[4] The only noticeable

[4] 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

changes in 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.[5]

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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 5 of this report, and 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.

[5] 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: Estimate of Regulated Utility Renewable Energy Supplied to Michigan Retail Customers, 2005 through 2007 (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		
	2006	2007	2006	2007	2006	2007	2006	2007	2005	2006	2007
Alger Delta Co-op	Unknown	Unknown	Unknown	Unknown	7,652	7,617	68,318	69,245	11.0	11.2	11.0
Alpena Power	0	Unknown	0	Unknown	17,283	16,960	338,888	332,542	8.1	5.1	5.1
American Electric (Indiana Michigan) Power Co.	10,534	10,557	6,026	7,004	16,560	17,561	3,285,554	3,393,199	0.4	0.5	0.5
Cherryland Electric Co-op	2672	1,107	1,318	1,107	3,990	2,214	356,337	368,994	1.22	1.12	0.6
Cloverland Electric Co-op	97,500	76,632	0	0	97,500	76,632	239,994	221,186	52.4	40.6	34.6
Consumers Energy	1,985,504	1,855,235	0	0	1,985,504	1,855,235	36,543,836	36,973,716	4.5	5.4	5.0
Detroit Edison	575,412	592,395	0	0	575,412	592,395	50,956,675	52,575,147	1.1	1.12	1.13
Edison Sault	220,561	174,845	0	0	220,561	174,845	650,747	662,621	39.3	33.9	26.4
Great Lakes Energy Co-op	10,028	4,192	4,947	4,192	14,975	8,384	1,337,049	1,397,285	1.22	1.12	0.6
Midwest Energy Co-op	Unknown	Unknown	Unknown	Unknown	9,096	9,644	535,078	602,734	2.5	1.7	1.6
Ontonagon County REA	Unknown	Unknown	Unknown	Unknown	3,287	2,493	29,350	28,990	11.0	11.2	8.6
Presque Isle Electric & Gas Co-op	1,911	792	942	792	2,853	1,584	254,743	264,002	1.22	1.12	0.6
Thumb Electric Co-op	Unknown	Unknown	Unknown	Unknown	1,748	1,813	158,902	164,799	1.0	1.1	1.1
Tri-County Electric Co-op	2,303	1,017	1,136	1,017	3,439	2,033	307,106	338,888	1.22	1.12	0.6
Upper Peninsula Power Co.	66,488	64,894	10,077	9,354	76,565	74,248	816,862	893,451	10.5	9.4	8.3
We Energies	46,126	54,738	0	0	46,126	54,738	2,737,312	2,845,921	1.8	1.7	1.9
Wisconsin Public Service Corp.	916	745	12,034	11,094	12,950	11,839	300,923	303,089	3.0	4.3	3.9
Xcel Energy	77	65	24,237	19,745	24,314	19,811	135,075	139,418	15.5	18.0	14.2
Regulated Utility Totals & Averages					3,119,815	2,930,046	99,052,749	101,575,227	**2.9%**	**3.1%**	**2.9%**

See table notes on next page.

Notes for Table 3:

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. The fuel mix calculations are based on 12 month periods that may be slightly out of sync with the calendar year. 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. 2006 & 2007 renewable energy purchases are estimated based on Alpena's 2007 environmental disclosure reports.

Edison Sault and Cloverland had reduced renewable energy percentages in 2007 due to the impact of low lake levels on hydro generation.

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' 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

[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.

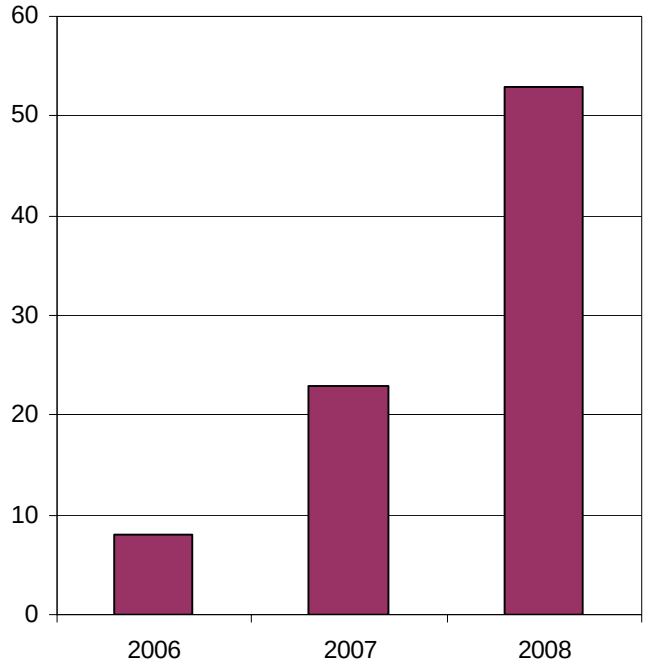
There is no formal system in Michigan for obtaining data on all renewable energy installations. Much of the existing data is obtained by utilities for systems that are interconnected with the electric grid, and some is collected by the State Energy Office, often as a result of customers participating in state grant programs in the past.[6]

[6] See more information at the State Energy Office website for renewable energy, http://www.michigan.gov/eorenew.

As of June 30, 2008, regulated utilities in Michigan reported 53 customers participating in net metering.[7] However, most utilities are reporting that interest in the program is growing based on increased numbers of customer inquiries. An MREP *Net Metering Program Report* for years ending June 30, 2007 and June 30, 2008 will be posted on the MREP Website. Figures 1 and 2 show the number of participating net metering customers and the breakdown of net metering installations by technology type. Currently, all net metering installations are 10 kW or less in aggregate generator nameplate capacity. The actual number of customers producing power with their own renewable energy installations would also include customers who are off the grid, however, Staff does not have the ability to track this information.

The Energy Office identifies 605 kW of solar photovoltaic (PV) systems and 55.5 MW of wind energy systems installed in Michigan by the end of 2007[8]. The Energy Office installed totals include all installations, including utility scale projects, and not just those where customers are producing their own power. 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. In 2007, 52.8 MW and a total of 32 wind turbines were installed in the Harvest Wind farm in Michigan's Thumb area. Consumers Energy reported in its annual green pricing program report that an additional Thumb area wind farm is expected to be operational in late 2008.

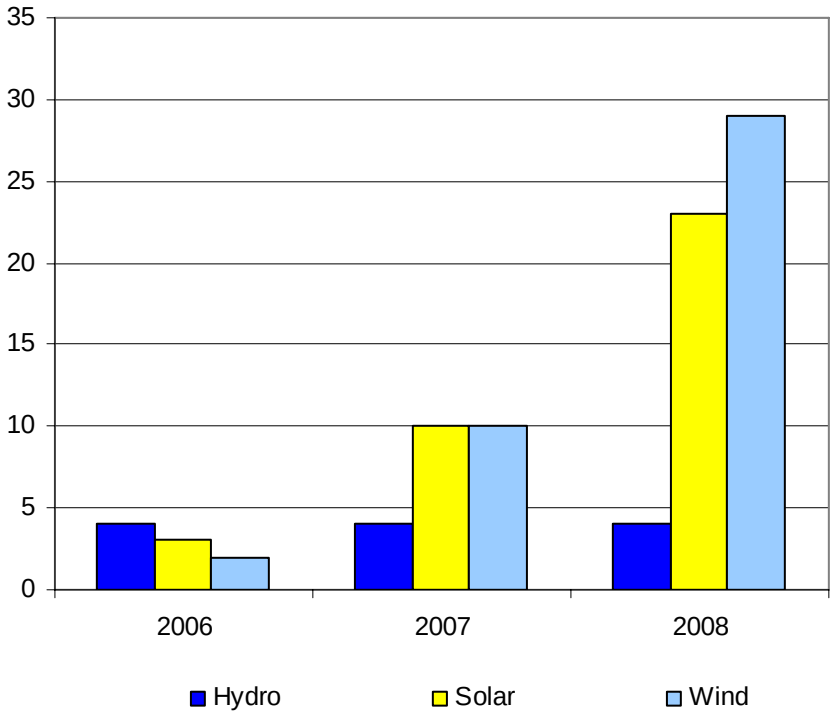
Figure 1: Number of Net Metering Customers (through year ending June 30, 2008)



[7] 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.

[8] See State Energy Office charts of installed solar PV in kW: http://www.michigan.gov/documents/CIS_EO_Solar_Chart_140010_7.pdf and installed wind in MW: http://www.michigan.gov/documents/CIS_EO_Wind_Chart_140011_7.pdf.

Figure 2: Number of Net Metering Installations by Technology Type



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.[9] Staff will work with utilities, independent certification agents, and a tracking system such as Midwest Renewable Energy Tracking System (MRETS),[10] in order to try to establish a mechanism whereby this data can be collected and reported.

[9] Data on the utility green pricing programs is presented in this report, in Section 5.
[10] 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. At the end of 2007 there were 18,956 customers participating in 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.[11] During 2008, the Commission approved two additional green pricing programs. In addition to the 9 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.[12]

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. Consumers Energy residential customers choosing to match 100% of their monthly usage with renewable energy will pay a price premium of 1.667 cents/kWh. Under the new Detroit Edison program, approved by the Commission in its April 3, 2007 Order in Case No. U-14569, the residential price premium for matching 100% of monthly usage is 2 cents/kWh.[13]

Green pricing program information is now available on the Commission's website at www.michigan.gov/greenpricing.

Table 5: Michigan Regulated Utility Green Pricing Programs
Sales and Customer Totals (2005 through 2007)

Utility	Sales (MWh)			Customers at year-end		
Year	**2005**	**2006**	**2007**	**2005**	**2006**	**2007**
Cloverland	63	57	63	19	21	20
Consumers Energy	3,655	18,107	47,961	715	6,686	11,658
Detroit Edison			10,295			6,822
Edison Sault	117	113	118	38	32	38
Presque Isle	*New Program approved in January 2008*					
Thumb Electric	*New Program approved in September 2008*					
UPPco	77	112	160	39	72	76
We Energies	717	656	718	330	325	332
WPSC	13	28	34	4	12	10
Total	**4,642**	**19,073**	**59,349**	**1,145**	**7,148**	**18,956**

[11] 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/.

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

[13] 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 2007, there were 20 Cloverland customers participating in the program.[14]

Consumers Energy Company – Green Generation[SM] Program

The Commission approved Consumers Energy's Renewable Resources Tariff on April 28, 2005. Consumers calls its program *Green Generation*.[15] *Green Generation* replaced an earlier Consumers Energy Green Power Pilot Program, which operated from July 2001 until *Green Generation* began in 2005.[16]

At year-end 2007, Consumers Energy had 11,658 participants in its *Green Generation* program (an increase of 4,972 from year-end 2006), of which the vast majority (99%) are residential customers. The amount of renewable energy subscribed by the participants for the year totaled 47,961 MWh (47,961,000 kWh). Residential customers account for 76% of the total energy subscriptions. The average residential participant enrolled in the block purchase option (one block represents 150 kWh), purchased 1.62 blocks of renewable of renewable energy (as of December 2007), representing a typical residential monthly premium of $4.05. This represents, very roughly, about one-third of the average monthly use of a typical Consumers Energy residential customer.

The *Green Generation* program is certified by Green-e. Consumers Energy completed its first Green-e verification/audit in early 2007, as part of its obligation to maintain the Green-e certification.

Consumers Energy reported that a major highlight of 2007 was the commitment made by the City of Grand Rapids to participate in the *Green Generation* program at a level representing 16,621 MWh per year of renewable energy, making them the single largest participant in the program.

Table 6: Consumers Energy Green Pricing Programs
Customer Enrollments by Customer Class (2004-2007)

Year	Residential	Commercial	Industrial	Total
2004[1]	423	19	3	445
2005	715	8	1	718
2006	6,644	37	5	6,686
2007	11,591	63	4	11,658

[1] 2004 program data as of Nov 1, 2004.

[14] See http://efile.mpsc.cis.state.mi.us/cgi-bin/efile/viewcase.pl?casenum=13949.
[15] See http://www.consumersenergy.com/welcome.htm?/products/index-nomargin.asp?asid=672&xx=SSID=100.
[16] For more information on Consumers Energy Green Power Pilot Program 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.

Marketing and promotion expenses during 2007 totaled $741,348, which equates to $149 per enrollment for the year.[17] Two bill inserts and three direct mail campaigns represented the primary promotional activities and were responsible for the bulk of new enrollments received during the year. The Company also leveraged media exposure from the more than 100 press releases issued throughout the year, generating news articles within the Consumers Energy service area. In addition, the *Green Generation* program was represented at numerous fairs and events throughout the year, including the Michigan Energy Fair, the University of Michigan Energy Fair and the Calvin College Energy Fair. During 2007, the number of participants enrolled increased by 4,972 customers.

Consumers Energy received its renewable energy supply for the *Green Generation* program from four suppliers with six generating facilities in 2007 with an average renewable price of $27 per MWh.[18] One wind and five landfill gas facilities provided 40,576 MWh to the program with 95% of the supply coming from landfill gas facilities. Consumers Energy is expecting the addition of a large wind energy supplier in November, 2008. The wind farm is expected to generate approximately 181,000 MWh of electricity annually, more than tripling supply for the *Green Generation* program. Renewable energy subscribed in 2007 for *Green Generation* totaled 47,961 MWh, which was 7,386 MWh more than delivered. The Green-e National Standard allows renewables generated during the first three months of the following calendar year to apply to program supply shortages from the previous year.

For 2007, contributions from *Green Generation* customers totaled $762,656. Applying Consumers Energy's average power supply cost to renewable energy deliveries resulted in a Power Supply Cost Recovery accounting credit of $1,554,448 for the associated renewable energy deliveries. This resulted in total collections of $2,317,104. Additionally, 10.5 MWh of renewable energy certificates were sold for $175. Program expenses, including purchasing the renewable energy supply, marketing and administrative expenses, totaled $3,348,842. This left a balance of $1,031,563 to be recovered from the Consumers Energy Renewable Resource Program (RRP) fund, and the year-end balance of the RRP fund was $13,280,493.[19]

Enrollment in the *Green Generation* program reached 13,000 customers by June 2008.

Detroit Edison Company – GreenCurrents℠ Program

The Commission approved Detroit Edison's *GreenCurrents* program in its April 3, 2007 Order in Case No. U-14569. [20, 21]

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[17] 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.
[18] 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).
[19] 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.
[20] 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.
[21] See http://my.dteenergy.com/products/greenCurrents/index.html.

Under the Commission Order (pp. 5-6), Detroit Edison will be filing annual reports on March 31 of each year. Detroit Edison filed the first report on March 31, 2008.[22]

At year-end 2007, Detroit Edison had 6,822 enrolled participants in its *GreenCurrents* program. The participants are 99% residential customers. During 2007, Detroit Edison purchased 6,064 renewable energy certificates. Detroit Edison purchased its renewable energy certificates from landfill gas and wind facilities located in Michigan for a weighted average price of $14.55 per MWh. Renewable energy subscribed in 2007 for *GreenCurrents* totaled 10,295 MWh, which was 4,231 MWh more than the 6,064 purchased. The Green-e National Standard allows renewables generated during the first three months of the following calendar year to apply to program supply shortages from the previous year.

For 2007, program expenses were $982,175, which equates to $144 per enrollment.[23] The program was primarily promoted through bill inserts, direct mail, and events. Over 70 related news articles were published in 2007. Detroit Edison also sponsored public radio and cable television programs and advertised in targeted publications whose audiences are known to be receptive to resource conservation issues. Where enrollments could be attributed to a particular marketing method, response data was tracked. Based on this tracking, direct mail accounted for approximately 30%, public events 22%, and web-based options 35% of total enrollments.

For 2007, revenue recorded by Detroit Edison for the *GreenCurrents* program totaled $221,254. Program expenses, including purchasing the renewable energy certificates, marketing and administrative expenses, totaled $982,175. This resulted in a net loss of $928,743 for 2007.

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. Enrollment in the *GreenCurrents* program reached 7,500 customers by March 2008 and 10,000 by June 2008. The *GreenCurrents* program received Green-e certification in February 2008. Detroit Edison reported that *GreenCurrents* ranks among the top 25% of customer participation in renewable programs in the United States and Canada.

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.

[22] See http://efile.mpsc.cis.state.mi.us/efile/docs/14569/0208.pdf.
[23] 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.

Edison Sault's participation rate is fairly low as the utility currently has 38 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 continues to grow. We Energies has over 17,800 customers in Wisconsin and the Upper Peninsula of Michigan enrolled in *Energy for Tomorrow*®. Currently, 332 of We Energies' Michigan Upper Peninsula customers are participating.

Energy for Tomorrow customers pay a premium of 1.37 ¢/kWh for 100% renewable electricity, 0.685 ¢/kWh for 50%, and 0.343 ¢/kWh for 25%. Business customers can also purchase renewable electricity in blocks of 100 kWh, for 1.37 ¢/kWh.[24]

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 which is marketed under the name *GreenWise Electric Power.* Currently, the program portfolio is 1.7 MW from hydroelectric plants owned by Tower Kleber, in Cheboygan County. In addition, in the spring of 2008 the BWL refurbished and brought on line a small hydro plant that had been inactive for the past decade. That plant generates approximately 0.6 MW of hydroelectricity.

The *GreenWise* program offers customers 250-kWh blocks for $7.50 per month (3¢/kWh). The residential customer participation has been greater (84% of participating customers) compared to the commercial sector (16%). Currently the BWL is evaluating enhancements to the current program to make it more affordable for customers.

Presque Isle Electric & Gas Co-op – Green Choice Program

Presque Isle's green pricing program was approved by the Commission on January 29, 2008.[25] Under the Green Choice green/renewable energy rider tariff, customers may choose to participate in the program for $1.75 per 100 kWh block, subject to a price cap of $2.50 per 100 kWh.

Presque Isle Electric & Gas Co-op is a purchaser of power from Wolverine Power Supply Cooperative, which has entered into a long-term power purchase agreement for renewable energy from Harvest Wind Farm, LLC.[26]

Thumb Electric Co-op – Green Thumb Renewable Energy Program

Thumb's green pricing program was approved by the Commission on September 23, 2008.[27] Green Thumb Renewable Energy customers may choose to participate in the program for $3.00 per 100 kWh block plus 50 cents per 100 kWh block for administrative costs.

[24] See www.we-energies.com/eft.
[25] See http://efile.mpsc.cis.state.mi.us/efile/docs/15477/0003.pdf.
[26] See https://www.pieg.com/Community.cfm?p=140.
[27] See http://efile.mpsc.cis.state.mi.us/efile/viewcase.php?casenum=15014-R&submit.x=27&submit.y=11.

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 residential customer premium of 1.65 cents per kWh and business customer premium of 2.2 cents/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 residential green tariff customer pays a monthly premium of approximately $8.25. 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.[28]

Table 7: TCL&P Wind Generator Production, 2000-2007

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%
2007	832,000	0.25%

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-six customers were participating by the end of 2007. 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.[29]
At the end of 2007, WPSC had 10 *NatureWise* customers in Michigan.

[28] See: http://www.tclp.org/uploaded_files/TCLP-1096-GreenWeb.pdf.
[29] See http://www.uppco.com/rates/naturewise_home.asp.

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) and Green Mountain Energy Company for a "green pricing" program.[30] Green Mountain Energy Company provides a 100% renewable product option consisting of wind, landfill gas, and hydroelectric power. Green Mountain is responsible for the energy supply and program management.

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.

Wyandotte Municipal Services, together with a grant from the Michigan Energy Office, Wyandotte Public Schools and Johnson Controls installed a 10 kW solar PV system at Wilson Middle School.

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 five utility scale wind turbines on brownfield sites within the city.

At the end of 2007, 123 customers (about 1.0%) were participating in the Wyandotte program, and program sales for 2007 totaled 832 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.

In Case No. U-15440,[31] the Commission established a reporting schedule for each of the MREP reports. All MREP data and reports will be posted on the MREP Website.

Due to the enactment of 2008 PA 295, much of the data needed to compile this report may soon be available in regular utility filings made as part of complying with the Act. MREP staff will follow the development of guidelines for the new filings and look for ways to align the MREP reporting so that data provided by utilities in the new reports can be used to prepare some or even all of the MREP Data Reports.

[30] See http://www.amp-ohio.org/ and http://www.greenmountain.com.
[31] See http://efile.mpsc.cis.state.mi.us/efile/docs/15440/0012.pdf.