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Reply to St. Paul Office

October 31, 2006

## VIA E-MAIL AND U.S. MAIL

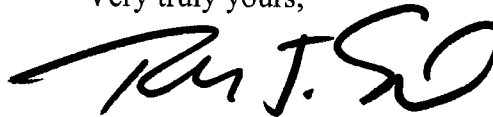
The Honorable Steve M. Mihalchick  
Administrative Law Judge  
Office of Administrative Hearings  
100 Washington Square  
Suite 1700  
Minneapolis, MN 55401-2138

**Re: In the Matter of a Petition by Excelsior Energy, Inc. for Approval of a Power Purchase Agreement Under Minn. Stat. § 216B.1694 and Determination of Least Cost Technology and Establishment of a Clean Energy Technology Minimum Under Minn. Stat. § 216B.1693  
OAH Docket No. 12-2500-17260-2  
MPUC Docket No. E-6472/M-05-1993**

Dear Judge Mihalchick:

Attached hereto please find an original and one copy of the Surrebuttal Testimony on behalf of the Minnesota Chamber of Commerce. Also enclosed please find an Affidavit of Service to all parties of record.

Very truly yours,



Richard J. Savelkoul

RZS/clj  
Attachments

cc: See Service List.



**Surrebuttal Testimony of**

**William Blazar**

Before the  
Minnesota Public Utilities Commission

In the Matter of the Application of a Petition by Excelsior Energy, Inc. for Approval of a Power Purchase Agreement Under Minn. Stat. § 216B.1694 and Determination of Least Cost Technology and Establishment of a Clean Energy Technology Minimum Under Minn. Stat. § 216B.1693

**OAH Docket No. 12-2500-17260-2**

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**October 31, 2006**

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1 I. INTRODUCTION

2 Q. Please state your name.

3 A. William Blazar.

4  
5 Q. Are you the same William Blazar who testified on behalf of MCC in reply testimony in  
6 this proceeding?

7 A. Yes.

8  
9 Q. What is the purpose of your surrebuttal testimony?

10 A. I will be providing surrebuttal testimony in response to the rebuttal testimony of James  
11 Skurla, Renee J. Sass, Elion Amit, Karen T. Hyde, and John J. Reed in issues of  
12 economic development benefits and appropriate terms of the PPA.

13 II. ANALYSIS

14 **Final PPA**

15 Q. What from the business customers' perspective must the PPA do to be in the public  
16 interest?

17 A. It must deliver reliable and competitively priced baseload electricity to Xcel's system.  
18 For guidance on both, we should look to Xcel's most recently approved resource plan,  
19 that has been reviewed by the Public Utilities Commission (PUC) and meets all the

1 resource and ratepayers protections requirements of state law. The resource plan  
2 identifies resource needs which the proposed project can meet and the PPA should be  
3 drafted accordingly. By taking this approach, the proposed project can deliver Xcel's  
4 ratepayers (including businesses) reliable, competitively priced electricity while also  
5 bringing some economic development of northeastern Minnesota. In approving Xcel's  
6 resource plan, the PUC already made a determination regarding the size and timing of  
7 Xcel's systems baseload needs. This Excelsior proceeding should determine if all other  
8 statutory requirements are met.

9  
10 I want to stress that a primary consideration should be Xcel's ratepayers and their need  
11 for reliable and competitively priced electricity.

12  
13 **Size of PPA**

14 *Q. Should Xcel purchase 450-megawatts of baseload energy from Excelsior pursuant to*  
15 *Minn. Stat. § 216B.1694?*

16 *A.* No, the legislature's intent for this statute was to, upon meeting other statutory  
17 requirements, require Xcel to purchase only that power which is necessary for the  
18 baseload needs of Xcel's Minnesota ratepayers. According to Xcel's most recent resource  
19 plan order (2004), Xcel's needs are far less than 450-megawatts.

1 Minn. Stat. § 216B.1694 clearly gives the Commission the authority to modify any  
2 required purchase pursuant to statute by the amount necessary as to not create waste. The  
3 PPA purchases pursuant to Minn. Stat. § 216B.1694 should be modified to only include  
4 necessary purchases pursuant to Xcel's most recent resource plan order.

5  
6 In hearings on October 5, 2006, Excelsior offered an explanation as to why 450-  
7 megawatts was selected by the legislature. In essence, Excelsior proposed that it likely  
8 was because 450 MW was the amount necessary to fulfill Xcel's Minnesota ratepayers'  
9 needs for baseload according to Xcel's then most recent proposed resource plan (2002).  
10 (See MCC Exhibit \_\_\_\_ (BB Surrebuttal 1)). I agree with this intent, but baseload needs  
11 have changed. Any required purchase under this proceeding should only be for the  
12 amount necessary to satisfy Xcel's needs under its current resource plan.

13  
14 *Q. In determining public interest, would it be in the public's interest for Xcel to purchase*  
15 *more power than is needed to supply Xcel's ratepayers with the baseload energy needed*  
16 *as required by their most recent resource plan?*

17 *A.* Certainly not. This would promote waste and unnecessary expenses for Xcel's ratepayers.  
18 Xcel does not need any baseload until 2015 and any excess purchases would be resold  
19 until that time and beyond. Presumably, at some point Xcel's customer demand would  
20 increase to the level proposed by Excelsior, but until then the customers would be paying  
21 for more plant, equipment and operating expense than is contemplated by the most

1 recently approved resource plan. This PPA would cost ratepayers in excess of \$2 billion,  
2 over 22 years. Customers can not afford this. (See MCC Exhibit \_\_\_\_ (BB Surrebuttal 2)).

3  
4 *Q. In other publications, MCC has maintained Xcel's baseload resources are inadequate,*  
5 *please reconcile that statement with your position in this case.*

6 A. It is my position that Xcel is currently behind in baseload resources. That will not be the  
7 case in 2012 when this PPA would come online.

8  
9 *Q. Are there things that Excelsior and Xcel could do with respect to this PPA that could*  
10 *make it more beneficial to the state?*

11 A. Yes, in addition to revising numerous provisions of the PPA to protect Xcel's ratepayer  
12 interests, the PPA could be modified to only sell the amount of power that is necessary to  
13 fulfill Xcel's baseload needs according to its most recent resource acquisition plan. As  
14 discussed above, Xcel will have excess power that will be sold on the market. If  
15 Excelsior reduces the power purchased by Xcel and changes the appropriate payment  
16 terms, this should result in a reduction of the over two billion dollars of increased costs  
17 that is a result of this PPA as it is currently drafted.

18  
19 **Economic Development**

20 *Q. Please respond to reply comments made by James A. Skurla on behalf of Excelsior*  
21 *Energy Inc. regarding the economic development impact of the project.*

1 A. I want to respond to the updated Research Report that was prepared under Mr. Skurla's  
2 direction by the University of Minnesota – Duluth Labovitz School of Business and  
3 Economics, Bureau of Business and Economic Research. Both the updated and the  
4 original report (2005) are economic multiplier and input/output analysis using a model  
5 created by the Minnesota IMPLAN Group, Inc. Basically, this model estimates the  
6 impact in both the Arrowhead Region and the state as a whole of the proposed  
7 investment. It provides estimates for both the project's construction phase and for a  
8 typical operating year.

9  
10 The most accurate way to understand its estimates is to consider them the static or “gross  
11 impact” of the project. They show how dollars spent will flow through the region's and  
12 state's economy. They are not adjusted for the other economic effects of the project,  
13 most notably the economic impact of any increase in electric rates that result from this  
14 project. Factoring in this effect would produce estimates of the project's dynamic or “net  
15 impact” on the region and most importantly, the state as a whole. Most importantly  
16 because the majority of the rate impact of this proposal will occur in Xcel's service  
17 territory which is outside of the area that will benefit most by Excelsior's investment in  
18 plant, equipment and operating payroll, i.e. the Arrowhead Region. In summary, the  
19 modeling that has been done is “static” and to meet the test of Minn. Stat. § 216B.1694,  
20 which requires “economic development benefits to the state,” a “dynamic” analysis must  
21 be done.

1 Our state Department of Employment and Economic Development does this for major  
2 economic development projects using the REMI (Regional Economic Models, Inc.)  
3 model. It is a common tool for projecting the full economic impact of the benefits and  
4 costs associated with any major capital investment or policy change.

5  
6 Let me elaborate on the type of economic impact analysis that is needed. First, I think  
7 the economic development benefits from this project should be estimated and compared  
8 against the economic benefits that would otherwise occur by virtue of Xcel Energy, Inc.,  
9 acquiring baseload necessary to fulfill its existing resource plan, i.e. if Xcel was to add  
10 more baseload at its Sherburne County facility.

11  
12 Second, the economic benefits should be measured against the economic costs associated  
13 with increasing rates for Xcel's ratepayers (See MCC Exhibit \_\_\_ (BB Surrebuttal 3))  
14 beyond what they otherwise need to pay under other baseload acquisition scenarios. As  
15 discussed in my rebuttal testimony, there will be a cost to increased rates in the form of  
16 less disposable income for individuals who, will in turn, be reducing spending, which will  
17 create less revenue for businesses and less sales tax collections for Minnesota, and  
18 businesses will have less revenue as well as higher electric bills, which will mean less  
19 income, which will increase the cost of doing business in Minnesota and cost  
20 Minnesotans jobs and less income tax collections for the state as a result.

1 Attached as MCC Exhibit \_\_\_\_ (BB Surrebuttal 4) is a copy of a study showing the  
2 effects of increasing rates beyond what is necessary for ratepayers, which demonstrates  
3 that increasing rates does have a negative impact on economic development. MCC has  
4 not performed such a study in Minnesota nor apparently has Excelsior. Absent such  
5 analysis and a positive result from it, Excelsior does not meet the statutory burden of  
6 demonstrating that there are net positive economic development benefits to the state as a  
7 result of this project.

8  
9 *Q. Please respond to Ms. Sass's contention that negative impacts associated with higher*  
10 *prices should not be incorporated into the economic development benefit analysis.*

11 *A. I strongly disagree. First of all, I do not think that the PPA as currently drafted will*  
12 *produce baseload electricity that is or is likely to be least cost resource, exhibits attached*  
13 *hereto show the contrary. There is sufficient evidence to demonstrate that the project as*  
14 *currently defined is not least cost, specifically, Xcel's modeling that demonstrates this*  
15 *PPA is over \$2 billion more expensive than its next cheapest alternative.*

16  
17 Furthermore, this position is confusing as Excelsior has maintained that they are entitled to the  
18 PPA under Minn. Stat. § 216B.1694 despite the costs of the PPA (I disagree with this  
19 interpretation). If Excelsior claims, as Ms. Sass does, that economic development does  
20 not need to analyze rate impacts because they are the least cost resource, they must prove  
21 they are a least cost resource in order to satisfy economic development requirements of

1 Minn. Stat. § 216B.1694, and thus, price is a factor that is weighed under that statute. If  
2 not, the economic development analysis must be redesigned with a dynamic model.

3  
4 **Default/Security**

5 *Q. Please discuss concerns with respect to collection of damages in the event of an Excelsior*  
6 *default under a PPA in this proceeding.*

7 A. I am concerned that Excelsior Energy is not adequately capitalized to protect Xcel and its  
8 ratepayers in the event of a default by Excelsior.

9  
10 See Excelsior's response to MCC's Information Request No. 6. (See MCC Exhibit \_\_\_\_  
11 (BB Surrebuttal 5)). Excelsior represents that it will only be capitalized to the extent  
12 necessary to meet lender or PPA obligations. The PPA must require additional  
13 capitalization or other security to protect ratepayers. Xcel typically includes such  
14 provisions in its contracts. See Xcel's response to MCC's Information Request No. 19  
15 (See MCC Exhibit \_\_\_\_ (BB Surrebuttal 6)).

16  
17 **Innovative Energy**

18 *Q. How should the Commission ensure that Innovative energy is produced pursuant to*  
19 *statute?*

20 A. Xcel energy entered into PPA's under the biomass statutes, those PPA's required a  
21 minimum amount of the output was biomass based, similar provisions should be put into

1 any PPA for IGCC electricity in this proceeding. Mr. Osteraas’s rebuttal testimony  
2 suggests that the company might agree with and incorporate this concept into a new draft  
3 of the PPA. We appreciate that and would like to discuss this suggestion, including how  
4 it could also be applied to fuel charges.

5  
6 **PPA Terms**

7 *R. How should the Commission review or modify this PPA if the necessary statutory*  
8 *requirements are met?*

9 *A. As I discussed in my rebuttal testimony, the economic risks should be fairly balanced*  
10 *with respect to what is commonly entered into for ratepayer protections in PPAs. The*  
11 *economic risks as proposed by Excelsior appear to be disproportionately pushed off to*  
12 *ratepayers.*

13  
14 The following issues also need to be addressed: if the plant is more expensive than what  
15 similar technology would cost by another provider, only those costs that are reasonable  
16 should be recovered; if the plant is scaled larger than is necessary, only those costs for an  
17 appropriately scaled facility should be recoverable, or only the proportional costs based  
18 on the size of the PPA as a percentage of total costs of the facility; if Excelsior is  
19 attempting to recover or sell power that is not generated from “innovative” sources  
20 (natural gas), those purchases and the related fuel charges should be limited, similar to  
21 statutory limitations of not more than 25% from non-biomass sources that apply to  
22 biomass purchases.

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*Q. What changes should be made to Excelsior’s PPA?*

A. Several parties have provided helpful testimony with respect to specific provisions that could or should be included in a PPA, including Elion Amit of the Minnesota Department of Commerce, and Karen T. Hyde and John J. Reed of Xcel Energy, but ultimately, the majority of these are considerations that should be negotiated and considered in their entirety within the context of a PPA. Making one change may have an unintended effect on other provisions if the PPA in its entirety is not considered.

There are certain provisions that could be ordered in this proceeding and other provisions that could be negotiated, all of which should be addressed and included to some extent in the PPA.

An example of provisions that should be ordered:

1. The PPA should not be for more than the power to satisfy Xcel’s ratepayer’s needs pursuant to Xcel’s 2004 resource plan; and
2. There should be a maximum amount of power produced by natural gas under this PPA.

Examples of items that should be negotiated and/or addressed in some manner are discussed by other intervenors such as Elion Amit and Karen Hyde.

1            On behalf of customers, I look forward to discussing and reviewing a revised PPA, which  
2            better meets the public interests involved.

**Executive Summary**

**1. Executive Summary**

Northern States Power Company d/b/a Xcel Energy ("Xcel Energy" or "Company") submits to the Minnesota Public Utilities Commission ("MPUC" or "Commission") our 2002 Resource Plan for consideration and approval. This Plan covers the period 2003 - 2017 and identifies a number of issues and risks that will significantly affect the reliability and economy of our customer's electrical energy supply. We look forward to discussion of this plan with stakeholders.

As in previous filings, this Plan presents our analysis of customer needs and resource options under a variety of assumptions to assist in selecting an appropriate path for resource acquisition. More so than previous plans, however, this Plan highlights critical decisions to be made within the five-year planning horizon that will significantly affect our future resource mix. Central among these decisions are:

- The future of our Prairie Island nuclear power plant, which will largely determine the future of nuclear generation in Minnesota.
- Whether the Commission approves our proposed 500-MW contract with Manitoba Hydro.
- The selection and ultimate acquisition of resources from our 2001 All-Source Bidding.
- The future of several key coal-fired power plants, which we have proposed to convert to natural gas and/or install state-of-the-art pollution control equipment.
- What framework of environmental, wholesale market, and transmission regulations will be in effect during the planning period.

## Executive Summary

In addition, we face normal planning risks (such as forecast risks) and decisions (such as what forecast confidence level to select for determining resource need).

Given the significant number of important issues to be addressed in the near future, our key objectives are to:

- *Anticipate the impacts and consequences of the various possible combinations of resource and regulatory options, and*
- *Ensure that we have adequate, affordable, and environmentally responsible resources to meet our customers' needs.*

Our five-year action plan focuses on managing through this period to ensure continued reliable, economic, environmentally sound service to our customers.

Not all of these decisions will be made by the Commission in this proceeding. Indeed, nuclear issues must be addressed by the Minnesota Legislature, given existing laws. Others are pending before the Commission in other proceedings, such as our Emissions Reduction Proposal (Docket No. E002/M-02-633) and the Manitoba Hydro contract (Docket No. E002/99-888), or may be primarily subject to federal regulation, such as environmental regulations and wholesale market design.

As such, this Plan is complex and will be considered in multiple forums. This Resource Plan attempts to provide a comprehensive view of these issues. As in prior years, we have analyzed a number of scenarios for consideration, modeling various assumptions regarding customer demand, the availability of resources, environmental policy, and market changes. In addition, we undertook significant modeling of various potential outcomes of decisions regarding nuclear power and pending Commission decisions. We believe our Plan presents information important to state policy makers, which we hope will help inform the debate regarding our energy future.

## Executive Summary

### Five-Year Action Plan

To successfully manage our resources through a period of significant risk and uncertainty and to ensure we have adequate resources available to meet our customers' needs, we propose the following five-year action plan:

- *Continue to aggressively pursue the conservation and load management goals established in the 2000 Resource Plan Proceeding.* To date, we have been successful in meeting the goals established in the previous plans. We intend to continue to develop new programs to ensure that we continue to meet these goals as cost-effectively as possible.
- *Obtain Commission approval of the Manitoba Hydro 500-MW contract.* This approval would complete the 1999 All-Source Bidding process and address resource needs beginning in 2005.
- *Complete the 2001 All-Source Bidding process in 2003.* This process, stemming from our last Resource Plan, seeks to secure up to 1,000 MW of additional resources. We are near final selection in this process. Successful completion is needed to ensure adequate supply resources in the 2005 – 2009 timeframe.
- *Obtain approval of our Emissions Reduction Proposal.* This Proposal provides 1,500 MW of environmentally sound, long-term supply, a net increase of approximately 300 MW over the existing plants. While the Commission will decide this matter in a separate proceeding, we include it in our recommended action plan. We believe this Proposal offers significant benefits to our customers.
- *Seek resolution of the future of nuclear generation in Minnesota by the legislature in 2003.* Our analysis indicates that an electricity future that includes nuclear generation is preferable to one that requires shutdown of our Prairie Island and Monticello plants. We have also identified options for replacement resources. Implementing a replacement to Prairie Island's generation will

## Executive Summary

take time, and our analysis indicates significant transmission improvements will be needed as well. Given current Minnesota law, action by the legislature will be required to address this issue, and we intend to provide various options for consideration. Our five-year action plan in this proceeding, however, will be significantly impacted by the outcome of this consideration.

- *Initiate an All-Source Bidding process in 2005 for up to 450 MW of generation to be in service between 2011 and 2013.* We plan to issue this solicitation with sufficient lead-time to accommodate competition from base load resources. We project a need for additional resources beginning in 2011.
- *Continue to closely monitor and manage the transition to new market and regulatory structures.* Dramatic industry changes brought about by new federal regulations will continue to influence our ability to plan for, acquire, construct, and transmit electricity. At the time of our last Resource Plan, the Federal Energy Regulatory Commission had just issued Order 2000, requiring Regional Transmission Organizations (“RTOs”). Now, the Midwest Independent System Operator (“MISO”) has commenced operations and independent transmission companies such as TRANSLink have been approved to provide certain RTO services. We expect that restructuring of the transmission function and change over to new organizations will continue to evolve over the coming years. This transition must be closely monitored to ensure that acquisition of needed supply resources can occur in a timely and efficient manner under the new structure. Xcel Energy anticipates filing its TRANSLink proposal, which is designed to help bridge some of these issues, with the Commission yet in December. Likewise, changes to environmental regulations could have significant impact on our resources, and should be carefully monitored.

While these action items seek to implement our preferred course, we recognize the uncertainty over whether all components will be approved and successfully

Executive Summary

accomplished. Therefore, we have also developed plans to help hedge this risk, making available options that will allow us to best meet our customer needs. These plans include:

- *If continued operation of our nuclear plants is not the State's preferred option, seek legislation expediting the Prairie Island alternative and begin the solicitation process in the 2003 – 2004 timeframe for replacement of Monticello's output in 2010. We plan to seek approval from the Commission of the PI Contingency finalist list and move forward with negotiations with the selected bidder(s) in order to maintain our options. In the event that the State does not agree with our preference for continued operation of nuclear generation, we will seek relief to provide timely siting and permitting of the Prairie Island replacement generation and transmission infrastructure. Continued operation of the Monticello nuclear generating plant beyond 2010 also depends on additional on-site dry storage if no out-of-state alternative is available. To ensure continued reliable supply, we would begin the resource acquisition process to replace the output from Monticello, which exhausts its storage capabilities in 2010.*
- *Establish an acquisition strategy for up to 500 MW of potential additional generation to as a hedge against the uncertainties and risks during this planning period. Seeking resources that offer implementation flexibility would enhance our ability to have available sufficient resources in the event any component of our Preferred Plan fails to develop or other risks materialize. Possibilities for this acquisition strategy include a Request for Proposals for contingency capacity, as is being done for Prairie Island, or rapid development of additional Company-owned resources. Such a strategy will provide an important hedge on the risks identified in this Plan, including forecast risk.*
- *Conduct a competitive solicitation program for up to 100 MW of biomass generation resources as a backstop so that we can respond quickly should current market conditions create difficulty for pending biomass projects. Of three projects currently under*

## Executive Summary

contract for 125 MW, only one (25 MW St. Paul District Energy) is financed and under construction. Changing independent power producer market conditions could conceivably impact the remaining two. To enhance our ability to respond quickly to meet our biomass objectives in the event of changed circumstance we intend to develop and pursue additional biomass resource bidding as a backstop.

- *Conduct periodic assessments to consider the combined impacts of the many events that will be occurring on our system.* We will continue to carefully monitor developments affecting our system. To the extent that we need to act in response to any development in a way not addressed by this Resource Plan, we will file with the Commission under Minn. Rule 7543.0500, Subd. 5 for a notice of changed circumstance. Careful monitoring and prompt action will be required to ensure we successfully manage resources during this period.

We recognize that others may view these issues differently and come to different conclusions. We welcome the opportunity to engage in a dialogue of these issues and work toward ensuring continued reliable, economical, and environmentally sound energy for our customers.

### Chapter Summaries

To assist in understanding the key components of our proposed Resource Plan, we provide the following summaries of each chapter of this filing.

#### Electric Energy and Peak Demand Forecast

In general, our forecasted needs for energy and capacity remain comparable to the projections made in our 2000 Resource Plan. We used slightly different forecasting methods in this Plan than in previous filings, responding to issues raised by parties in our 2000 Plan.

Our current projections place the median forecast of native *energy requirements* at an average annual growth of 1.7 percent over the 2003 – 2017 forecast period,

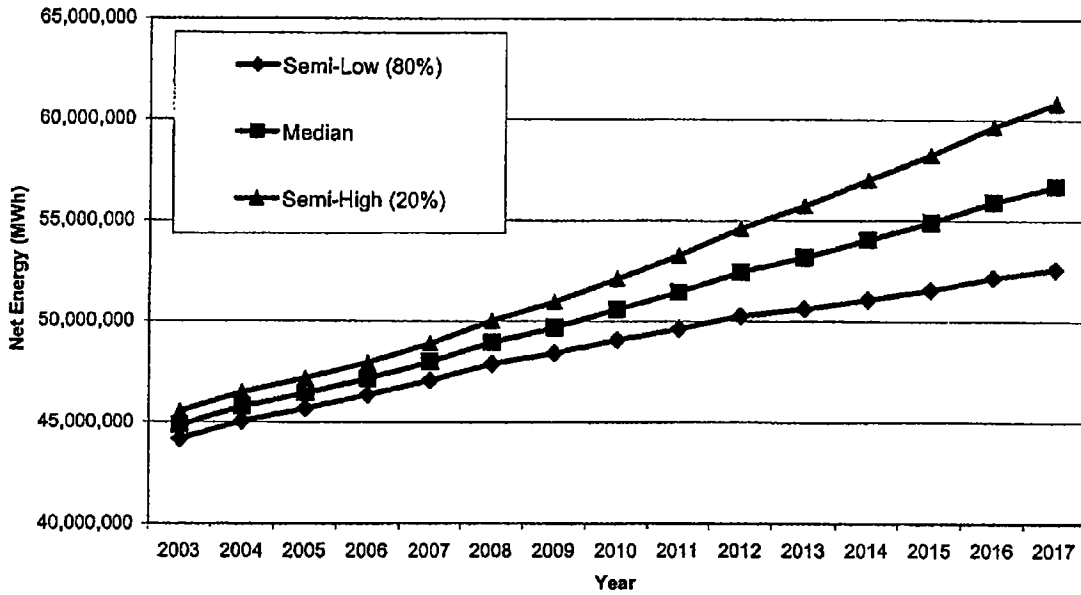
Xcel Energy  
2002 Resource Plan

**Executive Summary**

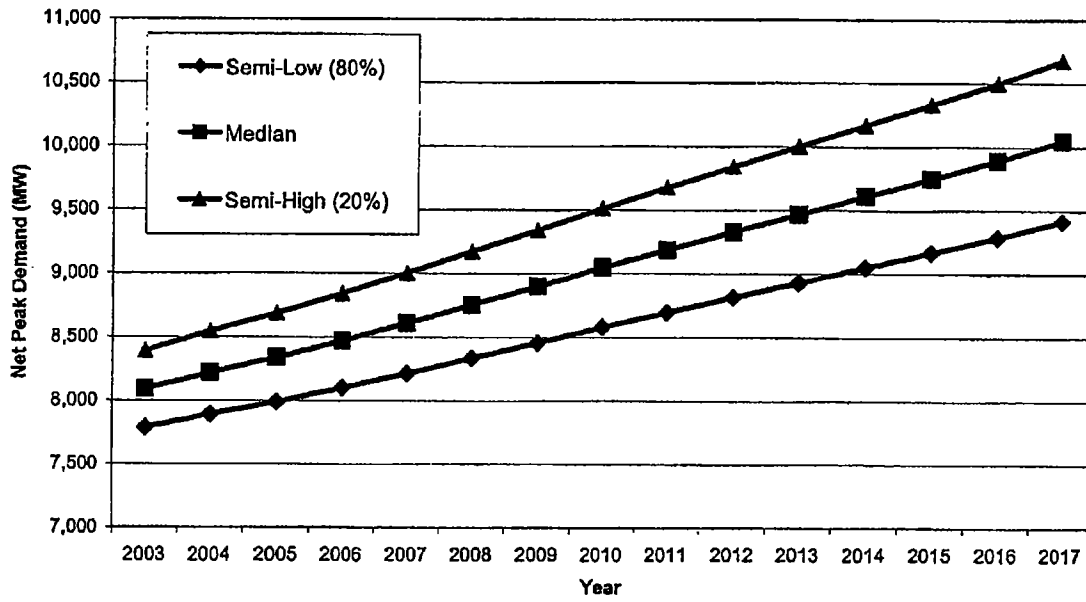
compared to an average annual growth rate of 1.65 percent in the 2000 – 2015 period covered by the previous plan. The median base *peak demand* forecast shows an average annual growth rate of 1.6 percent, compared to a 1.63 percent average annual growth rate in the 2000 Resource Plan. The difference in growth over the years from 2003 through 2008 between the 2000 Resource Plan forecast and this Resource Plan forecast is only 22 MW.

Xcel Energy supplements the median forecasts with two others to measure uncertainty and quantify uncertainty and errors in the models used to forecast electricity sales and peak demand. These forecasts predict system demand will increase at a rate between 1.4 and 1.8 percent per year, with a base of 8,637 to 9,309 MW of predicted demand in 2003. Figures 1-1 and 1-2 show the 2003 through 2017 long-range forecast of net energy requirements and net summer peak demand for the three forecasts.

Figure 1-1  
Xcel Energy Net Energy (MWh)



**Figure 1-2**  
**Xcel Energy Net Summer Peak Demand (MW)**



Executive Summary

**Resource Needs and Action Planning**

Xcel Energy may need up to 4100 - 5800 MW of new capacity by 2017. The resource need over the next five years depends on decisions to be made by Xcel Energy, the Commission, the Legislature, and other entities. Therefore, identification of resource needs is considerably more uncertain in this Plan than prior submissions. Key issues include: whether Prairie Island will continue to operate, how many megawatts will be procured in the 2001 competitive bidding solicitation, whether the pending 500 MW contract with Manitoba Hydro will be approved, and whether the Emissions Reduction Proposal will be approved. A number of these issues will be resolved within the coming year.

Depending on the resolution of these issues, our resource need by 2007 could range from 0 MW to over 1800 MW of capacity. Close monitoring and contingency plans will be important to ensuring that we can respond appropriately as these outcomes are decided.

In this Resource Plan, we advocate issuing an All-Source RFP in 2005 for up to 450 MW of capacity to be available beginning in 2011. In addition, we seek to develop an acquisition strategy for up to 500 MW of contingent capacity, potentially through an RFP for contingent power or the development of additional Company-owned generation. Such a strategy will allow us to better manage risk and provide an important hedge, given the significant uncertainties during this planning period. Having more potential suppliers in the event other projects fail to materialize or demand exceeds our forecast will benefit our resource acquisition efforts.

**Resource Plan Analysis**

Having identified expected need, Xcel Energy tests a spectrum of resource combinations that might be used to meet future electrical demand, allowing the impacts of various energy policy objectives to be tested. This analysis provides the basis for developing a robust action plan that will serve our customers well while furthering public policy objectives.

## Executive Summary

In this Resource Plan, we present many scenarios for consideration. The significant number of scenarios evaluated is indicative of the amount of potential variability and risk we see in this planning period. Therefore, we present analysis of the effects of: variability in the future demand for electricity; various renewable energy scenarios; and various nuclear power scenarios. We also examine the potential impacts various environmental strategies could have on the Minnesota's economy and power supply decisions.

### Demand-Side Management

As in our most recent Plan, we anticipate that it will become increasingly difficult to cost-effectively acquire additional DSM on our system. While demand-side management offers a number of advantages to our system and our customers, it can also pose implementation issues, particularly as we begin to saturate the market for particular technologies.

At present, however, we have met the aggressive goals adopted in the 2000 Resource Plan. We believe it is appropriate to continue to operate under these goals at this time, and seek Commission approval for continuation of these goals in our current Plan.

### Fossil-Fuel Resources

Xcel Energy currently has 3,758 MW (summer rating) of coal-fired generation on our system. With respect to this existing fleet, we recently completed the conversion of Black Dog Units 1 and 2 from coal to natural gas. During the upcoming planning period, we expect that more change will occur within our coal fleet through the Emissions Reduction Proposal, which would convert the High Bridge and Riverside plants from coal to natural gas in 2008 and 2009 and substantially refurbish the King Plant with new pollution control equipment in 2007. We have assumed that all other coal plants continue to operate through the planning horizon without any major changes in O&M expenses or capital

## Executive Summary

commitments. We will, however, continue to make incremental improvements at existing plants when cost effective.

With respect to natural gas-fired generation, Xcel Energy currently has 1,277 MW of on our system, including 987 MW of combustion turbines and 290 MW of combined cycle plant. We have assumed all these plants operate through the planning horizon without any major changes in O&M expenses or capital commitments.

### Nuclear Generation and Its Alternatives

Xcel Energy's current resource mix includes the Prairie Island ("PI") and Monticello nuclear plants. Minnesota law limits the amount of spent nuclear fuel storage at these plants, such that the PI plant will need to shut down in 2007 without legislative action. Monticello may operate until end of license (2010), but would not have the capability of seeking license extension (required to be filed in 2005). Therefore, electricity supply issues in the middle part of the planning period will be largely influenced by whether nuclear generation will continue to be part of the state's resource mix.

Our Plan provides information regarding the status of initiatives to provide storage and disposal of spent nuclear fuel and analysis of the options available to Minnesota policymakers regarding nuclear generation and its alternatives. Our analysis indicates that an electricity future that includes nuclear resources is preferable to one that requires shutdown of these facilities. The Plan provides detail on the options Xcel Energy will present to the Minnesota Legislature in the 2003 Session.

*Spent Fuel Storage:* Since our last Resource Plan, Congress authorized the Department of Energy's ("DOE") permanent spent fuel repository at Yucca Mountain, Nevada. While this milestone is significant, the repository will not be available to address the needs of PI and Monticello during the planning period. Although less promising than reported in our previous Resource Plan, Private Fuel

Xcel Energy  
2002 Resource Plan

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Storage ("PFS") solution remains a potential interim solution. PFS anticipates that the Nuclear Regulatory Commission ("NRC") will issue a license for the facility in 2003, such that the storage facility could be operating by the end of 2005. The project will continue to face political and legal challenges, as well as uncertainty as to whether it can attract sufficient customers. The progress on Yucca Mountain may cause many utilities to defer to the Yucca site rather than using off-site, interim storage. While we continue to believe PFS is a viable initiative and we intend to continue to pursue development of the project, we can no longer make planning decisions under the assumption that it will exist. Given the status of both the federal and private initiatives, the Minnesota Legislature will need to resolve the future of nuclear generation in this state absent a 2007 out-of-state spent nuclear fuel solution. We will present our analysis and potential options for consideration by the 2003 Minnesota Legislatures.

*Steam Generator Replacement:* Our analysis indicates that Prairie Island can produce power more economically if steam generators are replaced. However, it would not be economical to invest in new steam generators if the plant must shut down in 2007 due to spent fuel storage limitations. The most advantageous course is to replace steam generators in Unit 1 in 2004. We have taken incremental steps to preserve our ability to do that. However we have reached a point at which a decision whether to continue must be made. That decision necessarily depends on spent nuclear fuel decisions to be made by the legislature.

*Relicensing:* Applications must be made to the NRC five or more years before the current licenses expire and the work to prepare applications takes approximately two years. Therefore, Xcel Energy must decide soon whether to continue the process of application preparation for relicensing for the Monticello plant, or alternatively commence decommissioning planning. To date, 26 nuclear power plant licensees have made application for 20-year extensions to their operating licenses; 26 others have announced their intention to apply. Licenses have been renewed at five nuclear generating plant sites.

## Executive Summary

In this resource plan we examine a variety of alternatives to replace Prairie Island should it become necessary. Xcel Energy has received bids for the replacement of Prairie Island in a special competitive bidding process designed for that purpose. We anticipate finishing the selection process soon and continuing through the rest of the process as expeditiously as possible to preserve our ability to replace Prairie Island if necessary. The bids available to us consist of new gas- and coal-based generating plants. All require substantial transmission investments to ensure system reliability as the result of the significant change in the operating dynamics of the grid resulting from the absence of Prairie Island.

In addition, we have explored the feasibility of repowering Prairie Island as a natural gas fired facility. While nuclear power plants have been repowered, such a conversion has never been done seamlessly. Rather, gas conversion has only taken place after decommissioning is well advanced, several years after operations cease. Repowering does not appear to be a replacement option but may be a strategy to consider in order to make use of the site's infrastructure in the future.

Our comparative analysis of the replacement alternatives and continued operation indicates that the cost of electricity will be more economical with nuclear generation than without it. We also found the emission of fossil fuel related pollutants and green house gases to be lower with a nuclear generating component in our resource mix. We believe the risks associated with nuclear generation are manageable. We also conclude that the difference in the amount of spent nuclear fuel produced as the result of early shutdown is small and does nothing to address the fundamental responsibilities we as a nation have to properly manage and dispose of radioactive wastes. However, if Minnesota does not agree, we are prepared to pursue the resources necessary to replace our nuclear generating plants.

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### Renewable Energy

Xcel Energy's use of renewable energy is expected to increase during the planning period. We anticipate that biomass facilities developed pursuant to 1994 Minnesota legislation will begin to operate during this period. We anticipate that additional wind resources will be procured under the All-Source Bidding processes, both underway and planned. Due to the relative costs of various renewable energy resources, we expect that most renewable energy additions will be wind. We continue to believe that All-Source Bidding is the most appropriate means for determining additions to our resource mix, including renewable energy.

Other developments regarding renewable energy since our last Resource Plan include: adoption of renewable energy objectives by the Minnesota Legislature; implementation of a tariff for small wind producers to allow for streamlined connection to our distribution system; approval of our green-pricing offering; and awards of the first round of funding under the Renewable Development Fund, which has selected 19 projects for grants totaling \$16 million for renewable energy projects.

### Environment

Xcel Energy's fossil-fueled plants continue to comply with environmental regulations. Since our last Resource Plan, we have implemented several pollution-control equipment installations at our plants, submitted a voluntary mercury reduction plan, and proposed significant projects at the King, High Bridge, and Riverside plants under the Emissions Reduction Rider statute.

There is uncertainty in predicting the future of environmental compliance regulations. Consequently, we modeled various scenarios of potential future regulations to assess their impacts. This analysis shows that independent actions of either Minnesota or the United States will have more of a detrimental impact on the state's economy than operation under international environmental agreements would have. In addition, we provide various analyses in compliance with the

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Commission's Order in our most recent Resource Plan regarding alternative environmental scenarios.

### Transmission Impacts Associated with Generation Decision Making

Like other utilities in the country, Xcel Energy's transmission system is operating with very little excess capacity. Major improvements will be necessary as generation is added and customer demands continue to grow. The new market created by Open-Access transmission tariffs have increased the volume of transactions often to the point of raising the transmission network loading to its limits, such that line-loading relief and curtailment procedures are implemented more frequently than ever before. Implementation of RTOs, the start-up of MISO, and anticipated operation of TRANSLink pose transitional issues that impact resource planning and acquisition. Managing through these transitions as efficiently and effectively as possible will be important. Close monitoring of these transitions will be needed.

Legislative and Regulatory Changes have been made that require a separate Minnesota Transmission Planning proceeding. Minnesota transmission providers must now file a report on November 1 of odd numbered years outlining the system deficiencies their planning must address and potential solutions. The inaugural State Transmission Planning Report was filed November 1, 2001, and rulemaking is underway to guide future transmission planning dockets.

In this Resource Plan we provide a general discussion of the transmission implications associated with the generation decision making discussed throughout the plan. New high voltage transmission lines will be needed to support just about any large generation addition to the system. The actual requirements are very dependent on the specific site, size and operating characteristics of the proposal.

In general, small increments of additional electric power can probably be delivered within the Twin Cities metropolitan area without significant transmission investments. However, large units, approaching 400 – 500 MW in size, will

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probably require new transmission lines so that the added electrical power can be injected at more than one point in the interconnected electrical grid. Remote large generators (for example wind or coal-based plants in the Dakotas or additional purchases from Canada) will require new longer, and therefore more expensive, high-voltage transmission lines.

### Distributed Generation

Much work has been completed since the last Resource Plan to facilitate the addition of distributed generation resources on our system. Key among these include implementation of our tariff for projects 2 MW and under, and the work to establish generic state standards for projects sized up to 10 MW. Straightforward processes to connect distributed resources to our system are important to encouraging their development.

While we do not expect that distributed generation will provide a significant portion of our resource needs in the near future, we are working to support its implementation. In this chapter, we provide a summary of the pilot projects underway as part of our approved Conservation Improvement Plan.

### Conclusion

Xcel Energy appreciates this opportunity to present this Resource Plan to the parties and decision makers. We believe that a successful Resource Plan will allow us to successfully manage our resources through risk and uncertainty and ensure that we have ample, viable resources available to meet our customers' needs. Our five-year action plan focuses on managing through this period to ensure continued reliable, economic, environmentally sound service to our customers.

We look forward to discussion of our action plan with key stakeholders and decision makers. We recognize that others may view these issues differently and come to different conclusions. We welcome the opportunity to engage in a dialogue of these issues and work toward ensuring continued reliable, economical, and environmentally sound energy for our customers.

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## 2. Electric Energy and Peak Demand Forecast

- *We project an energy growth rate of 1.68% (average annual) over the planning period.*
- *We project a peak demand growth of 1.6% (average annual) over the planning period.*
- *Our forecast methodology no longer involves separate short- and long-term forecasts.*

Xcel Energy prepares a 15-year forecast of the demand for electricity as part of the bi-annual resource planning process. The Commission reviewed our forecast methodology in the 2000 Resource Plan and approved it with minor modifications. We prepared the current Resource Plan forecast using a slightly different methodology. The change in methodology responds to comments received on the 2000 Resource Plan and was presented to the Department prior to preparation of this Plan.

### Results

The median forecast of native energy requirements for the Xcel Energy – North<sup>1</sup> service territory has an average annual growth of 1.68 percent over the forecast period 2003 – 2017. This forecast is similar to the 2000 Resource Plan, which had an average annual growth rate of 1.65 percent from 2000 – 2015.

System peak demand is the maximum demand for capacity faced by the Xcel Energy – North system. Xcel Energy must be prepared to meet this demand through generation, purchases, or load-management programs. Our maximum demand occurs in the summer, during periods of hot and humid weather.

The median base peak demand forecast shows an average annual growth rate of 1.60 percent between 2003 and 2017. This is comparable to a 1.63 percent average annual growth rate from the 2000 Resource Plan. The difference in growth

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<sup>1</sup> “Xcel Energy – North” refers to the five-state electric service territory of Northern States Power Company (Minnesota, North Dakota, and South Dakota) and Northern States Power Company – Wisconsin (Wisconsin and Michigan).

## Forecast

between the 2000 Resource Plan forecast and this Resource Plan forecast for the period 2003 – 2008 is only 22 MW on a 9,700-MW base.

Xcel Energy has had load-relief programs, or interruption of load during hot summer weather, for several years. Participation in the programs has grown significantly, and we adjust our peak forecast to reflect this decrease in demand. The resulting median net peak demand is expected to grow 1.55 percent annually over the planning period versus 1.50 percent in the 2000 Plan.

### Forecast Methodology

Xcel Energy's forecast is prepared by major customer class sector and by jurisdiction using a variety of statistical and econometric techniques.

We develop our system median sales forecast by using a set of econometric models at the jurisdictional level for the Residential, Small Commercial and Industrial, and Large Commercial and Industrial sectors. These models relate Xcel Energy's historic electric sales to economic and demographic variables such as prices, income, employment, number of customers, and weather. Trending is used for the remaining sectors: Public Street and Highway Lighting, Other Sales to Public Authorities, Interdepartmental, and Firm Wholesale. We then compile our system sales by summing the individual forecasts for each sector in each jurisdiction.

Loss factors are used to convert the sales forecasts (obtained from the econometric models) into annual energy requirements (at the generator). It is assumed that these loss factors will hold constant over the forecast period. An econometric model was developed, with native energy requirements as a key driver, to forecast base peak demand in the Xcel Energy – North service territory.

A more complete documentation of the econometric modeling used to develop Xcel Energy's forecast of electric energy and peak demand is included in Appendix A.

### Key Variables

Following is a discussion of some of the key demographic and economic variables affecting the 2002 Resource Plan forecasts.

*Demographic Assumptions:* Population projections are essential in the development of the long-range forecast. The forecasts of residential customers are derived from population and number of household projections at the state level provided by Data Resources, Inc. – Wharton Econometric Forecasting Associates<sup>2</sup> (“DRI-WEFA”). The number of residential customers is the key variable in the residential MWh sales forecasts. Xcel Energy forecasts an annual growth rate for the number of total system residential customers of 1.19 percent, or approximately 17.9 percent over the period 2003 – 2017.

*Economic Assumptions:* Xcel Energy used forecasts of several key economic indicators as received from DRI-WEFA, including gross state product, employment, and productivity. Most variables used were specific to the jurisdiction, and proved key in the sales forecast of the commercial and industrial customer classes.

*Electricity Prices:* Xcel Energy created historic prices by calculating a price per MWh from billing information at the customer class and jurisdictional level. We then used the wholesale price index for electricity as created by DRI-WEFA to determine the forecast.

### Forecast Variability

As a measure of the uncertainty in any forecasting effort, Xcel Energy prepared a semi high and semi low forecast. The semi high forecast (20% forecast) is that level of energy consumption and power demand that is likely to be exceeded only 20 percent of the time. The semi low forecast (80% forecast) is that level of

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<sup>2</sup> DRI-WEFA has recently merged and changed the company name to Global Insight.

Forecast

power demand and energy consumption that is likely to be exceeded more than 80% of the time.

These forecasts predict system demand will increase at a rate between 1.40 and 1.80 percent per year, with a base of 8,637 to 9,309 MW of predicted demand in 2003. Tables 2-1 and 2-2 and Figures 2-1, 2-2 and 2-3, and show the 2003 to 2017 long-range forecast of net energy requirements and summer peak demand for the three forecasts.

Table 2-1 Xcel Energy  
2003 Long Range Forecast

Annual Net Energy (MWh)

Year	Forecast 1	Forecast 2	Forecast 3
2003	44,154,985	44,843,980	45,532,978
2004	45,057,594	45,777,599	46,497,608
2005	45,672,494	46,430,154	47,187,812
2006	46,350,252	47,154,797	47,959,342
2007	47,072,332	47,984,010	48,895,690
2008	47,879,117	48,950,604	50,022,089
2009	48,419,144	49,689,519	50,959,891
2010	49,077,644	50,590,274	52,102,904
2011	49,635,225	51,449,293	53,263,364
2012	50,263,086	52,443,251	54,623,415
2013	50,621,610	53,172,225	55,722,846
2014	51,089,639	54,054,566	57,019,494
2015	51,563,357	54,913,439	58,263,524
2016	52,179,777	55,927,765	59,675,752
2017	52,589,962	56,705,792	60,821,624
Average Growth 2003-2017	1.25%	1.68%	2.07%

**Table 2-2 Xcel Energy  
2003 Long Range Forecast**

**Annual Base Summer Peak Demand (MW)**

2003	8,637	8,973	9,309
2004	8,770	9,134	9,498
2005	8,902	9,289	9,676
2006	9,037	9,451	9,864
2007	9,177	9,617	10,057
2008	9,315	9,782	10,248
2009	9,452	9,945	10,439
2010	9,592	10,113	10,634
2011	9,724	10,271	10,817
2012	9,857	10,430	11,003
2013	9,987	10,586	11,185
2014	10,119	10,744	11,369
2015	10,247	10,898	11,549
2016	10,380	11,058	11,735
2017	10,520	11,226	11,932
<b>Average Growth 2003-2017</b>	<b>1.41%</b>	<b>1.60%</b>	<b>1.77%</b>

**Annual Net Summer Peak Demand (MW)**

2003	7,787	8,090	8,393
2004	7,894	8,221	8,549
2005	7,991	8,338	8,686
2006	8,102	8,472	8,843
2007	8,215	8,609	9,003
2008	8,336	8,754	9,171
2009	8,457	8,898	9,339
2010	8,581	9,047	9,512
2011	8,697	9,186	9,675
2012	8,815	9,328	9,840
2013	8,931	9,467	10,003
2014	9,050	9,609	10,168
2015	9,166	9,748	10,330
2016	9,287	9,893	10,499
2017	9,416	10,048	10,680
<b>Average Growth 2003-2017</b>	<b>1.36%</b>	<b>1.55%</b>	<b>1.72%</b>

Figure 2-1  
Xcel Energy Net Energy (MWh)

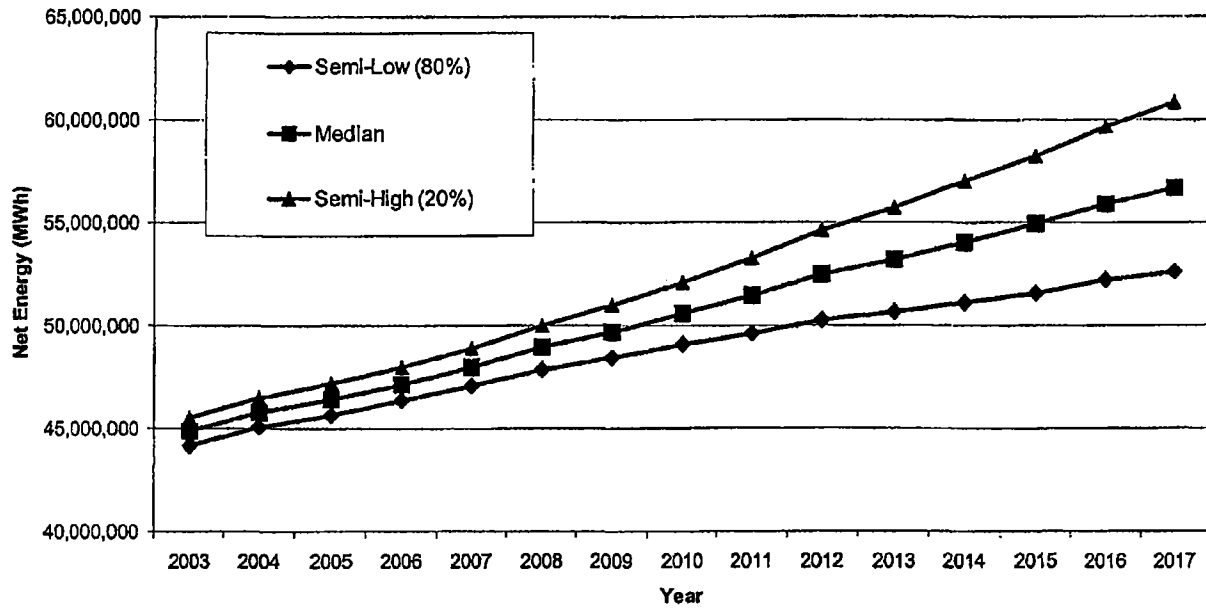


Figure 2-2  
Xcel Energy Base Summer Peak Demand (MW)

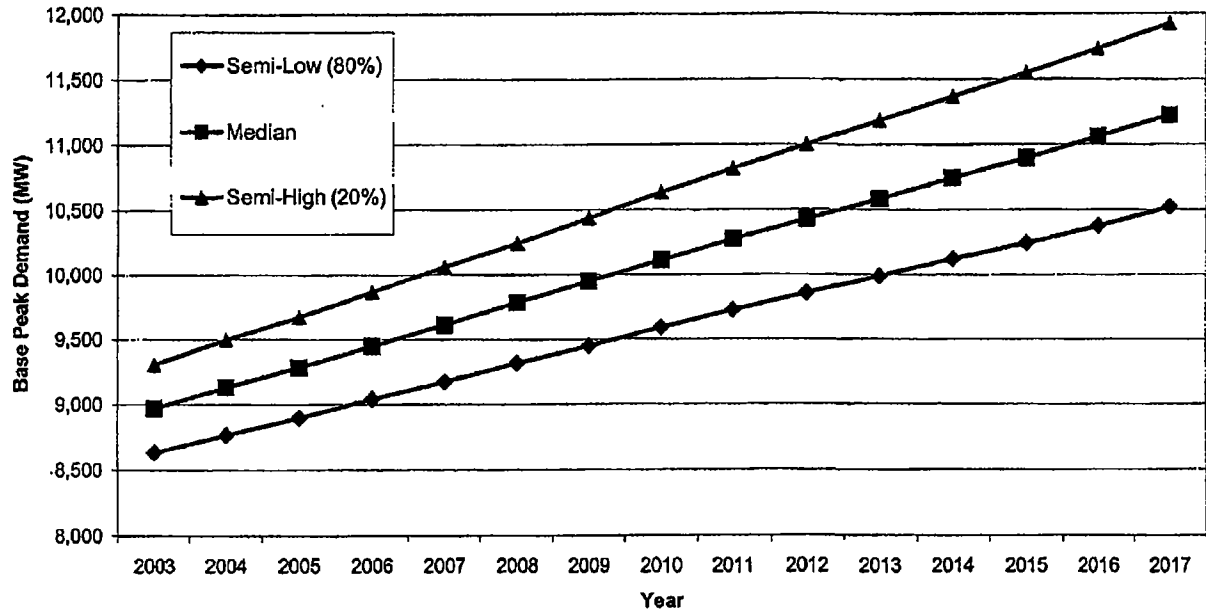
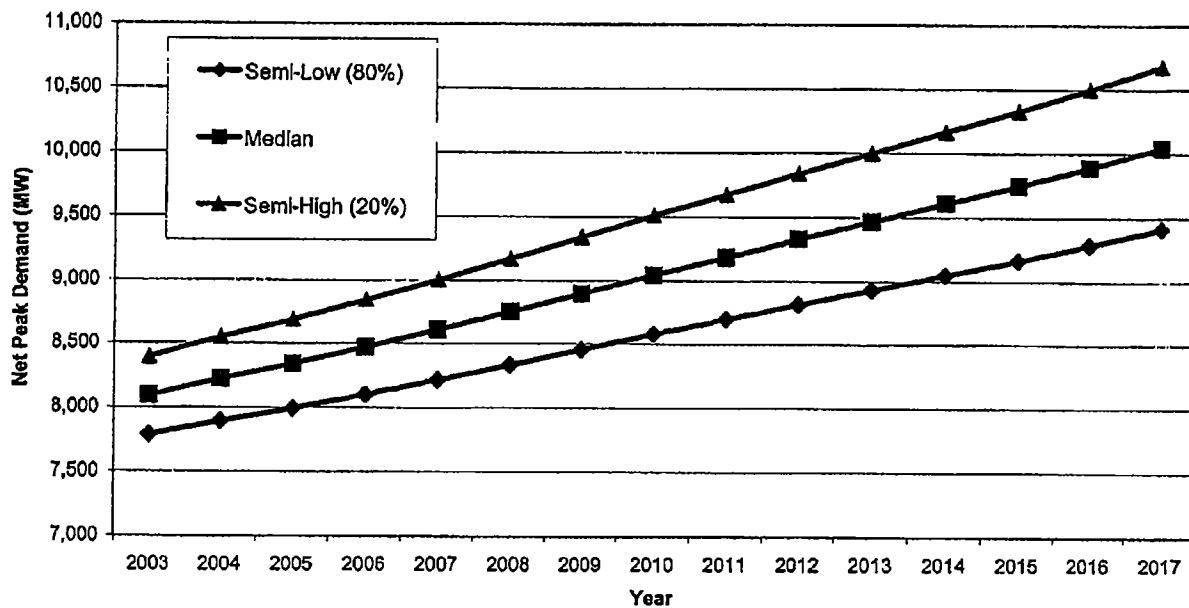


Figure 2-3  
Xcel Energy Net Summer Peak Demand (MW)



### Forecast Compliance Issues

We met with the staff of the Department of Commerce (“Department”) to discuss the recommendations from the 2000 Resource Planning process and present our plan for addressing these. Issues addressed the Department are discussed below.

*Calibration Methodology:* The Department disagreed with how Xcel Energy calibrated the short- and long-term forecasts in the 2000 Resource Plan. For the 2002 Resource Plan, we created one forecast for each customer class and jurisdiction for the entire planning period, eliminating the need for calibration. Because we no longer need to calibrate short-term and long-term forecasts, the explanation of that process is appropriately removed from the documentation.

*Inconsistent Methodologies:* The Department suggested the methods used to create the peak demand forecast in the short- and long-term forecasts were inconsistent. For the 2002 Resource Plan, we are no longer using load factors to create peak demand forecasts. Rather, we are using an econometric model to forecast peak demand for the entire planning period and have included the model and data series in Appendix A.

*Language Clarification:* The Department suggested a clarification in the language regarding the short-term sales and peak demand methodologies. We have modified the forecast process, eliminating the need for both a short-term and long-term forecast and thus a calibration of the two forecasts. The current methodology is described at length in Appendix A.

Resource Needs

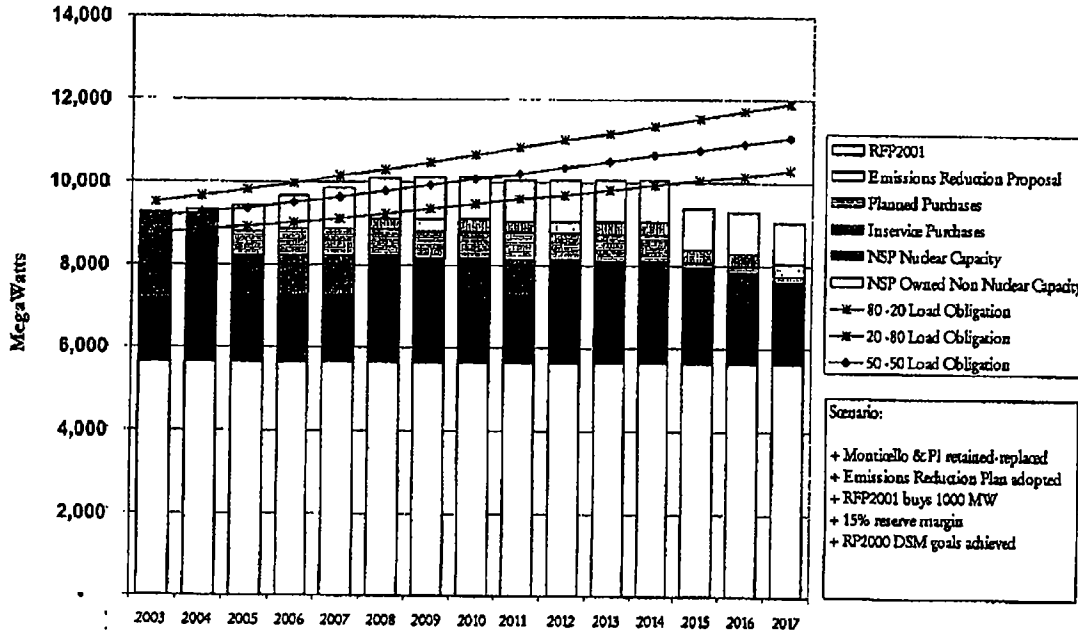
3. Resource Needs and Action Planning

- *Additional resources are required to meet our customers' requirements.*
- *Our plans focus on meeting customer requirements in an affordable, reliable, and environmentally responsible manner.*
- *Creating a process for ensuring the availability of additional resources should our plans fail to deliver expected capacity and energy is an important component of our action plan.*

Figure 3-1 presents the results of Xcel Energy's forecast of production capacity requirements compared to existing generation resources and pending generation acquisitions.

Figure 3-1

Resource Need



## Resource Needs

The forecast lines in Figure 3-1 reflect the demand-side management goals resulting from the 2000 Resource Plan proceeding and the 15% generation reserve requirement. After adjustments, Xcel Energy's median forecast predicts the peak demand for electricity will be 9,128 MW in 2003, 10,070 MW in 2010, and 11,096 MW in 2017. On the supply side, Xcel Energy owns approximately 5,800 MW of existing non-nuclear accredited production capacity and approximately 1,700 MW from Prairie Island and Monticello nuclear plants. Existing power purchases amount to 1,980 MW in 2003 but decline over time as purchase agreements expire.

Based on our forecasted demand and expected available resources, we anticipate the need to issue an All-Source Bid solicitation for approximately 450 MW in 2005 for resources to be placed in service between 2011 and 2013. This expected need and acquisition plan assumes successful completion of a number of our pending initiatives, including the outcome of several on-going acquisition programs, the decisions concerning the conversion and upgrade of existing plants in the Emission Reduction Proposal (Docket No. E002/M-02-633), and the Legislature's consideration of the future of nuclear generation. If any of these initiatives fail to deliver the expected energy and capacity, we will require additional replacement resources. Reaching consensus on an action plan to hedge this risk will be important to ensuring we are able to reliably and cost-effectively meet our customers' needs.

Issues and risks during the planning period that may affect our expected resource needs include:

- *DSM Risk.* Our forecasts rely on our ability to achieve an additional 50 to 80 MW of peak reduction each year due to conservation and load management. Based on our research, we believe it will become increasingly difficult to maintain this pace of DSM.

## Resource Needs

- *Developer Risk.* There are on the order of 1,900 MW in our anticipated power supply portfolio currently in development, contracted but not yet under construction, or yet to be secured in ongoing acquisition dockets. There is risk that some portion of those anticipated resources may not be implemented, despite our best efforts.
- *Existing Supply Risks.* Our Emission Reduction Proposal would provide 1,525 MW of capacity over the planning period, an increase of approximately 300 MW over the capacity of the existing plants. If the Commission does not adopt our Proposal, our resource need will grow.
- *Storage Capacity Risks.* Prairie Island does not have the ability to operate beyond 2007 unless additional spent fuel storage becomes available. If out-of-state spent fuel storage is not an option by that time and the Minnesota Legislature does grant additional storage, the output from Prairie Island must be replaced. If additional storage is not authorized for Prairie Island, it is unlikely Monticello would be able to operate beyond 2010 since it would also require additional spent fuel storage by that time.
- *Short-term Supply Risks.* Xcel Energy has traditionally met its median forecast with long-term supplies. We then make short-term purchases to cover variations due to weather, load forecast, forced plant outages, and wholesale market fluctuations. Our short-term purchases have increased dramatically in recent years. Increasing transmission constraints have restricted import of short-term purchases to our system. Additional long-term supplies coupled with additional transmission capacity may be needed to ensure continued reliable access to supplies.

Given these pending issues and uncertainties, we believe it is prudent to acquire – in an effort separate from the 450-MW solicitation identified above – up to 500 MW of additional long-term resources, provided we can achieve flexibility regarding timing of those resources. We believe we can achieve this needed

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flexibility in a number of ways, either individually or in combination. We could design an RFP similar to the Prairie Island contingent-bidding program. In that case we asked developers to provide bids that included cancellation provisions. In this case we could similarly seek cancellation and/or delay provisions to give added flexibility. Second, we could pursue staged development of Company-owned resources with short lead times, like natural-gas-fired combustion turbines deployed at existing power plant sites. We believe there are other flexibility strategies that could be explored. We welcome comment and discussion during consideration of this Resource Plan. We believe that achieving consensus and approval of a plan to hedge these risks is needed to ensure adequate supply of reliable, economic power to meet our customers' needs.

### Five-Year Action Plan

To successfully manage our resources through a period of significant risk and uncertainty and to ensure we have adequate resources available to meet our customers' needs, we propose the following five-year action plan:

- *Continue to aggressively pursue the conservation and load management goals established in the 2000 Resource Plan.* To date, we have been successful in meeting the goals established in the previous plans. We intend to continue to develop new programs to ensure that we continue to meet these goals as cost-effectively as possible.
- *Obtain Commission approval of the Manitoba Hydro 500-MW contract.* This approval would complete the 1999 All-Source Bidding process and address resource needs beginning in 2005.
- *Complete the 2001 All-Source Bidding process in 2003.* This process, stemming from our last Resource Plan, seeks to secure up to 1,000 MW of additional resources. We are near final selection in this process. Successful completion is needed to ensure adequate supply resources in the 2005 – 2009 timeframe.

## Resource Needs

- *Obtain approval of our Emissions Reduction Proposal.* This Proposal provides 1,500 MW of environmentally sound, long-term supply, a net increase of approximately 300 MW over the existing plants. While the Commission will decide this matter in a separate proceeding, we include it in our recommended action plan. We believe this Proposal offers significant benefits to our customers.
- *Seek resolution of the future of nuclear generation in Minnesota by the legislature in 2003.* Our analysis indicates that an electricity future that includes nuclear generation is preferable to one that requires shutdown of our Prairie Island and Monticello plants. We have also identified options for replacement resources. Implementing a replacement to Prairie Island's generation will take time, and our analysis indicates significant transmission improvements will be needed as well. Given current Minnesota law, action by the legislature will be required to address this issue, and we intend to provide various options for consideration. Our five-year action plan in this proceeding, however, will be significantly impacted by the outcome of this consideration.
- *Initiate an All-Source Bidding process in 2005 for up to 450 MW of generation to be in service between 2011 and 2013.* We plan to issue this solicitation with sufficient lead time to accommodate competition from base load resources.
- *Continue to closely monitor and manage the transition to new market and regulatory structures.* Dramatic industry changes brought about by new federal regulations will continue to influence our ability to plan for, acquire, construct, and transmit electricity. At the time of our last Resource Plan, the Federal Energy Regulatory Commission had just issued Order 2000, requiring Regional Transmission Organizations ("RTOs"). Now, the Midwest Independent System Operator ("MISO") has commenced operations and independent transmission companies such as TRANSLink have been approved to provide certain RTO services. We expect that

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restructuring of the transmission function and change over to new organizations will continue to evolve over the coming years. This transition must be closely monitored to ensure that acquisition of needed supply resources can occur in a timely and efficient manner under the new structure. Likewise, changes to environmental regulations could have significant impact on our resources, and should be carefully monitored.

While these action items seek to implement our preferred course, we recognize the uncertainty over whether all components will be approved and successfully accomplished. Therefore, we have also developed plans to help hedge this risk, making available options that will allow us to best meet our customer needs. These plans include:

- *If continued operation of our nuclear plants is not the State's preferred option, seek legislation expediting the Prairie Island alternative and begin the solicitation process in the 2003 – 2004 timeframe for replacement of Monticello's output in 2010. We plan to seek approval from the Commission of the PI Contingency finalist list and move forward with negotiations with the selected bidder(s) in order to maintain our options in case the authorization of for additional on-site spent fuel storage is not obtained from the legislature. In the event that the State does not agree with our preference for continued operation of nuclear generation, we will seek relief to provide timely siting and permitting of the Prairie Island replacement generation and transmission infrastructure. Continued operation of the Monticello nuclear generating plant beyond 2010 also depends on additional on-site dry storage if no out-of-state alternative is available. To ensure continued reliable supply, we would begin the resource acquisition process to replace the output from Monticello, which exhausts its storage capabilities in 2010.*
- *Establish an acquisition strategy for up to 500 MW of potential additional generation to as a hedge against the uncertainties and risks during this planning period. Seeking resources that offer implementation flexibility would enhance our ability to*

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have available sufficient resources in the event any component of our Preferred Plan fails to develop or other risks materialize. Possibilities for this acquisition strategy include a Request for Proposals for contingency capacity, as is being done for Prairie Island, or rapid development of additional Company-owned resources. Such a strategy will provide an important hedge on the risks identified in this Plan, including forecast risk.

- *Conduct a competitive solicitation program for up to 100 MW of biomass generation resources as a backstop so that we can respond quickly should current market conditions create difficulty for pending biomass projects.* Of three projects currently under contract for 125 MW, only one (25 MW St. Paul District Energy) is financed and under construction. Changing independent power producer market conditions could conceivably impact the remaining two. To enhance our ability to respond quickly to meet our biomass objectives in the event of changed circumstance we intend to develop and pursue additional biomass resource bidding as a backstop.
- *Conduct periodic assessments to consider the combined impacts of the many events that will be occurring on our system.* We will continue to carefully monitor developments affecting our system. To the extent that we need to act in response to any development in a way not addressed by this Resource Plan, we will file with the Commission under Minn. Rule 7543.0500, Subd. 5 for a notice of changed circumstance. Careful monitoring and prompt action will be required to ensure we successfully manage resources during this period.

We look forward to discussion of this action plan with key stakeholders. We recognize that others may view these issues differently and come to different conclusions. We welcome the opportunity to engage in a dialogue of these issues and work toward ensuring continued reliable, economical, and environmentally sound energy for our customers.

#### 4. Resource Plan Analysis

- *The “Strategist” tool has replaced EGEAS, performing the same type of analysis.*
- *We developed a Preferred Plan after developing a Reference Case and modeling various assumptions. We recommend the Commission adopt the Preferred Plan as a basis for decision-making in this proceeding*

After resource needs have been identified, the planning process next investigates resource combinations that might be used to meet future electrical demand. Our analytical tools allow us to determine the most efficient resource mix under a variety of assumptions. With this information, we can compare the economic, environmental, and reliability impacts of various potential energy policy objectives over the planning period.

#### Modeling Tool

Xcel Energy uses the “Strategist” resource expansion model<sup>3</sup> to analyze various long-range electric supply-demand alternatives. Strategist replaces the EGEAS model that we used in the past, but essentially does the same work. Specifically, Strategist:

- Develops the optimized selection of resources to meet the resource need, given the input assumptions.
- Determines the supply patterns of existing and required new resources to meet the identified customer needs.
- Calculates the present value of revenue requirements (“PVRR”) to measure the economic impacts of various planning scenarios. (Our reported present values are in 2003 dollars [“2003\$”]).
- Calculates environmental impacts of the plan using input externality values.

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<sup>3</sup> “Strategist” is a registered trademark of New Energy Associates, Inc. New Energy Associates developed and maintains the Strategist model.

## Analysis

Our Emissions Reduction Proposal included the results of Strategist analysis, and we have used this model in our evaluation of bids submitted in both the Prairie Island ("PI") Contingency and All-Source Bid processes. We would be happy to provide additional detail on this model, if needed.

### Reference Case

To perform the analysis, we first construct a Reference Case against which all other scenarios can be compared. Through comparisons, the supply patterns, relative economic impacts, and environmental impacts of various alternatives under different sets of assumptions can be determined and analyzed. The Reference Case is not necessarily the least-cost plan, but a starting point for the analysis.

### *Assumptions*

The 2002 Resource Plan Reference Case assumes:

- Our median forecast of demand and energy requirements.
- DSM at the level adopted by the Commission in our most recent resource plan, which corresponds to the ordered values of 1,174 MW and 3,253 GWh.
- Continued operation of our existing power plants as currently configured (i.e., without the changes proposed in the Emissions Reduction Proposal).
- PI Units retired in 2006 and 2007; Monticello in 2010.
- The value of unserved energy is \$150/MWh.
- Continuation of existing purchased power contracts, and placeholders for 800 MW to represent selections from the 2001 All-Source Bidding process.<sup>4</sup>
- Installation of 480 MW of wind by the end of 2005 and 125 MW of biomass by 2004. We do not assume any additional wind that might be purchased in our 2001 All-Source Bidding program. We model wind using MAPP accredited capability at 10% of nameplate capacity, a \$2/MWh ancillary

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<sup>4</sup> We used 800 MW instead of the full 1,000 MW potentially sought by the bid to fit with the generic plant size used by the Strategist model.

Analysis

service charge, and a 25 – 32% annual capacity factor, depending on the size of the installation.

Stratigist requires generic resources to meet future demand when installed resources fall short. This Resource Plan uses the following generic resources, developed using information from bidding processes and the Energy Information Agency.

- 200 MW purchase, based on combustion turbines.
- 200 MW purchase, based on combined-cycle generators.
- 450 MW purchase, based on coal-fired generation.
- 400 MW (nameplate) purchase, based on wind resources.

*Results*

The resulting Reference Case has a PVRR of \$14,817 million. Table 4-1 shows the results for the high and low forecasts.

Table 4-1 Stratigist Results

Forecast Study Results from Stratigist 2002 Resource Plan – Study Timeframe 2003-2017 PVRR in \$000,000 (millions of dollars)			
Forecast	PVRR	Low Externalities	High Externalities
Low (80/20)	14,031	14,355	16,102
Reference Case (50/50)	14,817	15,155	16,998
High (20/80)	15,607	15,951	17,843

*Compliance Requirements*

Order Point 4 of our 2000 Resource Plan Order directed Xcel Energy to present the needs identified by Stratigist in baseload, intermediate, peaking, and other categories. In compliance with that Order, we present the following tables. Stratigist matches a particular resource to the need, such that coal plants represent baseload, natural-gas combined-cycle generators represent intermediate, and

Analysis

combustion turbines represent peaking. The "Other" category is represented by wind, a resource with a fixed delivery pattern that does not fit a baseload, intermediate, or peaking definition.

Table 4-2 Incremental Resource Needs (MW)  
Reference Plan, Median Forecast

	Base (Coal)	Intermediate (CC)	Peaking (CT)	Other (Wind*)	Total
2003					0
2004					0
2005		600			600
2006		200			200
2007		400	200		600
2008	902				902
2009					0
2010				40	0
2011	902				902
2012					0
2013	451				451
2014					0
2015	451		200		651
2016			200	40	200
2017	451				451

\* Accredited capability; 10% of nameplate capacity.

**Table 4-3 Cumulative Resource Needs (MW)  
Reference Plan, Median Forecast**

	Base (Coal)	Intermediate (CCs)	Peaking (CTs)	Other (Wind*)	Total
2003					0
2004					0
2005		600			600
2006		800			800
2007		1200	200		1400
2008	902	1200	200		2302
2009	902	1200	200		2302
2010	902	1200	200	40	2342
2011	1804	1200	200	40	3244
2012	1804	1200	200	40	3244
2013	2255	1200	200	40	3695
2014	2255	1200	200	40	3695
2015	2706	1200	400	40	4346
2016	2706	1200	600	80	4586
2017	3157	1200	600	80	5037

\* Accredited capability; 10% of nameplate capacity.

### Comparative Analysis

We next studied many potential changes to the reference case assumptions to explore different ways to meet our customers' needs under a variety of scenarios. We chose the scenarios to model varying potential outcomes of key areas of risk during the planning period. These key risk areas include demand forecast, the Emissions Reduction Proposal implementation, continued nuclear generation, and environmental regulation impacts. Further, because the cost of natural gas can significantly influence PVRR, we ran scenarios of low, median, and high natural gas prices within each of the key areas.

Below we provide a general summary of our comparative analysis in each of these key areas. Details regarding the outcome of these analyses are included in the chapters that follow.

*Forecast*

To test the sensitivity of resource additions to slower or faster demand growth, Xcel Energy varied the demand forecast by selecting a variety of confidence intervals. In addition to the median forecast, we tested the semi-high ("20-80") and semi-low ("80-20") forecasts. The results of these analyses are contained in Table 4-1 of this Plan.

As discussed above, we based the Reference Case on a median load forecast. Other cases presented in this Resource Plan are based on load forecasts at different points on a normal distribution of weather over the past 40 years. None of these cases accurately predict load patterns we could expect during the extreme summer weather periods that occur every few years in Minnesota. Thus, the Company explored the question of whether the load patterns resulting from these sporadic extreme summer weather periods suggest a different set of resource needs than those identified in the Reference Case.

We used actual weather data for each hour in June, July, and August of the years 1987 - 2001 in our load-forecasting model to simulate load patterns for each summer in the resource planning period (2003 -2017). In other words, 1987 summer weather was simulated in the load forecast model for 2003, 1988 summer weather was simulated in the load forecast model for 2004, and so on to produce simulated summer load patterns for each summer in the planning period. The simulated monthly summer peak load and total monthly energy were then substituted for the summer peak load and energy used in Strategist for the Reference Case. A typical week per month pattern was created based on the simulated peak load and energy along with the load pattern from the Reference Case. Strategist was then allowed to optimize using the same generic units available for the Reference Case optimization. The results of the Summer Simulation Case optimization are presented in Table 4-4.

**Table 4-4 Summer Simulation Case  
Capacity by Generic Plant Type (MW)**

Weather Year	Simulation Year	Coal	CC	CT	Wind <sup>2*</sup>	Total	Cumulative Total
1987	2003		400			400	400
1988	2004			400	40	440	840
1989	2005		600			600	1440
1990	2006		200			200	1640
1991	2007			200		200	1840
1992	2008					0	1840
1993	2009	450				450	2290
1994	2010	450				450	2740
1995	2011	900				900	3640
1996	2012					0	3640
1997	2013					0	3640
1998	2014				40	40	3680
1999	2015	1350			40	1390	5070
2000	2016					0	5070
2001	2017	450		200	40	690	5760
	<b>Total</b>	<b>3600</b>	<b>1200</b>	<b>800</b>	<b>160</b>	<b>5760</b>	

\* Accredited capability, 10% of nameplate capacity.

Annual comparisons of resource needs identified in the Reference Case (presented earlier in this chapter) versus the Summer Simulation Case are probably not meaningful because it is unreasonable to expect, as an example, that summer 1988 weather will be experienced again in 2004 or in any other particular year. However, we believe it is instructive to compare resource needs over the entire planning period by resource type and in terms of total resource needs.

The Summer Simulation Case suggests Xcel Energy could have 730 MW more resource needs than the Reference Case has identified if, in fact, actual summer weather patterns from the past 15 years are repeated over the course of the resource planning period (2003 – 2017). This additional resource need would take the form of one additional peaking resource (200 MW), one additional coal resource (450 MW) and two additional wind resources (80 MW accredited). While it is unlikely that the summer weather pattern for the past 15 years will repeat itself exactly over the next 15 years, we have concluded from this preliminary analysis

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 Public Document – Trade Secret Data Excised  
 Public Document

Xcel Energy

Docket No.: E6472/M-05-1993

Response To: MN Chamber of Commerce Information Request No. 23

Date Received: October 17, 2006

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Question:

What would Xcel do with excess baseload capacity if the Power Purchase Agreement as proposed by Excelsior is approved?

Response:

If there was excess system capacity as a result of the PPA being approved, Xcel Energy would likely try to sell the excess to other utilities in the market.

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Response By: Elizabeth Engelking

Title: Manager, Resource Planning and Bidding

Date: October 30, 2006

- Non Public Document – Contains Trade Secret Data  
 Public Document – Trade Secret Data Excised  
 Public Document

Xcel Energy

Docket No.: E6472/M-05-1993

Response To: MN Chamber of Commerce Information Request No. 24

Date Received: October 17, 2006

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Question:

In the event Excelsior does not meet the commercial operation date pursuant to its proposed timeline, how would replacement baseload be acquired, and what would be the cost of that compared to the cost under the Excelsior PPA?

Response:

If Mesaba Unit 1 did not meet its proposed commercial operation date, Xcel Energy would utilize its own resources and available market resources to procure the capacity and energy necessary to meet its load obligations. Pursuant to our approved resource plan, the Minnesota Public Utilities Commission has determined that Xcel Energy does not need additional baseload capacity until 2015 and we do not anticipate the need to replace capacity that is in excess of our approved resource plan.

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Response By: Elizabeth Engelking

Title: Manager, Resource Planning and Bidding

Date: October 30, 2006

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Xcel Energy

Docket No.: E6472/M-05-1993

Response To: MN Chamber of Commerce Information Request No. 21

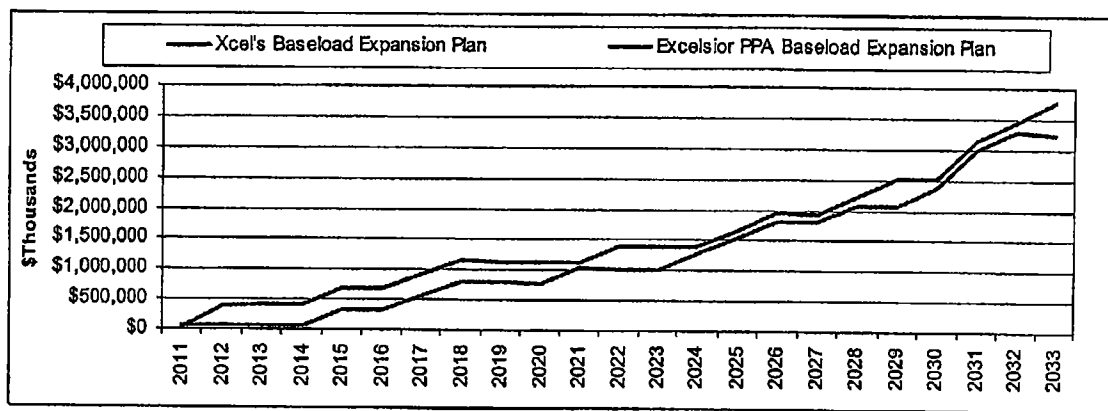
Date Received: October 17, 2006

Question:

What is the cost of Xcel's own expansion of baseload generating facilities over the 25-year period proposed by Excelsior for its PPA?

Response:

Xcel Energy's analysis shows that its base load expansion plan is substantially less expensive than the expansion plan that includes the Excelsior PPA. Summing the total cost of baseload additions from 2011 to 2033, the last year of Xcel Energy's strategist model, the 2007 net present value of the increased costs caused by Excelsior is \$2,126,666,000. The following chart illustrates the differences in baseload expansion costs.



Response By: Elizabeth Engelking

Title: Manager, Resource Planning and Bidding  
Date: October 30, 2006

**Economic Impacts from Rate Increases to Non-DSI Federal Power Customers Resulting from Concessional Rates to the DSIs**

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Portland, Oregon 97232**

**May 31, 2006**



