REPORT ON THE IMPLEMENTATION OF THE P.A. 295 RENEWABLE ENERGY STANDARD AND THE COST-EFFECTIVENESS OF THE ENERGY STANDARDS

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MICHIGAN PUBLIC SERVICE COMMISSION
Department of Licensing and Regulatory Affairs
In compliance with Public Act 295 of 2008

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Introduction

Report Criteria

In October 2008, Public Act 295 of 2008 (PA 295 or the Act) was enacted. Section 51(5) (MCL 460.1051(5)) requires that by February 15, 2011, and each year thereafter, the Michigan Public Service Commission (MPSC or Commission) submit to the standing committees of the Senate and House of Representatives with primary responsibility for energy and environmental issues a report that does all of the following:

a) Summarizes data collected under this section.

b) Discusses the status of renewable energy and advanced cleaner energy in this state and the effect of Subparts A and B on electricity prices.[1]

c) For each of the different types of renewable energy sold at retail in this state, specifies the difference between the cost of the renewable energy and the cost of electricity generated from new conventional coal-fired electric generating facilities.

d) Discusses how the Commission is ensuring that actions taken under this Act by electric providers serving customers in the same distribution territory do not create an unfair competitive advantage for any of those electric providers.

e) Evaluates whether Subpart A has been cost-effective.

f) Provides a comparison of the cost effectiveness of the methods of an electric utility with one million or more retail customers in this state as of January 1, 2008, obtaining renewable energy credits from renewable energy systems owned by the electric provider and from contracts that do not require the transfer of ownership of the renewable energy system.

g) Describes the impact of Subpart A on employment in this state. The Commission shall consult with other appropriate agencies of the department of labor and economic growth in the development of this information.[2]

h) Describes the effect of the 10 percent limit on using energy optimization credits or advanced cleaner energy credits to meet the renewable energy credit standards.

[1] Subpart A (MCL 460.1021-1053) deals with renewable energy standards. Subpart B (MCL 460.1071-1097) deals with energy optimization standards.

[2] A State government reorganization took place in 2011 which moved employment-related agencies outside the newly-formed Department of Licensing and Regulatory Affairs (LARA). Consultation with the appropriate agencies is continuing.

i) Makes any recommendations the Commission may have concerning amendments to Subpart A, including changes in the 10 percent limits described in (h) or changes in the definition of renewable energy resource or renewable energy system to reflect environmentally preferable technology.

Additionally, Section 97 of the Act (MCL 460.1097) requires the following:

(6) By February 15, 2011 and each year thereafter and by September 30, 2015, the Commission shall submit to the standing committees described above a report that evaluates and determines whether Subpart B and Subpart A have each been cost-effective and makes recommendations to the legislature. The report shall be combined with any concurrent report by the Commission under section 51.

This fourth annual report provides information on Commission renewable energy activities related to the Act through calendar year 2013 and summarizes data from the electric provider annual reports through the 2012 calendar year.[3] This report also includes a new section presenting 2012 renewable energy credit compliance data for the first interim step compliance year.

Renewable Energy Plans and Commission Approval

Subpart A of the Act requires electric providers to meet a 10 percent renewable energy standard based on retail sales by the end of 2015. The Act includes interim compliance steps for 2012 – 2014. For 2016 and each year thereafter, the Act requires electric providers to maintain the same amount of renewable energy credits (RECs) needed to meet the standard in 2015.

The renewable energy standard is applicable to Michigan's investor-owned electric utilities, cooperative electric utilities, municipal electric utilities and alternative electric suppliers (AESs). The Act directed electric providers to file initial renewable energy plans (REPs) in 2009.[4] The 74 initial REPs described how each electric provider intended to meet the renewable energy standard requirements. The Act also directs electric providers to file REPs biennially for Commission review.

[3] *See:* the Commission's February 15, 2013 report: http://www.michigan.gov/documents/mpsc/implementation_of_PA295_renewable_energy_411615_7.pdf?20140102105631

[4] There are currently a total of 86 electric providers. Of those 86, 15 are AESs not serving customers and therefore are not required to file annual reports or register in MIRECS, the REC tracking system. Seventy-one electric providers are required to meet the REC standard in the Act.

A listing of case numbers, electric provider names, and approval dates for this reporting period can be found in ***Appendix A***. Commission Staff created a web page with links to each electric provider's renewable energy plan case docket.

The Act allows providers to recover the incremental costs of compliance with the renewable energy standard requirements through a renewable energy surcharge on customer bills. Commission approval is only required for rate-regulated electric providers. Section 45 of the Act limits the retail rate impact (surcharge amount) of the renewable energy standard to the following:

(a) $3.00 per month per residential customer meter.

(b) $16.58 per month per commercial secondary customer meter.

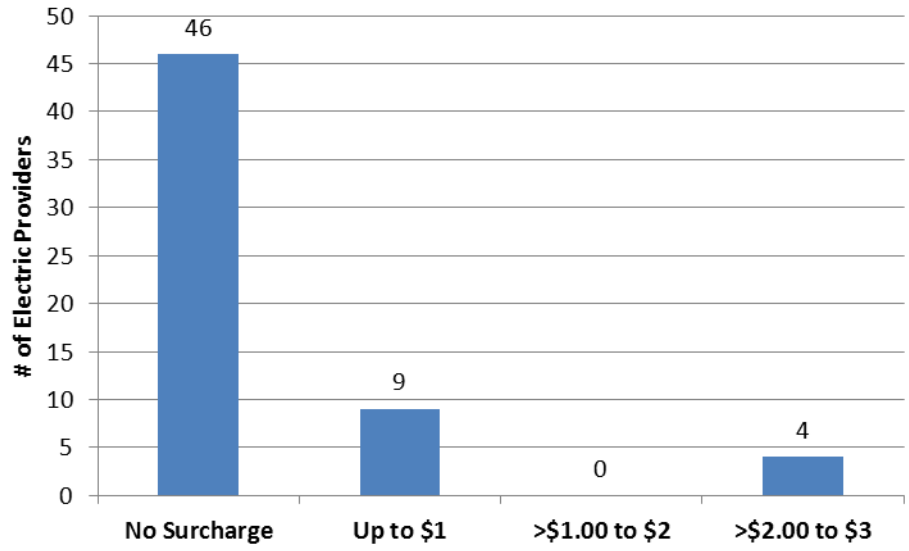
(c) $187.50 per month per commercial primary or industrial customer meter.

Through 2013, there are five rate-regulated providers collecting renewable energy surcharges on customer bills. Additionally, there are eight non-rate-regulated electric providers with revenue recovery mechanisms. Consumers Energy Company (Consumers Energy) has a case pending to reduce its renewable energy surcharge to zero, and DTE Electric Company's (DTE Electric) renewable energy plan filing, approved on December 19, 2013, includes a residential surcharge reduction from $3.00 per meter per month to $0.43 per meter per month effective January 2014. Forty-six providers do not collect surcharges. **Figure 1** summarizes the residential surcharges for all Michigan electric providers. Details about the surcharges can be found in ***Appendix B***.

Based upon a review of REPs filed with the Commission, all providers are expected to be able to meet the 10 percent renewable energy standard in 2015, with the exception of Detroit Public Lighting Department.[5]

[5] Wisconsin Electric Power Company's initial REP did not show the Company achieving the full 10 percent standard. The Company's most recently filed REP filed on September 5, 2012 in Case No. U-17072, although rejected by the Commission, shows that the Company will reach the full 10 percent requirement. The Commission has suspended all of Detroit Public Lighting renewable energy filings during the city's bankruptcy process.

Figure 1: Residential Customer Renewable Energy Monthly Surcharge Summary



AESs do not currently serve residential customers.
Source: Renewable energy plans filed with the MPSC

Renewable Energy Cost Reconciliation Cases and Commission Approval

Per Section 49 (1) of PA 295 (MCL 460.1049(1)), the MPSC rate-regulated electric providers are required to file annual renewable energy cost reconciliation cases.[6] For the 2012 reconciliation period, each of the 11 rate-regulated electric providers filed renewable energy cost reconciliation cases. After Staff review, three rate-regulated electric cooperatives and four investor-owned utilities filed settlement agreements which have been approved by the Commission. The four other investor-owned utilities, Alpena Power Company (Alpena Power), Consumers Energy, DTE Electric and Wisconsin Electric Power Company, have cases currently under review to determine the reasonableness and prudence of expenditures and amounts collected pursuant to the revenue recovery mechanism. Case numbers and order dates for each renewable energy cost reconciliation case for the reporting period

[6] Commission Staff audits the pertinent revenues and expenses along with other tasks. Staff analyzes and determines the electric provider's compliance with its filed REP per the Act. Beginning with the first compliance year for the Renewable Energy Standard, the Commission will determine whether the provider has met its compliance targets.

can be found in ***Appendix A.*** Commission Staff created a web page with links to each electric provider's reconciliation case docket.

Summary of Renewable Energy Data Collected

Electric providers are directed by Section 51(1) of PA 295 (MCL 460.1051(1)) to file annual reports for each plan year beginning with 2009. Michigan electric provider annual reports for 2009 through 2012 are available on the Commission's website.[7] Commission Staff worked with electric providers to develop an annual report template based on Section 51 of the Act. A summary of data from annual reports is shown in ***Appendix C***.

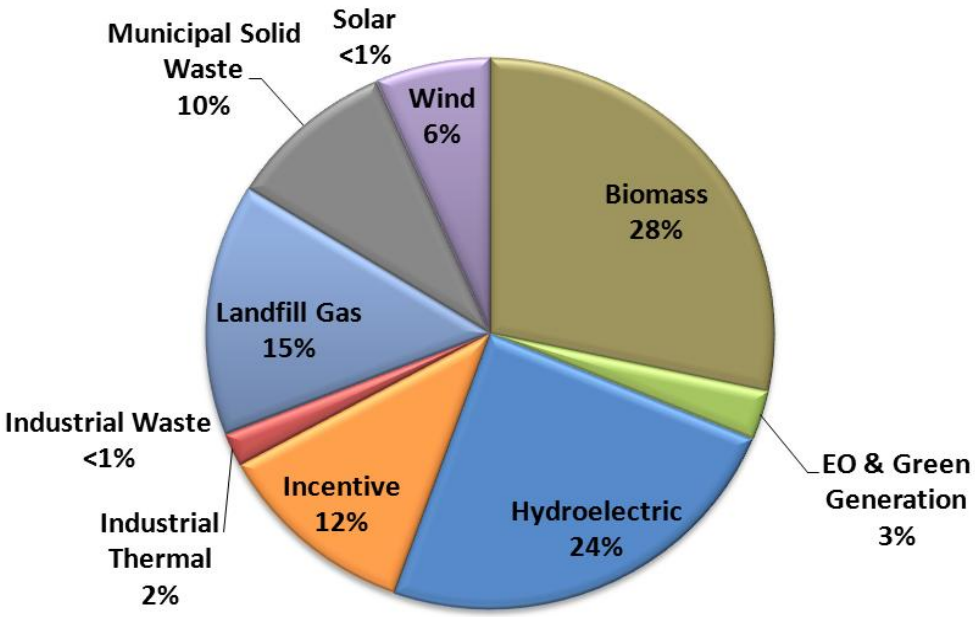
Renewable Energy Credit Requirements – 2012 Compliance

In 2012, electric providers were required to meet the first interim compliance step on the path to the full 10 percent standard. The number of renewable energy credits required for 2012 compliance varies by electric provider and is calculated by "closing the gap" between the full 10 percent compliance level and each electric provider's pre-Act 295 baseline renewable energy credits by 20 percent.[8] All of Michigan's 71 electric providers (alternative electric suppliers not serving customers are not included in this total) met the 2012 requirements and retired[9] a total of 4,004,602 energy credits. **Figure 2** shows the different renewable energy technology types used to generate the credits used for compliance for all electric providers and separately for both Consumers Energy and DTE Electric.

[7] *See:* http://www.michigan.gov/mpsc/0,1607,7-159-16393_53570-240179--,00.html.
[8] The number of baseline renewable energy credits is the sum of the number of renewable energy credits that would have been transferred to the electric provider plus the number of credits that would have been generated by the electric provider during the year preceding the effective date of the Act.
[9] Energy credits are "retired" when used for compliance.

Figure 2: Energy Credit Breakdown for 2012 Compliance

All Electric Providers - 2012 Compliance Energy Credits
4,004,602 Total Energy Credits



Consumers Energy
1,906,592 Total Energy Credits

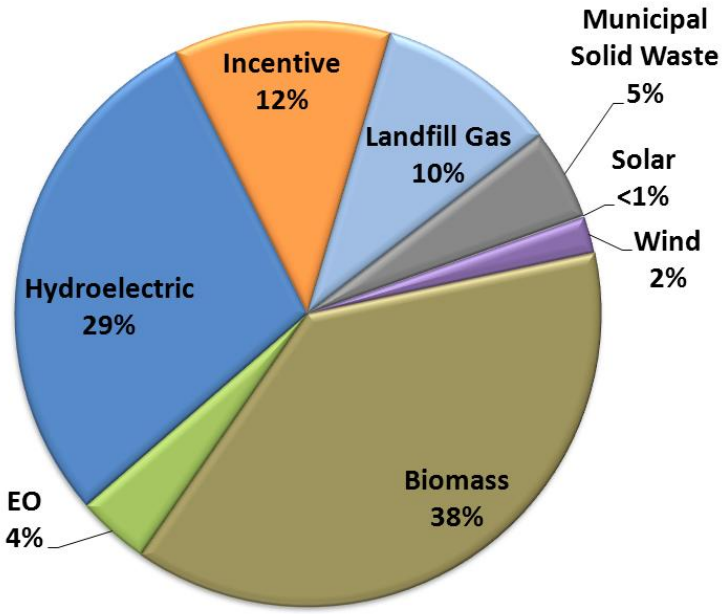
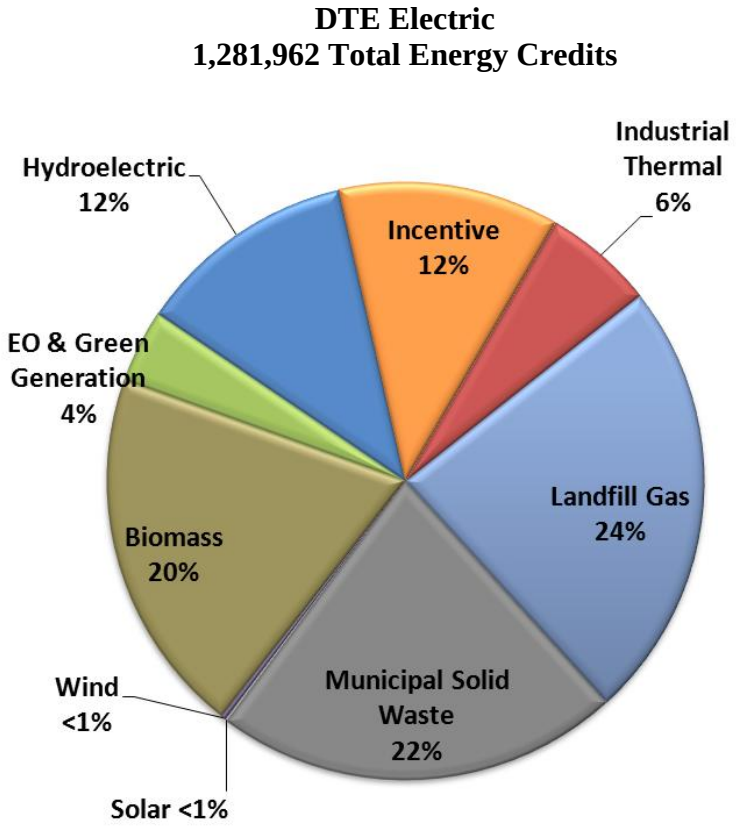


Figure 2: Energy Credit Breakdown for 2012 Compliance (continued)

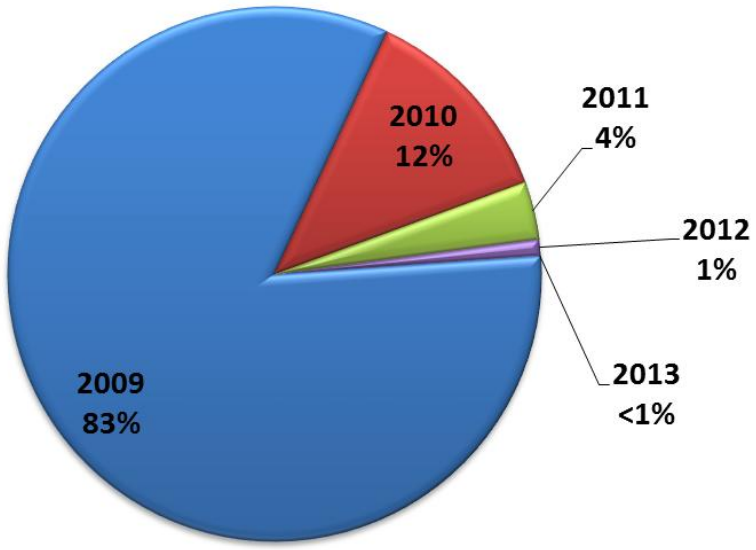


Section 29 of the Act includes provisions for determining whether the location of a renewable energy system is eligible for Michigan's RPS. Ninety-two percent of the energy credits used for 2012 compliance were from renewable energy generated in Michigan. Wisconsin was the source for three percent and the remaining credits came from renewable energy generated in Indiana, Iowa, and Minnesota. Michigan's multi-state utilities and electric providers with out-of-state wholesale suppliers are most likely to use energy credits from states other than Michigan.

PA 295 includes a provision that allows energy credits to be "banked" up to 36 months. **Figure 3** shows a breakdown of energy credits retired for compliance by vintage year of generation. The data shows that providers are utilizing the 36-month energy credit banking provision in the Act.

Approximately 83% of the energy credits used to comply in 2012, were from renewable energy generated in 2009. MIRECS data shows that approximately 2,300,000 energy credits with a 2009 or 2010 vintage expired without being used for compliance. Electric providers also used a small number of 2013 energy credits in accordance with a provision in the Act that allows energy credits from the first 120 days of the year to be used for the previous year's compliance requirements.

Figure 3: 2012 Compliance Energy Credits – Year of Generation



Status of Renewable Energy

Based on the number of energy credits generated or acquired during 2012 as reported by electric providers, Michigan's 2012 estimated renewable energy percentage is 5.4 percent of retail sales as shown in ***Appendix C.***

A projection of Michigan's renewable energy credits for 2013 through 2015 is shown in **Figure 4** along with the annual REC compliance requirement and accumulated RECs. In order to reflect only renewable energy generated or acquired in each year, accumulated RECs from previous years are not

included in the yearly renewable energy totals but are shown separately in the line called accumulated REC inventory. The projected renewable energy includes: i) baseline renewable energy (renewable energy that was operational prior to the passage of PA 295); ii) a projection of other RECs from non-rate regulated providers and contracts that do not require Commission approval under PA 295; iii) an estimate of RECs from PA 295 approved contracts for company-owned renewable energy projects; and iv) power purchase agreements and REC-only contracts.

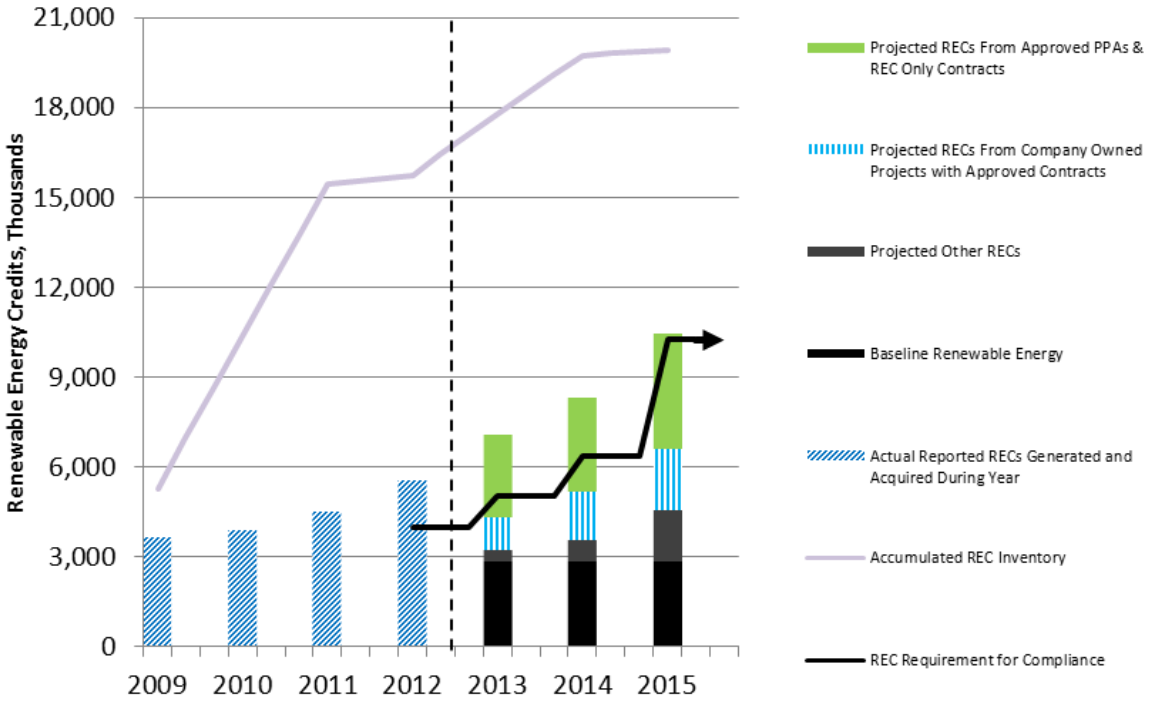
There are several changes from the data presented last year. Last year's forecast of accumulated REC inventory showed a peak of approximately 16 million credits in 2014 and a decrease in 2015. The updated projection peaks at about 19.5 million energy credits in 2014 and stays about the same in 2015. In previous reports, the accumulated REC inventory projection was calculated using data reported by electric providers which may have undercounted RECs that were held in inventory by wholesale providers or renewable energy generators. Additionally, the accumulated REC inventory for 2012 must reflect energy credits that were retired for 2012 compliance, voluntary retirements and 2009 energy credits that expired, due to the 36-month banking provision, without being used.

Based on these factors, a new methodology was used for the 2012 accumulated REC inventory using data in the Michigan Renewable Energy Certification System (MIRECS). The new methodology takes all RECs in MIRECS into account while the method used in previous years was based on the number of RECs held in inventory and reported by electric providers. Accumulated REC totals for 2009 through 2011 were updated to reflect all 2009 – 2011 RECs in MIRECS.

Additionally, last year's report projected renewable energy generation in 2015 at about 9 percent of total retail sales and showed that energy credits from accumulated REC inventory would be needed to reach the 10 percent requirement. **Figure 4** incorporates Michigan's current renewable energy status and projects that renewable energy generation will reach 10% of total retail sales in 2015. The increase in expected renewable energy generation in 2015 is largely due to the accelerated

development of several wind projects to qualify for the wind production tax credit which was extended in January 2013 for projects that start construction before January 1, 2014. Consumers Energy moved the commercial operation date of its Cross Winds project from 2015 to 2014 and DTE Electric signed several contracts for wind energy that are expected to qualify for the tax credit. The renewable energy projections shown for 2013 through 2015 clearly indicate that providers are on track to meet the renewable energy standard.

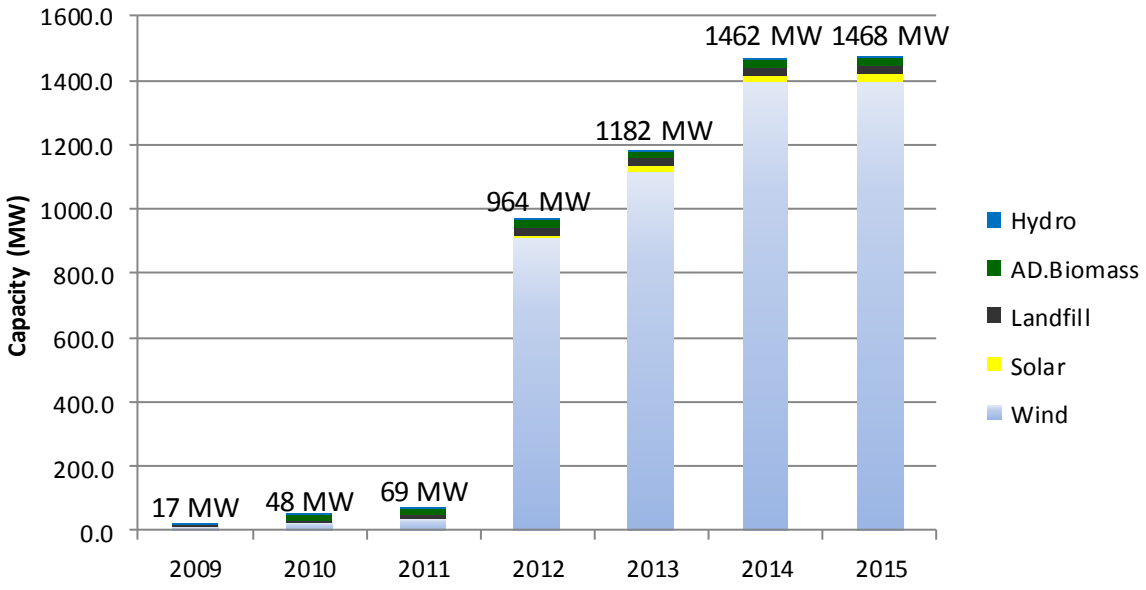
Figure 4: Michigan Renewable Energy Projection, 2013 - 2015



Source: Electric provider annual reports, PA 295 contracts, MIRECS and Commission Staff projections.

As of January 2014, 56 renewable contracts and amendments have been approved by the Commission. **Figure 5** shows the expected commercial operation dates for renewable energy projects through 2015 based on the contracts and solar programs approved by the Commission.[10]

Figure 5: Cumulative Renewable Energy Capacity by Commercial Operation Date



Additionally, Consumers Energy and DTE Electric both continue to implement solar photovoltaic (PV) pilot programs. Consumers Energy's approximately 4 MW expanded solar pilot program has experienced more demand each round than is available to award even with a substantial reduction in program price from the initial 2 MW pilot. DTE Electric's customer-owned program met its goal of 5 MW in May 2011, and the Commission approved a 2 MW expansion of the customer-

[10] Assumes 17 MW of DTE Electric Company's 22 MW SolarCurrents program and 5.25 MW of Consumers Energy's 6 MW Experimental Advanced Renewable Programs were commercially operational by the end of 2013. The remainder of the Companies' programs are assumed to continue development through 2015.

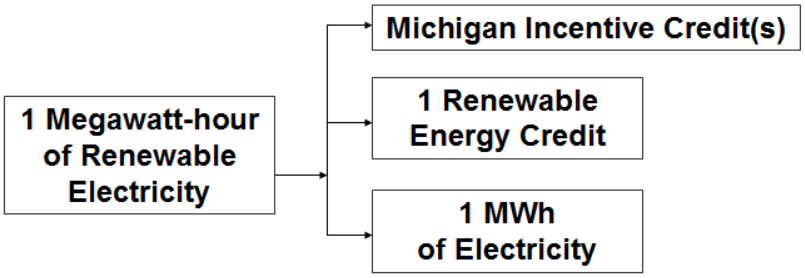
owned SolarCurrents program in November 2012. Additionally, DTE Electric is continuing development under its 15 MW Company-owned SolarCurrents program. These PV pilots are discussed in more detail in ***Appendix D***.

Electric providers have secured nearly all of the renewable energy necessary for compliance with the Act.[11] Looking forward, electric providers, with the exception of one, are on pace to hit the interim targets as well as the 10 percent by 2015 renewable energy standard.

Michigan Renewable Energy Certification System (MIRECS)

Compliance with the renewable energy standard is demonstrated through the use of RECs. One REC is created for each megawatt-hour (MWh) of renewable energy generated. Additionally, the Act provides for Michigan incentive renewable energy credits (IRECs) and the substitution of energy optimization credits (EOCs)[12] and advanced cleaner energy credits (ACECs) for RECs. RECs may be sold separately from energy as shown in **Figure 6**.

Figure 6: Renewable Energy Credits



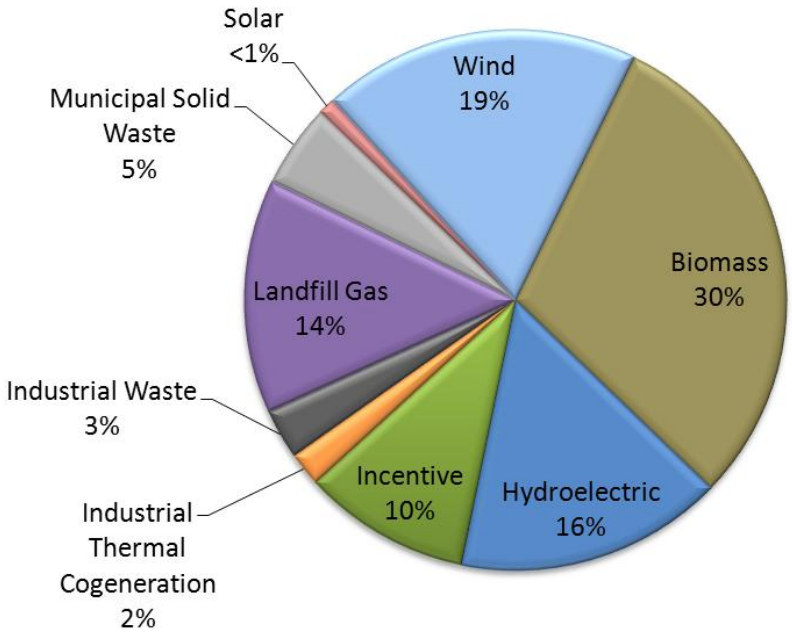
Section 41 of PA 295 (MCL 460.1041) directed the Commission to "establish a renewable energy credit certification and tracking program." On August 11, 2009, the Commission approved the

[11] Nearly all AESs are purchasing unbundled renewable energy credits to meet the renewable energy credit portfolio requirements. The terms and conditions of these purchases are unknown.
[12] At this time, energy optimization credits are not transferable from one electric provider to another, meaning that they cannot be sold or otherwise traded.

contract between the Department of Energy, Labor and Economic Growth (now Licensing and Regulatory Affairs or LARA) and APX, Inc., that designates APX, Inc. as the State of Michigan Administrator of the renewable energy credit and tracking program. MIRECS was launched on October 30, 2009.[13]

As of February 1, 2014, a total of 26,781,973 Michigan energy credits have been created in MIRECS from 2009 through 2013. **Figure 7** shows the categorization of Michigan's energy credits by technology type. A yearly breakout of energy credits is available in ***Appendix E***. Analysis of these breakouts shows the significant growth of wind in Michigan's REC portfolio, from 25 percent in 2012 to 37 percent in 2013. The 19 percent wind figure shown in **Figure 7** represents total credits created over the 2009 – 2013 period. This data differs from **Figure 2** because all energy credits created in MIRECS since its inception are reflected, while **Figure 2** shows only energy credits used for 2012 compliance.

Figure 7: MIRECS 2009-2013 Vintage Energy Credits –26,781,973 Total Credits



[13] MIRECS may be accessed at http://www.mirecs.org.

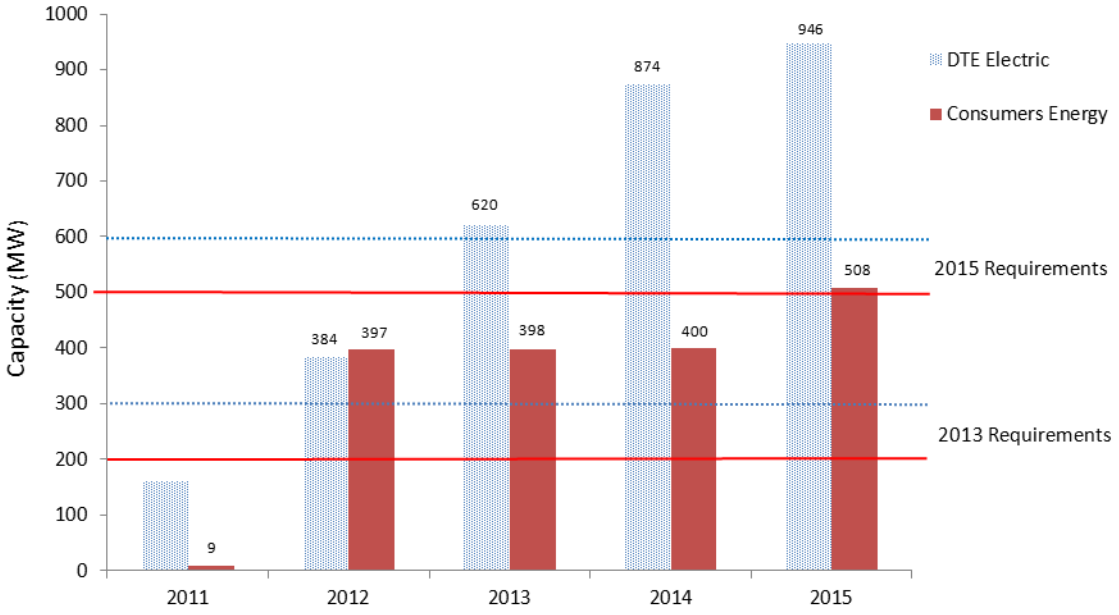
The number of generating units within MIRECS continues to grow. As of February 1, 2014, there were 216 registered projects (generators) in MIRECS. MIRECS has 135 account holders which include electric service providers, generator owners and others.

MIRECS is able to fully integrate with other tracking systems such as the Midwest Renewable Energy Tracking System (M-RETS) and North American Renewables Registry (NAR). This integration allows both businesses and individual citizens to sell their product to a wider market. Generators registered with other tracking systems have, as of February 1, 2014, registered 56 projects for the purpose of importing RECs into MIRECS. Commission Staff assists electric providers with the compliance process and will continue to hold training/information meetings.

Competition in Areas Served by Multiple Providers

Consumers Energy and DTE Electric have made substantial progress toward complying with the renewable energy standard. Consumers Energy has filed renewable energy contracts with the Commission totaling 501.8 MW, and DTE Electric totaling 889.4 MW, as shown in ***Appendix F*****.** In addition to meeting the requirement in PA 295 for RECs that is applicable to all electric providers, both Consumers Energy and DTE Electric have renewable capacity requirements pursuant to Section 27 of PA 295 (MCL 460.1027). By the end of 2013, Consumers Energy was required to obtain 200 MW of nameplate capacity that was not in commercial operation before the effective date of the Act. Similarly, DTE Electric's capacity portfolio requirement for 2013 was 300 MW. By the end of 2015, Consumers Energy's and DTE Electric's total capacity portfolio requirement increases to 500 MW and 600 MW, respectively. At the end of 2013, both companies had obtained Commission approval of PPA and company-owned renewable energy projects that provide the necessary capacity to exceed the 2015 legislative capacity requirements. Planned new cumulative capacity and capacity portfolio requirements are shown for each company in **Figure 8**.

Figure 8: Planned New Cumulative capacity through 2015 for Consumers Energy and DTE Electric[14]



AESs are required to meet the energy credit requirement contained in the Act. Almost all AESs have indicated through REPs and 2012 annual reports that they will purchase RECs instead of building and owning renewable energy projects or signing long term renewable energy purchase agreements to meet the renewable energy standard requirement. Customer choice participation levels for DTE Electric and Consumers Energy are at the maximum amount allowed by law and both electric providers currently have customers waiting to switch providers. Through building or contracting to purchase energy, capacity and RECs from new renewable energy projects, the two largest utilities in Michigan have driven the expansion of renewable energy and have incurred most of the associated

[14] Data shows planned capacity through 2015 only. Both companies expect to build or acquire additional capacity after 2015. Consumers Energy source data is from biennial REP Case No. U-17301. DTE Electric source data is from biennial REP Case No. U-17302.

costs while the AESs reported intentions of compliance by purchasing RECs instead of building new capacity.

Cost-Effectiveness of Power Purchase Agreements and Owned Generation

Section 33 of PA 295 (MCL 460.1033) includes a provision for electric providers who serve more than 1,000,000 electric customers in this state as of January 1, 2008 with regard to competitive bidding and unsolicited contracts. Consumers Energy and DTE Electric fall under this provision.

Pursuant to Section 33, the companies are required to obtain RECs necessary to meet the REC standard in 2015 by one or more of the following methods:

> (i) Renewable energy systems that were developed by and are owned by the electric provider. An electric provider shall competitively bid any contracts for engineering, procurement, or construction of any new renewable energy systems…
>
> (ii) Renewable energy systems that were developed by 1 or more third parties pursuant to a contract with the electric provider under which the ownership of the renewable energy system may be transferred to the electric provider, but only after the renewable energy system begins commercial operation. Any such contract shall be executed after a competitive bidding process conducted pursuant to guidelines issued by the commission.

Additionally:

> (b) At least 50 percent of the renewable energy credits shall be from renewable energy contracts that do not require transfer of ownership of the applicable renewable energy system to the electric provider or from contracts for the purchase of RECs without the associated renewable energy. A renewable energy contract or contract for the purchase of RECs under this subdivision shall be executed after a competitive bidding process conducted pursuant to guidelines issued by the commission. However, an electric provider may consider unsolicited proposals presented to it outside of a competitive bid process by a renewable energy system developer that is not affiliated with the electric provider. If the provider determines that such an unsolicited proposal provides opportunities that may not otherwise be available or commercially practical, the provider may enter into a contract with the developer.

The companies have conducted 22 requests for proposals (RFPs) in total. Consumers Energy has conducted eight RFPs and three requests for qualifications. DTE Electric has conducted 14 RFPs, two pre-qualification events, one solar solicitation of interest, a request for information, and an auction

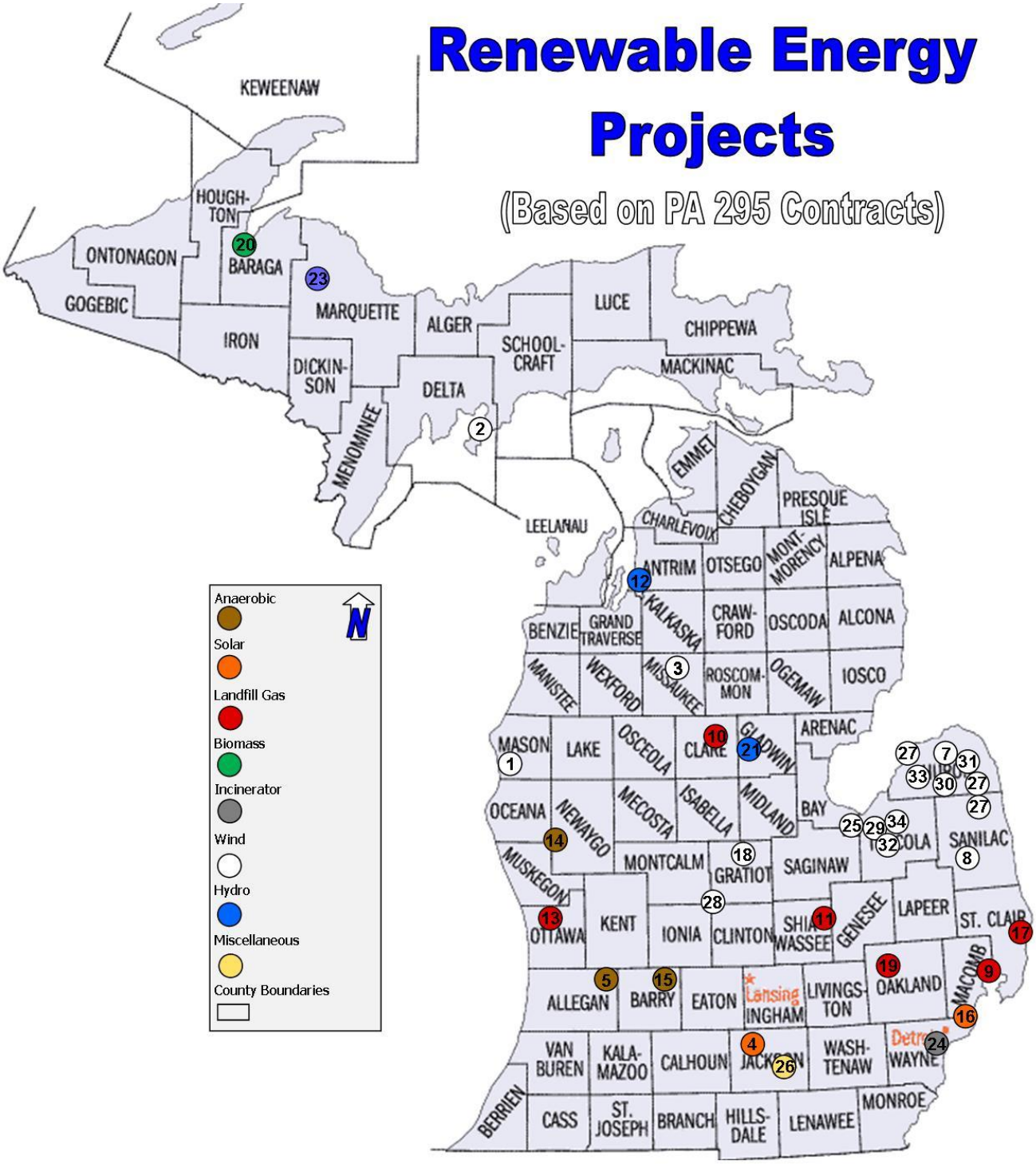
for 2009 and 2010 vintage RECs. In response to the majority of the companies' RFPs, Commission Staff has reviewed competitive bidding activities through process audits. The purpose and design of the audits were to ensure that the companies followed the processes and procedures outlined in the Commission's December 4, 2008 Temporary Order in MPSC Case No. U-15800, Attachment D[15] and pursuant to Section 33 of PA 295. Details about each company's competitive bidding activities are shown in ***Appendix G***.

Pursuant to Section 37 of the Act (MCL 460.1037), renewable energy power purchase and REC-only agreements entered into by any electric provider whose rates are regulated by the Commission must be submitted to the Commission for determination of whether the terms are reasonable and prudent. ***Appendix F*** lists all renewable energy contracts that have been approved by the MPSC to date.

There has been significant renewable energy development as a result of PA 295. ***Appendix H*** lists all of the renewable energy projects that have approved PA 295 contracts. The ***Appendix F*** and ***Appendix H*** map key corresponds to the map in **Figure 9**. Wind energy has been the primary source of new renewable energy in Michigan. At the end of 2013, there were over 1,100 MW of utility scale wind projects in operation in Michigan as indicated in ***Appendix I.***

[15] *See:* http://efile.mpsc.state.mi.us/efile/docs/15800/0001.pdf.

Figure 9: Locations of Renewable Energy Projects



Multiple Solar projects participating in Consumers Energy's Experimental Advanced Renewable Program are represented by a solar symbol placed at Jackson.
Multiple Solar projects participating in DTE's SolarCurrents Program are represented by a solar symbol placed at Detroit.
Alpena Power Company purchasing "bulk of RECs" from Consumers Energy represented by a yellow symbol placed at Jackson.
DTE purchasing misc RECs from UPPCo represented by a blue symbol placed at UPPCo's headquarters.
Map shows renewable energy projects based on PA 295 contracts filed at the Michigan Public Service Commission.

*Numbers shown on map correspond to the Map Key Column provided on ***Appendices F and H***.

The MWh contract prices represented in ***Appendix F*** are levelized cost calculations and reflect the prices over the contract term for all power purchase agreements or, in the case of a company-owned project, the depreciable composite life.[16] The levelized cost value is used to compare multiple contracts with varying terms and conditions. Of the 56 contracts and amendments from five electric providers approved by the Commission to date, all but four have been from Consumers Energy or DTE Electric and 11 have been unsolicited. With the exception of several early contracts for small renewable energy projects, the contract prices have been much lower than expected and have continued to decline.

Pricing for wind farms has declined rapidly in Michigan which makes the timing of wind farm development a major factor in the price. A comparison of the cost-effectiveness of the renewable energy resource acquired through power purchase agreements using the methods described in Section 33 of the Act (MCL 460.1033) to company-owned projects, shows that company-owned projects have been almost equally cost effective when compared to similar power purchase agreements. Consumers Energy filed two applications for approval of company-owned wind farms totaling 206.2 MW. DTE Electric filed four applications for approval of Company-owned wind farms totaling 322.8 MW and applications for 15 MW of company-owned solar through its SolarCurrents program. Since no large scale solar installations have been contracted through power purchase agreements, only the above-mentioned wind contracts are compared for purposes of this section of the report.

Consumers Energy filed contracts to purchase wind turbines from Vestas Wind Technology and utilize White Construction for the construction of its Lake Winds Energy Park

[16] MPSC Staff performed audits of the companies' levelized cost calculations starting in the early part of 2011. Additionally, through RFP process audits, Staff reviewed actual costs of contracts obtained through most of the companies' competitive solicitations. Staff was provided an opportunity to review the actual costs of all contracts listed in ***Appendix F***.

wind farm. The combined levelized cost of these contracts is $110 per MWh.[17] During 2013, Consumers Energy filed contracts to purchase wind turbines from General Electric Company and use Barton Malow Company for the construction of its second wind farm, Cross Winds Energy Park. The combined levelized cost of the 105.4 MW Cross Winds contracts is $59.00 per MWh. DTE Electric filed contracts to purchase the output of the 20 MW Big Turtle Wind Farm at $53 per MWh and the 74.8 MW Pheasant Run at up to $49.25 per MWh. DTE Electric filed build-transfer contracts for the 74.8 MW Pheasant Run II project also at $49.25 per MWh. DTE Electric filed contracts for a build-transfer arrangement with Gratiot County Wind that has an expected levelized cost of approximately $91.43 per MWh.[18] In addition, it filed contracts to purchase wind turbines from General Electric and use Barton Malow for the construction of its second and third wind farms, Thumb Wind and Echo Wind, respectively. The combined levelized cost of the Thumb Wind contracts is approximately $62.50 per MWh and the combined levelized cost of the Echo Wind contracts is approximately $52.50 per MWh. To compare these costs, a weighted average of the levelized wind contract costs equal to $76.27 per MWh was calculated based on 12 wind power purchase agreements from non-Company-owned contracts filed by DTE Electric and Consumers Energy. This cost compares to the weighted average levelized cost of Company-owned wind projects of $76.48 per MWh.

Impact of the Renewable Energy Standard on Employment

One purpose of PA 295 is to "provide improved air quality and other benefits to energy consumers and citizens of this state." An added benefit of the additional investment,

[17] The contracts originally approved by the Commission stated a levelized cost of $95 per MWh. Based primarily on the Company's decision to substitute the Federal Cash Grant for the Production Tax Credit and the accounting treatment of the Grant, the levelized cost increased to $110 per MWh as stated in the Company's 2011 biennial REP available at: http://efile.mpsc.state.mi.us/efile/docs/16581/0008.pdf.

[18] Based on updated information provided by DTE Electric to Commission Staff, the levelized price was reduced from $94.43 per MWh.

manufacturing, installation, administration and development of clean and renewable energy has been the effect on jobs.

The clean and renewable energy sector continues to contribute to employment opportunities in Michigan. In 2013, generating facilities were constructed utilizing Michigan equipment and labor; contracts for utility scale projects, which will employ Michiganders, were approved; and solar pilot programs that utilize Michigan labor for installations continued and expanded. During 2013, the 100 MW Tuscola Bay Wind II project in Tuscola and Bay Counties and the 74.8 MW Pheasant Run project in Huron County began commercial operation and four wind farms with expected 2014 commercial operation dates totaling 312.2 MW were under construction.

In September 2013, the Commission approved DTE Electric's contract for the Big Turtle Wind Farm in Huron County. This 20 MW wind farm will have at least 50% of the total cost of the project including materials, components, logistics and labor sourced in Michigan. Ventower, located in Monroe, will be providing the turbine towers. Big Turtle will be the first utility scale wind farm in Michigan with 100% of its towers manufactured by Ventower in Michigan.

Section 39 of PA 295 (MCL 460.1039) provides for Michigan Incentive Renewable Energy Credits for renewable energy systems that meet certain criteria. For renewable energy systems constructed using a threshold level of Michigan labor, the amount of the incentive is one-tenth of a REC for each MWh generated during the first three years of commercial operation. The incentive for Michigan equipment is calculated in a similar manner. **Figures 10 and 11** show the number of generators and the Michigan incentive credits created through 2013.

Figure 10: Michigan Equipment Incentive Credits

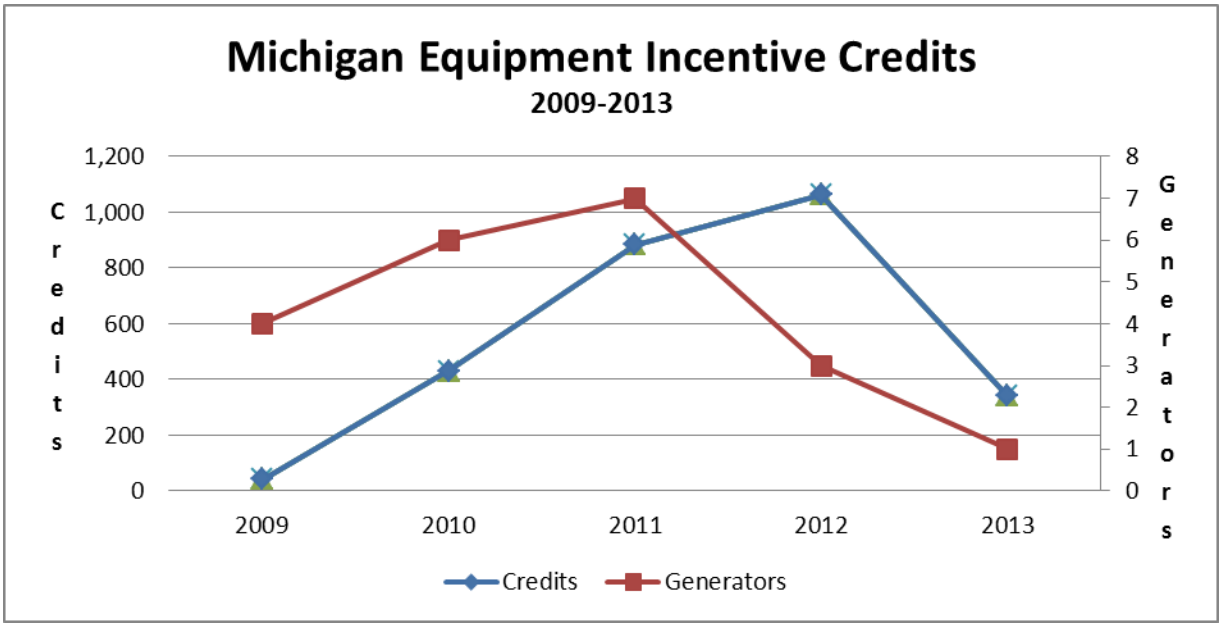
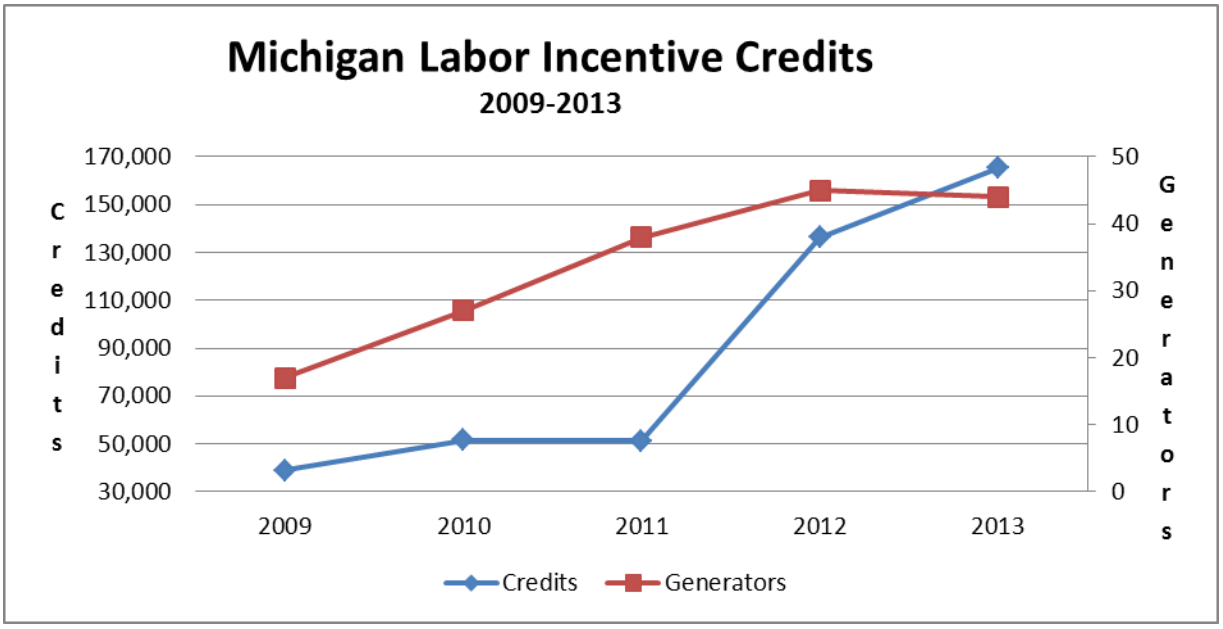


Figure 11: Michigan Labor Incentive Credits



Statewide, there has been significant investment in the renewable energy sector since the passage of PA 295 in 2008. Conservatively, assuming an installed cost of $2,000 per kW[19] for new renewable energy projects, over $2.2 billion has been invested to bring 1,113 MW[20] of new renewable energy projects on-line through 2013 in Michigan. The $2.2 billion includes both incremental cost of compliance and the portion of costs recovered as energy costs.

As noted in prior annual reports, the *Michigan Green Jobs Report 2009*[21] was optimistic about the job creation potential of the renewable energy industry and pointed to the renewable energy standard as a driver for growth in this field. The report found that "…Michigan boasts 109,067 total green jobs—both direct and support positions—among private sector employers. There are 96,767 direct green jobs and 12,300 support green jobs. This is big news, but it also shows the potential for growth of the green economy. Michigan's overall private sector employment is 3.2 million; green jobs are currently 3 percent of that total." A 2010 Regional Analysis complementing the 2009 Green Jobs Report found that the largest numbers of green jobs were in Southeast Michigan.[22]

The Michigan Workforce Development Agency in partnership with the Office of Labor Market Information and Strategic Initiatives issued an Energy Cluster Workforce Analysis in January 2013 which tracked eight detailed industry sectors as a proxy for employment trends in

[19] DTE Electric reported an installed cost of $2,225 to $2,438 per kW for its Echo Wind Park contract approval application filed on August 10, 2012.
[20] This number does not include 67.5 MW of wind generation attributable to contracts filed by Indiana Michigan Power Company as these projects are outside of Michigan or 1.05 MW of hydro and anaerobic bio-digestion projects that were commercially operational prior to PA 295.
[21] *See:* http://www.michigan.gov/documents/nwlb/GJC_GreenReport_Print_277833_7.pdf
[22] See http://milmi.org/admin/uploadedPublications/1747_Green_Jobs_Regional_Report_2010.pdf

the Renewable and Alternative Energy cluster. The analysis found the cluster grew from 6,775 jobs in 2005 to 8,200 jobs in 2013.[23]

Michigan is continuing to realize its position as a regional leader in the development and manufacturing of renewable energy systems, building on the state's engineering expertise, modernized machining, and RPS compliance efforts. It appears that Michigan's incentive REC provision is meeting its intended purpose to encourage developers to maximize utilization of Michigan equipment and labor. The Commission will continue to monitor data on the impact of the renewable energy standard on employment in Michigan.

Impact of Percentage Limits on the Use of Advanced Cleaner Energy Credits

Advanced cleaner energy (ACE) is defined in PA 295 as any of the four following facilities: 1) gasification, 2) industrial cogeneration, 3) coal-fired electric generating if at least 85 percent of the carbon dioxide emissions are captured and permanently geologically sequestered, or 4) electric generating that uses technologies not in commercial operation on the effective date of PA 295. Energy produced from these facilities is eligible for ACE credits (ACECs); the credits are tracked within MIRECS. Electric providers may substitute ACECs for RECs to meet the renewable energy standard. However, there are conditions on the substitution and there is a statutorily imposed limit on the percentage of ACEC's eligible to be used each year for the renewable energy standard.

Section 27(7) of PA 295 (MCL 460.1027(7)) describes the conditions and substitution limits. ACECs from industrial cogeneration may be substituted for RECs without Commission approval. For other types of ACECs, substitution may only be made with Commission approval

[23] The report's author provided additional information to MPSC staff showing job data for 2005 and 2013. Data presented in the report is for 2011. See http://milmi.org/admin/uploadedPublications/1992_WDA_EnergyFINAL.pdf.

and if the advanced cleaner energy is both cost effective and provides a carbon dioxide emission benefit. The combination of energy optimization credits and ACECs may not account for more than 10 percent of the total energy credits used to meet the standard in a given year. Older non-plasma arc gasification advanced cleaner energy systems (in existence on January 1, 2008) cannot be used to meet more than 70 percent of the 10 percent limit. The substitution ratio of plasma arc gasification or industrial cogeneration is one ACEC to one REC while the ratio for other forms of advanced cleaner energy is 10 ACECs to one REC.

The Commission has found no negative impact on advanced cleaner energy development based on the above-described percentage limits. To better answer this question, the MPSC Staff asked the question "Did the percentage limits in Section 27(7) affect development of advanced cleaner energy by the electric provider? How so?" in the annual reports required under Section 51. No electric provider indicated the percentage limits in Section 27(7) affected development of advanced cleaner energy. Advanced cleaner energy generation has decreased substantially to 46,983 MWh in 2013 with only two facilities of one electric service provider generating advanced cleaner energy in 2013. Given this, advanced cleaner energy continues to be a small percentage of the Michigan renewable energy portfolio (just greater than 2.0 percent of the 2012 compliance portfolio). The percentage limits, which in all cases are far from being met, do not appear to be affecting the development of advanced cleaner energy in Michigan.

The Cost of Renewable Energy Compared to the Cost of New Coal Energy

Pursuant to Section 21(6)(b) (MCL 460.1021(6)(b)), rate-regulated electric providers' REPs were required to show that the life cycle cost of renewable energy acquired, less the life cycle net savings associated with Energy Optimization Plans, did not exceed the life cycle cost of

electricity generated by a new conventional coal-fired facility. The Commission Staff filed a letter in MPSC Case No. U-15800 to provide the required life cycle cost of electricity generated by a new conventional coal plant:

> The Commission's temporary order implementing 2008 PA 295, Case Number U-15800, directed the Staff to work with the providers to develop the required life cycle cost of electricity generated by a new conventional coal-fired facility in terms of a guidepost consisting of a levelized busbar rate, in $/MWh, of an advanced-supercritical pulverized coal plant with a life cycle of 40 years. The Commission directed the Staff to submit the number to the Commission by January 30, 2009. The Staff has diligently worked with the providers to develop the guidepost rate and finds that the number is $133 per MWh.[24]

This guidepost rate was derived from data provided to Consumers Energy as a result of the Company's inquiry into building a new 830 MW coal fired power facility, and was adopted by all electric providers. In its amended REP in Case No. U-16543, Consumers Energy updated the levelized cost of a conventional coal plant to $107 per MWh using the same construction cost estimates used in determining the $133 per MWh rate. The decrease in cost was primarily due to updated emissions assumptions.[25] However, the cost of coal had declined compared to the costs in 2008 when the original analysis had taken place. This had the effect of reducing the long-term fuel price projections. Additionally, federal legislation regarding carbon emissions had not been enacted, which resulted in emissions costs having less of an impact on the cost of a coal plant in the company's revamped calculation. Given all of this, the Commission continues to find that the $133 per MWh guidepost is reasonable as discussed below.

On December 21, 2011 the U.S. Environmental Protection Agency (EPA) finalized the Mercury and Air Toxics Rule (MATS)[26] which regulates emissions of mercury, filterable

[24] *Source:* Excerpt from Commission Staff January 30, 2009 Guidepost Rate Letter, http://efile.mpsc.state.mi.us/efile/docs/15800/0023.pdf.
[25] *See:* http://efile.mpsc.state.mi.us/efile/docs/16543/0010.pdf.
[26] Mercury and Air Toxics Standards: http://www.epa.gov/mats/basic.html

particulate matter and hydrogen chloride. There are other proposed regulations that have the potential to dramatically impact electric providers' generation sources, primarily coal-fired plants. In December 2011, the EPA supplemented its rulemaking under the Cross State Air Pollution Rule (CSAPR)[27] to require Michigan, along with four other states, to reduce summertime NOx emissions under an ozone season control program. CSAPR continues to be debated in the Supreme Court and the Clean Air Interstate Rule (CAIR)[28] remains in effect. The Clean Water Act Cooling Water Intake rule seeks to reduce the impingement and entrainment of aquatic organisms. EPA issued final standards in January 2014.[29] Affected sources must comply within eight years of the 2014 date. EPA regulations regarding Coal Combustion Residual (Ash) handling has the potential to be very costly for coal plant operators if it is considered hazardous waste under future rule making.[30] The EPA plans to align Ash with Effluent Limitations Guidelines (ELG) to reduce the regulatory burden.[31] Finally, in March 2012, the EPA proposed the Greenhouse Gases New Source Performance Standards (GHG NSPS) which would require all new fossil-fueled plants to meet an emissions standard of 1,000 pounds of CO_2 per MWh. President Obama's Climate Action Plan has directed the EPA to issue carbon standards by June 2014 with final rules in place a year later.[32] These EPA regulations could have a considerable impact on the price of electricity going forward, as electric providers will have to make the decision to either retire or retrofit existing generators. Any new coal capacity would likely

[27] Cross State Air Pollution Rule: http://www.epa.gov/crossstaterule/
[28] Clean Air Interstate Rule: http://www.epa.gov/cair/
[29] Clean Water Act: http://www.epa.gov/lawsregs/laws/cwa.html;
[30] Easterm Interconnection States' Planning Coucil, *Current State and Future Direction of Coal-fired Power in the Eastern Interconnection*, White Paper, June 2013
[31] Coal Combustion Residuals: http://www.epa.gov/wastes/nonhaz/industrial/special/fossil/ccr-rule/index.htm.

[32] http://www.whitehouse.gov/the-press-office/2013/06/25/presidential-memorandum-power-sector-carbon-pollution-standards

require significant capital costs making the cost of new renewable energy development even more competitive.

By comparing the levelized cost of $133 per MWh for a new conventional coal-fired power facility with the combined weighted average levelized contract prices in **Table 1**, the cost of all renewable energy technologies is less than the coal guidepost rate with the exception of two anaerobic digester contracts representing less than 4 MW of capacity. These contracts were the result of Consumers Energy's first solicitation for small (under 5 MW) facilities. Consumers Energy and DTE Electric have since seen much lower prices for renewable energy. Even using Consumers Energy's revised $107 per MWh levelized cost, wind and biomass still compare favorably while landfill gas is competitive. As solar development in Michigan only includes small-scale projects or pilot programs, it was not analyzed in this section or included in **Table 1**.

Table 1: Weighted Average Levelized Renewable Energy Contract Prices

Consumers Energy					
Technology	**Wind**	**Digester**	**Biomass**	**Landfill**	**Hydro**
Weighted Average	$90.60	$137.77	NA	$106.21	$121.31
Detroit Edison					
Technology	**Wind**	**Digester**	**Biomass**	**Landfill**	**Hydro**
Weighted Average	$66.79	NA	$98.94	$98.97	NA
Combined Weighted Average	**$76.37**	**$137.02**	**$98.94**	**$104.05**	**$121.31**

While the Commission is required to make a determination about the cost effectiveness of the renewable energy standard as compared to the life- cycle cost of electricity of coal-fired generation, it should be noted that renewable energy wind resources are not equivalent on a capacity basis when compared to coal-fired or other base load generation. The differences in energy availability during peak loads can be significant. For example, regional transmission organizations such as Midcontinent Independent Transmission System Operator (MISO), discounted the capacity value of wind resources during the peak load to as low as 14.1 percent in the most recent planning year, compared to an availability ranging as high, or higher than 80 percent for base load generation plants. Comparing per unit energy costs of different generation types may not reflect the true value of the resource to the reliability of the electric system as a whole.

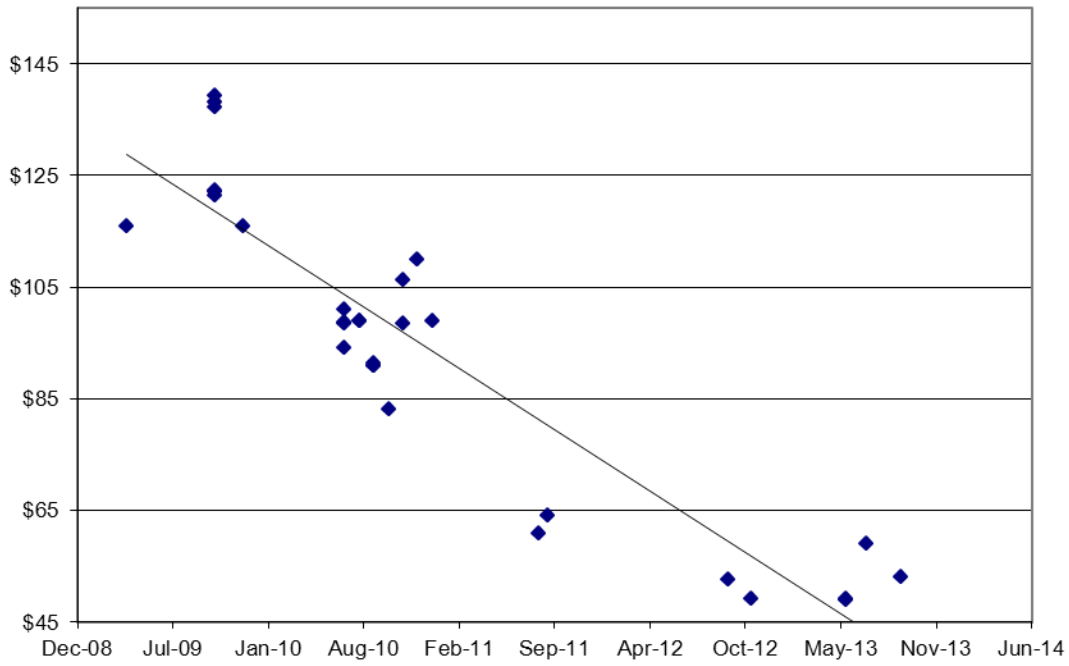
Cost-Effectiveness of Renewable Energy and Energy Optimization Standards

Section 51(5)(e) of PA 295 (MCL 460.1051(5)(e)) requires an evaluation of the cost-effectiveness of the renewable energy standard. In a similar vein, Section 97 of PA 295 (MCL 460.1097) requires the Commission to evaluate and determine whether the energy optimization and renewable energy standards have been cost-effective.

The actual cost of renewable energy contracts submitted to the Commission to date continues to show a downward pricing trend. This trend was the case in the previous reports, and continues. The most recent contracts approved by the Commission for new wind capacity have levelized costs in the $50 to $59 per MWh range which is about 10 percent less than the cheapest levelized contract prices from 2011 and half of the levelized cost of the first few renewable energy contracts approved in 2009 and 2010. Contracts submitted to the Commission through 2013 total approximately 1,400 MW[33] of renewable capacity. Weighting the levelized costs of these contracts by the generation in MWh results in an average cost of $78.39 per MWh. Almost all renewable energy contract prices are lower than the $133 per MWh coal guidepost rate as shown in **Figure 12**. This calculation does not include the DTE Electric's and Consumers Energy's solar programs as these are considered pilot programs and make up less than two percent of the REC and IREC creation from contracts and projects approved by the Commission to date.

[33] This includes DTE Electric Company's 22 MW SolarCurrents program and Consumers Energy Company's 6 MW EARP programs. Additionally, this only accounts for Michigan's allocation (67.5 MW) of Indiana Michigan Power Company's two wind contracts.

Figure 12: Levelized Cost of MPSC Approved Contracts Over Time



Factoring in the cost of conserved energy due to energy optimization efforts, as required by Section 21(6)(b) of the PA 295 (MCL 460.1021(6)(b)), **Table 2** demonstrates the cost-effectiveness of the renewable energy and energy optimization standards using the state's two largest electric providers. The levelized cost of conserved energy of the energy optimization programs was weighted by the life cycle present value energy savings, extrapolated through 2029, expected from the companies' Energy Optimization Programs. For renewable energy, the levelized costs of all DTE Electric and Consumers Energy contracts approved by the Commission (with the exception of the solar pilot programs) were weighted by the generation anticipated over the term of the contract. To determine the anticipated generation for the company-owned projects, the depreciable composite life of the project was used. For Consumers Energy's company-owned projects, the present value of the generation based on a 31.2-year life was used. For DTE Electric Company-owned projects, the present value of the generation based

on a 22-year life was used. IRECs were not factored into the weighting of any of the renewable energy projects; however, doing so would increase the cost effectiveness of renewable energy. When combined, a cost of $34.06 per MWh for both Subpart A (Renewable Energy Standard) and Subpart B (Energy Optimization Standard) of 2008 PA 295 is approximately 26 percent of the cost of a new conventional coal plant, using $133 per MWh as the coal plant cost. The $78.39 per MWh cost of the renewable energy standard only is substantially lower than the cost of a new coal-fired plant, but the combined cost of $34.06 per MWh, is less than any new generation including new natural gas combined cycle plants when compared to the Energy Information Administration levelized plant costs.[34] If the Federal Production Tax Credit is extended in 2014, as it has been in previous years, it will continue to be a major contributor to the cost effectiveness of renewable energy in Michigan. Going forward, Commission Staff anticipates that the cost of renewable energy will level off at a competitive rate as compared with traditional fossil fuel generation.

Table 2: Cost Effectiveness of Energy Optimization and Renewable Energy Standards

Energy Optimization Cost of Conserved Energy Weighted Average ($/MWh)	**$10.97**
Renewable Energy Weighted Average Cost ($/MWh)	**$78.39**
Combined Weighted Average Cost of Energy Optimization and Renewable Energy ($/MWh)	**$34.06**
Source: The significant reduction in the combined weighted average cost of EO and RE compared to what was reported last year ($45.98/MWh) is due to two factors. First, EO cost data used this year assumes EO plans renew similar measures on a yearly basis through 2029 (corresponding to the 20 year period of renewable energy plans). Last year's weighted average was calculated with EO programming only through the 2015 plan year, resulting in energy savings peaking in 2015, and declining thereafter through 2029. Second, the EO cost of conserved energy was lower this year, primarily due to significant learning and progress gained from experience implementing energy optimization programs, leading to improved economics. Renewable energy cost data is based on levelized costs provided as part of the renewable energy contract approval process.	

[34] *See:* http://www.eia.gov/forecasts/aeo/electricity_generation.cfm

Effect of the Renewable Energy and Energy Optimization Standard on Electricity Prices

For the 2012 calendar year, Michigan had five rate-regulated electric providers collecting revenue through a renewable energy surcharge. Alpena Power, Consumers Energy, and DTE Electric all began collecting the surcharge in September 2009. Wisconsin Electric Power Company's renewable energy surcharge began during the January 2010 billing month and Indiana Michigan's surcharge began in 2012. Renewable energy surcharge amounts are listed in ***Appendix B***. All investor-owned, cooperative and municipal electric providers (as well as Commission-regulated natural gas utilities) assess energy optimization surcharges. Specific surcharge amounts are detailed in the Commission's *2013 Report on the Implementation of the P.A. 295 Utility Energy Optimization Programs*, issued on November 26, 2013.[35]

As noted in previous sections, the cost of energy generated by renewable sources continues to decline and is cheaper than new coal-fired generation. Using recent cost of service data for Consumers Energy and DTE Electric, Commission Staff calculated $64 per MWh[36] as the combined weighted average of all power supply costs (conventional, renewable and other), including purchased power, which is higher than the combined cost of the renewable energy and energy efficiency standards of $34.06 per MWh.

While the renewable energy and energy optimizaion surcharges have an impact on electric rates, there are other benefits attributable to an increase in renewable energy generation sources and improved energy efficiency. Wind generation has increased to over 12 GW throughout the MISO footprint.[37] In June 2011, MISO introduced Dispatchable Intermittent Resource (DIR) provisions for wind resources to help control the intermittency by allowing wind

[35] *See:* http://www.michigan.gov/documents/mpsc/eo_report_441092_7.pdf
[36] The $64 per MWh weighted average is based on 2012 filings and excludes transmission costs.
[37] *See*: https://www.misoenergy.org/WhatWeDo/StrategicInitiatives/Pages/GrowthofWindCapacity.aspx

generators to respond to economic market signals. The MISO DIR improves the integration of wind into the grid. This has the effect of allowing wind farm operators to better respond to market signals and grid congestion and not allow wind generation onto the grid when potentially cheaper resources are available to meet electricity demand. Michigan's wind generation continues to contribute to MISO's overall wind capacity with approximately 1,100 MW of operational wind generation. Michigan's wind generation is expected to increase to over 1,400 MW by the end of 2014. In addition, the Commission's *2013 Report on the Implementation of the P.A. 295 Utility Energy Optimization Programs* found that for every dollar spent on energy optimization, customers realize a cost of service benefit of $4.07.[38] As implementation of the renewable energy and energy optimization standards continues, these broader economic benefits must be taken into account.

Recommendations

The first interim compliance requirement was accomplished successfully by all of Michigan's electric providers for 2012, and progress toward the 10 percent renewable energy target in 2015 is going smoothly. Michigan's electric providers are on track to meet the 10 percent renewable energy requirement. The renewable energy standard is resulting in the development of new renewable capacity and can be credited with over 1,100 MW of new renewable energy projects becoming commercially operational since the Act took effect. The weighted average price of existing renewable energy contracts is $78.39 per MWh, which is less than forecasted in REPs, and is continuing to trend downward. The combined weighted average cost of the companies' energy optimization and renewable energy is $34.06 per MWh, significantly lower than the cost of all types of new fossil fuel generation plants. The

[38] *See:* http://www.michigan.gov/documents/mpsc/eo_report_441092_7.pdf

Commission will continue to monitor electric provider progress toward meeting the requirements of the standards as provided under the Act.

The Commission has no recommendation for legislation at this time. The Commission participated in the 2013 public process for informing Michigan's energy future and assisted in the preparation of a report on renewable energy as directed in the Governor's Special Message on Energy and the Environment in November 2012.[1] In 2014, the Commission intends to participate in continuing stakeholder discussions in furtherance of the Readying Michigan to Make Good Energy Decisions process related to renewable energy, and stands ready to assist policymakers as they consider Michigan's future energy policy.

[1] Readying Michigan to Make Good Energy Decisions: Electric Choice, released November 20,2013, http://www.michigan.gov/documents/energy/electricc_report_440539_7.pdf.

Appendix A - RE Filings: Case Numbers, Companies, Plan Approval Dates and Reconcilation Approval Dates

	COMPANY	2009 Initial RE Plan Case #	2013 RE Biennial Plan Case #	2013 RE Plan Approval Date	2012 Reconciliation Case #	2012 Reconciliation Approval Date
	IOUs					
1	Alpena Power Company	U-15804	U-17300	10/17/2013	U-17320	Pending
2	Consumers Energy Company	U-15805	U-17301	Pending	U-17321	Pending
3	DTE Electric Company	U-15806	U-17302	12/19/2013	U-17322	Pending
4	Indiana Michigan Power Company	U-15808	U-17303	11/14/2013	U-17323	12/19/2013
5	Northern States Power Company-Wisconsin	U-15809	U-17304	1/8/2014	U-17324	9/24/2013
6	Upper Peninsula Power Company	U-15810	U-17305	8/13/2013	U-17325	12/16/2013
7	Wisconsin Public Service Corporation	U-15811	U-17306	8/13/2013	U-17326	12/16/2013
	Wisconsin Electric Power Company	U-15812	U-17307	5/15/13 Filing Suspended; see U-17072		
8	Wisconsin Electric Power Company	U-15812	U-17072	12/19/13 REP rejected; ordered to file revised REP 90 days	U-17327	Pending
	Cooperatives - Rate Regulated					
9	Cloverland Electric Cooperative/Edison Sault	U-15816	U-17308	11/4/2013	U-17328	1/23/2014
10	Midwest Energy Cooperative	U-15818	U-17309	10/17/2013	U-17329	1/23/2014
11	Thumb Electric Cooperative	U-15821	U-17310	10/17/2013	U-17330	12/19/2013
	Cooperatives - Member Regulated				**Not Required**	
12	Alger Delta Cooperative Electric Association	U-15813	U-16589	8/13/2013		
13	Bayfield Electric Cooperative	U-15814	U-16590	8/29/2013		
14	Cherryland Electric Cooperative	U-15815	U-16591	8/13/2013		
15	Great Lakes Energy Cooperative (2012)	U-15817	U-16593	8/13/2013		
16	Homeworks Tri-County Electric Cooperative	U-15822	U-16598	8/13/2013		
17	Ontonagon Co. Rural Electricification Assoc. (2012)	U-15819	U-16595	9/24/2013		
18	Presque Isle Electric and Gas Co-op (2012)	U-15820	U-16596	8/13/2013		
	Municipals				**Not Required**	
19	Village of Baraga	U-15848	U-16599	12/19/2013		
20	City of Bay City	U-15849	U-16600	12/19/2013		
21	City of Charlevoix	U-15850	U-16601	12/19/2013		
22	Chelsea Department of Electric and Water	U-15851	U-16602	12/19/2013		
23	Village of Clinton	U-15852	U-16603	12/19/2013		
24	Coldwater Board of Public Utilities	U-15853	U-16604	12/19/2013		
25	Croswell Municipal Light & Power Department	U-15854	U-16605	12/19/2013		
26	City of Crystal Falls	U-15855	U-16606	12/19/2013		
27	Daggett Electric Department	U-15856	U-16607	12/19/2013		
28	Detroit Public Lighting Department	U-15857	U-16608	12/19/2013		
29	City of Dowagiac	U-15858	U-16609	12/19/2013		
30	City of Eaton Rapids	U-15859	U-16610	12/19/2013		
31	City of Escanaba	U-15860	U-16611	1/8/2014		
32	City of Gladstone	U-15861	U-16612	12/19/2013		
33	Grand Haven Board of Light and Power	U-15862	U-16613	12/19/2013		
34	City of Harbor Springs	U-15863	U-16614	12/19/2013		
35	City of Hart Hydro	U-15864	U-16615	12/19/2013		
36	Hillsdale Board of Public Utilities	U-15865	U-16616	12/19/2013		
37	Holland Board of Public Works	U-15866	U-16617	12/19/2013		
38	Village of L'Anse	U-15867	U-16618	12/19/2013		
39	Lansing Board of Water & Light	U-15868	U-16619	12/19/2013		
40	Lowell Light and Power	U-15869	U-16620	12/19/2013		
41	Marquette Board of Light and Power	U-15870	U-16621	12/19/2013		
42	Marshall Electric Department	U-15871	U-16622	12/19/2013		
43	Negaunee Department of Public Works	U-15872	U-16623	12/19/2013		
44	Newberry Water and Light Board	U-15873	U-16624	12/19/2013		
45	Niles Utility Department	U-15874	U-16625	12/19/2013		
46	City of Norway	U-15875	U-16626	12/19/2013		
47	City of Paw Paw	U-15876	U-16627	12/19/2013		
48	City of Petoskey	U-15877	U-16628	12/19/2013		
49	City of Portland	U-15878	U-16629	1/8/2014		
50	City of Sebewaing	U-15879	U-16630	12/19/2013		
51	City of South Haven	U-15880	U-16631	12/19/2013		
52	City of St. Louis	U-15881	U-16632	1/8/2014		
53	City of Stephenson	U-15882	U-16633	12/19/2013		
54	City of Sturgis	U-15883	U-16634	12/19/2013		
55	Traverse City Light & Power	U-15884	U-16635	12/19/2013		
56	Union City Electric Department	U-15885	U-16636	12/19/2013		
57	City of Wakefield	U-15886	U-16637	1/8/2014		
58	Wyandotte Department of Municipal Service	U-15887	U-16638	12/19/2013		
59	Zeeland Board of Public Works	U-15888	U-16639	12/19/2013		

NL = New License
LVR = License Voluntarily Relinquished
LR = License Revoked

Appendix A - RE Filings: Case Numbers, Companies, Plan Approval Dates and Reconcilation Approval Dates

	COMPANY	2009 Initial RE Plan Case #	2013 RE Biennial Plan Case #	2013 RE Plan Approval Date	2012 Reconciliation Case #	2012 Reconciliation Approval Date
	Alternative Electric Suppliers (AES) Serving Customers				**Not Required**	
60	CMS ERM Michigan LLC	U-15826	U-16640	7/11/2013		
61	Commerce Energy Inc	U-15828	U-16641	7/11/2013		
62	Constellation NewEnergy Inc	U-15829	U-16642	7/11/2013		
63	Direct Energy Business LLC	U-15845	U-16643	7/11/2013		
64	FirstEnergy Solutions Corp	U-15832	U-16644	7/11/2013		
65	Glacial Energy of Illinois	U-16007	U-16645	Pending due 12/16/13		
66	Integrys Energy Services Inc	U-15833	U-16646	6/28/2013		
67	MidAmerican Energy Company	U-15837	U-16647	6/28/2013		
68	Noble Americas Energy Solutions LLC f/k/a Sempra Energy Solutions LLC	U-15843	U-16650	6/28/2013		
69	Spartan Renewable Energy Inc	U-15844	U-16651	7/11/2013		
70	U.P. Power Marketing LLC	U-16586	U-16652	8/13/2013		
71	Wolverine Power Marketing Cooperative Inc	U-15847	U-16653	6/28/2013		
	Alternative Electric Suppliers (AES) Not Serving Customers				**Not Required**	
72	AEP Energy, Inc (formerly BlueStar Energy)	U-15825	U-15825	Pending		
73	Direct Energy Services LLC	U-15830	U-15830	Pending		
74	Duke Energy Retial Sales, LLC		U-16767	Pending		
75	Exelon Energy Company	U-15831	U-15831	1/17/13 LVR		
76	energy.me Midwest LLC d/b/a energy.me		U-17455	Pending NL		
77	Energy Service Providers, Inc d/b/a Michigan Gas & Electric		U-17010	Due 9/11/14		
78	GearyEnergy LLC		U-16264	8/29/13 LVR		
79	Interstate Gas Supply, Inc d/b/a IGS Energy		U-17338	Pending NL		
80	Lakeshore Energy Services, LLC		U-16979	Due 7/6/14		
81	Liberty Power Delaware	U-15834	U-15834	Pending		
82	Libery Power Holdings LLC	U-15835	U-15835	Pending		
83	Nordic Marketing LLC	U-15838	U-15838	2/28/13U-17137 LR		
84	Plymouth Rock Energy LLC		U-17549	Due 6/30/14 NL		
85	PowerOne Corporation	U-15840	U-15840	Pending		
86	Premier Energy Marketing LLC	U-15841	U-16648	Pending		
87	Santana Energy Services		U-17254	6/28/13 NL		
88	Quest Energy LLC	U-15842	U-16649	1/23/14 LVR		
89	TERM Power & Gas d/b/a ENCOA		U-17518	Due 3/6/14 NL		
90	Texas Retail Energy, LLC		U-17168	5/29/13 NL		

NL = New License
LVR = License Voluntarily Relinquished
LR = License Revoked

Appendix B - Estimate of Renewable Energy Credit Requirements and Renewable Energy Plan Summary

Company	Initial Plan	2013 Plan Docket	2012 Compliance Year Sales*	Retail Sales Method**	2007/2008 Baseline RECs	2012 REC Requirement	2012 Excess RECs Retired	2012 EO & Green Pricing Credit Substitutions	Estimated 2013 REC Requirement	Estimated 2014 REC Requirement	Estimated 2015 REC Requirement	2015 10% Standard Met	Current Residential Surcharge $/Month
Rate Regulated Utilities													
Alpena Power	U-15804	U-17300	321,887	3Y	0	6,438	7,180		10,622	16,094	32,189	Yes	0.24
Consumers Energy	U-15805	U-17301	33,336,013	3Y	1,549,840	1,906,592	0	69,584	2,138,481	2,441,721	3,333,601	Yes	0.52
DTE Electric	U-15806	U-17302	41,715,637	W	566,819	1,281,962	0	46,643	1,756,385	2,369,191	4,171,564	Yes	0.43
Indiana Michigan	U-15808	U-17303	2,813,544	W	17,450	70,231	0		104,538	149,402	281,354	Yes	0.43
NSP-Wisc (Xcel)	U-15809	U-17304	139,115	3Y	12,679	12,926	0		13,086	13,295	13,912	Yes	0.00
Upper Peninsula Power	U-15810	U-17305	846,819	3Y	98,521	84,682	86		84,682	84,682	84,682	Yes	0.00
Wisc. PSC	U-15811	U-17306	273,320	3Y	11,145	14,383	0		16,487	19,239	27,332	Yes	0.00
Wisc. Elec Co	U-15812	U-17072	2,670,926	3Y	53,196	95,975	0		123,782	160,144	267,093	Yes*	3.00

*Revised Plan Pending Approval

Rate Regulated Cooperatives													
Cloverland Electric Coop	U-15816	U-17308	803,349	3Y	301,126	80,335	0		80,335	80,335	80,335	Yes	0.00
Midwest Energy Coop	U-15818	U-17309	579,003	3Y	0	11,580	405		19,107	28,950	57,900	Yes	0.00
Thumb Elec. Coop	U-15821	U-17310	152,604	3Y	1,562	4,302	0		6,082	8,411	15,260	Yes	0.00

Member Regulated Cooperatives													
Alger Delta Coop Elec	U-15813	U-16589	58,892	3Y	920	1,914	2		2,560	3,405	5,889	Yes	0.00
Bayfield Elec. Coop	U-15814	U-16590	200	3Y	4	7	0		9	12	20	Yes	0.00
Cherryland Elec Coop	U-15815	U-16591	364,483	3Y	0	7,290	0		12,028	18,224	36,448	Yes	0.00
Great Lakes Energy Coop	U-15817	U-16593	1,339,882	3Y	0	26,798	0		44,216	66,994	133,988	Yes	0.00
Homeworks Tri-County Elec. Coop	U-15822	U-16598	316,048	3Y	0	6,321	0		10,430	15,802	31,605	Yes	0.00
Ontonagon Co. Rural Elec.	U-15819	U-16595	24,762	3Y	2,246	2,292	0		2,322	2,361	2,476	Yes	0.00
Presque Isle Elec & Coop	U-15820	U-16596	237,036	3Y	0	4,741	0		7,822	11,852	23,704	Yes	0.00

Alternative Electric Suppliers													
CMS ERM Michigan	U-15826	U-16640		3Y								Yes	0.00
Commerce Energy	U-15828	U-16641		W								Yes	0.00
Constellation NewEnergy	U-15829	U-16642		W								Yes	0.00
Direct Energy Business	U-15845	U-16643		W								Yes	0.00
First Energy Solutions	U-15832	U-16644		W								Yes	0.00
Glacial Energy of Illinois	U-16007	U-16645		W								Yes	0.00
Integrys Energy Services	U-15833	U-16646		W								Yes	0.00
MidAmerican Energy Company	U-15837	U-16647		W								Yes	0.00
Noble Americas Energy Solutions f/k/a Sempra Energy Solutions	U-15843	U-16650		W								Yes	0.00
Spartan Renewable Energy	U-15844	U-16651		3Y								Yes	0.00
U.P. Power Marketing	U-15846	U-16652		W								Yes	0.00
Wolverine Power Marketing Cooperative	U-15847	U-16653		3Y								Yes	0.00
Aggregated Totals**			**9,207,250**		**0**	**184,145**	**4,154**		**303,839**	**460,363**	**920,725**		

Appendix B - Estimate of Renewable Energy Credit Requirements and Renewable Energy Plan Summary

Company	Initial Plan	2013 Plan Docket	2012 Compliance Year Sales*	Retail Sales Method**	2007/2008 Baseline RECs	2012 REC Requirement	2012 Excess RECs Retired	2012 EO & Green Pricing Credit Substitutions	Estimated 2013 REC Requirement	Estimated 2014 REC Requirement	Estimated 2015 REC Requirement	2015 10% Standard Met	Current Residential Surcharge $/Month
Municipal Utilities													
Village of Baraga	U-15848	U-16599	18,390	3Y	0	368	0		607	920	1,839	Yes	0.00
City of Bay City	U-15849	U-16600	320,118	3Y	0	6,402	0		10,564	16,006	32,012	Yes	0.00
City of Charlevoix	U-15850	U-16601	61,313	3Y	0	1,226	0		2,023	3,066	6,131	Yes	0.00
Chelsea Dept. of Electric & Water	U-15851	U-16602	91,502	3Y	0	1,830	0		3,020	4,575	9,150	Yes	0.00
Village of Clinton	U-15852	U-16603	22,142	3Y	0	443	0		731	1,107	2,214	Yes	0.00
Coldwater Board of Public Utilities	U-15853	U-16604	278,803	3Y	0	5,576	39		9,200	13,940	27,880	Yes	0.00
Croswell Municipal Light & Power Dept.	U-15854	U-16605	35,391	3Y	0	708	0		1,168	1,770	3,539	Yes	0.15
City of Crystal Falls	U-15855	U-16606	16,227	3Y	4,400	1,623	0		1,623	1,623	1,623	Yes	0.00
Daggett Electric Department	U-15856	U-16607	1,313	3Y	0	26	28		43	66	131	Yes	0.00
Detroit Public Lighting Department	U-15857	U-16608	486,249	3Y	0	9,725	18		16,046	24,312	48,625	No	3.00
City of Dowagiac	U-15858	U-16609	63,429	3Y	0	1,269	31		2,093	3,171	6,343	Yes	0.00
City of Eaton Rapids	U-15859	U-16610	86,165	3Y	2,263	3,534	0		4,360	5,440	8,617	Yes	0.84
City of Escanaba	U-15860	U-16611	143,846	3Y	0	2,877	0		4,747	7,192	14,385	Yes	0.00
City of Gladstone	U-15861	U-16612	32,063	3Y	0	641	0		1,058	1,603	3,206	Yes	0.00
Grand Haven Board of Light & Power	U-15862	U-16613	267,333	3Y	0	5,347	0		8,822	13,367	26,733	Yes	0.50
City of Harbor Springs	U-15863	U-16614	37,521	3Y	0	750	0		1,238	1,876	3,752	Yes	0.00
City of Hart	U-15864	U-16615	40,481	3Y	804	1,453	0		1,875	2,426	4,048	Yes	0.00
Hillsdale Board of Public Utilities	U-15865	U-16616	121,168	3Y	0	2,424	0		3,999	6,058	12,117	Yes	0.00
Holland Board of Public Works	U-15866	U-16617	945,650	3Y	0	18,913	0		31,206	47,283	94,565	Yes	0.00
Village of L'anse	U-15867	U-16618	13,174	3Y	0	264	0		435	659	1,317	Yes	0.00
Lansing Board of Water & Light	U-15868	U-16619	2,149,614	3Y	6,655	48,317	2		75,396	110,808	214,961	Yes	2.50
Lowell Light & Power	U-15869	U-16620	61,746	3Y	0	1,235	0		2,038	3,087	6,175	Yes	3.00
Marquette Board ofLght & Power	U-15870	U-16621	307,882	3Y	14,016	17,370	0		19,551	22,402	30,788	Yes	0.23
Marshall Electric Department	U-15871	U-16622	107,012	3Y	1,318	3,195	0		4,414	6,010	10,701	Yes	0.00
Negaunee Dept. of Public Works	U-15872	U-16623	22,057	3Y	0	442	0		728	1,103	2,206	Yes	0.00
Newberry Water and Light Board	U-15873	U-16624	18,520	3Y	4,931	1,852	2,463		1,852	1,852	1,852	Yes	0.00
Niles Utilities Department	U-15874	U-16625	128,946	3Y	0	2,579	0		4,255	6,447	12,895	Yes	0.00
City of Norway	U-15875	U-16626	29,377	3Y	21,080	2,938	0		2,938	2,938	2,938	Yes	0.00
Village of Paw Paw	U-15876	U-16627	40,203	3Y	0	804	0		1,327	2,010	4,020	Yes	0.00
City of Petoskey	U-15877	U-16628	105,474	3Y	0	2,109	0		3,481	5,274	10,547	Yes	0.00
City of Portland	U-15878	U-16629	36,040	3Y	1,746	2,118	0		2,359	2,675	3,604	Yes	0.00
City of Sebewaing	U-15879	U-16630	39,391	3Y	0	788	5		1,300	1,970	3,939	Yes	0.92
City of South Haven	U-15880	U-16631	131,330	3Y	0	2,633	0		4,334	6,567	13,133	Yes	0.00
City of St. Louis	U-15881	U-16632	38,311	3Y	680	1,310	0		1,720	2,256	3,831	Yes	0.00
City of Stephenson	U-15882	U-16633	6,075	3Y	0	122	293		200	304	608	Yes	0.00
City of Sturgis	U-15883	U-16634	221,536	3Y	11,232	13,416	0		14,836	16,693	22,154	Yes	0.00
Traverse City Light & Power	U-15884	U-16635	318,180	3Y	778	6,986	0		11,021	16,298	31,818	Yes	0.00
Union City Electric Department	U-15885	U-16636	15,165	3Y	1,625	1,517	0		1,517	1,517	1,517	Yes	0.00
City of Wakefield	U-15886	U-16637	13,166	3Y	0	263	0		434	658	1,317	Yes	0.00
Wyandotte Dept. of Muncipal Service	U-15887	U-16638	275,249	3Y	0	5,505	0		9,083	13,762	27,525	Yes	0.00
Zeeland Board of Public Works	U-15888	U-16639	302,678	3Y	0	6,054	30		9,988	15,134	30,268	Yes	0.00
		*****Total**	**102,651,000**		**2,687,036**	**3,989,866**	**14,736**	**116,227**	**5,014,443**	**6,346,699**	**10,265,100**		
				Estimated Renewable Energy %					**4.9%**	**6.2%**	**10.0%**		

*Sales from Annual Report

** 3Y = 3 Year Average W = Weather Normalized

***AES totals are aggregated.

Appendix C - ELECTRIC PROVIDER RENEWABLE ENERGY ANNUAL REPORT SUMMARY

2012 Reporting Year

Company Name	2012 Generated or Aquired (RECs)	2012 Generated or Aquired (ACECs)	Energy Credits Sold in 2012 (RECs)	2009-2011 Reported Incremental Cost of Compliance ($)	2012 Reported Incremental Cost of Compliance ($)	Remaining Anticipated Incremental Cost of Compliance ($)	Total Plan Period Anticipated Incremental Cost of Compliance (Prior Years plus Anticipated) ($)
Investor Owned Utilities:							
Alpena Power Company	6,438	0	0	1,115,994	390,735	4,666,400	6,173,129
Consumers Energy Company	2,215,235	0	0	12,929,989	19,838,182	483,000,000	515,768,171
Detroit Edison Company**	1,989,411	57,802	0	46,214,314	64,115,822	544,124,765	654,454,901
Indiana Michigan Power Company**	70,023	0	11,721	0	0	669,647	669,647
Northern States Power Company**	22,876	0	2,017	0	0	0	0
Upper Peninsula Power Company**	143,284	0	90,000	0	0	0	0
Wisconsin Public Service Corporation**	67,536	0	42,156	0	0	0	0
Wisconsin Electric Power Co**	125,029	0	0	153,495	0	19,056,000	19,209,495
	4,639,832	**57,802**	**145,894**	**60,413,792**	**84,344,739**	**1,051,516,812**	**1,196,275,343**
Rate Regulated Cooperatives:							
Cloverland Electric Cooperative**	351,019	0	5493	0	0	0	0
Midwest Energy Cooperative**	26,553	0	0	0	0	0	0
Thumb Electric Cooperative**	0	0	0	0	0	0	0
	377,572	**0**	**5,493**	**0**	**0**	**0**	**0**
Member Regulated Electric Cooperatives:							
Alger Delta Cooperative Electric Association**	0	0	0	0	0	0	0
Bayfield Electric Cooperative**	7	0	0	0	0	0	0
Cherryland Electric Cooperative**	16,252	0	0	0	0	0	0
Great Lakes Energy Cooperative**	59,356	0	0	0	0	0	0
Homeworks Tri-County Electric Cooperative**	14,231	0	0	0	0	0	0
Ontonagon County Rural Electricification Association**	2,329	0	0	0	0	0	0
Presque Isle Electric and Gas Co-op**	10,328	0	0	0	0	0	0
	102,503	**0**	**0**	**0**	**0**	**0**	**0**
Municipally-Owned Electric Utilities:							
City of Bay City	9,162	0	0	524,647	70,221	0	594,868
City of Charlevoix	1,839	0	0	21,190	14,122	0	35,312
City of Crystal Falls	4,358	0	3,035	0	0	0	0
City of Dowagiac	1,300	0	0	7,146	0	0	7,146
City of Eaton Rapids	2,965	0	350	154,274	6,936	729,540	890,750
City of Escanaba	11,655	0	0	0	0	847,463	847,463
City of Gladstone	0	0	0	0	0	0	0
City of Harbor Springs	1,833	0	0	21,190	0	0	21,190
City of Hart Hydro	2,056	0	0	10,595	0	0	10,595
City of Norway	22,117	0	22,698	0	0	0	0
City of Petoskey	3,068	0	0	42,380	28,071	0	70,451
City of Portland	2,578	0	0	6,357	1,591	0	7,948
City of Sebewaing	935	0	0	0	0	416,096	416,096
City of South Haven	0	0	0	7,719	0	0	7,719
City of St. Louis	2,894	0	0	6,301	21,517	0	27,818
City of Stephenson	634	0	0	0	0	0	0
City of Sturgis	7,253	0	0	12,051	0	0	12,051
City of Wakefield	0	0	0	0	0	0	0
Chelsea Dept of Electric & Water	1,266	0	0	105,414	8,461	56,395	170,270
Coldwater Board of Public Utilties	12,849	0	0	0	3,411	0	3,411
Croswell Municipal Light & Power Dept	0	0	0	0	0	225,336	225,336
Daggett Electric Dept	120	0	0	1,905	0	0	1,905
Detroit Public Lighting Dep	0	0	0	23,598	4,704	0	28,302
Grand Haven Board of Light & Power	7,330	0	0	175,449	212,215	5,058,526	5,446,190
Hillsdale Board of Public Utilities	5,547	0	0	0	1,473	0	1,473
Holland Board of Public Works	53,213	0	0	6,352,628	0	0	6,352,628
Lansing Board of Water & Light	92,831	0	5,132	3,727,247	2,623,402	52,916,307	59,266,956
Lowell Light & Power	2,561	0	0	53,217	48,160	5,036,528	5,137,905
Marquette Board of Light & Power	60,274	0	0	0	42,175	1,262,194	1,304,369
Marshall Electric Dept**	7,552	0	959	0	7,186	0	7,186
Negaunee Dept of Public Works	0	0	0	0	0	0	0
Newberry Water & Light Board	5,493	0	0	2,173,289	0	0	2,173,289
Niles Utility Dept	0	0	0	7,529	0	0	7,529
Traverse City Light & Power	31,135	0	0	0	0	0	0
Union City Electric Dept	4,358	0	1,448	0	506	0	506
Wyandotte Dept of Municipal Service	3,659	0	0	110,168	28,051	0	138,219
Village of Baraga	0	0	0	0	0	0	0
Village of Clinton	1,014	0	0	0	269	0	269
Village of L'Anse	0	0	0	0	0	0	0
Village of Paw Paw**	0	0	0	2,505	0	0	2,505
Zeeland Board of Public Works	8,034	0	0	0	1,106	0	1,106
	371,883	**0**	**33,622**	**13,546,799**	**3,123,577**	**66,548,385**	**83,218,761**
Alternative Electric Suppliers (AES):							
CMS ERM Michigan LLC							
Commerce Energy Inc							
Constellation NewEnergy Inc							
Direct Energy Business LLC							
FirstEnergy Solutions Corp							
Glacial Energy of Illinois, Inc.							
Integrys Energy Services Inc							
Midamerican Energy Company							
Noble Americas Energy Solutions LLC f/k/a Sempra Energy Solutions LLC							
Spartan Renewable Energy Inc							
UP Power Marketing LLC							
Wolverine Power Marketing Cooperative Inc							
	211,884	**340**	**40,015**				
***Totals:**	**5,703,674**	**58,142**	**225,024**	**73,960,591**	**87,468,316**	**1,118,065,197**	**1,279,494,104**

Michigan Retail Sales (MWh):	**102,651,000**
Michigan Estimated Renewable Energy %:	**5.4%**

(Based on Appendix B Retail Sales Total)

Source: PA 295 Annual Reports:
http://www.michigan.gov/mpsc/0,4639,7-159-16393_53570-240179--,00.html
*AES totals are aggregated

Michigan's Solar Programs

Consumers Energy and DTE Electric continued previously established solar programs designed to incentivize solar installations. During 2013, Cherryland Electric Cooperative and Traverse City Light & Power implemented Michigan's first community solar program.

Experimental Advanced Renewable Program

Consumers Energy's original EARP was approved by the Commission in 2009. The maximum program size was 2 MW (2,000 kW) with 1,500 kW reserved for commercial projects and the remaining 500 kW allotted to residential projects. In June 2011, the company announced that the program had become fully subscribed after completing 102 agreements. After careful review and design, Consumers Energy expanded the program by an additional 3 MW. The Commission approved the expanded program in May 2011 with the option for additional capacity should program funding allow. Later in 2011, the Commission approved an addition 0.25 MW for a total of 5.25 MW. As of its most recent biennial renewable energy plan review filed on May 28, 2013, the company expects to solicit a total of 6 MW of solar installations under its EARP.

Under Consumers Energy's original EARP (phase 1 and 2), customers receive a firm price for each kWh generated by the customer's solar generation system over a 12 year period. Phase 1 agreements began in September 2009 paying $0.65 per kWh for residential systems up to 20 kW and $0.45 per kWh for commercial systems up to 150 kW. Phase 2 agreements began in May 2010 paying $0.525 per kWh for residential systems up to 20 kW and $0.375 per kWh for commercial systems up to 150 kW.

The 4 MWs of capacity under the expanded program is split between residential and non-residential customers and will be awarded in phases pertaining to the respective customer class. The price is set with a maximum offer of $0.259 per kWh, which is dynamic; increasing or decreasing based on interest in prior phases. Additionally, the company offers a $0.001 per kWh bonus for systems constructed using both Michigan labor and Michigan materials.

A system's size is limited to the customer's annual electricity use, similar to the net-metering program. This is a change from the original phase 1 and 2 of the EARP that allowed for systems larger than customer use within the respective category. The program will continue to add new participants for three years from the Commission approval and agreements will have 15 year terms or will expire at the end of the Renewable Energy Plan period in 2029, whichever comes first.

Consumers Energy has awarded agreements through 13 phases under the expanded program (15 phases have been awarded including phase 1 and phase 2 of the original program). Eight have been residential phases and five have been non-residential phases. One hundred fourteen residential projects are expected to be completed totaling 811.5 kW of installed capacity. As a result of the five non-residential phases, 25 non-residential projects totaling 1,223.1 kW are expected to be completed. Consumers Energy currently has a total of 4.06 MW of solar capacity participating or under construction as part of the EARP.

SolarCurrents

DTE Electric's 20 MW SolarCurrents pilot program includes a 5 MW customer-owned program and a 15 MW company-owned program. In May 2011, DTE Electric announced that the customer-owned program was fully subscribed. On December 20, 2011, the Commission ordered MPSC Staff to convene a collaborative to explore opportunities for the continuation of the customer-owned SolarCurrents program. Pursuant to the collaborative, the company filed an application for a 2 MW expansion on October 8, 2012 and the Commission approved the application on November 16, 2012.

The 5 MW phase 1 customer-owned SolarCurrents program provided an up-front REC payment equal to $2.40 per Watt of installed solar PV which is approximately half of the total system cost. The company will purchase the remaining RECs through a monthly payment/on-bill credit equal to $0.11 per kWh for 20 years. System size is limited by the customer's annual electricity use or by the 20 kW size cap (whichever is smaller).

Phase 2 will provide for an up-front purchase of approximately 30% of the RECs that the company anticipates will be generated over the life of the system. The remaining RECs will be purchased via monthly payments based on actual generation. This purchase is done through cents per kWh payments starting on the agreement execution date and ending on August 31, 2029, for a maximum term of 16 years. The company will be accepting applications for the 2 MW phase 2 program from residential customers up to 1.5 MW of the program and non-residential customers making up the remaining 0.5 MW of the program through four 500 kW tranches. The agreements will be awarded using random selection events starting in 2013 with the last tranche being awarded in 2014. Any remaining kW will be awarded during a fifth offering in early 2015. To date, the company has contracted for 5,030 kW from 589 customers representing full participation for phase 1 of SolarCurrents. The company has contracted for 207 kW representing 38 projects from the first offering of phase 2, and 245 kW from 36 projects currently installed from this offering.

DTE Electric's 15 MW company-owned SolarCurrents program includes large scale solar PV projects that are either located on DTE Energy property or on customer premises. Customers selected to host a solar project receive a one-time, upfront construction payment to cover any inconvenience during installation in addition to an annual easement payment for the life of the installation. Pursuant to two separate competitive solicitations, the company contracted with Nova Consultants to construct up to 15 MW of solar. The panels will be provided by either McNaughton-McKay Electric Company or Inovatus Solar, LLC. Currently, 19 projects are complete totaling 7.315 MW of solar PV capacity. An additional three projects are in the construction, design or feasibility phase totaling over 2.571 MW of capacity.

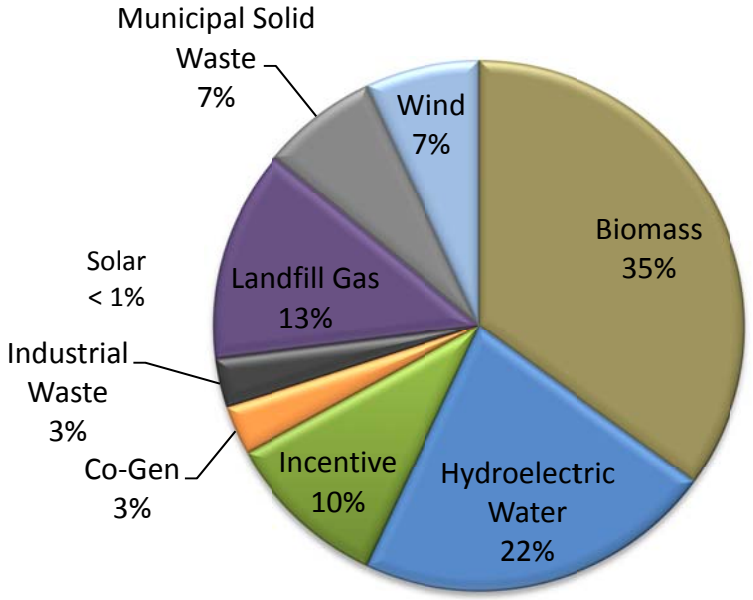
Community Solar

Cherryland Electric Cooperative and Traverse City Light & Power are the first electric providers in Michigan to offer a joint community solar program – Solar Up North (SUN) Alliance Program. The framework for this program comes from the energy optimization standard of Act 295 as opposed to net metering or the renewable energy standard. Cherryland Electric Cooperative members and Traverse City Light & Power customers can purchase solar shares for a one time investment of $470.00 each. The participants receive a $75.00 Energy Optimization rebate per panel. The electric providers use the wholesale electric market prices to determine the amount of monthly bill credit to provide to the participants. It is estimated that the

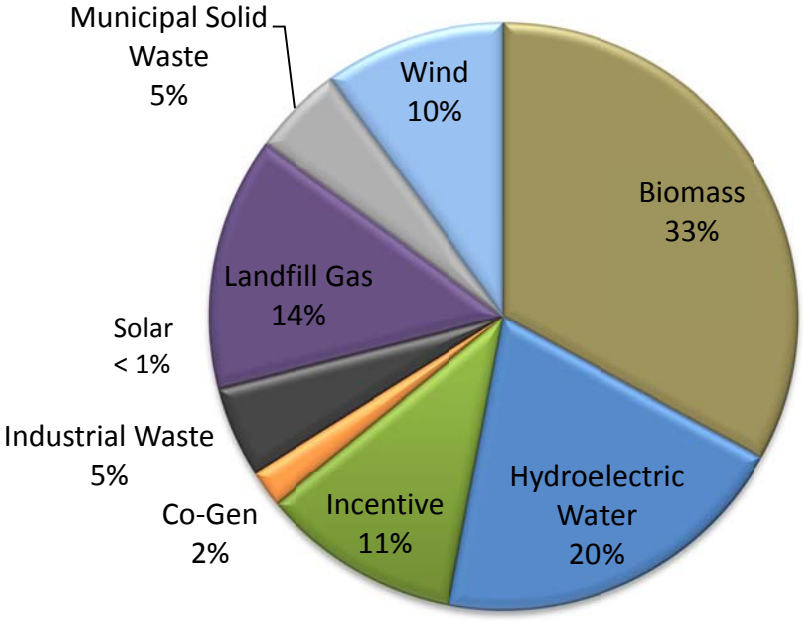
credit will be an average of $2.00 per month. This amount will be based on total monthly array output and will vary based on weather conditions. The community solar program has been very successful and is continuing to grow. As of July 2013, one hundred thirty six shares had been purchased.[1]

[1] See *A Guidebook for Community Solar Programs in Michigan Communities* http://glrea.org/

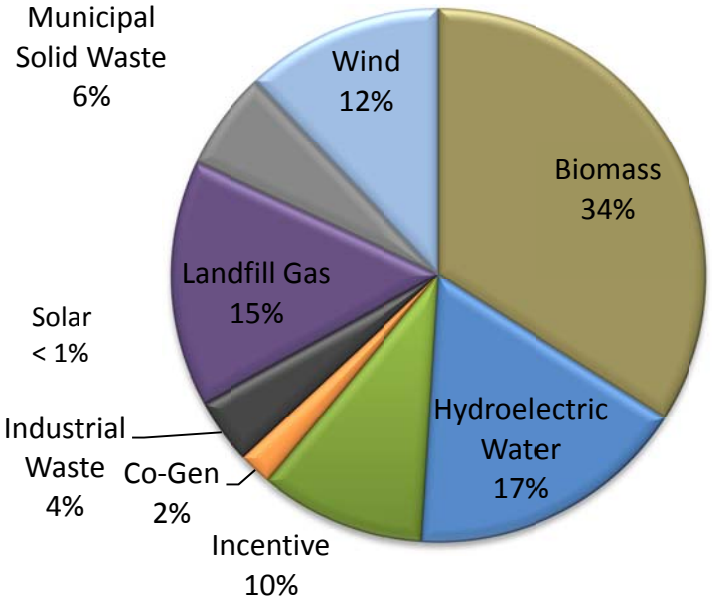
MIRECS 2009 Vintage Energy Credits
5,256,702 Total Credits



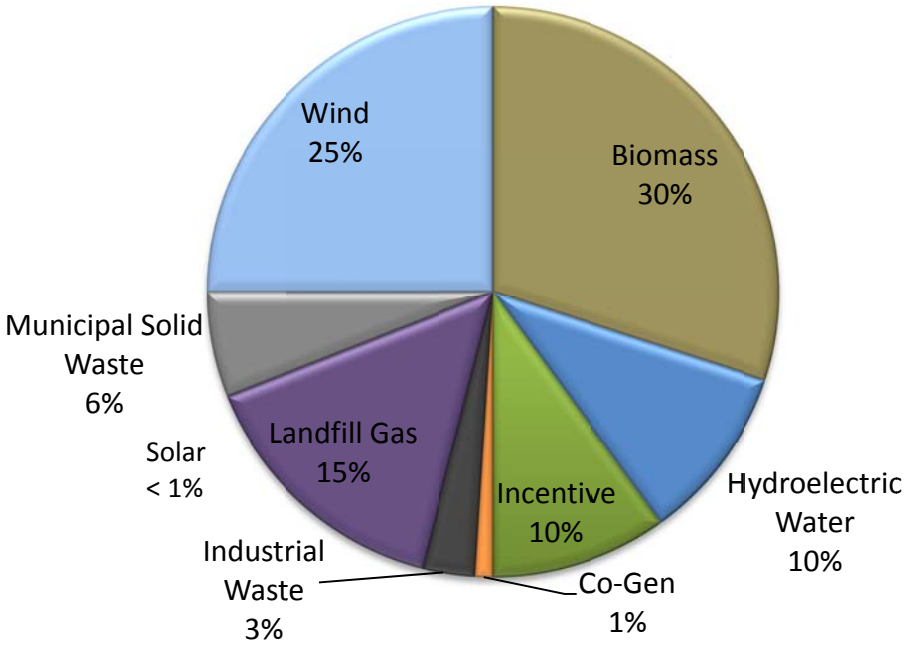
MIRECS 2010 Vintage Energy Credits
5,109,511 Total Credits



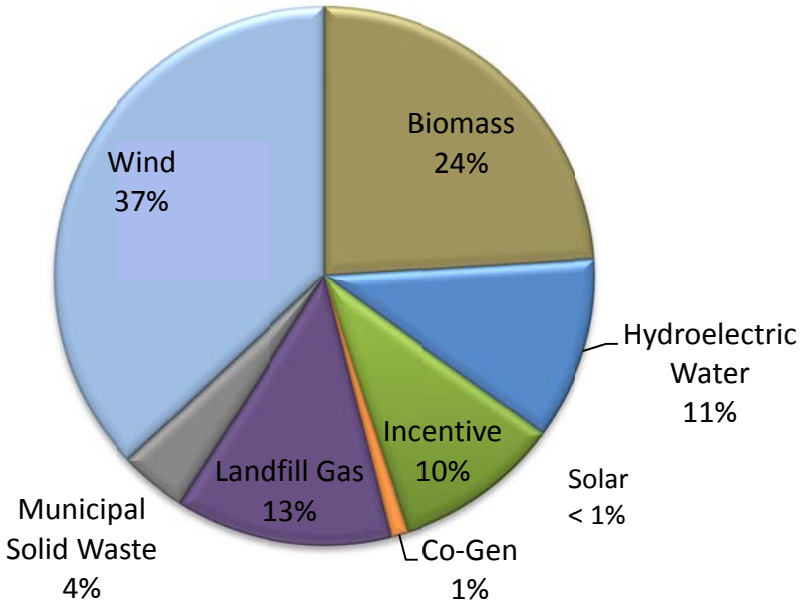
MIRECS 2011 Vintage Energy Credits
5,078,697 Total Credits



MIRECS 2012 Vintage Energy Credits
5,789,572 Total Credits



MIRECS 2013 Vintage Energy Credits
5,547,491 Total Credits



	Consumers Energy : Contracts							
Map Key	Seller	Quantity	Cost*	Term	Renewable Energy Type	Request for Proposal	Commission Approval	Commercial Operation Date
	Barton Malow Company	Construction		Company Owned "Cross Winds"		04/25/2013	09/10/2013	
	General Electric Company	62 1.7-100 1.7 MW				10/2/2012	06/28/2013	
32	ABB Transformers	2- 34.5KV to 345KV transformers	$59.00/MWh		Wind	02/27/2013	09/10/2013	12/31/2014
28	Blissfield Wind (Beebe Wind)	Unchanged	Unchanged	20 Years	Wind	Amendment	01/26/2012	12/31/2012
2	Heritage Garden Wind Farm I	20 MW	Unchanged	20 Years	Wind	Amendment	01/26/2012	12/31/2012
3	Heritage Stoney Corners Wind Farm II	Unchanged	Unchanged	20 Years	Wind	Amendment	01/26/2012	1/1/2012
3	Heritage Stoney Corners Wind Farm I (Phase 3)	8.35 MW	$106.20 MWh	20 Years	Wind	Result of Amendments	01/26/2012	1/1/2012
4	Experimental Advanced Renewable Program	987.7 KW	Commercial $0.375/KWh Residential $0.525/KWh	12 Years	Solar	Unsolicited	05/10/2011	5/1/2011
	Vestas-American Wind Technology	56 V100 1.8 MW Turbines	$110.00/MWh	Company Owned "Lake Winds"	Wind	1/15/2010		
	White Construction, Inc. U-15805 edocket files # 251-256	Installation and construction				7/23/2010		
1	GE Prolec Transformers, Inc.	2-125 KV transformers				7/27/2009	12/2/2010	12/31/2012
2	Heritage Garden Wind Farm I	28.6 MW	$106.20 MWh	20 Years	Wind	Unsolicited	11/19/2010	1/1/2012
3	Heritage Stoney Corners Wind Farm II	12.3 MW	$98.50 MWh	20 Years	Wind	Unsolicited	11/19/2010	1/1/2012
4	Experimental Advanced Renewable Program	Commercial 836.6 KW Residential 200.1 KW	Commercial $0.45/KWh Residential $0.65/KWh	12 Years	Solar	Unsolicited	12/21/2010	5/1/2010
5	Scenic View Dairy**	0.35 MW	$83.07/MWh	63 Months	Anaerobic	Unsolicited	10/26/2010	7/29/2010
6	Blissfield Wind (Now Beebe Wind)	81 MW	$100.88/MWh	20 Years	Wind	5/7/2009	7/27/2010	12/31/2012
7	Harvest II Wind	59.4 MW	$98.38/MWh	20 Years	Wind	5/7/2009	7/27/2010	12/31/2012
8	Michigan Wind 2	90 MW	$94.00/MWh	20 Years	Wind	5/7/2009	7/27/2010	6/30/2012
9	WM Renewable Energy - Pine Tree Acres	12.8 MW	$98.75/MWh	20 Years	Landfill Gas	5/7/2009	7/27/2010	6/30/2012
10	WM Renewable Energy - Northern Oaks Landfill	1.6 MW	$122.39/MWh	20 Years	Landfill Gas	1/29/2009	10/13/2009	11/11/2010
11	NANR – Lennon	1.6 MW	$137.27/MWh	20 Years	Landfill Gas	1/29/2009	10/13/2009	12/31/2010
12	Elk Rapids Hydro Electric** 1	0.7 MW	$121.31/MWh	10 Years	Hydro	1/29/2009	10/13/2009	7/11/2009
13	Zeeland**	1.6 MW	$122.20/MWh	7 Years	Landfill Gas	1/29/2009	10/13/2009	7/11/2009
14	Freemont Community Digester	3.1 MW	$139.35/MWh	20 Years	Anaerobic	1/29/2009	10/13/2009	11/11/2012
15	Scenic View Dairy** 1, 2	0.82 MW	$138.17/MWh	7 Years	Anaerobic	1/29/2009	10/13/2009	7/11/2009
	Total	**501.8 MW**						

* Per MWh prices represent levelized costs. ** Pre-existing projects prior to 2008 PA 295 - The commercial operation date would refer to the effective date of the contract.

	DTE Electric Company : Contracts							
Map Key	Seller	Quantity	Cost*	Term	Renewable Energy Type	Request for Proposal	Commission Approval	Commercial Operation Date
33	Big Turtle Wind Farm, LLC	20 MW	$53/MWh	20 Years	Wind	Unsolicited	09/24/2013	Expected 2014
31	Pheasant Run Wind, LLC	74.8 MW	Up to $49.25/MWh	20 Years	Wind	Unsolicited	5/17/2013	12/31/2014
31	Pheasant Run Wind II, LLC	74.8 MW	Up to $49.25/MWh	20 Years	Wind	Unsolicited	5/17/2013	12/31/2014
16	SolarCurrents Phase II	0.5 MW Non-Residential 1.5 MW Residential	$0.13/W $0.02/kWh $0.20/W $0.03/kWh	Through 8/31/2029	Solar	Unsolicited	11/16/2012	2013
29	Tuscola Wind II, LLC	100 MW	$49.25/MWh***	20 Years	Wind	5/3/2012	10/31/2012	12/31/2013
30	General Electric Company Barton Malow Company	1.6MW-100 model turbines up to 110 MW Installation and construction	$52.50/MWh	Company Owned “Echo Wind”	Wind	10/12/2011 4/17/2012	9/11/2012	12/31/2013
24	Michigan Waste Energy, Inc.	Up to 65,000 RECs/Year	$7.00/REC	13 Years	Incinerator	Unsolicited	12/6/2011	1991
16	Nova Consultants, Inc.	Solar EPC	Up to $48 Million	Company Owned	Solar	2/28/2011	11/10/2011	12/31/2015
16	McNaughton-McKay Electric Company	Supply up to 12 MW of Modules	Up to $24 Million			3/24/2011		
16	Inovatus Solar, LLC	Supply up to 12MW						
27	General Electric Company Barton Malow Company	Up to 69 1.6MW-100 Turbines Installation and construction	$61-$64/MWh	Company Owned “Thumb Wind”	Wind	3/9/2011 5/6/2011	9/13/2011	12/31/2012
25	Tuscola Bay Wind, LLC	120 MW	Up to $60.90/MWh	20 Years	Wind	11/18/2010	8/25/2011	10/31/2012
20	L’Anse Warden Electric Company	110,374 RECs	$11.98 (Average of 4 REC/ACEC Contracts)	Amendment Acquiring Vintage RECs	Biomass	8/18/2009	8/25/2011	7/1/2010
18	Gratiot County Wind	12.8 MW additional	Unchanged from original contract	Company Owned	Wind	Amendment	5/10/2011	12/31/2012
16	Nova Consultants	Unchanged from original contract	Unchanged from original contract	Company Owned	Solar	Extension	12/21/2010	12/31/2011
17	Blue Water Renewables - Smiths Creek Landfill	3.2 MW	$99.00/MWh	20 Years	Landfill	Unsolicited	1/20/2011	12/31/2011
18	Gratiot County Wind	110.4 MW 89.6 MW Company Owned	$91.43/MWh Up to $94.43/MWh	20 Years Company Owned	Wind	8/18/2009	9/14/2010	05/1/2012 03/31/2012
19	WM Renewable Energy - Eagle Valley Landfill	3.2 MW	Combined average price of $98.94/MWh	20 years	Landfill	8/18/2009	8/10/2010	6/1/2011
20	L’Anse Warden Electric Company	17 MW		20 years	Biomass	8/18/2009	8/10/2010	7/1/2010

	DTE Electric Company : Contracts							
Map Key	**Seller**	**Quantity**	**Cost***	**Term**	**Renewable Energy Type**	**Request for Proposal**	**Commission Approval**	**Commercial Operation Date**
21	Boyce Hydro**	Firm 210,000 RECs w/additional 112,000 RECs dependent on generation	$7.75/ REC	7 Years	Hydro	12/23/2009	4/27/2010	3/16/2010
16	Nova Consultants	Up to 3 MW	Up to $18 Million	Company Owned	Solar	11/23/2009	3/2/2010	12/31/2010
22	Heritage Sustainable Energy Stoney Corners Wind Farm	12.2 MW	Unchanged from original contract	20 Years	Wind	Unsolicited	12/1/2009	1/1/2011
23	UPPCO**	Firm 500,000 RECs	Combined average price of $12.46/REC	7 Years	Hydro	12/23/2009	12/1/2009	10/1/2009
Not Shown	Sterling Planet**	Firm 2,500,000 RECs		10 Years	MISC	12/23/2009	12/1/2009	10/1/2009
22	Heritage Sustainable Energy Stoney Corners Wind Farm	14 MW	$116.00/MWh	20 Years	Wind	Unsolicited	4/30/2009	12/21/2009
	Total	**889.4 MW**						

* Per MWh prices represent levelized costs.
** Pre-existing projects prior to 2008 PA 295 - The commercial operation date would refer to the effective date of the contract.
***Staff calculated levelized cost, does not include gross-up for taxes.

	Alpena Power Company : Contracts							
	Seller	**Quantity**	**Cost**	**Term**	**Renewable Energy Type**	**Request for Proposal**	**Commission Approval**	**Commercial Operation Date**
26	Consumers Energy	"Bulk of RECs needed to meet the RPS"	$30.37/REC (estimated)	20 Years	MISC	Unsolicited	9/15/2009	8/4/2009
	AEP/Indiana Michigan : Contracts							
	Seller	**Quantity**	**Cost**	**Term**	**Renewable Energy Type**	**Request for Proposal**	**Commission Approval**	**Commercial Operation Date**
	Fowler Ridge Wind Farm II	50 MW	Redacted	20 Years	Wind	Unsolicited	9/15/2009	2/15/2010
	Wildcat I Wind Farm, LLC	100 MW	Redacted	20 years	Wind	Competitive Solicitation	8/25/2011	12/31/12
	Wisconsin Electric Power Company : Contracts							
	Seller	**Quantity**	**Cost**	**Term**	**Renewable Energy Type**	**Request for Proposal**	**Commission Approval**	**Commercial Operation Date**
	Cadillac Renewable Energy. LLC	REC-Only Redacted	Redacted	Redacted	Biomass	Competitive Solicitation	01/23/2014	Redacted

Appendix G - Requests for Proposal (RFP) Summary

Consumers Energy : Request for Proposals/Requests for Information/Pre-Qualifications						
Issue Date	**Type**	**Description**	**Requested Capacity**	**Company Owned**	**Applicable Technology***	**Responses**
4/25/2013	RFP	Requested bids for the Installation of a Utility Owned Wind Farm (Cross Winds)				6 Proposals
2/27/2013	RFP	Requested Substation Transformer Bids for Utility Owned Wind Farm (Cross Winds)				5 Proposals
10/2/2012	RFP	Requested bids for Utility Owned Wind Turbines (Cross Winds)	105 MW by	Yes	Wind	9 Proposals/ 6 Suppliers
May-12	RFQ	Request for Qualifications for 105 MWs of Utility Owned Wind Turbines	N/A	Yes	Wind	12 Recipiants
7/23/2010	RFP	Requested bids for the Installation of a Utility Owned Wind Farm				7 Proposals
1/15/2010	RFP	Requested bids for Utility Owned Wind Turbines				11 Proposals/ 4 Suppliers
7/27/2009	RFP	Requested Substation Transformer Bids for Utility Owned Wind Farm	100 MW by 2012	Yes	Wind	4 Proposals
2/19/2010	RFQ	Request for Qualifications for the Installation of a 100 MW Utility Owned Wind Farm	N/A	Yes	Wind	8 Recipients
7/14/2010	RFQ	Request for Qualifications for 100 MWs of Utility Owned Wind Turbines	N/A	Yes	Wind	8 Recipients
5/7/2009	RFP	Requested CEREC**	100 MW by 2012 / 150 MW by 2014	No	All	80 Proposals
1/29/2009	RFP	Requested CEREC**	17.4 MW	No	All	12 Proposals/ 11 Suppliers

* All=Any Renewable Energy Resource defined by 2008 PA 295; REC=Renewable Energy Credit; ACEC=Advanced Cleaner Energy Credit
** CEREC=Capacity, Energy, and Renewable Energy Attributes

Appendix G - Requests for Proposal (RFP) Summary

DTE Electric Company : Request for Proposals/Requests for Information/Pre-Qualifications						
Issue Date	**Type**	**Description**	**Requested Capacity**	**Company Owned**	**Applicable Technology***	**Responses**
5/3/2012	RFP	100 MW of Wind	100 MW by 12/31/2013	No	Wind	17 proposals / 16 suppliers
4/17/2012	RFP	EPC (Echo)	NA	Yes	Wind	13 proposals / 13 suppliers
12/7/2011	Auction	Requested RECs* Without the Associated Energy	2009 and 2010 Vintage	No	All	NA
10/12/2011	RFP	110 MW of Utility Owned Wind Turbines (Echo)	110 MW by 12/31/2013	Yes	Wind	14 proposals / 7 suppliers
5/6/2011	RFP	EPC (Thumb)	N/A	Yes	Wind	6 proposals / 6 suppliers
3/24/2011	RFP	Solar Panels	12 MW	Yes	Solar	38 proposals, 24 companies
3/10/2011	RFP	Wind Ownership Option	50 MW by 12/31/2014	Yes	All	38 proposals / 15 suppliers
3/9/2011	RFP	109 MW of Utility Owned Wind Turbines (Thumb)	109 MW by 12/31/2012	Yes	Wind	17 proposals / 7 suppliers
2/28/2011	RFP	Requested bids for the Installation of Utility Owned Solar	N/A	Yes	Solar	27 companies, 27 proposals
2/10/2011	RFP	O&M Services	N/A	Yes	Wind	5 proposals / 5 suppliers
11/18/2010	RFP	Requested CEREC**	245 MW by 12/31/2014	No	All	146 proposals / 46 Suppliers
7/26/2010	Pre-Q	Pre-qualification for 100-200 MW of Utility Owned Wind Turbines	N/A	Yes	Wind	27 proposals / 17 Suppliers
3/29/2010	SOI	Solicitation of Interest to Host Utility Owned Solar at the Customers Location	N/A	Yes	Solar	10 Responses
11/23/2009	RFP	Requested bids for the Installation of Utility Owned Solar	3 MW	Yes	Solar	11 Proposals
10/23/2009	Pre-Q	Pre-Qualification for the Installation of 3 MW of Utility Owned Solar	N/A	Yes	Solar	30 Responses
8/18/2009	RFP	Joint Development for Utility Owned Wind	75 MW by 12/31/2011	Yes	Wind	12 Proposals/ 9 Suppliers
8/18/2009	RFP	Requested CEREC**	106 MW by 12/31/2011	No	All	35 Proposals/ 21 Suppliers
5/22/2009	RFI	Request for Information for the Joint Development of Wind Farms	N/A	Yes	Wind	155 Registered 27 Responses
12/23/2008	RFP	Requested RECs* and ACECs* Without the Associated Energy	250,000 RECs*/Year	No	All	43 Proposals/ 11 Suppliers

* All=Any Renewable Energy Resource defined by 2008 PA 295; REC=Renewable Energy Credit; ACEC=Advanced Cleaner Energy Credit
** CEREC=Capacity, Energy, and Renewable Energy Attributes

Appendix H - PA 295 CONTRACT RENEWABLE ENERGY PROJECTS

Map Key	Renewable Project Name	County	Capacity (MW)	Type	Power Purchaser	Commercial Operation Date
14	Freemont Community Digester	Newaygo	3.1	Anaerobic Digester	Consumers Energy	2012
5, 15	Scenic View Dairy - 2 Locations	Allegan & Barry	1.2	Anaerobic Digester	Consumers Energy	2009 - 2010
20	L'Anse Warden	Baraga	17	Biomass	DTE	2010
	Biomass Total		**21.3**	**MW**		
12	Elk Rapids Hydro	Antrim	0.7	Hydro	DTE	Pre-Act 295 Project
	Hydro Total		**0.7**	**MW**		
19	Eagle Valley Landfill	Oakland	3.2	Landfill Gas	DTE	2011
11	Lennon Generation Station	Shiawassee	1.6	Landfill Gas	Consumers Energy	2010
10	Northern Oaks Landfill	Clare	1.6	Landfill Gas	Consumers Energy	2010
9	Pine Tree Acres Landfill	Macomb	12.8	Landfill Gas	Consumers Energy	2012
17	Smith's Creek Landfill	St. Clair	3.2	Landfill Gas	DTE	2011
13	Zeeland #2	Ottawa	1.6	Landfill Gas	Consumers Energy	2009
	Landfill Gas Total		**24**	**MW**		
4	Experimental Advanced Renewable Program	Varies	6	Solar	Consumers Energy	2009-Present
16	SolarCurrents	Varies	22	Solar	DTE Owned and Customer Owned	2009 - Present
	Solar Total		**28**	**MW**		
28	Beebe	Gratiot	81	Wind	Consumers Energy	December 2012
33	Big Turtle	Huron	20	Wind	DTE	Expected 2014
34	Cross Winds	Tuscola	105.4	Wind	Consumers Energy Owned	Expected 2014
30	Echo	Huron	112	Wind	DTE Owned	Expected 2014
	Fowler Ridge II (MI Allocation)	Benton County, Indiana	7.5	Wind	Indiana Michigan	2010
2	Garden I	Delta	28	Wind	Consumers Energy & DTE	September 2012
18	Gratiot County	Gratiot	212.8	Wind	DTE & DTE Owned	June 2012
7	Harvest II	Huron	59.4	Wind	Consumers Energy	November 2012
1	Lake Winds	Mason	100.8	Wind	Consumers Energy Owned	November 2012
27	McKinley	Huron	14.4	Wind	DTE Owned	December 2012
8	Michigan Wind II	Sanilac	90	Wind	Consumers Energy	January 2012
27	Minden	Sanilac	32	Wind	DTE Owned	December 2012
31	Pheasant Run	Huron	74.8	Wind	DTE	December 2013
31	Pheasant Run II	Huron	74.8	Wind	DTE Owned	Expected 2014
27	Sigel	Huron	64	Wind	DTE Owned	December 2012
3	Stoney Corners	Missaukee & Osceola	46.9	Wind	Consumers Energy & DTE	October 2012
25	Tuscola Bay Wind	Tuscola, Bay & Saginaw	120	Wind	DTE	December 2012
29	Tuscola Bay Wind II	Tuscola & Bay	100	Wind	DTE	November 2013
	Wildcat I (MI Allocation)	Madison & Tipton Counties, Indiana	60	Wind	Indiana Michigan	2012
	Wind Total		**1,404**	**MW**		
	Total Act 295 Contracts		**1,478**	**MW**		

Appendix I - Michigan Utility Scale Wind Farms

Michigan Utility Scale Wind Farms*

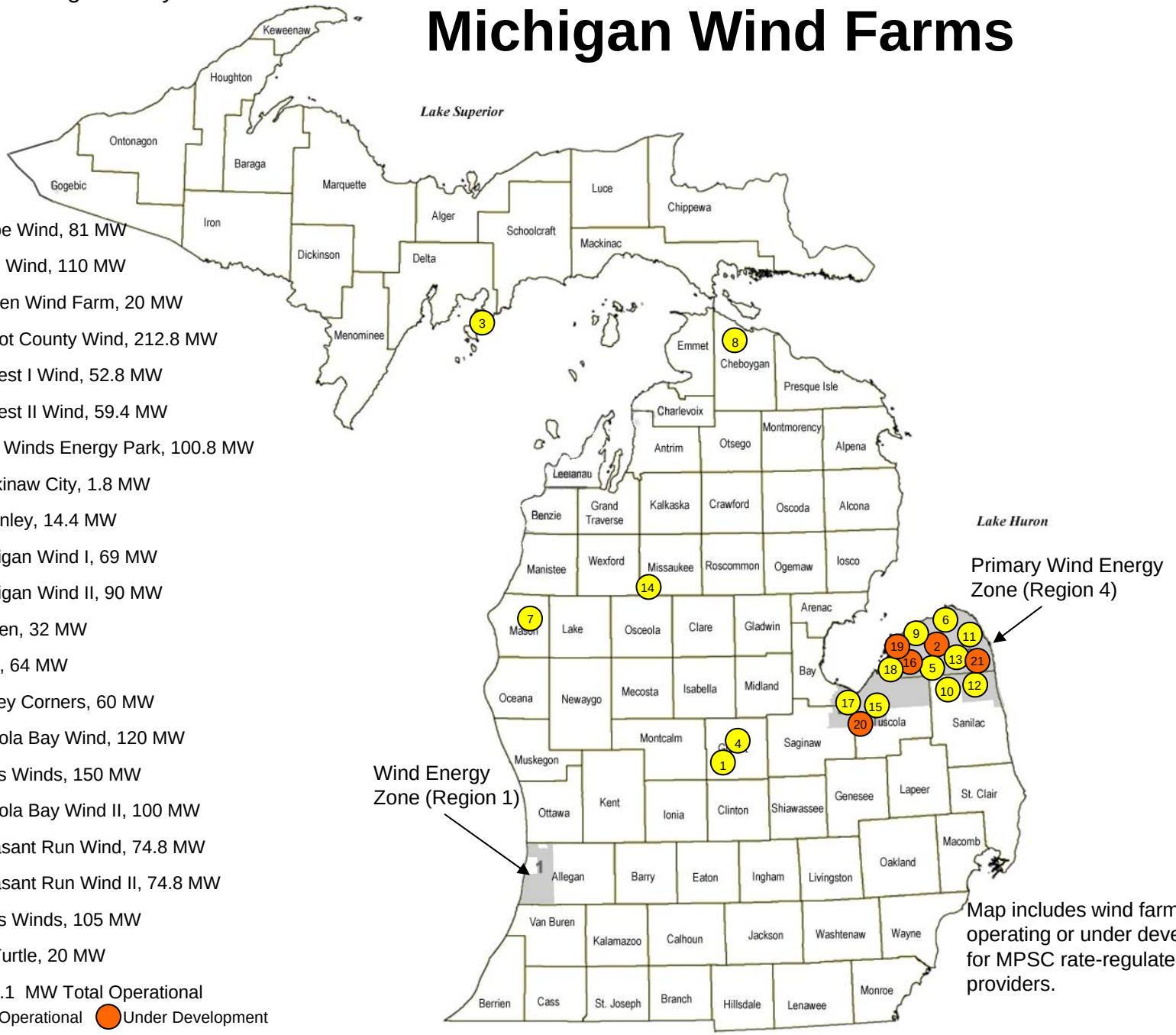
Project Name	County	Capacity (MW)	Turbine Size (MW)	Number of Turbines	Turbine Manufacturer	Developer	Power Purchaser	Commercial Operation Date
Beebe	**Gratiot**	**81**	**2.4**	**34**	**Nordex**	**Exelon & Great Lakes Wind**	**Consumers Energy**	**December 2012**
Big Turtle	Huron	20	2.0	10	Gamesa	Heritage Sustainable Energy	DTE	Expected 2014
Cross Winds	Tuscola	105.4	1.7	62	GE Energy	Consumers Energy	N/A	Expected 2014
Echo	Huron	112	1.6	70	GE Energy	DTE	N/A	Expected 2014
Garden I	**Delta**	**28**	**2.0**	**14**	**Gamesa**	**Heritage Sustainable Energy**	**Consumers Energy & DTE**	**September 2012**
Gratiot County	**Gratiot**	**212.8**	**1.6**	**133**	**GE Energy**	**Invenergy & DTE**	**DTE**	**June 2012**
Harvest	**Huron**	**52.8**	**1.65**	**32**	**Vestas**	**Exelon**	**Wolverine Power Cooperative**	**2008**
Harvest II	**Huron**	**59.4**	**1.8**	**33**	**Vestas**	**Exelon**	**Consumers Energy**	**November 2012**
Lake Winds	**Mason**	**100.8**	**1.8**	**56**	**Vestas**	**Consumers Energy**	**N/A**	**November 2012**
McKinley	**Huron**	**14.4**	**1.6**	**9**	**GE Energy**	**DTE**	**N/A**	**December 2012**
Mackinaw City	**Emmet**	**1.8**	**0.9**	**2**	**NEG Micon**	**Mackinaw Power**	**Consumers Energy**	**2001**
Michigan Wind I	**Huron**	**69**	**1.5**	**46**	**GE Energy**	**Exelon**	**Consumers Energy**	**2008**
Michigan Wind II	**Sanilac**	**90**	**1.8**	**50**	**Vestas**	**Exelon**	**Consumers Energy**	**January 2012**
Minden	**Sanilac**	**32**	**1.6**	**20**	**GE Energy**	**DTE**	**N/A**	**December 2012**
Pheasant Run Wind	**Huron**	**74.8**	**1.7**	**44**	**GE Energy**	**NextEra Energy**	**DTE**	**December 2013**
Pheasant Run Wind II	Huron	74.8	1.7	44	GE Energy	NextEra Energy	DTE	Expected 2014
Sigel	**Huron**	**64**	**1.6**	**40**	**GE Energy**	**Detroit Edison**	**N/A**	**December 2012**
Stoney Corners	**Missaukee & Osceola**	**60**	**2 - 2.5**	**29**	**Repower, Fuhrlander, Northern Power Systems**	**Heritage Sustainable Energy**	**Consumers Energy, DTE, Traverse City Light & Power**	**October 2012**
Tuscola Bay Wind	**Tuscola, Bay & Saginaw**	**120**	**1.6**	**75**	**GE Energy**	**NextEra Energy**	**DTE**	**December 2012**
Tuscola Wind II	**Tuscola & Bay**	**100.3**	**1.7**	**59**	**GE Energy**	**NextEra Energy**	**DTE Electric**	**November 2013**
Totals		**1,473.3**	**MW**	**862**	**Turbines**			
Operational Totals		**1,161.1**	**MW**	**746**	**Turbines**			

Bold text indicates the wind farm is operational.

* Prepared by MPSC Staff and includes all wind farms operational, planned or under contract with an MPSC-rate-regulated electric provider.

Appendix I – Michigan Utility Scale Wind Farms

Michigan Wind Farms



1. Beebe Wind, 81 MW
2. Echo Wind, 110 MW
3. Garden Wind Farm, 20 MW
4. Gratiot County Wind, 212.8 MW
5. Harvest I Wind, 52.8 MW
6. Harvest II Wind, 59.4 MW
7. Lake Winds Energy Park, 100.8 MW
8. Mackinaw City, 1.8 MW
9. McKinley, 14.4 MW
10. Michigan Wind I, 69 MW
11. Michigan Wind II, 90 MW
12. Minden, 32 MW
13. Sigel, 64 MW
14. Stoney Corners, 60 MW
15. Tuscola Bay Wind, 120 MW
16. Cross Winds, 150 MW
17. Tuscola Bay Wind II, 100 MW
18. Pheasant Run Wind, 74.8 MW
19. Pheasant Run Wind II, 74.8 MW
20. Cross Winds, 105 MW
21. Big Turtle, 20 MW

1161.1 MW Total Operational

Currently Operational Under Development

Map includes wind farms currently operating or under development for MPSC rate-regulated electric providers.