Appendix D

Demand Work Group Report

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Michigan Capacity Need Forum:
Demand Work Group

Michigan Electric Sales and Peak Demand Forecast
2005 – 2025

January 2006

Copies of this report are available from the Michigan Public Service Commission's Web site, at: http://www.dleg.state.mi.us/mpsc/electric/capacity/cnf.

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1 Introduction

This report explains the electric energy forecast methodology and results produced by the Demand Work Group. The Demand Work Group was charged with preparing an electric demand and energy forecast for the period running from 2005 to 2025 for use by the Capacity Need Forum's Integration Group. The projections rely primarily on forecast data provided by members of the work group including: Consumers Energy, Detroit Edison, Wolverine Power Cooperative, Michigan municipal utilities, WE Energies and WPS Energy. Various methods were used by each of these participants to forecast their loads.

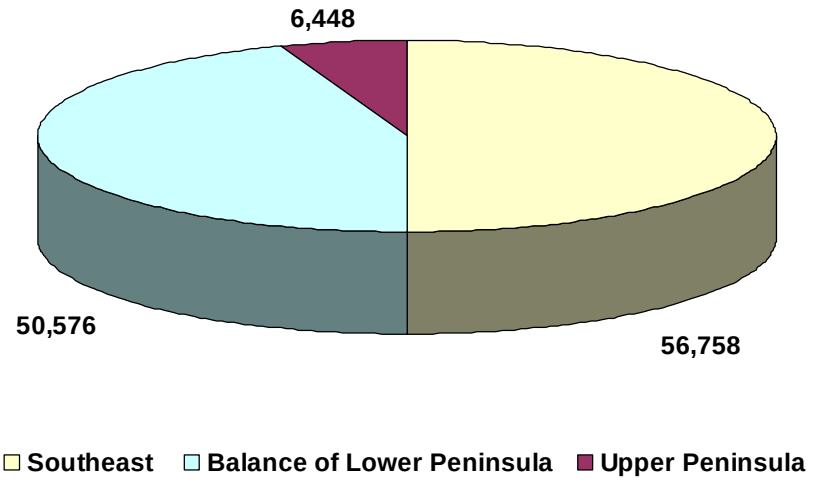
The purpose of the forecast is to provide the Capacity Need Forum's Integration Group with demand and energy projections for use in modeling the State of Michigan's electric generating needs in the near to longer-term future. The Midwest Independent System Operator (MISO) has used the forecast prepared by the Demand Work Group in its MARELI model to assess electric reliability needs in Michigan. The Integration group will also use the forecast in order to select the least cost method for meeting future electric supply needs. The sales and peak demand forecast are adjusted upwards to account for transmission and distribution losses to reflect system requirements for input to the modeling effort as shown in Attachment III.

The annual forecast has been prepared for three geographical regions within Michigan: Southeast Michigan, comprising the area served by the International Transmission Company (ITC), the balance of the Lower Peninsula, comprising the area served by the Michigan Electric Transmission Company (METC) and the Upper Peninsula, comprising the ATC Zone 2 region. The breakdown of the estimated 2005 gigawatt-hour[1] (GWh) sales by region is shown below:

Included in the forecast are all electric load-serving entities in the State of Michigan. In addition to the regulated investor-owned utilities, this includes the regulated electric cooperatives and non-regulated municipal utilities. The forecast includes total service territory sales for Consumers Energy and Detroit Edison, consisting of both bundled and competitive choice customers. The forecast numbers are based upon sales to customers with on-site supply net of their internal generation. Specifically not included in this report is the PJM region of Southwestern Michigan.

[1] Gigawatthour (GWh): One billion watt-hours.

Figure 1: Michigan 2005 Forecasted GWh Sales

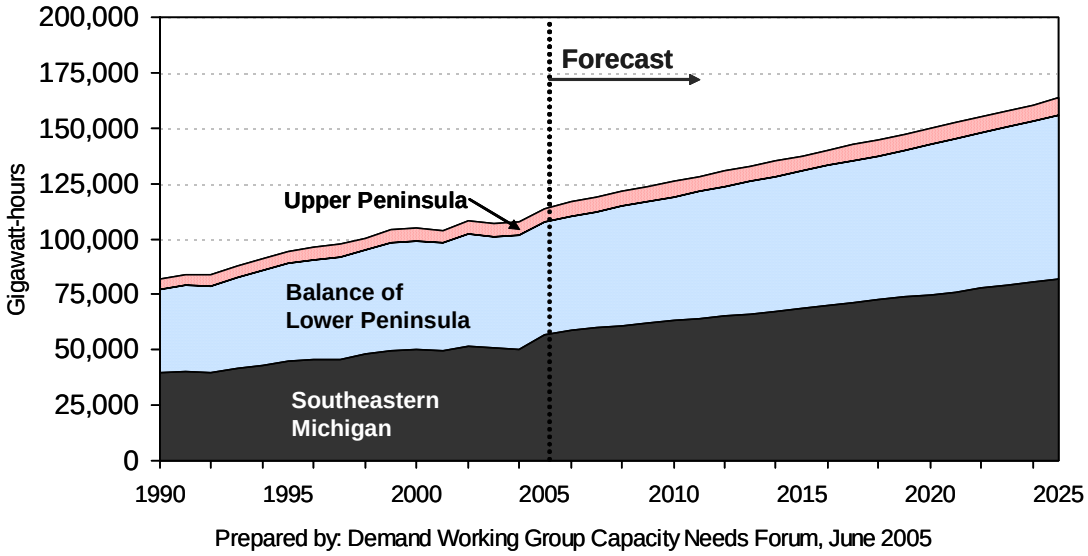


After the enactment of Public Act 141 of 2000, Michigan electric customers were allowed to select electric generation service from non-regulated, competitive, suppliers. According to the Staff's most recent report on electric competition, alternate electric suppliers were serving approximately 4 million megawatt hours of Consumers Energy's commercial and industrial customer's sales for the twelve months ending with November 2004. The competitive suppliers were serving nearly 9 million megawatt hours in Detroit Edison's service territory over the same time period. At the end of 2004, the Staff report showed that alternate electric suppliers were serving 926 and 2,378 megawatts (MW) of load in Consumers Energy and Detroit Edison's service territories respectively. This forecast is intended to project total retail electricity sales and system losses in the future by geographical region within Michigan. No attempt has been made to forecast the future shares of total sales between regulated utilities and competitive suppliers.

2 Forecast Results

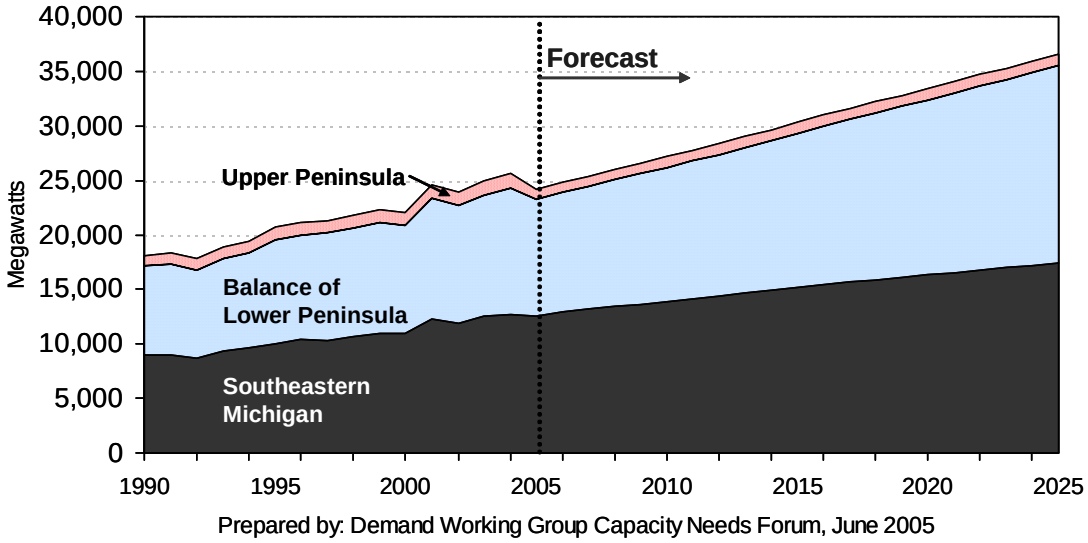
In the base case, Michigan's total electricity needs are expected to grow by 1.8 percent from 2005 to 2025, from 113,782 GWh to 163,411 GWh. Southeast Michigan is expected to experience a growth rate of 1.8 percent, the balance of the Lower Peninsula is expected to grow at 1.9 percent and the Upper Peninsula is expected to grow at 0.9 percent over this time period. Historical and forecast sales are shown in the graph below and more detailed tables of forecast sales by region of the State and by scenario are included in the Appendices to this report.

Figure 2: Michigan Electricity Historical and Forecasted Sales



Peak demand is expected to grow from 24,101 MW to 36,589 MW, or at a rate of 2.1 percent from 2005 to 2025. The expected peak load growth for southeast Michigan is 1.7 percent, for the balance of the Lower Peninsula it is 2.7 percent, and for the Upper Peninsula it is 0.9 percent. The graph below depicts forecast demand growth:

Figure 3: Michigan Electricity Forecast Demand Growth



Annual demand forecast tables for each geographic region by forecast scenario are included in the Appendices.

3 Discussion

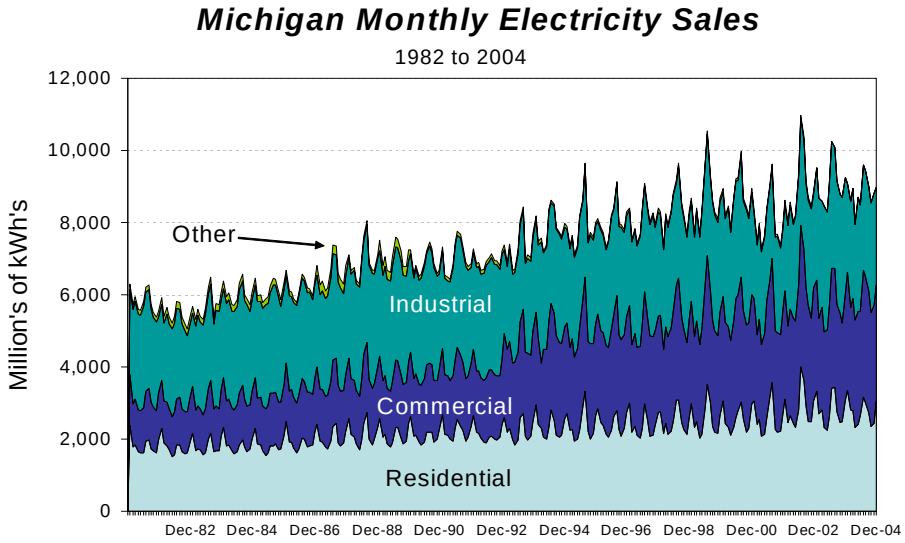
Southeast Michigan's near-term forecast reflects a resumption of economic growth in 2005, but at a relatively slow rate. This growth is not projected to increase employment, however. Manufacturing, especially related to the auto and truck industry, drives much of southeast Michigan's demand for electricity. The longer-term future growth of this sector is clouded. The forecast is based upon slow growth in auto and truck production, with a significant downturn beginning in 2007 and, eventually, a resumption of transportation related growth. The forecast is also based upon no growth in the rate of housing starts over the next several years and short-term growth in Detroit area steel production, with flat production after 2007.

The balance of the Lower Peninsula's forecast is based upon slow growth in housing starts and mixed, but generally positive, growth in industrial manufacturing. Slow to negative growth is expected in out state transportation related employment over the near future, even with growth in output. More robust growth is expected in electrical equipment and appliance manufacturing and chemical production. More modest growth is projected for rubber and plastics manufacturing, along with furniture.

The Upper Peninsula's forecast is affected by the operation of two mines in the Upper Peninsula that are served by We Energies. These two mines currently represent 280 MW of total load (20 MW firm, the balance interruptible), which is approximately one-third of the entire Upper Peninsula's forecasted load. Ongoing speculation that the mines could close for various reasons has existed for a number of years. Similarly, discussion of potential increases in mine production and electric load has also taken place. The current forecast provided by We Energies assumes no change in the electrical loads of the mines. Another factor possibly impacting the electric loads in the Upper Peninsula is changing environmental regulations that would cause electric generation units that are operated by paper companies in the Upper Peninsula to be closed. The closing of these paper companies might result in over 100 MW of additional generation being supplied by the existing investor-owned or municipal electric utilities.

It is helpful t keep in mind that the forecast reflects annual totals that do not display the variability of demand seen over the year. This variability while best seen in daily data can also be seen in historical monthly sales as shown in the following graph. The summer peak sales can be seen more clearly in this graph and it should be remembered that for the purpose of capacity planning the need is to assure sufficient capacity to meet peak demand. Therefore, when looking at the summer peak demand forecast it is not unlike drawing a line across all the highest points shown in this historical data. The variability of loads from hour to hour and day to day are important factors in understanding the complexity of evaluating the best way of meeting this demand curve.

Figure 4: Michigan Monthly Electricity Sales: 1982 to 2004



Source: Energy Information Administration, Electric Power Monthly, prepared by MPSC Staff
http://www.eia.doe.gov/cneaf/electricity/epm/epm_sum.html

3.1 Forecasting Methods

The regional forecasts represent composite projections made by individual participants. Southeast Michigan's forecast is based almost exclusively on Detroit Edison's projections. Detroit Edison's forecast was updated in March of 2005 and is for the period 2005 through 2019. Growth rates (1.76 percent for energy and 1.30 percent for demand) were applied to the 2019 forecast data to trend the demand and energy forecasts from 2019 through 2025. The economic parameter forecast has been created by DTE Energy's corporate economist and is based upon data and forecasts from Global Insight and Blue Chip Economic Indicators. The economic parameters of Detroit Edison's forecast include: U.S. and Detroit car and truck production Detroit steel production, Detroit and Ann Arbor non-manufacturing employment, Detroit index of coincident indicators, U.S. FRB industrial production index and Detroit and Ann Arbor Housing permits. The Detroit and Ann Arbor non-manufacturing employment and the U.S. FRB industrial production index parameters are based on the North American Industrial Classification System (NAICS) rather than on the Standard Industrial Classification (SIC).

The forecast of the balance of the Lower Peninsula includes Consumers Energy, Wolverine Power Cooperative, municipal utilities and several other utilities, with Consumers Energy's forecast contributing the majority of the forecasted load.

Consumers Energy's forecast was updated in April of 2004 and is for the period 2005 through 2019 with all years after 2009 based on forecast trends. Annual adjustments to energy (848 GWh) and demand (330 MW) were applied to the 2019 forecast data to trend the demand and energy forecasts from 2020 through 2025. The economic parameter forecast has been created by Consumers Energy and is based upon data and forecasts from Global Insight and include: the U.S. industrial production eight sector average, the

Michigan industrial production six sector average, the composite Michigan transportation index and Michigan housing starts. Consumers' key forecast inputs also include cooling-degree and heating-degree days based on a fifteen-year average, an adjustment for leap days as appropriate and adjustments have been made for expected major industrial plant closings. Consumers' forecasts are based on the following:

- Residential class forecasts were developed from projections of customer growth and average use per customer and were based on regression modeling.
- Commercial forecasts were developed using regression analysis that quantifies the influence of time-series trends, weather conditions and seasonal factors on monthly commercial class usage.
- Industrial forecasts (GM/Delphi and Industrial Other usage) were developed using regression analysis.
    - The GM/Delphi forecast quantifies the influence of Michigan Transportation Equipment sector economic activity, seasonal factors and historical plant closings and efficiency improvements on quarterly usage of General Motors and Delphi accounts.
    - The Industrial Other forecast quantifies the influence of U.S. and Michigan industrial production activity and seasonal factors on the quarterly usage of industrial customers other than General Motors, Delphi and one Dow Chemical account.
- Other class forecasts include street lighting and interdepartmental usage and were developed using regression analysis.
- Summer peak forecast was developed using regression analysis that quantifies the influence of customer growth, average usage of the industrial class and other class customers during the months of July and August, average temperatures on the day of the system peak, the peak day average dew point temperature variance and estimated impacts of extreme weather conditions.

Wolverine Power Cooperative's forecast was updated in 2004 and is for the period 2005 through 2018. Growth rates (3.0 percent for energy and 3.3 percent for demand) were applied to the 2018 forecast data to trend the demand and energy forecasts from 2019 through 2025. Wolverine's forecast is developed at the member-distribution cooperative level and rolled up to create a single Wolverine system forecast, which includes transmission system losses and own use. This fifteen-year forecast is updated annually. County level demographic projections are taken from Woods & Poole Complete Economic and Demographic Data Source and from the National Planning Association Regional Economic Projections Series. Wolverine's various forecasts are based on the following:

- Residential sales, which comprise the majority of sales in all four of the member cooperatives, is forecast by combining independent projections of consumers and use per consumer using a combined time series, cross sectional econometric model and includes variables for real electric price, heating-degree and cooling-degree days adjusted by the trend in equivalent air-conditioning
- Seasonal sales are forecast using separate econometric equations

- Commercial and industrial forecasts are based on both facility-specific individual forecasts for short-term forecasting and aggregate econometric models for long-term expansion projects
- Street and highway lighting accounts, public authorities and irrigators, which represent less than 2 percent of total Wolverine sales, is based on simple trending

The Lower Peninsula municipal forecast is based upon past individual trends of each individual municipality taking into account specific customer information that is available to the municipality at the time of the forecast and is for the period 2005 through 2025. Growth rates (3.25 percent for both energy and demand) were applied to the 2014 forecast data to trend the demand and energy forecasts from 2014 through 2025. The City of Lansing was reported separately and the growth rates applied for the period 2014 through 2025 was 2.0 percent for both energy and demand.

The Upper Peninsula's forecast reflects the aggregation of several investor-owned utilities and municipal utilities. Three of the five investor-owned utilities in the Upper Peninsula are multi-state utilities and generally forecast loads on a system-wide basis. These system-wide load forecasts utilize econometric forecasting methods. The investor-owned load forecast for the Upper Peninsula was derived by various allocation methods. The load forecasts for the remaining two Michigan-only investor-owned utilities and two municipal electric utilities reflect the use of general historical load growth trends. Due to the economic situation in the Upper Peninsula, these load growth trends have been minimal. These Upper Peninsula forecasts cover the period 2005 through 2013, 2014 or 2015 depending upon the utility, with average combined growth rates (0.89 percent for energy and 0.89 pecent for demand) applied to the 2014, 2015 or 2016 forecast data to trend the demand and energy forecasts through 2025.

3.2 Impact of Energy Efficiency

The electric forecast prepared by the Demand Work Group includes some consideration of "business as usual" energy efficiency. For example, appliance efficiencies mandated by the federal government are considered. Other states have demonstrated that energy efficiency programs and more aggressive energy policies can achieve energy savings that go beyond current federal standards and the "business as usual" policy. These programs include utility sponsored energy efficiency investments and regulatory standards adopted by the states, such as new building standards. Michigan has had experience with utility programming during the first half of the 1990s. During that period, both Consumers Energy and Detroit Edison undertook sizable energy efficiency and load management programs that produced energy and demand savings in Michigan. Although Detroit Edison retains two load management programs, no new energy efficiency programming has been undertaken by the utilities since the mid 1990s.

There are two methods to estimate the energy efficiency potential in Michigan. The first represents a bottom-up approach. This approach involves identifying specific programs,

for example accelerating the retirement of old, inefficient refrigerators through financial incentives. The method would involve arriving at an estimate of the number of such refrigerators and the likely number of owners who would retire their old refrigerator for the incentive payment. It would also involve estimating the savings that each retirement might provide and summing these savings over all the participants. Through this method, one could estimate the potential energy savings of the program. There are numerous other types of programs for residential, commercial and industrial customers. By summing up the impact of all such programs, it is possible to estimate the potential savings through energy efficiency programming. It is also possible to estimate the cost of these savings by summing the incentive payments, administrative costs and any indirect or participant costs that might be included in an economic assessment of the programs.

This bottom-up approach was the method relied upon in the Michigan Electric Options Study (MEOS) undertaken over the period of 1985-1987. The study estimated potential energy and demand savings for Michigan through 2005, over a 20-year period. Based upon this approach, the MEOS report estimated the following savings – along with estimated cost to achieve (or cost of conserved energy) – for Michigan's customer classes as a percent of total estimated class sales:

Table 1: Total Estimated Percent of Sales by Michigan Customer Class

Description	Residential	Commercial	Industrial	Total
Percent of Sales	17.2%	7.2%	1.6%	7.9%
Cost of Conserved Energy: *cents/kWh*	1.0-2.0	1.0-2.5	0.5-1.0	

This bottom-up approach to estimating both demand and energy programming has been used in a number of jurisdictions throughout the United States.

Although discontinued by Michigan's major electric utilities, traditional utility energy efficiency and load management programming has continued in a number of other states. Based upon program evaluation results being reported for those states and based upon estimated impacts from regulatory changes like building standards, information is available to estimate the energy savings potential in Michigan. Recently, the American Council for an Energy-Efficient Economy (ACEEE) prepared and issued a report entitled "Examining the Potential for Energy Efficiency to Help Address the Natural Gas Crisis in the Midwest" in January 2005. Although the report was primarily aimed at natural gas, substantial space was devoted to electric energy savings as well. The report included estimated electric savings for Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio and Wisconsin. The report estimated electric savings for each state in the region from both traditional utility programs and regulatory changes. The state data, including Michigan-specific electric saving estimates, covered the time frame being addressed by the Capacity Need Forum. We believe that this report provides useful information for developing an energy efficiency, or conservation, scenario for use by the Integration Work Group of the Capacity Need Forum.

ACEEE's overall estimated of achievable energy savings for Michigan are based upon a concerted, statewide program to implement energy efficiency through multiple venues as a mater of public policy. For example, it would include legislation to tighten Michigan's building code to promote energy efficiency as well as requiring extensive replacement of inefficient lighting or appliances through traditional utility or non-utility programming. In total, ACEEE estimated the following savings (as a percentage of statewide sales) available to Michigan:

Table 2: ACEEE Estimated Saving Available to Michigan:

Year	Percentage of Total Sales
2006	1.90
2007	2.55
2008	3.20
2009	3.85
2010	4.50
2011	5.05
2012	5.60
2013	6.15
2014	6.70
2015	7.25
2016	7.80
2017	8.60
2018	9.40
2019	10.20
2020	11.00

The ACEEE report is based upon a review of both utility and non-utility programs from other states. Among the important assumptions made in the report are that 50 percent of the savings would come from utility programs and 50 percent from non-utility programs and that the overall cost of conserved energy upon which an investment cost should be based is three cents per kWh. The cost to achieve the savings that ACEEE estimated are available in Michigan through utility programming is heavily dependent upon a cost of conserved energy number of three cents per kWh. The ACEEE authors state that this figure represents a typical number that one would expect from a well-run program. This three-cent figure is very similar to the experience here in Michigan with utility sponsored programs. The largest energy efficiency program undertaken in the 1990s was Consumers Energy's reduce the use program. Results from the program are shown below:

Table 3: Results from Consumers Energy's Energy Efficiency Program (1990's)

Residential Programs	Energy Savings (GWh)	Demand Savings (MW)	CCE (¢/kWh)
Appliance Recycling	15.33	1.75	
Free Install	13.01	1.97	
Rebate Coupon/Catalog	8.24	0.74	
Water Heater Conversion	3.74	0.52	
Total Residential	**27.32**	**3.02**	**5.75**
Non-Residential Programs	**Energy Savings (GWh)**	**Demand Savings (MW)**	**CCE (¢/kWh)**
Free Install	9.61	3.03	
Direct Rebate	128.29	27.42	
Custom Rebate	90.95	15.71	
Total Nom-Residential	**228.85**	**46.16**	**2.33**
Total Program Savings	**269.17**	**51.15**	**2.82**

This would seem to indicate that the three cents per kWh for conserved energy would serve as a reasonable estimate of the cost of achieving similar savings today. It should be noted that these figures do not include transmission and distribution losses, which would lower the net cost of conserved energy. Further, evaluation of data from Detroit Edison's contemporaneous programs produced a cost of conserved energy figure of 1.5 cents per kWh.

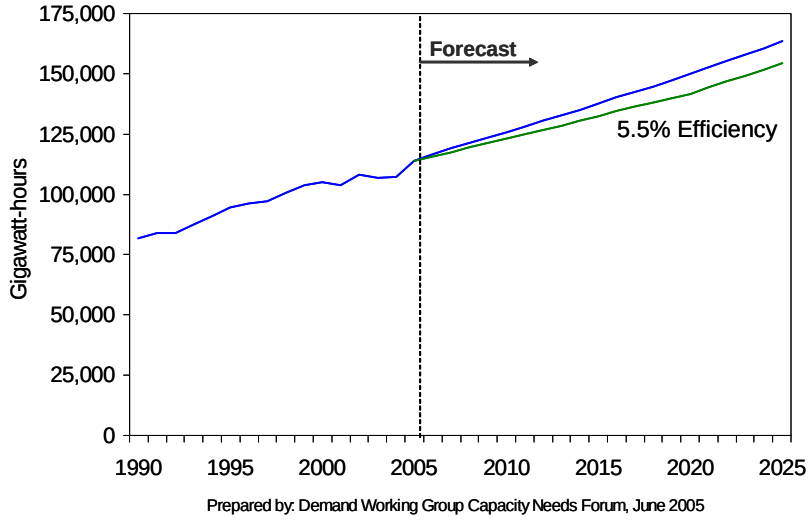
Both Michigan historical data and data from other states indicate that use of three cents per kWh for conserved energy would be reasonable. However, it should be noted that not everyone reporting the cost of conserved energy from their programs uses the same discount rate or measure lifetime in their calculations. This data is not calculated and reported uniformly. It should also be noted that many of the program results are based upon experience from the West Coast and East Coast. Although ongoing energy efficiency programming is taking place in Wisconsin and Minnesota, the bulk of traditional utility programming is taking place on the west Coast and east Coast. On the other hand, Michigan has not undertaken a large-scale energy efficiency program for a decade and this would seem to indicate that the potential for savings is relatively greater in Michigan than some other states. As a result, we recommend using 50 percent of the ACEEE savings as an estimate of energy efficiency savings available in Michigan through traditional utility programming.

The results are as follows:

Year	Percentage of Achievable Savings
2006	0.95
2007	1.28
2008	1.60
2009	1.93
2010	2.25
2011	2.53
2012	2.80
2013	3.08
2014	3.35
2015	3.63
2016	3.90
2017	4.30
2018	4.70
2019	5.10
2020	5.50

Based upon ACEEE's estimate of an achievable three cents per kWh cost and an average twelve-year measure life, the cost to achieve these savings would be approximately $110 million annually, in 2005 dollars. It is assumed that these policies and programs begin in the year prior to the first year of savings shown and continue over time.

Figure 5: Michigan Electricity Sales Forecast

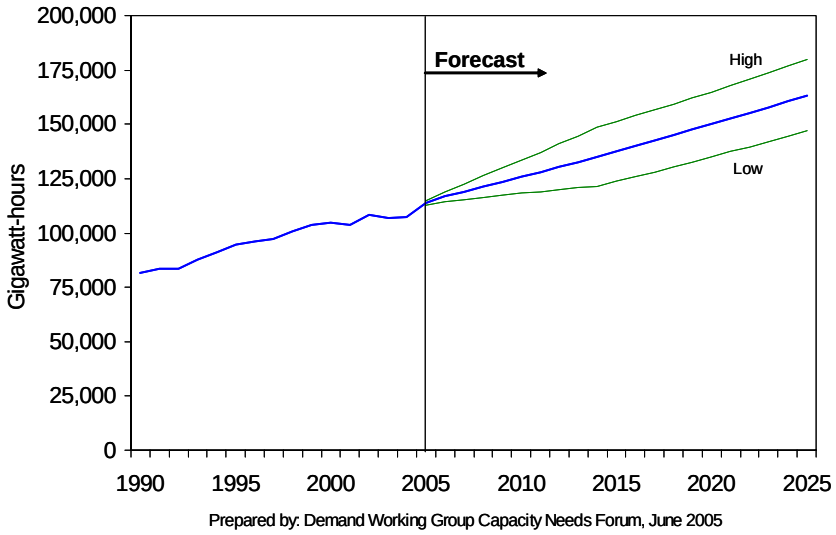


The ACEEE study estimates provide the basis for developing an "energy efficiency scenario." We also recommend that the estimates be used in an "environmental scenario," since the electric efficiency savings may be the least cost option available.

Risk and Uncertainties

In order to assess how robust the selected resource plan is to changes in the growth rate of electric demand, we have provided a base forecast along with a more rapid growth and a slower growth forecast. It is a common feature of energy plans to create scenarios and sensitivities to account for the uncertainty of electric demand forecasts, and therefore a high and low growth case have been developed to gauge the effects that these difference outcomes might have on future planning decisions.

Figure 6: Michigan Electricity Sales Forecast Range



The actual future electricity demand will be higher or lower than our base forecast. The actual course of future demand will be dependent upon numerous factors, like weather patterns, population growth and economic growth to mention a few important factors. If one anticipates normal weather, economic and customer growth will likely drive the eventual growth rate of electricity sales and resulting system requirements in Michigan. A number of participants have indicated that growth is likely to be affected by manufacturing output and employment in Michigan. The past several years have witnessed a steady erosion of manufacturing employment, and it is unclear what the future of employment in this traditionally important employment sector may be over the twenty-year timeframe included in the study. Manufacturing employment is heavily related to the auto and truck industry, which besides experiencing business cycles is facing stiff international competition. The drive to compete will have a continuing impact on Michigan manufacturing employment. This is offset to some degree by the continuing weakness in the U.S. dollar, which makes U.S. manufactured goods cheaper in international markets. Due to the complexity of the factors influencing manufacturing

output and employment, the Demand Work Group has not attempted to quantitatively measure forecast contingencies, but recognizes that there are significant uncertainties related to Michigan's manufacturing sector that may have a significant impact on future electricity demand.

The low-growth and high-growth forecasts include the following adjustments to the base forecast:

Table 4: Michigan Electricity High and Low Growth Forecasts

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Low-Growth	+1%	+2%	+3%	+4%	+5%	+6%	+7%	+8%	+9%	+10%
High-Growth	-1%	-2%	-3%	-4%	-5%	-6%	-7%	-8%	-9%	-10%

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Attachment I

Base Demand Forecast and Sensitivities

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I - 1: Annual Non-Coincident Peak in Megawatts - Base Case

Michigan Electric Peak Demand Forecast					
Annual Non-coincident Peak in Megawatts					
Base Case					
	Southeast Michigan	Balance of Lower Peninsula	Upper Peninsula	Total Demand	Percent Change
Year	Summer	Summer	Summer	Summer	Summer
1990	9,032	8,071	950	18,053	
1991	8,980	8,317	997	18,294	1.3%
1992	8,704	8,121	1,002	17,827	-2.6%
1993	9,362	8,512	950	18,824	5.6%
1994	9,684	8,723	1,040	19,447	3.3%
1995	10,049	9,553	1,098	20,700	6.4%
1996	10,377	9,593	1,118	21,088	1.9%
1997	10,305	9,875	1,055	21,235	0.7%
1998	10,704	9,920	1,115	21,739	2.4%
1999	11,018	10,144	1,152	22,314	2.6%
2000	10,958	9,946	1,169	22,073	-1.1%
2001	12,240	11,102	1,205	24,547	11.2%
2002	11,308	11,907	1,171	24,386	-0.7%
2003	10,470	12,115	1,220	23,805	-2.4%
2004	12,714	11,575	1,258	25,547	7.3%
---------- **Forecast** ----------					
2005	12,551	10,652	898	24,101	-5.7%
2006	12,896	10,965	903	24,765	2.8%
2007	13,174	11,285	910	25,368	2.4%
2008	13,415	11,626	918	25,959	2.3%
2009	13,648	11,970	926	26,544	2.2%
2010	13,888	12,313	938	27,138	2.2%
2011	14,125	12,663	946	27,734	2.2%
2012	14,377	13,014	953	28,344	2.2%
2013	14,650	13,367	962	28,979	2.2%
2014	14,939	13,724	971	29,634	2.3%
2015	15,218	14,101	979	30,299	2.2%
2016	15,505	14,484	988	30,977	2.2%
2017	15,697	14,871	997	31,565	1.9%
2018	15,898	15,265	1,008	32,171	1.9%
2019	16,108	15,671	1,016	32,794	1.9%
2020	16,318	16,071	1,025	33,414	1.9%
2021	16,532	16,472	1,036	34,040	1.9%
2022	16,748	16,877	1,044	34,668	1.9%
2023	16,967	17,283	1,054	35,303	1.8%
2024	17,189	17,692	1,063	35,943	1.8%
2025	17,413	18,103	1,073	36,589	1.8%

I - 2: Annual Non-Coincident Peak in Megawatts - Low Growth Case

Michigan Electric Peak Demand Forecast					
Annual Non-coincident Peak in Megawatts					
Low Growth Case					
	Southeast Michigan	Balance of Lower Peninsula	Upper Peninsula	Total Demand	Percent Change
Year	Summer	Summer	Summer	Summer	Summer
1990	9,032	8,071	950	18,053	
1991	8,980	8,317	997	18,294	1.3%
1992	8,704	8,121	1,002	17,827	-2.6%
1993	9,362	8,512	950	18,824	5.6%
1994	9,684	8,723	1,040	19,447	3.3%
1995	10,049	9,553	1,098	20,700	6.4%
1996	10,377	9,593	1,118	21,088	1.9%
1997	10,305	9,875	1,055	21,235	0.7%
1998	10,704	9,920	1,115	21,739	2.4%
1999	11,018	10,144	1,152	22,314	2.6%
2000	10,958	9,946	1,169	22,073	-1.1%
2001	12,240	11,102	1,205	24,547	11.2%
2002	11,308	11,907	1,171	24,386	-0.7%
2003	10,470	12,115	1,220	23,805	-2.4%
2004	12,714	11,575	1,258	25,547	7.3%
---------- **Forecast** ----------					
2005	12,426	10,545	889	23,860	-6.6%
2006	12,638	10,746	885	24,269	1.7%
2007	12,779	10,946	882	24,607	1.4%
2008	12,878	11,161	881	24,920	1.3%
2009	12,966	11,371	879	25,217	1.2%
2010	13,055	11,574	881	25,510	1.2%
2011	13,136	11,777	880	25,793	1.1%
2012	13,227	11,973	877	26,076	1.1%
2013	13,332	12,164	875	26.371	1.1%
2014	13,445	12,352	874	26.671	1.1%
2015	13,696	12,691	881	27,269	2.2%
2016	13,955	13,035	889	27,879	2.2%
2017	14,128	13,384	897	28,409	1.9%
2018	14,308	13,738	907	28,953	1.9%
2019	14,497	14,104	914	29,515	1.9%
2020	14,687	14,463	923	30,073	1.9%
2021	14,878	14,825	932	30,636	1.9%
2022	15,073	15,189	939	31,201	1.8%
2023	15,270	15,555	948	31,773	1.8%
2024	15,470	15,922	957	32,349	1.8%
2025	15,672	16,292	965	32,930	1.8%

I - 3: Annual Non-Coincident Peak in Megawatts - High Growth Case

Michigan Electric Peak Demand Forecast					
Annual Non-coincident Peak in Megawatts					
High Growth Case					
	Southeast Michigan	Balance of Lower Peninsula	Upper Peninsula	Total Demand	Percent Change
Year	Summer	Summer	Summer	Summer	Summer
1990	9,032	8,071	950	18,053	
1991	8,980	8,317	997	18,294	1.3%
1992	8,704	8,121	1,002	17,827	-2.6%
1993	9,362	8,512	950	18,824	5.6%
1994	9,684	8,723	1,040	19,447	3.3%
1995	10,049	9,553	1,098	20,700	6.4%
1996	10,377	9,593	1,118	21,088	1.9%
1997	10,305	9,875	1,055	21,235	0.7%
1998	10,704	9,920	1,115	21,739	2.4%
1999	11,018	10,144	1,152	22,314	2.6%
2000	10,958	9,946	1,169	22,073	-1.1%
2001	12,240	11,102	1,205	24,547	11.2%
2002	11,308	11,907	1,171	24,386	-0.7%
2003	10,470	12,115	1,220	23,805	-2.4%
2004	12,714	11,575	1,258	25,547	7.3%
---------- **Forecast** ----------					
2005	12,677	10,759	907	24,342	-4.7%
2006	13,154	11,185	921	25,260	3.8%
2007	13,569	11,624	937	26,130	3.4%
2008	13,951	12,091	954	26,997	3.3%
2009	14,331	12,568	972	27,871	3.2%
2010	14,721	13,051	994	28,767	3.2%
2011	15,114	13,550	1,013	29,676	3.2%
2012	15,527	14,055	1,029	30,612	3.2%
2013	15,969	14,570	1,048	31,587	3.2%
2014	16,433	15,097	1,068	32,598	3.2%
2015	16,740	15,512	1,077	33,328	2.2%
2016	17,056	15,932	1,086	34,074	2.2%
2017	17,267	16.358	1,096	34,722	1.9%
2018	17,488	16,791	1,108	35,388	1.9%
2019	17,719	17,238	1,118	36,074	1.9%
2020	17,950	17,678	1,128	36,756	1.9%
2021	18,185	18,120	1,139	37,444	1.9%
2022	18,423	18,564	1,148	38,135	1.8%
2023	18,663	19,011	1,159	38,834	1.8%
2024	18,907	19,461	1,169	39,537	1.8%
2025	19,155	19,913	1,180	40,248	1.8%

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Attachment II

Base Sales Forecast and Sensitivities

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II - 1: Annual Sales (GWh) Base Case

Michigan Statewide Electric Sales Forecast					
Annual Sales (GWh) Base Case					
Year	Southeast Michigan	Balance of Lower Peninsula	Upper Peninsula	Total Sales	Percent Change
1990	39,674	37,716	4,183	81,573	
1991	40,135	38,851	4,838	83,824	2.8%
1992	39,377	39,411	5,052	83,840	0.0%
1993	41,716	40,992	4,880	87,588	4.5%
1994	43,211	42,667	5,281	91,159	4.1%
1995	44,926	44,385	5,390	94,701	3.9%
1996	45,328	45,407	5,567	96,302	1.7%
1997	45,822	45,990	5,578	97,390	1.1%
1998	47,905	46,899	5,702	100,506	3.2%
1999	49,822	48,582	5,577	103,981	3.5%
2000	50,211	48,836	5,839	104,886	0.9%
2001	49,370	49,033	5,415	103,818	-1.0%
2002	51,650	50,695	5,873	108,218	4.2%
2003	50,953	49,898	5,940	106,791	-1.3%
2004	50,268	51,113	6,040	107,421	0.6%
----------Forecast ----------					
2005	56,758	50,576	6,448	113,782	5.9%
2006	58,552	51,570	6,526	116,648	2.5%
2007	59,857	52,621	6,565	119,043	2.1%
2008	60,982	53,877	6,624	121,483	2.0%
2009	61,979	54,977	6,684	123,640	1.8%
2010	63,037	56,058	6,754	125,850	1.8%
2011	64,098	57,180	6,821	128,099	1.8%
2012	65,186	58,424	6,875	130,486	1.9%
2013	66,315	59,444	6,929	132,688	1.7%
2014	67,509	60,598	6,991	135,097	1.8%
2015	68,729	61,747	7,053	137,529	1.8%
2016	69,996	63,029	7,116	140,141	1.9%
2017	71,138	64,077	7,180	142,394	1.6%
2018	72,341	65,259	7,243	144,843	1.7%
2019	73,612	66,474	7,306	147,392	1.8%
2020	74,910	67,693	7,370	149,973	1.8%
2021	76,231	68,923	7,434	152,588	1.8%
2022	77,575	70,164	7,499	155,238	1.8%
2023	78,942	71,417	7,564	157,924	1.7%
2024	80,334	72,682	7,632	160,649	1.7%
2025	81,751	73,959	7,701	163,411	1.7%

II - 2: Annual Sales (GWh) - Low Growth Case

Michigan Statewide Electric Sales Forecast					
Annual Sales (GWh) Low Growth Case					
Year	Southeast Michigan	Balance of Lower Peninsula	Upper Peninsula	Total Sales	Percent Change
1990	39,674	37,716	4,183	81,573	
1991	40,135	38,851	4,838	83,824	2.8%
1992	39,377	39,411	5,052	83,840	0.0%
1993	41,716	40,992	4,880	87,588	4.5%
1994	43,211	42,667	5,281	91,159	4.1%
1995	44,926	44,385	5,390	94,701	3.9%
1996	45,328	45,407	5,567	96,302	1.7%
1997	45,822	45,990	5,578	97,390	1.1%
1998	47,905	46,899	5,702	100,506	3.2%
1999	49,822	48,582	5,577	103,981	3.5%
2000	50,211	48,836	5,839	104,886	0.9%
2001	49,370	49,033	5,415	103,818	-1.0%
2002	51,650	50,695	5,873	108,218	4.2%
2003	50,953	49,898	5,940	106,791	-1.3%
2004	50,268	51,113	6,040	107,421	0.6%
---------- **Forecast** ----------					
2005	56,190	50,071	6,384	112,645	4.9%
2006	57,381	50,538	6,396	114,315	1.5%
2007	58,061	51,043	6,368	115,472	1.0%
2008	58,543	51,722	6,359	116,624	1.0%
2009	58,880	52,228	6,350	117,458	0.7%
2010	59,255	52,694	6,349	118,299	0.7%
2011	59,611	53,178	6,344	119,132	0.7%
2012	59,971	53,750	6,325	120,047	0.8%
2013	60,346	54,094	6,305	120,746	0.6%
2014	60,758	54,538	6,292	121,587	0.7%
2015	61,856	55,572	6,348	123,776	1.8%
2016	62,996	56,726	6,405	126,127	1.9%
2017	64,024	57,669	6,462	128,155	1.6%
2018	65,107	58,733	6,519	130,358	1.7%
2019	66,251	59,826	6,575	132,653	1.8%
2020	67,419	60,923	6,633	134,975	1.8%
2021	68,608	62,031	6,691	137,329	1.7%
2022	69,817	63,148	6,749	139,714	1.7%
2023	71,048	64,275	6,808	142,132	1.7%
2024	72,301	65,414	6,869	144,584	1.7%
2025	73,576	66,563	6,931	147,070	1.7%

II - 3: Annual Sales (GWh) - High Growth Case

Michigan Statewide Electric Sales Forecast					
Annual Sales (GWh) High Growth Case					
Year	Southeast Michigan	Balance of Lower Peninsula	Upper Peninsula	Total Sales	Percent Change
1990	39,674	37,716	4,183	81,573	
1991	40,135	38,851	4,838	83,824	2.8%
1992	39,377	39,411	5,052	83,840	0.0%
1993	41,716	40,992	4,880	87,588	4.5%
1994	43,211	42,667	5,281	91,159	4.1%
1995	44,926	44,385	5,390	94,701	3.9%
1996	45,328	45,407	5,567	96,302	1.7%
1997	45,822	45,990	5,578	97,390	1.1%
1998	47,905	46,899	5,702	100,506	3.2%
1999	49,822	48,582	5,577	103,981	3.5%
2000	50,211	48,836	5,839	104,886	0.9%
2001	49,370	49,033	5,415	103,818	-1.0%
2002	51,650	50,695	5,873	108,218	4.2%
2003	50,953	49,898	5,940	106,791	-1.3%
2004	50,268	51,113	6,040	107,421	0.6%
---------- **Forecast** ----------					
2005	57,325	51,082	6,513	114,920	7.0%
2006	59,723	52,601	6,657	118,981	3.5%
2007	61,652	54,200	6,762	122,614	3.1%
2008	63,421	56,032	6,889	126,343	3.0%
2009	65,078	57,726	7,018	129,822	2.8%
2010	66,820	59,421	7,160	133,401	2.8%
2011	68,584	61,183	7,299	137,066	2.7%
2012	70,401	63,098	7,425	140,924	2.8%
2013	72,283	64,794	7,552	144,629	2.6%
2014	74,260	66,657	7,690	148,607	2.7%
2015	75,601	67,922	7,759	151,282	1.8%
2016	76,995	69,332	7,828	154,155	1.9%
2017	78,251	70,485	7,897	156,634	1.6%
2018	79,575	71,785	7,967	159,327	1.7%
2019	80,973	73,121	8,037	162,131	1.8%
2020	82,401	74,462	8,107	164,970	1.8%
2021	83,854	75,815	8,178	167,846	1.7%
2022	85,332	77,181	8,249	170,761	1.7%
2023	86,837	78,559	8,321	173,716	1.7%
2024	88,368	79,950	8,395	176,714	1.7%
2025	89,926	81,355	8,471	179,752	1.7%

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Attachment III

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Loss Factor Table
(Applied to Base Forecast 2005 – 2025 to Obtain Net Sales/Demand)

Detroit Edison	6.5%
Southeast Michigan	6.5%
Consumers Energy	7.0%
Balance of Lower Peninsula	7.0%
Upper Peninsula	9.2%

The summer peak demands of Northern States Power, Wisconsin Electric and Wisconsin Public Power Total Company have been prorated based upon Michigan sales.

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