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**APPLICATION FOR INTEGRATED
RESOURCE PLAN APPROVAL
2012 - 2026**

**SUBMITTED TO THE MINNESOTA
PUBLIC UTILITIES COMMISSION**

July 29, 2011



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July 29, 2011

VIA E-FILING

Burl W. Haar
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101-2147

RE: 2011 Resource Plan
DOCKET NO: E____/RP-11-____

Dear Dr. Haar,

Minnesota Municipal Power Agency is pleased to submit its 2011 Integrated Resource Plan (IRP or “the Plan”) to the Minnesota Public Utilities Commission (PUC) for consideration and approval. The planning period covered in MMPA’s 2011 IRP is 2012-2026.

This is MMPA’s second IRP. The Commission accepted MMPA’s first Integrated Resource Plan (IRP) and found MMPA to be in compliance with its 2008 Renewable Energy Standards obligations. MMPA has incorporated the recommendations of the PUC order from its 2008 IRP. The Commission ordered that:

- 1) MMPA study the relationship with its members’ energy consumption and peak demand to determine if the use of a historical load factor to determine peak demand is a reasonable approach.

MMPA studied this relationship and used weather normalized load factors to determine its peak demand. MMPA shared and discussed the results of this study with Division of Energy Resources (DOER) staff. DOER staff agreed that MMPA’s new approach is reasonable. Appendix A of the IRP discusses the Load Projection Methodology.

- 2) Before filing its next IRP, MMPA should discuss potential refinements in its DSM modeling with the Division of Energy Resources.

MMPA is and has been in regular and frequent contact with Department of Commerce with respect to its Demand Side Management, specifically its Conservation Improvement Program (CIP). Since its last IRP, MMPA enhanced



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its CIP offerings and their effectiveness. Section 6 of the IRP addresses Energy Conservation and Demand Side Management.

- 3) In its next resource filing, MMPA should analyze a range of possible fuel and capital costs, along with a range of environmental costs, and analyze what capacity additions best meet its needs considering the resources currently in its portfolio.

In its 2011 IRP, MMPA used four possible fuel scenarios, three possible capital scenarios and three possible environmental cost scenarios to analyze the capacity additions that best meet its needs.

MMPA's Plan contains a discussion of a wide variety of analytical, market and policy issues and presents a five-year action plan and a long range plan that MMPA believes is needed to continue to meet member needs for a low-cost, reliable and environmentally sound energy supply. Given the volatility in commodity markets, and especially in energy commodities, the Plan was designed to provide a high level of flexibility. Overall, MMPA believes the Plan reflects the key issues facing the Agency and its members and provides members with a clear understanding of the Agency's proposed path.

Pursuant to Commission Rule 7829.3200, MMPA respectfully requests a variance from the portions of Rule 7610.0310 that require a utility to provide customer count data by class. Compliance with this rule would impose an excessive burden upon MMPA because, as a wholesale supplier to its members, the Agency has no retail customers. Therefore, it does not keep this data. Moreover, granting the variance would neither adversely affect the public interest nor conflict with standards imposed by law.

Enclosed is MMPA's 2011 Integrated Resource Plan, both the Public and Non-public version. Please contact me at (612) 252-6524 or Oncu Er at (612) 252-6528 if you have any questions.

Very truly yours,

Avant Energy Services
Agent for MMPA

A handwritten signature in blue ink, appearing to read 'James D. Larson', written over a blue circular scribble.

James D. Larson

Enc.
Cc: Service list

**In the Matter of
Minnesota Municipal Power Agency's
2011 Integrated Resource Plan**

Docket No. E____/RP-11-____
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Section 1. Executive Summary

This section is intended to provide a brief overview of the Minnesota Municipal Power Agency's (MMPA) second Integrated Resource Plan (IRP).

Electric Utility Industry Facing Unprecedented Uncertainty

The electric utility industry currently faces unprecedented levels of uncertainty.

Most energy-related commodity prices are high and volatile.

The transmission interconnection process adds significant planning uncertainty regarding both the schedule and cost of new generation projects.

Even though the carbon cap and trade proposals have not been passed by the Congress, the EPA still has the authority and willingness to regulate carbon emissions. These potential carbon regulations further increase uncertainty regarding future technology selection.

MMPA Energy And Demand Growth Projected To Be Lower Than Historical Levels

MMPA's energy and demand growth are projected to be significantly lower than historical levels. Although the twenty-year historical growth rates are approximately three percent, the projected growth rates for the period 2012 to 2026 are less than one percent. These slower growth rates are attributed to projected economic and population slowdowns and improved conservation efforts, among other factors. MMPA's Projected Energy and Demand Requirements are discussed in sections 4 and 5.

MMPA Is Striving To Meet Its 2011 Conservation Goal

The Agency is striving to meet Minnesota's 2011 conservation goal. MMPA is refining its energy conservation portfolio to incorporate the most relevant and cost effective strategies for reducing electricity use of its customers. MMPA's conservation programs are discussed in Section 6 under Energy Conservation/Demand Side Management.

MMPA Needs More Capacity In The Future

MMPA needs more capacity in the future. However, MMPA's projected capacity needs in this IRP are less than MMPA's projected needs from in its 2008 IRP. Lower load growth and lower reserve requirements are the main reasons for the lower capacity needs in this IRP.

The Agency's need for additional capacity grows from 12 MW in 2015 to 74 MW in 2026. This need arises from the expiration of existing capacity contracts and member demand growth.

MMPA Has Many Projects At Various Development Stages To Meet Its Electric Supply Needs

MMPA has many projects at various stages of development to meet its future electric supply needs. Planning flexibility is vital to success given the high level of uncertainty in the electric utility industry. A utility cannot be certain that any one project can be implemented. Therefore, the Agency is developing a large number of resource prospects to meet its future needs. Our Planning Approach and Resource Prospects are discussed in Section 9.

Preferred Plan Includes Distributed Generation And Simple Cycle Gas Generation

The Agency's preferred plan includes a mix of distributed generation and simple cycle gas generation. MMPA will continue its renewable generation efforts as needed. The Short-Term Action Plan is discussed in Section 11 and the Long Range Plan is presented in Section 12.

MMPA Has Made A Good Faith Effort To Meet The REO And Is Positioned To Meet The RES

MMPA has made a good faith effort to meet Minnesota's Renewable Energy Objective and is positioned to meet the Renewable Energy Standard. The Agency constructed Hometown WindPower, a project that put a wind turbine in each member community and at the Faribault Energy Park site. The Agency is currently constructing the 44 MW Oak Glen Wind Farm (OGWF) and developing Shell Rock Wind Farm (SRWF) which is also expected to have a generating capability of 44 MW. MMPA is also developing the Le Sueur Bio Power project. Section 14 will address meeting the REO and the RES.

MMPA's Plan Is In The Public Interest

MMPA's IRP is in the public interest. The Agency's plan allows MMPA to maintain flexibility during this period of unprecedented uncertainty, reducing risks to its customers while keeping rates as low as practical. MMPA's plan also minimizes negative environmental impacts through its emphasis on conservation and renewable energy. Section 15 further describes how MMPA's plan is in the public interest.

Section 2. About MMPA

This section provides overview information about the Minnesota Municipal Power Agency.

MMPA Is A Municipal Power Agency

MMPA is a municipal power agency formed in 1992 under Chapter 453 of Minnesota Statutes. The Agency is a political subdivision of the state of Minnesota. MMPA began supplying power to its members in 1995.

MMPA Has 11 Members

The eleven members of MMPA are the following Minnesota cities:

- Anoka
- Arlington
- Brownton
- Buffalo
- Chaska
- East Grand Forks
- Le Sueur
- North St. Paul
- Olivia
- Shakopee
- Winthrop

MMPA's member municipal utilities serve 59,000 retail customers in Minnesota with a combined population of approximately 122,000.

MMPA Sold 1,420,553 MWh In 2010

MMPA sold 1,420,553 MWh of energy to its eleven member municipal utilities in 2010.

The Agency's 2010 Peak Load Was 307 MW

MMPA's peak load (including 2.4% transmission system losses) during the summer of 2010 was 307 MW on August 9, 2010. This was also the Agency's record peak load.

Avant Energy Manages MMPA

Avant Energy manages the Minnesota Municipal Power Agency. Avant is an innovator, bringing new technologies and new ways of doing business to the energy industry.

Avant's services to MMPA include:

- Day-to-day management of the Agency's operations
 - Electricity purchasing and selling and relationship management with the Midwest Independent Transmission System Operator (MISO)
 - Overall long-term strategic management of the Agency
 - Project development for power generation, from planning through operations
-

**MMPA's First
Owned Plant Was
Completed In 2007**

Faribault Energy Park (FEP), the first power plant to be owned by the Agency, was completed in 2007. The plant was built in two phases. The 159 MW simple cycle phase became operational in April 2005. The combined cycle phase, which increased both the capacity and fuel efficiency of the plant, became operational in the summer of 2007. MMPA's ownership of FEP marks a transition from a resource portfolio based solely on contracts to one that also includes Agency-owned assets. FEP is described in more detail in Section 7.

Section 3. Business Environment

This section discusses the business environment in which MMPA operates. MMPA’s IRP must recognize the uncertainty in electricity markets when making planning decisions for the future.

Electric Industry Faces Unprecedented Levels Of Uncertainty

The electric utility industry currently faces unprecedented levels of uncertainty. These uncertainties include commodity prices, transmission availability, carbon legislation, MISO market changes and the global economy.

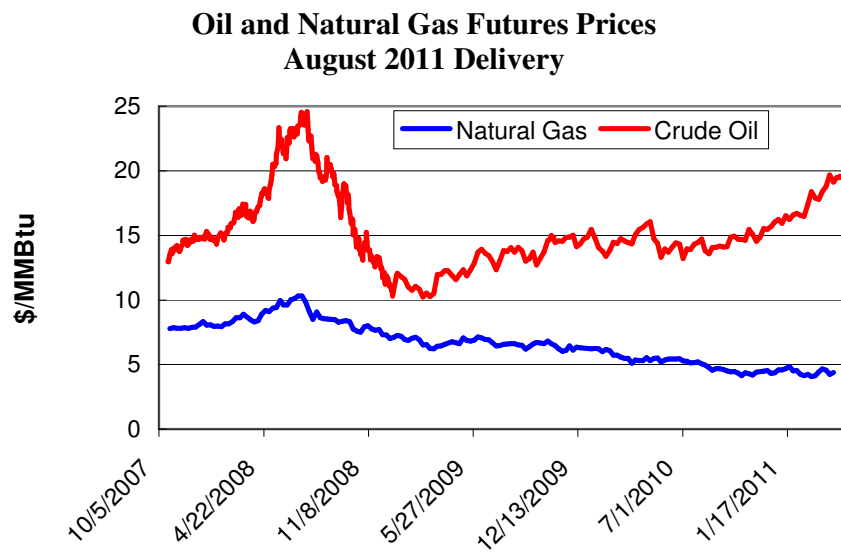
Commodity Prices Are High And Volatile

Prices for a large number of commodities, including grains, metals, and energy, are currently very high and volatile.

The price of natural gas futures for summer 2011 delivery increased more than 30% from the end of 2007 to the summer of 2008 before dropping 40% by March 2009 and then dropping by another 30% by April 2011.

The price of crude oil futures for summer 2011 delivery increased more than 78% from the end of 2007 to the summer of 2008 before dropping 55% by March 2009. Unlike natural gas futures, oil futures increased another 86% by April 2011.

The following chart shows the history of weekly close of oil and gas futures for August 2011 delivery as expressed in \$ per MMBtu.



The graph illustrates the significant increase in volatility of

commodities. High and volatile prices increase uncertainty in the electric utility industry.

**Changes In
Transmission
Interconnection
Process Make
Planning Difficult**

FERC approved a MISO interconnection queue process reform in August 2008. MISO was implementing the new process when FERC required a large number of projects to go through a restudy in 2010. MISO plans to file a new interconnection process yet again in 2011. These process changes continue to delay interconnection schedules and make planning difficult.

**Overcrowded
Interconnection
Queue Causes
Transmission
Uncertainty For
Planned Generation**

MISO has attempted to improve the generator interconnection process; however, there is a backlog of projects lined up in the interconnection queue that have been in the queue for five years or longer. There are over 350 projects with over 65,000 MW of capacity waiting to interconnect to MISO, and only a fraction of the projects will actually get built. Project withdrawals continue to change the studies and upgrades for the remaining projects in the queue. This introduces significant uncertainty in transmission costs for planned generation.

**Transmission Cost
Allocation Changes
May Improve The
Interconnection
Process At The
Expense Of Shifting
The Cost To Load**

FERC conditionally approved a revised MISO tariff in December 2010 that outlined a new transmission cost allocation methodology. MISO has identified certain transmission upgrades as Multi Value Projects (MVPs). MISO will transfer the financial burden of MVP transmission upgrades from generation to load; and therefore, make it easier for new generation projects to interconnect to the system.

**Carbon Legislation
Could Increase Cost
Of Fossil Fuel Based
Generation**

Any future carbon legislation could increase the cost of fossil fuel based generation.

In the absence of national carbon legislation, individual states are taking initiative and setting rules and regulations to first control and then decrease carbon emissions from certain sectors of their economies.

Uncertainty regarding the amount of a tax or the price of an allowance under a national cap and trade system complicates power supply planning. This IRP uses the low and high costs of \$4 and \$34 per ton of carbon dioxide as established by the Public Utilities Commission order issued on June 3, 2011 on Docket No. E-999/CI-07-1199.

**MISO Introduces
Uncertainties**

MISO is continually changing and updating the market rules. For instance, MISO energy markets now include Dispatchable Intermittent Resources (DIRs) and Load Modifying Resources (LMRs). MISO transmission markets are assessing the changes introduced by multi-value projects (MVPs) and cost allocations of MVPs. MISO is planning the implementation of multi-year mandatory capacity auctions. The impacts of these changes are yet to be determined and are a source of uncertainty.

**Weak Dollar
Creates Higher
Domestic Fuel
Prices**

Weakness of the US dollar has driven the price of oil higher. As the global oil market is denominated in dollars, a decline in the value of the dollar gives foreign buyers more purchasing power, increasing the global demand for oil. The prices of other fuels, such as fuel oil, have also increased. These higher and more volatile fuel prices increase power supply planning uncertainty.

**Weak Dollar
Creates Higher
Capital Costs**

A weak dollar also increases capital costs for power generation equipment. The weaker dollar makes US-produced power generation equipment more affordable to foreign buyers, increasing demand and cost. At the same time, foreign-made power generation equipment is more costly because of the low value of the dollar relative to the foreign currency.

**World And US
Economies Are
Going Through
Challenging Times**

The past 3 years have been some of the most challenging economic times in the modern world's history.

The world and the U.S economies are struggling with high unemployment, increasing cost of living, debate over entitlement programs, high budget deficits, issues with regulation and increased challenges with climate changes. This IRP does not quantify the energy market effects of these economic challenges, but planning decisions must recognize this increased level of uncertainty.

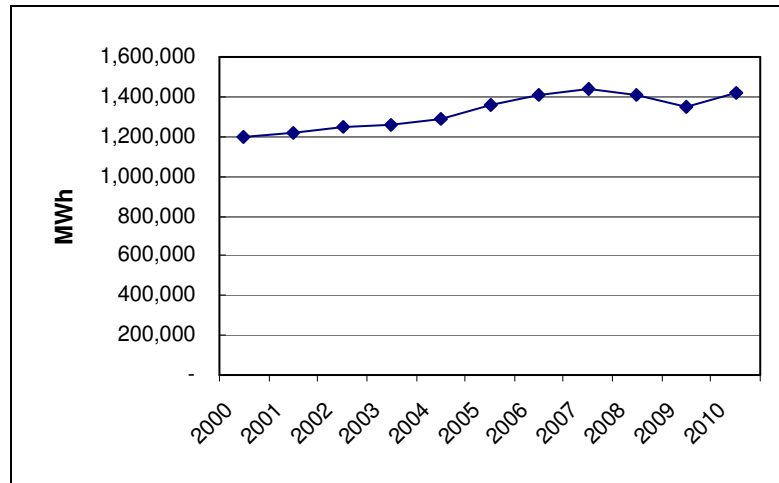
Section 4. Projected Energy Requirements – 2012 to 2026

This section discusses the projected slowdown between MMPA’s historical and future energy requirements.

MMPA’s Historical Energy Growth Rate Is 3.5%

Over the period 1988 to 2010, MMPA’s energy usage grew at a compound annual growth rate of roughly 3.5% for the 9 members for which data is available. The following graph shows historical MMPA energy requirements for the years 2000 to 2010, the time period for which data is available for all eleven MMPA member cities, and data has been adjusted to include all of Shakopee’s load.

**Minnesota Municipal Power Agency
Historical Member Energy Requirements (MWh)
2000-2010**



MMPA Began Serving Additional Shakopee Load In 2009

As discussed in MMPA’s previous IRP, historically the Agency has only supplied approximately 85% of the City of Shakopee’s energy requirements, with the remainder being served under a contract with Xcel Energy. That contract expired at the end of 2008, and starting in 2009 MMPA began serving 100% of Shakopee’s energy requirements.

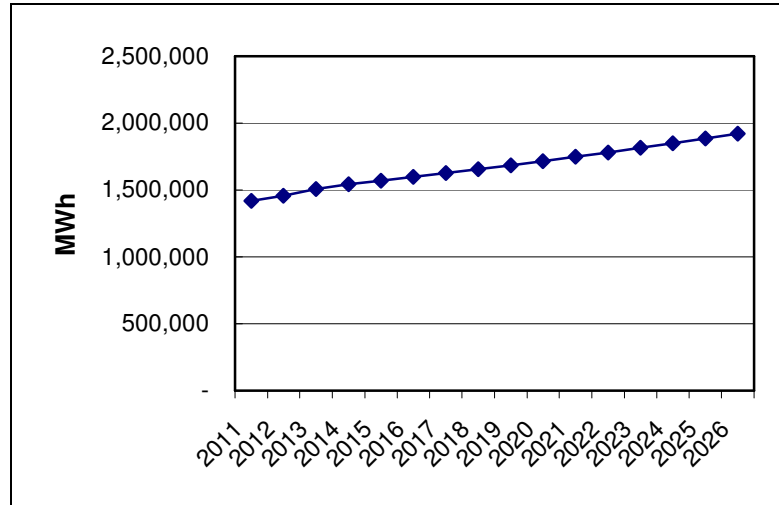
MMPA’s Projected Energy Growth Rate Net Of Conservation Is 0.7%

In the 2012-2026 projection period, MMPA’s projected energy growth rate net of conservation is 0.7%.

MMPA’s Projected Energy Growth Rate Is 2.0% Absent Conservation

Over the projection period for this IRP (2012 to 2026), the base compound annual growth rate of member energy requirements (before conservation) is projected to be 2.0%. The following graph shows projected MMPA base energy requirements for the period 2011 to 2026.

**Minnesota Municipal Power Agency
Projected Base Member Energy Requirements (MWh)
2011-2026**



Growth Rate Projected To Decline Because Of Conservation And Slower Income And Population Growth

The slowdown in energy growth is attributed to MMPA’s energy conservation efforts as well as projected slower growth of both income and population in member cities over the projection period.

The population of MMPA’s member cities grew at a compound annual growth rate of 2.3% from 1988 to 2009. However, the Metropolitan Council and the Minnesota State Demographic Center project that population growth between 2010 and 2026 will occur at a 1.7 % compound annual growth rate. Several of MMPA’s member cities are now fully built out. As developable land in member cities declines, population growth is expected to slow.

The Woods and Poole State and County Projections, the source of MMPA’s income data, reports that income per capita grew at a compound annual growth rate of 1.6% from 1988 to 2009 for 9 MMPA cities that data is available. It projects that the compound annual growth rate for the period 2011 to 2026 will be 1.1% for all 11 cities, a significant slowdown.

Linear Regression Model Used To Project Growth

A linear regression model was used to project energy usage for this IRP. The variables in the model are:

- Weather (Heating degree days and cooling degree days)

- Population
- Income per capita

Details on the inputs and assumptions of this model can be found in Appendix A.

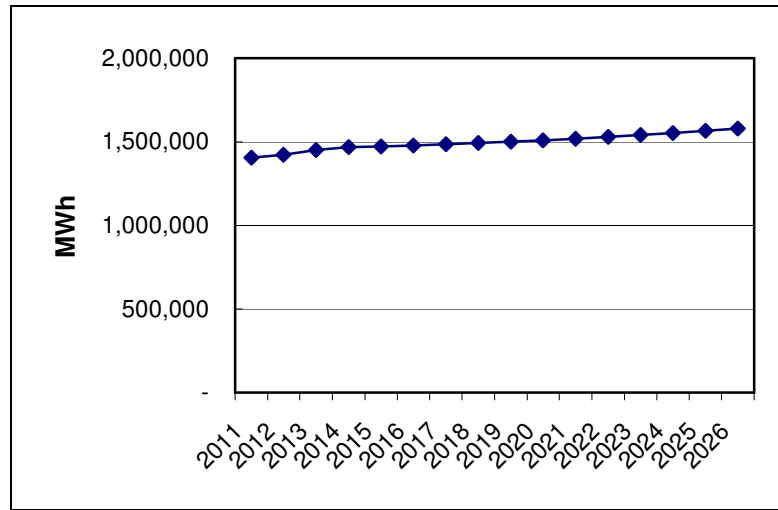
New Conservation Assumed To Reduce Annual Energy Growth Rate By 1.3%

New conservation measures are assumed to reduce the Agency’s annual energy growth rate from 2012 onwards by 1.3%. Since 2010, MMPA has spent significantly more money on energy conservation than on load curtailment expenditures. It is also assumed that MMPA’s current level of energy conservation is built into the historical energy usage data that is an input to the linear regression model.

The combined net effect of conservation on load growth would yield a net growth rate of 0.7%.

The following graph shows projected MMPA energy requirements during the years 2011 to 2026 with the assumed conservation reduction.

**Minnesota Municipal Power Agency
Projected Member Energy Requirements With
Conservation Adjustment (MWh)**



Effect Of New Electric Uses On Annual Energy Growth Is Unclear

MMPA received a U.S. Department of Energy EECBG Topic 2: Innovation Grant, which is being harnessed to pursue the Hometown GeoPower program. The goal of this program is to install geothermal heating and cooling systems in affordable housing properties, which will be powered by 100% renewable resources. The energy impact of this will be to reduce electricity use for cooling in summer, while shifting heating in winter from natural gas

to electricity and increasing electricity use for the winter. The net effect of this program on energy is unknown at this time.

Additional Customers Would Increase Energy Requirements

MMPA’s projected energy requirements would increase if the Agency were to take on additional customers or members. This IRP assumes that the Agency does not take on new customers or members during the projection period.

Decreased Supply From WAPA Would Increase Energy Requirements

Two of MMPA’s 11 members currently receive allocations of energy (approximately 95,000 MWh per year) from the Western Area Power Administration (WAPA). Both of these MMPA members have a contract with WAPA through 2020. WAPA could reduce the amount of energy and power available to its customers. This would represent a policy change from the past. If WAPA decreases the energy available to its customers, MMPA’s energy requirements would increase, as the Agency provides all of the energy to the two cities that is not supplied by WAPA. This IRP assumes that WAPA supplies remain at 2010 to 2015 contract amounts throughout the projection period.

Increased Electric Use For Transportation Would Increase Energy Requirements

Electricity is gaining greater traction as a fuel for transportation, as it holds the potential to reduce reliance on oil and reduce carbon emissions from transportation. With the development and commercialization of plug in electric and hybrid vehicles, MMPA anticipates an increase in energy requirements. However, the penetration of this technology and the extent of its effect are thus far unknown.

Section 5. Projected Demand Requirements – 2012 to 2026

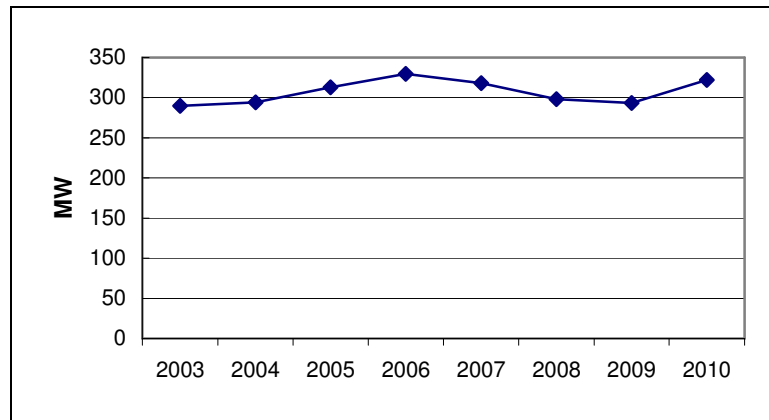
This section discusses the projected slowdown between MMPA’s historical and future demand requirements.

MMPA’s Historical Demand Growth Rate Is 3.0%

Over the period 1988 to 2010, the coincident peak demand for 9 MMPA cities grew at a compound annual growth rate of 3.0%. The following graph shows historical MMPA peak capacity requirements during this period (including 2.4% losses and 5% reserves) for the years 2003 to 2010, the time period for which data is available for all eleven MMPA member cities. Years 2003 – 2008 have been adjusted to include full Shakopee load.

Actual reserve requirements have varied from 2003-2010 but for comparability reasons, this IRP assumed 5% for its calculations.

**Minnesota Municipal Power Agency
Historical Coincident Peak Capacity Requirement (MW)
Includes 2.4% Losses and 5% Reserves**



MMPA Began Serving Additional Shakopee Load In 2009

Historically, the Agency has only supplied approximately 85% of the City of Shakopee’s power requirements, with the remainder being served under a contract with Xcel Energy. This contract expired at the end of 2008, and starting in 2009, MMPA began serving 100% of Shakopee’s power requirements.

Weather Normalized Load Factor Approach Used To Project Demand

Coincident demand for the Agency was projected using a weather normalized historical average load factor which was applied to MMPA’s projected base energy requirements net of conservation. Details of the methodology can be found in Appendix A.

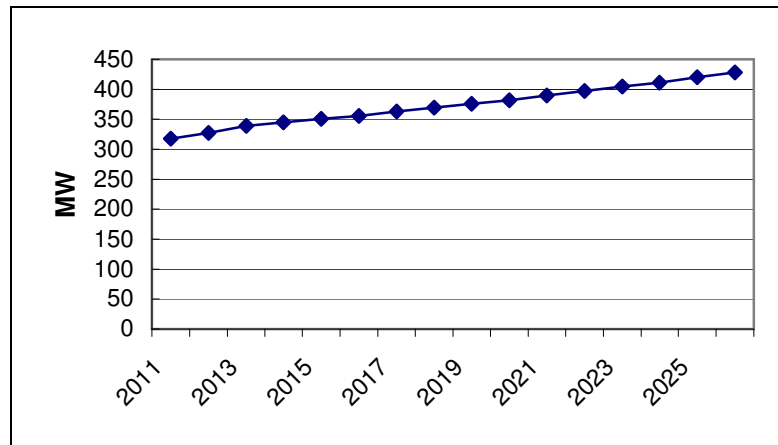
MMPA’s Projected Demand Growth Rate Net Of Conservation Is 0.7%

For the 2012-2026 projection period, MMPA’s demand growth net of conservation is 0.7%.

MMPA’s Projected Demand Growth Rate Is 1.9% Absent Conservation

Over the projection period (2012-2026) the base compound annual growth rate of member coincident peak demand (before conservation) is projected to be 1.9%. The following graph shows projected MMPA peak capacity requirements during the projection period, including 2.4% losses and 5% reserves.

**Minnesota Municipal Power Agency
Projected Base Coincident Peak Capacity Requirements (MW)
Includes 2.4% Losses and 5% Reserves**



Growth Rate Declining Because Of Conservation And Slower Income And Population Growth

The slowdown in demand growth is attributed to MMPA’s energy conservation efforts as well as projected slower growth of both income and population in member cities over the projection period.

The population of MMPA’s member cities grew at a compound annual growth rate of 2.3% from 1988 to 2009. However, the Metropolitan Council and the Minnesota State Demographic Center project that population growth between 2010 and 2026 will occur at a 1.7 % compound annual growth rate. Several of MMPA’s member cities are now fully built out. As developable land in member cities declines, population growth is expected to slow.

Woods and Poole, the source of MMPA’s income data, reports that income per capita grew at a compound annual growth rate of 1.6% from 1988 to 2009. It projects that the compound annual growth rate for the period 2011 to 2026 will be 1.1%, a significant

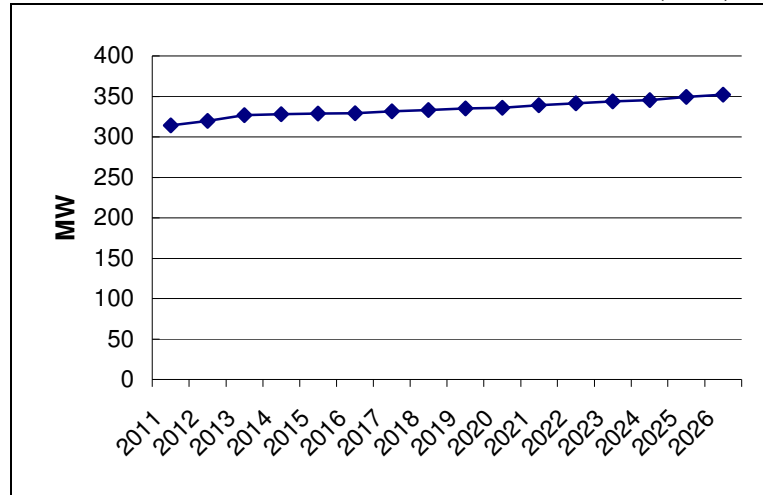
slowdown.

New Conservation Assumed To Reduce Net Annual Growth Rate Of Peak Demand Requirements By 1.2%

As discussed in Section 4, the effect of new conservation measures is assumed to reduce the annual growth rate of MMPA’s energy requirements by 1.3%. This in turn reduces the annual growth rate of the Agency’s peak demand requirements by 1.2 %, resulting in a compound annual growth rate of peak demand requirements of 0.7%.

The graph below shows projected MMPA peak capacity requirements during the projection period adjusted for new conservation.

**Minnesota Municipal Power Agency
Projected Member Peak Capacity Requirements With
New Conservation Adjustments
Includes 2.4% Losses and 5% Reserves (MW)**



Additional Customers Would Increase Demand Requirements

MMPA’s projected coincident peak demand would increase if the Agency were to take on additional customers or members. This IRP assumes that the Agency does not take on new customers or members during the projection period.

Decreased Supply From WAPA Would Increase Demand Requirements

Two of MMPA’s 11 members currently receive allocations of power (15.7 MW) from the Western Area Power Administration (WAPA). Both of these MMPA members have a contract with WAPA through 2020. WAPA could reduce the amount of energy and power available to its customers. This would represent a policy change from the past. If WAPA decreases the power available to its customers, MMPA’s demand requirements would increase, as the Agency provides all of the power to the two cities that is not supplied by WAPA. This IRP assumes that WAPA supplies remain

at 2010 to 2015 contract amounts throughout the projection period.

Effect Of Electric Use For Transportation On Demand Requirements Is Unclear Electricity is gaining greater traction as a fuel for transportation, as it holds the potential to reduce reliance on oil, reduce carbon emissions from transportation and provide consumers with a cheaper alternative. The effect of this transition on MMPA’s demand requirements is unclear. The charging of electric vehicles would primarily occur at night. It is possible that these vehicles could be connected to the grid in parking lots during the day and used as a power source during times of peak demand. However, a high level of penetration of electric vehicles would be necessary to affect MMPA’s level of demand.

Increased Electric Use For Ground Source Heat Pumps Would Decrease Summer Demand Requirements Through the U.S. Department of Energy EECBG Topic 2: Innovation Grant, MMPA is developing the Hometown GeoPower program, which will install geothermal heating and cooling systems in affordable housing properties. As geothermal cooling systems are more efficient than traditional air conditioning, peak demand would be reduced.

MISO Planning Resource Margin Increases Would Increase Capacity Requirements MISO’s Planning Reserve Margin (PRM) was reduced from 4.5% in 2010 to 3.81% in 2011. This study uses a PRM of 5% which is more conservative than the MISO 2010 or 2011 PRM.

MISO’s Loss of Load Expectation Working Group (LOLEWG) recently published an analysis that a 5 year out mandatory capacity auction could raise the PRM to 12.8%.

Increased Generation Forced Outage Rate Would Increase Capacity Requirements An increased generation forced outage rate, as measured by Equivalent Demand Forced Outage Rate (EFORD), would decrease the capacity market credits MMPA would receive. This would effectively increase MMPA’s capacity requirements. Faribault Energy Park (FEP) historically had EFORDs that are well under the MISO class average. Going forward, this IRP assumes that FEP EFORD will increase to match the current MISO class average by 2017.

Minnesota River Station (MRS) EFORDs have been improving and this IRP assumes that MRS EFORDs will decrease to match the MISO class average in 2012.

Section 6. Energy Conservation/Demand Side Management

This section discusses MMPA's energy conservation and demand side management efforts. The Agency's energy conservation programs delay the need for new generation.

State Legislature Established A CIP Energy Savings Target

In 2007, the State Legislature revised the Conservation Improvement Program (CIP) statute to set an annual energy savings goal for each electric and gas utility beginning in 2010.

Eight of MMPA's eleven members, representing approximately half of the Agency on a kWh basis, participate in a CIP managed by the Agency. The other three members manage their own energy efficiency programs at the municipal utility level. MMPA's participating members met their 2010 CIP spending requirements and 82% of their 2010 energy savings targets. The remainder of this section will focus on the eight members that participate in the MMPA managed program.

MMPA Is Striving To Meet Its 2011 CIP Spending Requirement And Energy Savings Target

MMPA is striving to meet its 2011 CIP spending requirement and energy savings target. In 2008, 2009 and 2010, MMPA met and, in some cases, surpassed its annual CIP spending requirement.

In 2010, MMPA's energy efficiency programs collectively saved almost 7.8 million kWh, which represents 82% of the savings target of 9.4 million kWh for these members.

In 2010, MMPA's participating members spent \$891,000, which represents the required 1.5% of the spending requirement basis.

MMPA has undertaken significant efforts to develop a CIP portfolio that will meet its CIP energy savings target in 2011 and beyond.

MMPA Focuses Its CIP Spending On End-User Conservation

Prior to 2010, MMPA had the ability to curtail up to 16,513 kW of demand through various load curtailment programs. In 2010, MMPA retired its load curtailment activities in favor of focusing its CIP spending on expanding and improving its end user conservation programs. However, MMPA will continue to explore how load curtailment might be done more cost-effectively in the future.

MMPA experienced a dramatic boost in the average efficiency of its CIP expenditures in saving one kWh of electricity, which went from \$0.33 in 2009 to \$0.11 in 2010. MMPA believes that it will have a continuing energy savings impact during the 2012-2026 projection period by focusing on developing CIP strategies with the lowest cost

per kWh of electricity saved.

Lighting And Custom Rebates Are High Performers

MMPA’s CIP portfolio includes lighting and custom projects. In 2010, 43% of MMPA’s Agency-managed CIP rebate spending went towards lighting projects. The table below highlights the return on investment in MMPA’s 2010 CIP cycle.

Project Type	kWh saved	2010 Cost/kWh saved
Lighting - New	1,099,462	\$0.01
Lighting - Retrofit	2,671,527	\$0.06
Residential CFL	55,025	\$0.03

Custom rebates are unique in that they give MMPA flexibility to support their customers on projects with high energy savings potential. These projects also tend to achieve a good return on investment, an average rebate cost of \$0.07 per kWh of electricity saved in 2010. Custom rebates made up 12% of MMPA’s Agency-managed CIP rebate spending in 2010.

Other high performing rebates include the refrigerator recycling bonus (\$0.06/kWh electricity saved), which creates customer incentives to de-commission and dispose of inefficient refrigerators, and variable frequency drives (\$0.02/kWh electricity saved), which improve the efficiency of existing ventilation systems of commercial customers.

Agency-Managed CIP Portfolio Centers On Rebate Effectiveness

In 2010, MMPA’s CIP program cost an average of \$0.11/kWh of electricity saved. In 2011 and beyond, MMPA’s Agency-managed CIP portfolio will incorporate rebates and programs that help to maintain an average rebate cost-to-electricity savings ratio of \$0.10/kWh or less.

Programs offered in the Agency-Managed 2011 CIP Portfolio include:

Residential: Clothes Washer, Dishwasher, Refrigerator, Refrigerator Recycling Bonus, Compact Fluorescent Lighting, Central Air Conditioning (AC) and Air Source Heat Pump Quality Installation, AC Tune Up, Home Energy Audit

Commercial: Lighting Retrofit, Lighting New Construction, Motors, Variable Frequency Drives (VFD), Custom Rebates, Vending Machine Controller

MMPA Enhances Low-Income CIP Strategies

In 2010, MMPA’s participating members spent \$14,000 on low-income energy conservation. Low-income conservation program spending is tracked at the city level; each city must meet the

spending requirements when calculated individually. Tracking the actual low-income energy savings and participation rate remains an administrative and reporting challenge. MMPA is concentrating on developing programs that provide direct benefits to low-income customers.

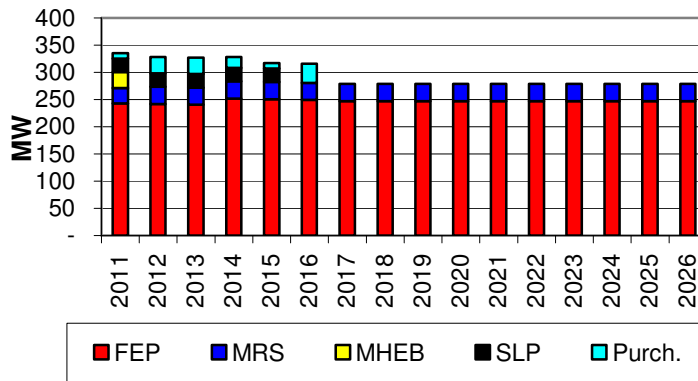
Section 7. Existing Resources

MMPA’s existing resource portfolio is a mix of owned generation and power purchase agreements.

MMPA Has 335 MW Of Power Supply Resources

MMPA has a power supply portfolio that consists of 335 MW of both contractual resources and Agency-owned generation in 2011. The graph below shows MMPA’s resources over the period 2011 to 2026.

**Minnesota Municipal Power Agency
Power Supply Resources – Summer Capacity In MW
2011 to 2026**



Faribault Energy Park Is An Innovative 261 MW Combined Cycle Power Plant

Faribault Energy Park is the first power supply resource financed and built by MMPA. The plant was built in two phases, with simple cycle operation beginning in April 2005. The combined cycle phase began operations in the summer of 2007, improving the fuel efficiency and increasing the maximum accredited summer output of the plant to 261 MW.

FEP is an innovative power plant that uses a series of created wetlands for water management at the plant. Rainwater is collected and filtered before being used for steam production and equipment cooling. The wetlands area is open to the public as a park with several small trails.

The plant is also designed to be a “working classroom,” with an observation room where visitors can view both the steam turbine and the plant’s control room.

The plant uses natural gas as its primary fuel, with fuel oil as a

backup.

MMPA’s total capacity from FEP is reduced by about 13 MW from 2011 to 2013 because of capacity sales to other utilities.

Minnesota River Station Is A 40 MW Peaking Combustion Turbine

The Minnesota River Station (MRS) plant is MMPA’s peaking resource. The City of Chaska, one of the Agency’s members, owns the plant and sells the entire output to MMPA under a long-term contract. MRS became operational in the summer of 2001 and is accredited for 40 MW in the summer. Like FEP, Minnesota River Station uses natural gas as its primary fuel, with fuel oil as a backup.

30 MW Manitoba Hydro Contract Provides Capacity And On-Peak Energy

MMPA has a long-term contract with the Manitoba Hydro-Electric Board (Manitoba Hydro) that provides for 30 MW of capacity and on-peak energy through April 30, 2012. This contract is an intermediate-type resource for the Agency.

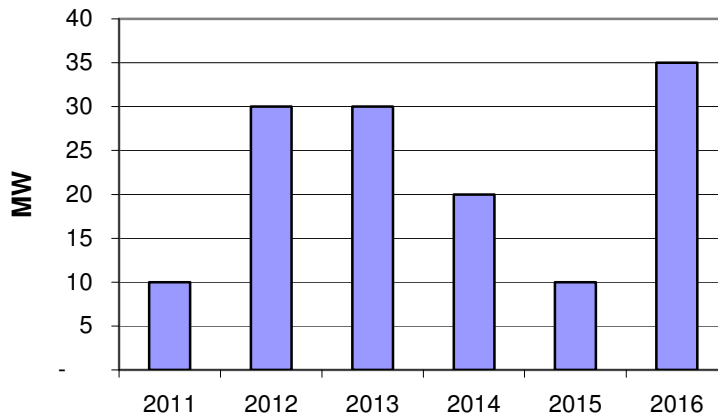
Contract With Rochester Public Utilities Provide 25 MW Of Capacity And Energy

MMPA has a contract with Rochester Public Utilities (RPU) related to the output of RPU’s Silver Lake Plant (SLP). MMPA purchases 25 MW of capacity and energy from SLP through October 31, 2015.

MMPA Purchased Capacity For 2011-2016

MMPA has purchased between 10 and 35 MW of MISO Aggregate Planning Resource Credits (APRCs) for 2011 through 2016.

**Minnesota Municipal Power Agency
Capacity Purchases (APRCs)
2011-2016**



**MMPA Buys Energy
From MISO Under
Current Market
Structure**

MMPA buys all energy for its load from the MISO energy market. Under the current market structure, MMPA also sells the output of all of its power supply resources to MISO, which began operating day-ahead and real-time energy markets on April 1, 2005.

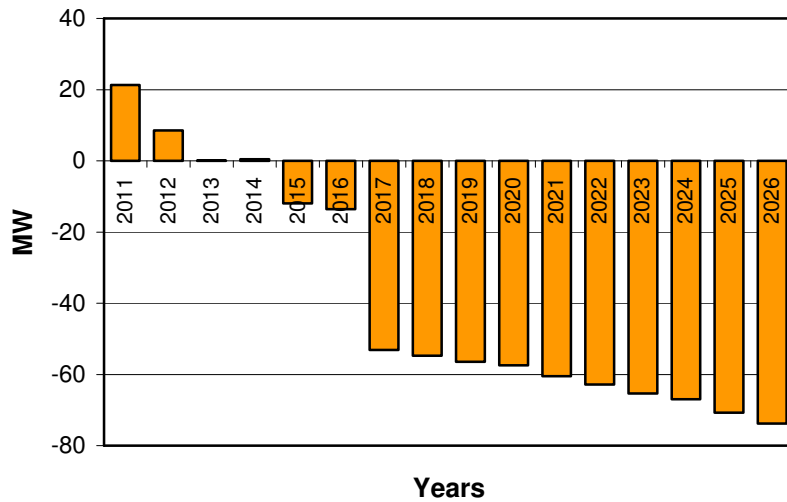
Section 8. Additional Generation Requirements

This section describes MMPA’s projected additional generation requirements over the planning period.

MMPA Is Projected To Need New Capacity In 2015

MMPA is projected to need new capacity in 2015. The chart below shows MMPA’s projected capacity position by year during the projection period.

**Minnesota Municipal Power Agency
Projected Capacity Position
2011-2026**



MMPA’s Projected Capacity Need Grows From 12 MW In 2015 To 74 MW In 2026

MMPA’s projected capacity need grows from 12 MW in 2015 to 74 MW in 2026. The increasing need is the result of member growth and the expiration of existing supply contracts.

Planning Reserve Margin Requirement Of 5% Is Assumed For This IRP

MMPA currently participates in the MISO Planning Reserve Margin (PRM) pool. This IRP assumes a PRM of 5% for the projection period. Any substantial change in this PRM would change MMPA’s capacity needs.

Section 9. Planning Approach and Resource Prospects

This section outlines MMPA’s planning approach and describes both the conventional and renewable resource prospects considered by the Agency in this IRP.

MMPA Seeks To Maintain Flexibility In Its Power Supply Plan

MMPA seeks to maintain flexibility in its power supply plan. The unprecedented uncertainty in the electric utility industry makes flexibility vital to any planning process.

Buy Capacity When Cost Effective

MMPA maintains long term relationships with many MISO market participants and looks for opportunities to buy capacity when cost effective.

Buy Capacity To Get To Economic Generation Size

The cost of adding new resources can vary greatly depending on the size and technology of the resources. MMPA will buy capacity to get to economic generation size. For instance, if building 50 MW generation is more economical than building 60 MW generation, then MMPA will purchase 10 MW to bridge the capacity shortage.

MMPA Has Developed Resource Prospects

MMPA views potential future power supply alternatives as resource prospects. The high amount of uncertainty in the electric utility industry makes it impossible to rely completely on any particular resource being implementable in a given year. Transmission, permitting, environmental regulation, or other factors can change the feasibility or economics of any given resource prospect.

It should also be noted that MMPA’s planning approach from its 2008 IRP resulted in construction of the Oak Glen Wind Farm.

Agency Is Committed To Sustainable Energy

The Agency is committed to sustainable energy. MMPA plans to meet or exceed both Minnesota’s Renewable Energy Objective (REO) and Renewable Energy Standard (RES). Section 14 further discusses MMPA’s plan to meet these renewable requirements.

MMPA Is Developing Resource Prospects With Up To 264 MW Of Capacity

MMPA is developing resource prospects, with up to 264 MW of capacity. Because some of these prospects are wind projects, the total accredited capacity would be less than 264 MW. The resource prospects are as follows:

Renewable

- Utility-Scale Wind Project – Up to 44 MW
- Exploring Wind PPAs with Developers
- Exploring Hydro PPAs

Conventional

- New Simple Cycle or Combined Cycle Plant – Up to 100 MW
- Distributed Generation, Natural Gas – Up to 90 MW
- Long Term PPAs – Up to 30MW

These resource prospects are greater than MMPA’s needs because of the uncertainty in the electric utility industry. By developing projects in excess of its needs, the Agency retains the planning flexibility that is vital to success in today’s market.

MMPA Is Developing Shell Rock Wind Farm MMPA is developing Shell Rock Wind Farm (SRWF) with up to 44 MW of generating capacity. MMPA expects to have SRWF in service in 2013. MMPA is contemplating selling portions of this project that are not needed to meet the Agency’s Renewable Energy Standard obligations.

MMPA Is Exploring PPAs With Wind Developers MMPA is exploring purchased power agreements (PPAs) with other wind developers. The current environment in the wind industry is unstable because of uncertainty regarding extension of the 1603 grant and uncertainty regarding transmission availability. As discussed further in Section 11, the Agency would also consider C-BED projects to the extent that they are feasible and economic. MMPA has no firm plans at this time regarding potential PPAs but continues to work with developers.

MMPA Is Exploring Hydro PPAs MMPA is exploring hydro PPAs with several counterparties.

MMPA Is Considering Addition Of Simple Cycle Or Combined Cycle Gas Generation MMPA is considering addition of simple cycle or combined cycle gas generation of up to 100 MW. MMPA is currently studying the economics of this project as well as the possibility of making this a distributed generation project.

Agency Is Pursuing Distributed Generation Fired With Natural Gas MMPA’s analysis indicates that distributed generation is a least cost way for the Agency to meet its reserve requirements. Distributed generation also improves system reliability in member communities and, by connecting with members’ distribution systems, could avoid

the uncertainty and costs associated with the transmission interconnection process.

The Agency is pursuing distributed generation fired with natural gas in its member communities. Under this approach, MMPA would install small natural gas fired generators in 5 to 10 MW increments in larger member cities. The Agency estimates that it could install up to 90 MW of distributed generation fired with natural gas across its member communities by 2026.

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**MMPA Is Exploring
Long-term PPAs**

MMPA is also exploring the extension of some current contracts as well as entering into new PPAs.

Section 10. Analytical Model and Results

This section describes the analytical model used by MMPA to determine both its short range action plan and its long-range plan.

Total Cost Model Used To Evaluate Traditional Resource Alternatives

A total cost per kilowatt model was used to evaluate resource alternatives. This model graphs a given resource's total cost on the vertical (y) axis in dollars per kilowatt. The resource's capacity factor is displayed on the horizontal (x) axis as a percentage of the time the resource is operating.

Various Technologies Were Evaluated

The Agency's total cost model was used to evaluate five technologies:

- Coal
- Nuclear
- Combined Cycle Combustion Turbine
- Simple Cycle Combustion Turbine
- Distributed Generation

MMPA's analysis assumes that renewable energy is pursued as needed to meet Minnesota's Renewable Energy Standard and it is not evaluated in this section. A description of MMPA's efforts to meet the REO and RES can be found in Section 14.

Cost Estimates And Other Assumptions Were Developed For Each Technology

Cost estimates, including capital costs, fixed and variable O&M, and fuel costs were developed for each technology. Other assumptions, such as the heat rate and emissions rates for various pollutants, were also developed.

The costs of transmission are not included in this analysis because transmission costs are project specific.

No, Low And High Externality Cost Scenarios

Scenarios using both the low and high environmental externality costs as established by the Public Utilities Commission for various emissions (SO_x, NO_x, CO₂) were used in the analysis. The recently-established low and high values of \$4 and \$34 per ton of CO₂ were also included in the analysis. The base case uses no externality cost.

Low, Base And High Capital Cost Scenarios

Low, base and high capital cost scenarios were used in the analysis. The following range of capital costs are in 2011 \$/kW:

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Low, Base, High Fuel Cost Scenarios Low, base and high fuel cost scenarios were used in the analysis. The following range of fuel costs are in 2011 \$/kWh:
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Eight Scenarios Were Analyzed Eight Scenarios were constructed and analyzed. These scenarios are:

- Base Case: Base Capital Cost, Base Fuel Costs, No Externalities
- Case 1: Low Externalities
- Case 2: High Externalities
- Case 3: Low Fuel Cost
- Case 4: High Fuel Cost
- Case 5: Low Capital Cost
- Case 6: High Capital Cost
- Case 7: High Natural Gas Cost

Model Indicates Most Cost-Effective Mix Of Resources The results of MMPA's total cost model are shown below. The most cost-effective mix of dispatchable resources is represented by the line segments that run closest to the bottom of the graph.

The lowest fixed cost resource was assumed to be used to meet the Agency's reserve requirements.

Natural Gas Fired Generation Is The Least Cost Resource In The Base Case Natural gas fired generation is the least cost resource under the base case. Below about 20% capacity factor, simple cycle combustion turbine has the lowest cost followed by distributed generation and combined cycle generation. Above 20% capacity factor, this order reverses as the higher fixed costs of combined cycle are spread over more MWs. Distributed generation is the next lower cost resource

followed by simple cycle combustion turbine.

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**Natural Gas Fired
Generation Is The
Least Cost Resource
Under Low And High
Externalities**

Natural gas fired generation is the least cost mix in the low and high externalities cases.

Similar to the base case, in low and high externality cases, below about 20% capacity factor, simple cycle combustion turbine has the lowest cost followed by distributed generation and combined cycle generation. This order reverses above 20% capacity factor.

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**Natural Gas Fired
Generation Is The
Least Cost Resource
Under Low and High
Fuel Cost Scenarios**

Simple cycle combustion turbine is the least cost peaking resource under about 20% capacity factor in low and high fuel scenario. Distributed generation is the next least cost peaking resource.

Combined cycle is the least cost generation for capacity factor over 20% in the low and high fuel cost scenario.

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**Natural Gas Fired
Generation Is The
Least Cost Resource
Under Low and High
Capital Cost
Scenarios**

Simple cycle combustion turbine is the least cost resource under 20% capacity factor in both the low capital and high capital cost scenarios. Distributed generation is the next least cost resource followed by combined cycle under 20% capacity factor.

Combined cycle is the least cost generation for capacity factor over 20% in both low and high capital cost scenarios.

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**Natural Gas Fired
Generation Is Still
The Least Cost
Resource Under High
Natural Gas Scenario**

Case 7 was constructed by assuming high fuel costs for natural gas fired resources and base fuel costs for coal and nuclear resources. Similar to all the other cases, natural gas fired resources are still the least cost options.

Coal and nuclear resources become competitive above 90% capacity factor.

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**Natural Gas
Alternatives Present
A Tradeoff Between
Efficiency And
Location**

In all of the scenarios, natural gas alternatives present a tradeoff between efficiency and locational advantages. For instance, whereas combined cycle gas fired generation would have the best efficiency from a heat rate perspective, it might have to be located further away from load because of challenges with land, transmission, and gas supply availability. On the other hand, distributed generation could be located right at load because of its smaller size, but it is less efficient than combined cycle generation.

Section 11. Short Range Action Plan

This section outlines MMPA’s short range action plan for the years 2012 to 2016.

Add Distributed Generation

The following table outlines MMPA’s preferred short range action plan:

**Minnesota Municipal Power Agency
Preferred Short Range Action Plan
2012 to 2016**

<u>Year</u>	<u>Resource Addition</u>
2013	Add 8 MW of Distributed Generation
2015	Add 8 MW of Distributed Generation

MMPA’s analysis from the previous section shows that the Agency has a need for peaking resources. Two uncertainties particularly complicate MMPA’s planning process: fuel prices and environmental legislation.

The fuel scenarios in this IRP are based on natural gas prices of \$3.83 to \$7.65 per MMBtu in 2011 dollars. EIA’s 2011 Annual Energy Outlook that was published in December 2010, projected natural gas prices to be about \$6/MMBtu by 2025 in 2009 dollars. If natural gas prices return to 2007-2008 levels, then other technologies such as coal or nuclear could be lower cost resources.

MMPA still believes that it would be wise not to commit to a baseload generation technology until some of the uncertainty surrounding environmental legislation is resolved. In addition, baseload resources have lead times of 10 years or more which diminishes the Agency’s ability to respond to changes in demand and market conditions.

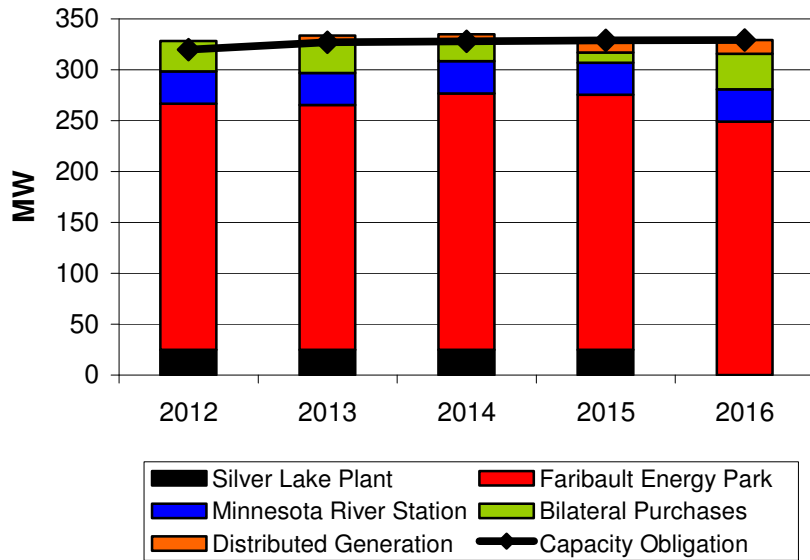
Therefore, in this IRP, the Agency’s preferred short range action plan still focuses primarily on distributed generation, as it can be built more quickly and for a lower cost than baseload technology. Because distributed generation can be built in smaller increments than most other technologies, MMPA could build new generation to match its needs and avoid the short-term excess capacity that often results from building a larger resource. The use of distributed generation also gives the Agency flexibility to respond to changes in projected demand growth.

MMPA is also pursuing renewable energy from a variety of sources.

It should be noted that a recent MISO Loss of Load Expectation Working Group (LOLEWG) study reported wind resources, which are the dominant renewable resources in most utilities' portfolios, would have MISO capacity credits that range between a couple of percent to about thirty percent. In addition to the uncertainty of wind capacity credits, the uncertainty of timing on wind projects makes it difficult to assess the capacity value of wind resources. Therefore, this section does not include MMPA's wind generation efforts. Section 14 further discusses MMPA's plans for renewable generation additions.

The following graph shows MMPA's power supply resources and projected capacity requirements under the preferred short range action plan.

**Minnesota Municipal Power Agency
Power Supply Resources and Requirements (Summer MW)
Preferred Short Range Action Plan
2012 to 2016**



MMPA's Preferred Plan Is Implementable

MMPA's preferred short range action plan is implementable even with the high level of uncertainty in the electric utility industry. The plan is also flexible, giving the Agency the opportunity to respond to changes in member demand, economic conditions, or relative fuel prices.

In addition to the plan outlined above, MMPA plans to take the following actions regarding its future power supply.

Continue To Develop And Market Cost-Effective Conservation Programs MMPA will continue to develop and market cost-effective conservation programs for its member utilities to offer to their retail customers. The Agency's philosophy is to focus on programs that generate the most energy savings per dollar spent. MMPA also remains committed to providing energy efficiency programs that benefit Minnesota's low income households.

Continue Developing Shell Rock Wind Farm The Agency will also continue to develop the Shell Rock Wind Farm as discussed in Section 9. MMPA's renewable resources are expected to provide the renewable energy for MMPA's compliance with Minnesota's Renewable Energy Standard.

Pursue C-BED Projects Where Available And Economic MMPA is also committed to Community Based Energy Development (C-BED). The Agency will pursue C-BED projects where they are available and economic. MMPA's website advertises the Agency's interest in C-BED projects and provides contact information for interested developers.

Section 12. Long Range Plan

This section outlines the Agency’s long range plan for the years 2017 to 2026.

Add Gas Turbine Or Combined Cycle Gas Facility

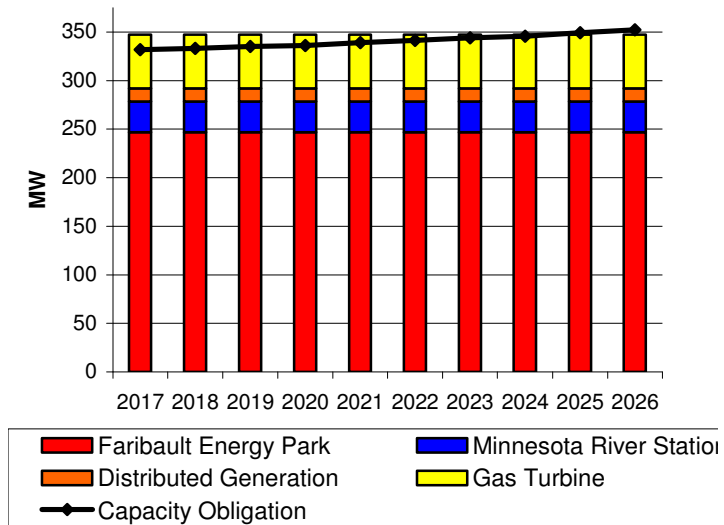
The Agency’s long range plan involves the addition of a second gas turbine or combined cycle facility. The following table outlines MMPA’s preferred long range plan:

Minnesota Municipal Power Agency Preferred Long Range Plan 2017 to 2026

<u>Year</u>	<u>Resource Addition</u>
2017	Up to 100 MW of Gas Turbine or Combined Cycle Facility

The following graph shows MMPA’s power supply resources and projected capacity needs under the preferred long range plan. In the following charts, MMPA planned for addition of a 60 MW gas turbine or combined cycle facility.

Minnesota Municipal Power Agency Power Supply Resources and Requirements (Summer MW) Preferred Long Range Plan 2017-2026



Largest Annual Increase In MMPA Capacity Needs Is 40 MW In 2017

The largest annual increase in MMPA’s capacity needs (above its existing resources) between 2017 and 2026 is 40 MW in 2017, when the Agency’s last bilateral capacity purchase expires. This makes it difficult for the Agency to add generation in large increments. The following table shows MMPA’s capacity position with its existing resources:

	Resources UCAP/PRCs	Capacity Needs	Capacity Surplus/(Deficit)	Yearly Change
2012	328	320	8	
2013	327	327	0	
2014	328	328	0	
2015	317	329	(12)	
2016	316	329	(14)	(2)
2017	279	332	(53)	(40)
2018	279	333	(55)	(2)
2019	279	335	(56)	(2)
2020	279	336	(57)	(1)
2021	279	339	(61)	(3)
2022	279	341	(63)	(2)
2023	279	344	(65)	(2)
2024	279	346	(67)	(2)
2025	279	349	(71)	(4)
2026	279	352	(74)	(3)

MMPA Has Developed Strategies To Reduce Environmental Footprint

Since filing its last IRP, MMPA has developed strategies to reduce its environmental footprint. MMPA has expanded its CIP offerings, focused its CIP spending on end-user conservation and enhanced its low income CIP strategies. In addition, MMPA also focused its efforts on renewables by constructing the Oak Glen Wind Farm, the development of Shell Rock Wind Farm and development of Biopower distributed generation projects.

Distributed Generation Provides Implementation Flexibility

Having the ability to add more distributed generation provides implementation flexibility for MMPA. As discussed in the previous sections, distributed generation can be built more quickly and for a lower cost than most technologies. In addition, since distributed generation can be built in smaller increments than most other technologies, MMPA could build new generation to match its needs and avoid the short-term excess capacity that often results from building a larger resource.

Section 13. Transmission

This section describes the Agency’s position on transmission.

MMPA Currently Owns Limited Transmission Assets

MMPA members own limited transmission assets throughout the state of Minnesota. The Agency is registered as a Transmission Owner for facilities in Chaska and East Grand Forks.

MMPA Purchases Transmission Service From Xcel And MISO

The Agency currently purchases its transmission service from Xcel Energy under a grandfathered contract that expires in 2015. MMPA also purchases transmission service from MISO. After 2015 MMPA will purchase all of its transmission from MISO.

MMPA Plans To Invest In Transmission Facilities To Meet Load And Generation Requirements

MMPA plans to increase its investment in transmission resources. The Agency is specifically interested in investing in transmission projects that would enhance the delivery of electricity to MMPA’s member communities. Such investment in the transmission system may also be necessary as the Agency continues to develop its wind power projects. MMPA will partner with other entities to develop new facilities and upgrade existing facilities.

MMPA’s Distributed Generation Approach Would Benefit Transmission System

The distributed generation approach proposed in this Integrated Resource Plan would benefit the transmission system. MMPA generation resources would be located close to load, and therefore use little to no bulk transmission system resources. Furthermore, the use of distributed generation (as opposed to larger plants) requires less MISO planning. MMPA would add reliable generation to the system quickly, without contributing to the congested MISO interconnection queue.

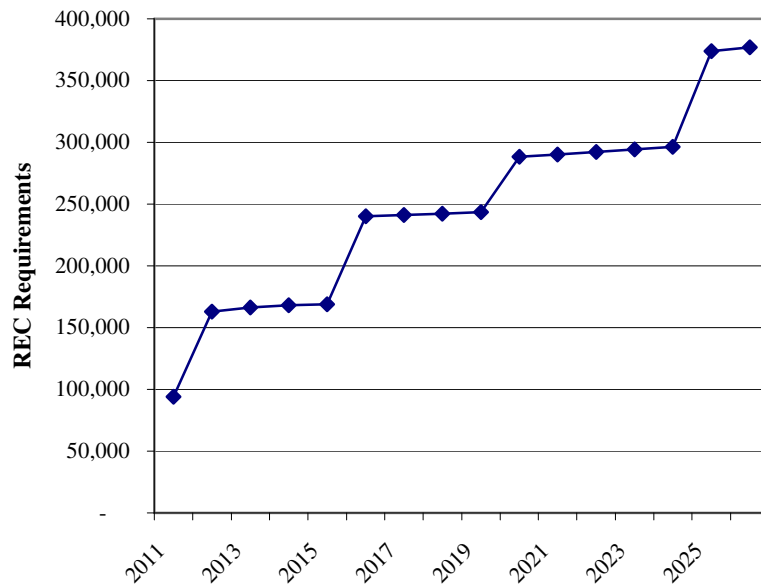
Section 14. Meeting The REO/RES

This section describes MMPA’s efforts toward meeting the state of Minnesota’s Renewable Energy Objective (REO) and Renewable Energy Standard (RES).

MMPA’s REC Requirements Are Projected To Grow From 94,000 In 2011 To 377,000 In 2026

MMPA’s Renewable Energy Credit (REC) requirements are projected to grow from 94,000 in 2011 to 377,000 in 2026.

MMPA REC Requirements 2011-2026



MMPA Has RECs In Its Portfolio

The Agency purchased 266,226 RECs of 2008 vintage and 180,800 RECs of 2009 vintage. MMPA has 313,749 RECs in its inventory. MMPA actively follows the REC markets and seeks opportunities to buy RECs to satisfy its future requirements.

MMPA Is Constructing 44 MW Oak Glen Wind Farm

MMPA is constructing the 44 MW Oak Glen Wind Farm (OGWF). OGWF is expected to be in service by the end of 2011. OGWF is expected to generate approximately 150,000 MWh/year.

MMPA Is Developing 44 MW Shell Rock Wind Farm

MMPA is developing the 44 MW Shell Rock Wind Farm (SRWF) which is expected to be in service by 2013. SRWF is expected to generate approximately 150,000 MWh/year.

MMPA’s Hometown WindPower Is In Service MMPA constructed its Hometown WindPower project which came in service in March 2010. This effort made MMPA the first power agency with a wind turbine in each of its member communities. Hometown WindPower is expected to produce approximately 3,363 MWh of renewable energy annually for the Agency.

MMPA Is Developing Le Sueur BioPower Project MMPA is developing the Le Sueur BioPower Project which will have the capability to generate 8 MW of electricity by converting agricultural processing residues to Biogas. Le Sueur BioPower is projected to be in service by the end of 2013.

MMPA Is Seeking PPAs With Wind Developers MMPA is also seeking purchased power agreements (PPAs) with other wind developers. The current environment in the wind industry is unstable because of uncertainty regarding extension of the production tax credit (PTC) and uncertainty regarding transmission availability. As discussed further in Section 11, the Agency would also consider C-BED projects to the extent that they are feasible and economic. MMPA has no firm plans at this time regarding potential PPAs but continues to work with developers.

MMPA Expects To Meet All Of Its Incremental Energy Needs Through Combination Of Conservation And Renewables Minn. Statute §216B.2422, subd.2 states, “ As a part of its resource filing, a utility shall include the least cost plan for meeting 50 and 75 percent of all new and refurbished capacity needs through a combination of conservation and renewable energy resources”.

In 2026, MMPA’s energy requirements of 1,578,899 MWh will be 156,173 MWh over its 2012 base. MMPA’s renewable energy requirement for 2026 of 377,012 MWs is over two times greater than its incremental energy needs. By satisfying its Renewable Energy Requirement, MMPA will meet all of its incremental energy needs through renewables. The effects of MMPA’s conservation efforts are included in the base calculations.

MMPA Has Made A Good Faith Effort To Meet The REO And Is Positioned To Meet The RES MMPA has made a good faith effort to meet the REO and is positioned to meet the RES through its mix of purchases and resources.

The Agency is developing projects expected to be able to produce over 383,000 MWh of renewable energy by 2015. This is over twice the amount of energy required under the RES in 2015 and more than the amount of energy required under the RES in 2026.

Section 15. MMPA's Plan Is In The Public Interest

This section discusses how MMPA's Integrated Resource Plan is in the public interest.

MMPA's Plan Provides Flexibility In An Uncertain Environment

MMPA's IRP gives the Agency flexibility during this time of unprecedented uncertainty regarding commodity prices, transmission availability, carbon legislation, and cost of new generation. The Agency creates this flexibility by developing multiple resource prospects in excess of its projected needs, giving it options for meeting its future capacity and renewable energy requirements. The use of distributed generation provides further flexibility for MMPA because of the ability to install facilities in smaller increments and on a quicker timetable than other resources.

MMPA's Plan Limits Environmental Effects

The Agency's plan limits negative environmental effects. MMPA is aggressively pursuing both increased energy conservation and a number of renewable energy projects.

MMPA's Facilities Ensure Compliance With Emissions Control Equipment And Report As Required

MMPA uses a Continuing Emissions Monitoring System (CEMS) at Faribault Energy Park (FEP) to measure NO_x and CO emissions, and to measure or calculate SO₂ and CO₂. MMPA uses low emitting pipeline quality natural gas and low sulfur distillate fuel oil for its fuel sources. In addition, combustion of MMPA's fuels emit relatively low levels of particulate matter and mercury.

Emissions are controlled by the use of selective catalytic reduction (SCR), dry-low NO_x combustion, water injection and low sulfur fuels. MMPA also tests its emissions and emissions monitoring equipment annually.

MMPA's Minnesota River Station facility is operated as a peaking facility. MMPA tests its emissions at this facility as per its permit requirements.

MMPA's Plan Meets The Public Interest Criteria In Rule 7843

MMPA's plan meets the public interest criteria set out in Commission Rule 7843.0500 Subp. 3, which are:

- Maintain or improve the adequacy and reliability of utility service
- Keep the customers' bills and the utility's rates as low as practicable, given regulatory and other constraints
- Minimize adverse socioeconomic effects and adverse effects

- upon the environment
- Enhance the utility's ability to respond to changes in the financial, social, and technological factors affecting its operations
- Limit the risk of adverse effects on the utility and its customers from financial, social, and technological factors that the utility cannot control

MMPA's plan promotes adequate and reliable service, particularly through its use of distributed generation, which reduces the load on the transmission system. The Agency's plan also keeps rates as low as practical given uncertainties about future commodity prices and carbon regulation by adding peaking resources that move MMPA closer to its least cost resource portfolio. MMPA balances socioeconomic and environmental considerations by both promoting energy conservation and developing a number of renewable resource prospects. The Agency enhances its ability to respond to changes by maintaining a flexible plan with many resource options. MMPA limits risk to its customers with its balanced power supply portfolio consisting of hydro, wind, Biogas, natural gas, fuel oil, and coal resources.

Appendix A. Load Projection Methodology

This appendix describes the methodology used to project MMPA's energy and demand requirements for this Integrated Resource Plan.

Members' Energy Requirements Were Projected Using Linear Regression

Linear regression analysis was used to project MMPA member energy requirements. Three separate projections were prepared and their results summed to calculate projected total MMPA energy. These projections can be summarized as follows:

- MMPA 9 – Includes the cities of Anoka, Arlington, Brownton, Chaska, Le Sueur, North St. Paul, Olivia, Shakopee and Winthrop with monthly historical energy usage from 1988 through 2010.
- East Grand Forks – Monthly historical energy usage from 1996 to 2010.
- Buffalo – Monthly historical energy usage from 2000 to 2010

Three different projections were prepared because of data constraints for East Grand Forks and Buffalo.

Total MMPA energy requirements were projected by running these three regression models and summing the results.

Explanatory Variables Used Were Weather, Income, and Population

For the regression analysis, weather, income, and population were used as explanatory variables.

Weather

Weather-normalization was done using a weighted temperature-humidity index for summer months only. Historical weather data comes from Telvent DTN. Weather data for the East Grand Forks model comes from the Fargo weather station (the closest available) from degreedays.net.

Income per Capita

Woods and Poole Economics' *Minnesota State Profile 2009 State and County Projections to 2040* were the source for both historical and projected income data. This data is provided at the county level. As a result, an income variable for each model run was created with weights based on annual member energy usage.

Population

Historical population for the period 1986 to 2009 was based on data from *Historic Household and Population Estimates* as prepared by

the Minnesota Department of Administration. No data was available for the year 1989, so linear smoothing of 1988 and 1990 data was used. Population projections for the period 2010 to 2026 are based on county-by-county long term growth rates taken from Woods and Poole.

All of the above-listed variables were used in the MMPA 9 model. For the East Grand Forks model, CDD and population were excluded because of low t-stat results. There is little air conditioning load in East Grand Forks, and the devastating 1997 flood likely explains the low t-stat for population. Income per capita was excluded from the Buffalo regression, also because of low t-stat results.

Each regression was run with monthly data to forecast monthly energy. This monthly forecasted energy was then aggregated to provide annual figures.

Annual Energy Reduced By Conservation

Each year's energy requirement was decreased by about 1.3%, representing MMPA's assumption regarding new conservation measures. This resulted in a compounded annual growth rate reduction of 1.2% and a net growth rate of 0.7% for energy. It is assumed that historical energy data contains embedded results from past conservation efforts.

Expected Load Additions in 2012 Increased Energy Requirements

MMPA expects new load additions outside of its historical growth model. One of the MMPA members has informed the Agency of load additions starting in 2012. The additional energy and demand requirements for this new load was added to the energy and demand projections.

Members' Energy Requirements Were Reduced For WAPA-Supplied Energy

Once conservation and new load additions were accounted for, projected members' energy requirements were reduced for energy supplied by WAPA. These WAPA allocations are assumed to stay at the 2010-2015 contract level throughout the projection period.

Agency Demand Was Projected Using Weather Normalized Load Factor Approach

To project the Agency's demand requirements, a historical average weather normalized load factor of 55.7% was calculated using 2006 to 2010 data. A five-year average was used because it was the only period for which hourly data (necessary to calculate the Agency's coincident peak) was available for all member cities. The historical load factor was then applied to the conservation-adjusted energy projections to obtain projected peak demand requirements for MMPA.

Agency Demand Was Reduced For WAPA-Supplied Capacity Similar to the energy projections, projected Agency demand was reduced for capacity supplied by WAPA. These WAPA allocations were assumed to stay at the 2010-2015 contract level throughout the projection period.

Capacity Requirements Include Losses And Reserves To determine the Agency's total capacity requirements, 2.4% transmission system losses were added to the projected demand requirements. Midwest Independent System Operator (MISO) reserve requirements of 5% were also added.

Appendix B. Advance Forecast

This appendix contains MMPA's filing to the Department of Commerce as outlined in Rule 7610.

MINNESOTA ELECTRIC UTILITY INFORMATION REPORTING - FORECAST SECTION

INSTRUCTIONS

The individual worksheets in this spreadsheet file correspond closely to the tables in the paper forms received by the utility. The instructions provided with the paper forms also pertain to the data to be entered in each of the worksheets in this file.

PLEASE DO NOT CHANGE THE NAME OR ORDER OF ANY OF THE WORKSHEET TABS IN THIS FILE

In general, the following scheme is used on each worksheet:

- Cells shown with a light green background correspond to headings for columns, rows or individual fields.
- Cells shown with a light yellow background require data to be entered by the utility.
- Cells shown with a light brown background generally correspond to fields that are calculated from the data entered, or correspond to fields that are informational and not to be modified by the utility.

Each worksheet contains a section labeled Comments below the main data entry area.

You may enter any comments in that section that may be needed to explain or clarify the data being entered on the worksheet.

Please complete the required worksheets and save the completed spreadsheet file to your local computer.

Then attach the completed spreadsheet file to an e-mail message and send it to the following e-mail address:

rule7610.reports@state.mn.us

If you have any questions please contact:

Steve Loomis

MN Department of Commerce

steve.loomis@state.mn.us

(651) 296-8963

MINNESOTA ELECTRIC UTILITY INFORMATION REPORTING - FORECAST SECTION

7610.0120 REGISTRATION

ENTITY ID#	266
REPORT YEAR	2010

RILS ID#	U13724
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UTILITY DETAILS	
UTILITY NAME	Minnesota Municipal Power Agency
STREET ADDRESS	200 South Sixth Street Suite 300
CITY	Minneapolis
STATE	Minnesota
ZIP CODE	55402
TELEPHONE	(612) 349-6868
	Scroll down to see allowable UTILITY TYPES
* UTILITY TYPE	

CONTACT INFORMATION	
CONTACT NAME	James Larson
CONTACT TITLE	Vice President, Regulatory Affairs
CONTACT STREET ADDRESS	200 South Sixth Street Suite 300
CITY	Minneapolis
STATE	Minnesota
ZIP CODE	55402
TELEPHONE	(612) 349-6868
CONTACT E-MAIL	james.larson@avantenergy.com

COMMENTS

PREPARER INFORMATION	
PERSON PREPARING FORMS	Jessy Hennesy
PREPARER'S TITLE	Analyst
DATE	7/25/2011

ALLOWABLE UTILITY TYPES

Code
 Private
 Public
 Co-op

MINNESOTA ELECTRIC UTILITY INFORMATION REPORTING - FORECAST SECTION (Continued)

7610.0310 Item A. SYSTEM FORECAST OF ANNUAL ELECTRIC CONSUMPTION BY ULTIMATE CONSUMERS

Provide actual data for your entire system for the past year, your estimate for the present year and all future forecast years.

Please remember that the number of customers should reflect the number of customers at year's end, not the number of meters.

		FARM	NON-FARM RESIDENTIAL	COMMERCIAL	MINING *	INDUSTRIAL	STREET & HIGHWAY LIGHTING	OTHER	SYSTEM TOTALS	Calculated System Totals
Past Year	2010	No. of Cust.								0
		MWH								0
Present Year	2011	No. of Cust.								0
		MWH								0
1st Forecast Year	2012	No. of Cust.								0
		MWH								0
2nd Forecast Year	2013	No. of Cust.								0
		MWH								0
3rd Forecast Year	2014	No. of Cust.								0
		MWH								0
4th Forecast Year	2015	No. of Cust.								0
		MWH								0
5th Forecast Year	2016	No. of Cust.								0
		MWH								0
6th Forecast Year	2017	No. of Cust.								0
		MWH								0
7th Forecast Year	2018	No. of Cust.								0
		MWH								0
8th Forecast Year	2019	No. of Cust.								0
		MWH								0
9th Forecast Year	2020	No. of Cust.								0
		MWH								0
10th Forecast Year	2021	No. of Cust.								0
		MWH								0
11th Forecast Year	2022	No. of Cust.								0
		MWH								0
12th Forecast Year	2023	No. of Cust.								0
		MWH								0
13th Forecast Year	2024	No. of Cust.								0
		MWH								0
14th Forecast Year	2025	No. of Cust.								0
		MWH								0

* MINING needs to be reported as a separate category only if annual sales are greater than 1,000 GWH. Otherwise, include MINING in the INDUSTRIAL category.

COMMENTS

MMPA is requesting an exemption from this forecast page, as it sells all of its electricity to its eleven member municipal utilities at wholesale. The Agency does not project customer count by class as part of its future energy and demand forecasts. As discussed in the Integrated Resource Plan, MMPA uses projected population of member cities to project energy and demand requirements.

MINNESOTA ELECTRIC UTILITY INFORMATION REPORTING - FORECAST SECTION (Continued)

7610.0310 Item A. MINNESOTA-ONLY FORECAST OF ANNUAL ELECTRIC CONSUMPTION BY ULTIMATE CONSUMERS

Provide actual data for your Minnesota service area only, for the past year, your best estimate for the present year and all future forecast years.

Please remember that the number of customers should reflect the number of customers at year's end, not the number of meters.

			FARM	NON-FARM RESIDENTIAL	COMMERCIAL	MINING *	INDUSTRIAL	STREET & HIGHWAY LIGHTING	OTHER	MN-ONLY TOTALS	Calculated MN-Only Totals
Past Year	2010	No. of Cust.									0
		MWH									0
Present Year	2011	No. of Cust.									0
		MWH									0
1st Forecast Year	2012	No. of Cust.									0
		MWH									0
2nd Forecast Year	2013	No. of Cust.									0
		MWH									0
3rd Forecast Year	2014	No. of Cust.									0
		MWH									0
4th Forecast Year	2015	No. of Cust.									0
		MWH									0
5th Forecast Year	2016	No. of Cust.									0
		MWH									0
6th Forecast Year	2017	No. of Cust.									0
		MWH									0
7th Forecast Year	2018	No. of Cust.									0
		MWH									0
8th Forecast Year	2019	No. of Cust.									0
		MWH									0
9th Forecast Year	2020	No. of Cust.									0
		MWH									0
10th Forecast Year	2021	No. of Cust.									0
		MWH									0
11th Forecast Year	2022	No. of Cust.									0
		MWH									0
12th Forecast Year	2023	No. of Cust.									0
		MWH									0
13th Forecast Year	2024	No. of Cust.									0
		MWH									0
14th Forecast Year	2025	No. of Cust.									0
		MWH									0

* MINING needs to be reported as a separate category only if annual sales are greater than 1,000 GWH. Otherwise, include MINING in the INDUSTRIAL category.

COMMENTS

MMPA is requesting an exemption from this forecast page, as it sells all of its electricity to its eleven member municipal utilities at wholesale. The Agency does not project customer count by class as part of its future energy and demand forecasts. As discussed in the Integrated Resource Plan, MMPA uses projected population of member cities to project energy and demand requirements.

MINNESOTA ELECTRIC UTILITY INFORMATION REPORTING - FORECAST SECTION (Continued)

7610.0310 Item B. FORECAST OF ANNUAL SYSTEM CONSUMPTION AND GENERATION DATA (Express in MWH)

NOTE: (Column 1 + Column 2) = (Column 3 + Column 5) - (Column 4 + Column 6)

It is recognized that there may be circumstances in which the data entered by the utility is more appropriate or accurate than the value in the corresponding automatically-calculated cell. If the value in the automatically-calculated cell does not match the value that your utility entered, please provide an explanation in the Comments area at the bottom of the worksheet.

	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	CALCULATED
	CONSUMPTION BY ULTIMATE CONSUMERS IN MINNESOTA in MWH [7610.0310 B(1)]	CONSUMPTION BY ULTIMATE CONSUMERS OUTSIDE OF MINNESOTA in MWH [7610.0310 B(2)]	RECEIVED FROM OTHER UTILITIES in MWH [7610.0310 B(3)]	DELIVERED FOR RESALE in MWH [7610.0310 B(4)]	TOTAL ANNUAL NET GENERATION in MWH [7610.0310 B(5)]	TRANSMISSION LINE SUBSTATION AND DISTRIBUTION LOSSES in MWH [7610.0310 B(6)]	TOTAL WINTER CONSUMPTION in MWH [7610.0310 B(7)]	TOTAL SUMMER CONSUMPTION in MWH [7610.0310 B(7)]	(GENERATION + RECEIVED) MINUS (RESALE + LOSSES) MINUS (CONSUMPTION) SHOULD EQUAL ZERO
Past Year 2010	0	0	1,560,795	1,938,775	377,980	0	0	0	0
Present Year 2011	0	0	1,603,570	1,993,320	389,750	0	0	0	0
1st Forecast Year 2012	0	0	1,896,807	2,287,557	390,750	0	0	0	0
2nd Forecast Year 2013	0	0	1,687,935	2,118,631	430,696	0	0	0	0
3rd Forecast Year 2014	0	0	1,467,951	1,898,647	430,696	0	0	0	0
4th Forecast Year 2015	0	0	1,473,083	1,943,724	470,641	0	0	0	0
5th Forecast Year 2016	0	0	1,478,501	1,949,142	470,641	0	0	0	0
6th Forecast Year 2017	0	0	1,485,221	2,008,422	523,201	0	0	0	0
7th Forecast Year 2018	0	0	1,492,392	2,015,593	523,201	0	0	0	0
8th Forecast Year 2019	0	0	1,500,359	2,023,560	523,201	0	0	0	0
9th Forecast Year 2020	0	0	1,508,850	2,032,052	523,201	0	0	0	0
10th Forecast Year 2021	0	0	1,518,793	2,041,994	523,201	0	0	0	0
11th Forecast Year 2022	0	0	1,529,220	2,052,421	523,201	0	0	0	0
12th Forecast Year 2023	0	0	1,540,446	2,063,647	523,201	0	0	0	0
13th Forecast Year 2024	0	0	1,552,123	2,075,324	523,201	0	0	0	0
14th Forecast Year 2025	0	0	1,565,259	2,088,460	523,201	0	0	0	0

COMMENTS

Under the Midwest Independent Transmission System Operator's (MISO) energy market, utilities purchase all of their load from MISO and sell all of the output from their generating resources to MISO. This table has been completed reflecting that structure of the industry. MPPA supplies its member cities with energy for resale.

MINNESOTA ELECTRIC UTILITY INFORMATION REPORTING - FORECAST SECTION (Continued)

7610.0310 Item C. PEAK DEMAND BY ULTIMATE CONSUMERS AT THE TIME OF ANNUAL SYSTEM PEAK (in MW)

	FARM	NON-FARM RESIDENTIAL	COMMERCIAL	MINING	INDUSTRIAL	STREET & HIGHWAY LIGHTING	OTHER	SYSTEM TOTALS	Calculated System Totals
Last Year Peak Day 2010									0.0

7610.0310 Item D. PEAK DEMAND BY MONTH FOR THE LAST CALENDAR YEAR (in MW)

	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
Last Year 2010	217	199	185	185	281	275	302	307	228	204	213	223

COMMENTS

MMPA is requesting an exemption from Item C of this page, as it does not possess the information necessary to classify the system peak by class of service. The Agency sells all of its power and energy to its eleven member utilities at wholesale. The peak demand presented in Item D includes 2.4% transmission system losses.

MINNESOTA ELECTRIC UTILITY INFORMATION REPORTING - FORECAST SECTION (Continued)

7610.0310 Item E. PART 1: FIRM PURCHASES (Express in MW)

NAME OF OTHER UTILITY =>									
Past Year	2010	Summer							
		Winter							
Present Year	2011	Summer							
		Winter							
1st Forecast Year	2012	Summer							
		Winter							
2nd Forecast Year	2013	Summer							
		Winter							
3rd Forecast Year	2014	Summer							
		Winter							
4th Forecast Year	2015	Summer							
		Winter							
5th Forecast Year	2016	Summer							
		Winter							
6th Forecast Year	2017	Summer							
		Winter							
7th Forecast Year	2018	Summer							
		Winter							
8th Forecast Year	2019	Summer							
		Winter							
9th Forecast Year	2020	Summer							
		Winter							
10th Forecast Year	2021	Summer							
		Winter							
11th Forecast Year	2022	Summer							
		Winter							
12th Forecast Year	2023	Summer							
		Winter							
13th Forecast Year	2024	Summer							
		Winter							
14th Forecast Year	2025	Summer							
		Winter							

COMMENTS

The Agency Does not Have any Firm Purchases from Other Utilities

MINNESOTA ELECTRIC UTILITY INFORMATION REPORTING - FORECAST SECTION (Continued)

7610.0310 Item E. PART 2: FIRM SALES (Express in MW)

NAME OF OTHER UTILITY =>									
Past Year	2010	Summer							
		Winter							
Present Year	2011	Summer							
		Winter							
1st Forecast Year	2012	Summer							
		Winter							
2nd Forecast Year	2013	Summer							
		Winter							
3rd Forecast Year	2014	Summer							
		Winter							
4th Forecast Year	2015	Summer							
		Winter							
5th Forecast Year	2016	Summer							
		Winter							
6th Forecast Year	2017	Summer							
		Winter							
7th Forecast Year	2018	Summer							
		Winter							
8th Forecast Year	2019	Summer							
		Winter							
9th Forecast Year	2020	Summer							
		Winter							
10th Forecast Year	2021	Summer							
		Winter							
11th Forecast Year	2022	Summer							
		Winter							
12th Forecast Year	2023	Summer							
		Winter							
13th Forecast Year	2024	Summer							
		Winter							
14th Forecast Year	2025	Summer							
		Winter							

COMMENTS

The Agency Does not Have any Firm Sales to Other Utilities

MINNESOTA ELECTRIC UTILITY INFORMATION REPORTING - FORECAST SECTION (Continued)

7610.0310 Item F. PART 1: PARTICIPATION PURCHASES (Express in MW)

NAME OF OTHER UTILITY =>		Manitoba Hydro Electric Board	Rochester Public Utilities	MISO Capacity Auction	Short Term Capacity Purchases			
Past Year	2010	Summer	30	25	5	55		
		Winter	30	25				
Present Year	2011	Summer	30	25	5	10		
		Winter	30	25		10		
1st Forecast Year	2012	Summer		25		30		
		Winter		25		20		
2nd Forecast Year	2013	Summer		25		30		
		Winter		25		25		
3rd Forecast Year	2014	Summer		25		20		
		Winter		25		20		
4th Forecast Year	2015	Summer		25		10		
		Winter				10		
5th Forecast Year	2016	Summer				35		
		Winter				35		
6th Forecast Year	2017	Summer						
		Winter						
7th Forecast Year	2018	Summer						
		Winter						
8th Forecast Year	2019	Summer						
		Winter						
9th Forecast Year	2020	Summer						
		Winter						
10th Forecast Year	2021	Summer						
		Winter						
11th Forecast Year	2022	Summer						
		Winter						
12th Forecast Year	2023	Summer						
		Winter						
13th Forecast Year	2024	Summer						
		Winter						
14th Forecast Year	2025	Summer						
		Winter						

COMMENTS

Short term capacity purchases from several counterparties are aggregated for limited disclosure. Data shown is for the peak month of each season.

MINNESOTA ELECTRIC UTILITY INFORMATION REPORTING - FORECAST SECTION (Continued)

7610.0310 Item F. PART 2: PARTICIPATION SALES

(Express in MW)

NAME OF OTHER UTILITY =>		Northern States Power (Xcel)	Sales to Coop 1	Sales to Coop 2					
Past Year	2010	Summer	10						
		Winter		5.8	7.1				
Present Year	2011	Summer		5.5	7.2				
		Winter		5.8	7.1				
1st Forecast Year	2012	Summer		5.5	7.2				
		Winter		5.8	7.1				
2nd Forecast Year	2013	Summer		5.5	7.2				
		Winter		5.8	7.1				
3rd Forecast Year	2014	Summer							
		Winter							
4th Forecast Year	2015	Summer							
		Winter							
5th Forecast Year	2016	Summer							
		Winter							
6th Forecast Year	2017	Summer							
		Winter							
7th Forecast Year	2018	Summer							
		Winter							
8th Forecast Year	2019	Summer							
		Winter							
9th Forecast Year	2020	Summer							
		Winter							
10th Forecast Year	2021	Summer							
		Winter							
11th Forecast Year	2022	Summer							
		Winter							
12th Forecast Year	2023	Summer							
		Winter							
13th Forecast Year	2024	Summer							
		Winter							
14th Forecast Year	2025	Summer							
		Winter							

COMMENTS

This spreadsheet reflects transactions entered into as of July 27, 2011. In 2010 and 2011, sales to some utilities varied month-by-month within a season. Data is shown for the peak month of each season.

MINNESOTA ELECTRIC UTILITY INFORMATION REPORTING - FORECAST SECTION (Continued)

7610.0310 Item G. LOAD AND GENERATION CAPACITY (Express in MW)

			Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9	Column 10	Column 11	Column 12	Column 13	Column 14	Column 15
			SEASONAL MAXIMUM DEMAND	SCHEDULE L PURCHASE AT THE TIME OF SEASONAL SYSTEM DEMAND	SEASONAL SYSTEM DEMAND	ANNUAL SYSTEM DEMAND	SEASONAL FIRM PURCHASES (TOTAL)	SEASONAL FIRM SALES (TOTAL)	SEASONAL ADJUSTED NET DEMAND (3 - 5 + 6)	ANNUAL ADJUSTED NET DEMAND (4 - 5 + 6)	NET GENERATING CAPABILITY	PARTICIPATION PURCHASES (TOTAL)	PARTICIPATION SALES (TOTAL)	ADJUSTED NET CAPABILITY (9 + 10 - 11)	NET RESERVE CAPACITY OBLIGATION	TOTAL FIRM CAPACITY OBLIGATION (7 + 13)	SURPLUS (+) OR DEFICIT (-) CAPACITY (12 - 14)
Past Year	2010	Summer	307		307	307			307	307	284	115	10	389	15	322	67
		Winter	223		223	307			223	307	284	55	13	326	11	234	92
Present Year	2011	Summer	299		299	299			299	299	284	70	13	341	15	314	27
		Winter	229		229	299			229	299	284	65	13	336	11	240	96
1st Forecast Year	2012	Summer	305		305	305			305	305	286	55	13	328	15	320	8
		Winter	235		235	305			235	305	286	45	13	318	12	247	71
2nd Forecast Year	2013	Summer	311		311	311			311	311	291	55	13	334	16	327	7
		Winter	236		236	311			236	311	291	50	13	328	12	248	81
3rd Forecast Year	2014	Summer	312		312	312			312	312	290	45		335	16	328	7
		Winter	237		237	312			237	312	290	45		335	12	249	86
4th Forecast Year	2015	Summer	313		313	313			313	313	295	35		330	16	329	1
		Winter	237		237	313			237	313	295	10		305	12	249	57
5th Forecast Year	2016	Summer	314		314	314			314	314	294	35		329	16	329	0
		Winter	239		239	314			239	314	294	35		329	12	251	79
6th Forecast Year	2017	Summer	316		316	316			316	316	347			347	16	332	16
		Winter	240		240	316			240	316	347			347	12	252	96
7th Forecast Year	2018	Summer	317		317	317			317	317	347			347	16	333	14
		Winter	241		241	317			241	317	347			347	12	253	94
8th Forecast Year	2019	Summer	319		319	319			319	319	347			347	16	335	12
		Winter	242		242	319			242	319	347			347	12	254	94
9th Forecast Year	2020	Summer	320		320	320			320	320	347			347	16	336	11
		Winter	244		244	320			244	320	347			347	12	256	91
10th Forecast Year	2021	Summer	323		323	323			323	323	347			347	16	339	8
		Winter	246		246	323			246	323	347			347	12	258	89
11th Forecast Year	2022	Summer	325		325	325			325	325	347			347	16	341	6
		Winter	248		248	325			248	325	347			347	12	260	88
12th Forecast Year	2023	Summer	328		328	328			328	328	347			347	16	344	4
		Winter	249		249	328			249	328	347			347	12	261	86
13th Forecast Year	2024	Summer	329		329	329			329	329	347			347	16	346	2
		Winter	252		252	329			252	329	347			347	13	264	83
14th Forecast Year	2025	Summer	333		333	333			333	333	347			347	17	349	-2
		Winter	254		254	333			254	333	347			347	13	266	81

COMMENTS

Seasonal Demands as shown include 2.4% Transmission System Losses. Net Generating capability accounts for EFORDs. Assumption for Net Reserve Capacity Obligation is 5%

MINNESOTA ELECTRIC UTILITY INFORMATION REPORTING - FORECAST SECTION (Continued)

7610.0310 Item H. ADDITIONS AND RETIREMENTS (Express in MW)

		ADDITIONS	RETIREMENTS
Past Year	2010		
Present Year	2011		
1st Forecast Year	2012		
2nd Forecast Year	2013	8	
3rd Forecast Year	2014		
4th Forecast Year	2015	8	
5th Forecast Year	2016		
6th Forecast Year	2017	60	
7th Forecast Year	2018		
8th Forecast Year	2019		
9th Forecast Year	2020		
10th Forecast Year	2021		
11th Forecast Year	2022		
12th Forecast Year	2023		
13th Forecast Year	2024		
14th Forecast Year	2025		

COMMENTS
Wind Additions are not noted as they have no firm capacity value

MINNESOTA ELECTRIC UTILITY INFORMATION REPORTING - FORECAST SECTION (Continued)

7610.0430 FUEL REQUIREMENTS AND GENERATION BY FUEL TYPE

Please use the appropriate code for the fuel type as shown in the list at the bottom of the worksheet.

		FUEL TYPE 1		FUEL TYPE 2		FUEL TYPE 3		FUEL TYPE 4	
		Name of Fuel	NG	Name of Fuel	FO2	Name of Fuel		Name of Fuel	
		Unit of Measure	MMBTU	Unit of Measure	MMBTU	Unit of Measure		Unit of Measure	
		QUANTITY OF FUEL USED	NET MWH GENERATED	QUANTITY OF FUEL USED	NET MWH GENERATED	QUANTITY OF FUEL USED	NET MWH GENERATED	QUANTITY OF FUEL USED	NET MWH GENERATED
Past Year	2010	2805523	375372	147262	2608				
Present Year	2011	2829225	386250	31500	3500				
1st Forecast Year	2012	2839725	387250	31500	3500				
2nd Forecast Year	2013	3219208	427196	31500	3500				
3rd Forecast Year	2014	3219208	427196	31500	3500				
4th Forecast Year	2015	3598691	467141	31500	3500				
5th Forecast Year	2016	3598691	467141	31500	3500				
6th Forecast Year	2017	4111151	519701	31500	3500				
7th Forecast Year	2018	4111151	519701	31500	3500				
8th Forecast Year	2019	4111151	519701	31500	3500				
9th Forecast Year	2020	4111151	519701	31500	3500				
10th Forecast Year	2021	4111151	519701	31500	3500				
11th Forecast Year	2022	4111151	519701	31500	3500				
12th Forecast Year	2023	4111151	519701	31500	3500				
13th Forecast Year	2024	4111151	519701	31500	3500				
14th Forecast Year	2025	4111151	519701	31500	3500				

LIST OF FUEL TYPES

- | | | |
|---------------------------------------|-------------------------------------|---------------------|
| BIT - Bituminous Coal | LPG - Liquefied Propane Gas | HYD - Hydro (water) |
| COAL - Coal (general) | NG - Natural Gas | WIND - Wind |
| DIESEL - Diesel | NUC - Nuclear | WOOD - Wood |
| FO2 - Fuel Oil #2 (Mid-distillate) | REF - Refuse, Bagasse, Peat, Non-wc | SOLAR - Solar |
| FO6 - Fuel Oil #6 (Residual fuel oil) | STM - Steam | |
| LIG - Lignite | SUB - Sub-bituminous coal | |

COMMENTS

MINNESOTA ELECTRIC UTILITY INFORMATION REPORTING - FORECAST SECTION (Continued)

7610.0600, item A. 24 - HOUR PEAK DAY DEMAND

Each utility shall provide the following information for the last calendar year:

A table of the demand in megawatts by the hour over a 24-hour period for:

1. the 24-hour period during the summer season when the megawatt demand on the system was the greatest; and
2. the 24-hour period during the winter season when the megawatt demand on the system was the greatest

	DATE	DATE
	8/9/10	12/13/10
	<= ENTER DATES	
TIME OF DAY	MW USED ON SUMMER PEAK DAY	MW USED ON WINTER PEAK DAY
0100	186	157
0200	177	155
0300	170	154
0400	164	154
0500	168	159
0600	177	171
0700	192	191
0800	215	208
0900	238	208
1000	255	207
1100	271	209
1200	285	210
1300	293	208
1400	298	206
1500	302	203
1600	306	203
1700	306	211
1800	303	228
1900	298	228
2000	290	223
2100	282	217
2200	274	207
2300	248	189
2400	227	175

COMMENTS
MMPA's reported MW include 2.4% transmission system losses.

Appendix C. IRP Cross Reference Index

The following table provides a cross reference index for the various regulatory requirements related to Integrated Resource Plan filings.

<u>Statute or Rule</u>	<u>Description of Requirement</u>	<u>Location in IRP Filing</u>
7843.0400 Subp. 1	Include most Advance Forecast filed with DOC	Appendix B
7843.0400 Subp. 2	File a proposed plan for meeting the service needs of its customers	Sections 11 and 12
7843.0400 Subp. 3A	Describe resource options considered, including information supporting selection of proposed resources	Sections 9 and 10
7843.0400 Subp. 3A	Include descriptions of the overall process and of the analytical techniques used to create resource plan from available options	Section 10
7843.0400 Subp. 3C	Include a five-year action plan	Section 11
7843.0400 Subp. 3D	Explain why the plan is in the public interest	Section 15
7843.0400 Subp. 4	Include a non-technical summary not to exceed 25 pages	Section 1
216B.1612 Subd. 5	Consideration of C-BED Projects	Section 11
216B.1691 Subd. 3	Description of efforts towards meeting REO/RES	Section 14
216B.2422 Subd. 2	Include in IRP a least cost plan for meeting 50% and 75% of all new and refurbished capacity needs through a combination of conservation and renewable energy resources	Section 14
216B.2422 Subd. 3	Use commission values and other external factors including socioeconomic costs when evaluating and selecting resource options	Section 10
