DRAFT – REVISION 0

2009 Infrastructure Update to
Electric Utility Baseline Strategy for 2005-2030
Electric Infrastructure

Prepared For

Rochester Public Utilities

July 2009

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prepared by

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

This report section presents a summary of the 2009 Infrastructure Update (Study or Study Update). The Study was completed by Burns & McDonnell Engineering Company (B&McD) for Rochester Public Utilities (RPU). The objectives, methodology, and results of the Study are described in the following sections

ES.1 STUDY OBJECTIVES

The updated analysis required to support the ongoing long term resource decisions is the subject of this report. The objective of this update was to analyze the power supply needs and regulatory requirements of RPU to the 2045 time frame in order to identify any longer term issues which could impact shorter term decisions. The major regulatory and power supply resource issues which confront RPU include:

- The long range development of power supply resources in anticipation of a contract extension or termination with SMMPA in 2030
- The development of renewable resources to meet Minnesota requirements
- The benefit of the Silver Lake power plant as a long term resource
- The examination of DSM impacts to RPU’s long range resource plan

ES.2 KEY ASSUMPTIONS

The following general assumptions are applicable to this Study:

- The study period for the SMMPA contract extension analysis covers the years 2025 through 2044 and the study period for the wind RFP and renewable energy analysis covers the years 2010 through 2030.
- Except where noted otherwise, all assumptions were escalated in real dollar terms based on 2009$.
- RPU must maintain capacity reserves of 15 percent above peak load (net of CROD) throughout the study period.
- In scenarios where CROD is not continued, the contract terminates December 31, 2030. In scenarios where CROD is continued, the contract continues at 216 MW and its other current terms through the study period.
- No RPU resources are retired throughout the study period.

- The hourly load shape provided by RPU for the 2006 calendar year was used as the basis for the study load shape adjusted based on future load growth projections.
- Future load growth projections were based on recent estimates from SMMPA.
- The discount rate for RPU for financing terms was 6.0 percent, with longer term resources financed over 30 years, and shorter term resources financed over 20 years.

In addition, there are a number of key variables which require forecasts over the life of the study. The forecasted variables include:

- Demand and Energy Forecast (See Section 2.1.2)
- Coal and Biomass Fuel Forecast (See Section 2.2.1)
- Natural Gas Price Forecast (See Section 2.2.2)
- Spot Market Energy Price Forecast (See Section 2.2.3)
- Estimated Carbon Tax Rate Forecast (See Section 2.3)

ES.3 LOAD FORECAST

The analysis of future resource requirements necessitates knowledge of the future loads to be served by the utility. The development of the load forecast used in this Update Study considers the historical load growth, effects of economic development, weather, the impacts of ongoing demand side management programs and various other factors. The load forecast used was based on linear growth of a recent SMMPA projection for RPU demand and energy requirements to 2030 and based on average growth thereafter. The historical load for 2006 was provided on an hourly basis by RPU and used as a starting load shape, modified based on future load growth projections. Table ES-1 shows the projected demand and energy forecast used in this analysis over the period 2010 through 2044.

Table ES-1: RPU Demand and Energy Forecast

Year	Demand (MW)	Energy (GWh)	Year	Demand (MW)	Energy (GWh)
2010	292.0	1,470.9	2028	379.3	1,982.8
2011	296.8	1,499.3	2029	384.1	2,011.2
2012	301.7	1,527.8	2030	389.0	2,039.7
2013	306.5	1,556.2	2031	394.0	2,069.4
2014	311.4	1,584.6	2032	399.1	2,099.5
2015	316.2	1,613.1	2033	404.3	2,130.1
2016	321.1	1,641.5	2034	409.6	2,161.1
2017	325.9	1,670.0	2035	414.9	2,192.5
2018	330.8	1,698.4	2036	420.2	2,224.4
2019	335.6	1,726.8	2037	425.7	2,256.8
2020	340.5	1,755.3	2038	431.2	2,289.7
2021	345.3	1,783.7	2039	436.8	2,323.0
2022	350.2	1,812.2	2040	442.5	2,356.8
2023	355.0	1,840.6	2041	448.2	2,391.1
2024	359.9	1,869.0	2042	454.0	2,426.0
2025	364.7	1,897.5	2043	459.9	2,461.3
2026	369.6	1,925.9	2044	465.8	2,497.1
2027	374.4	1,954.4			

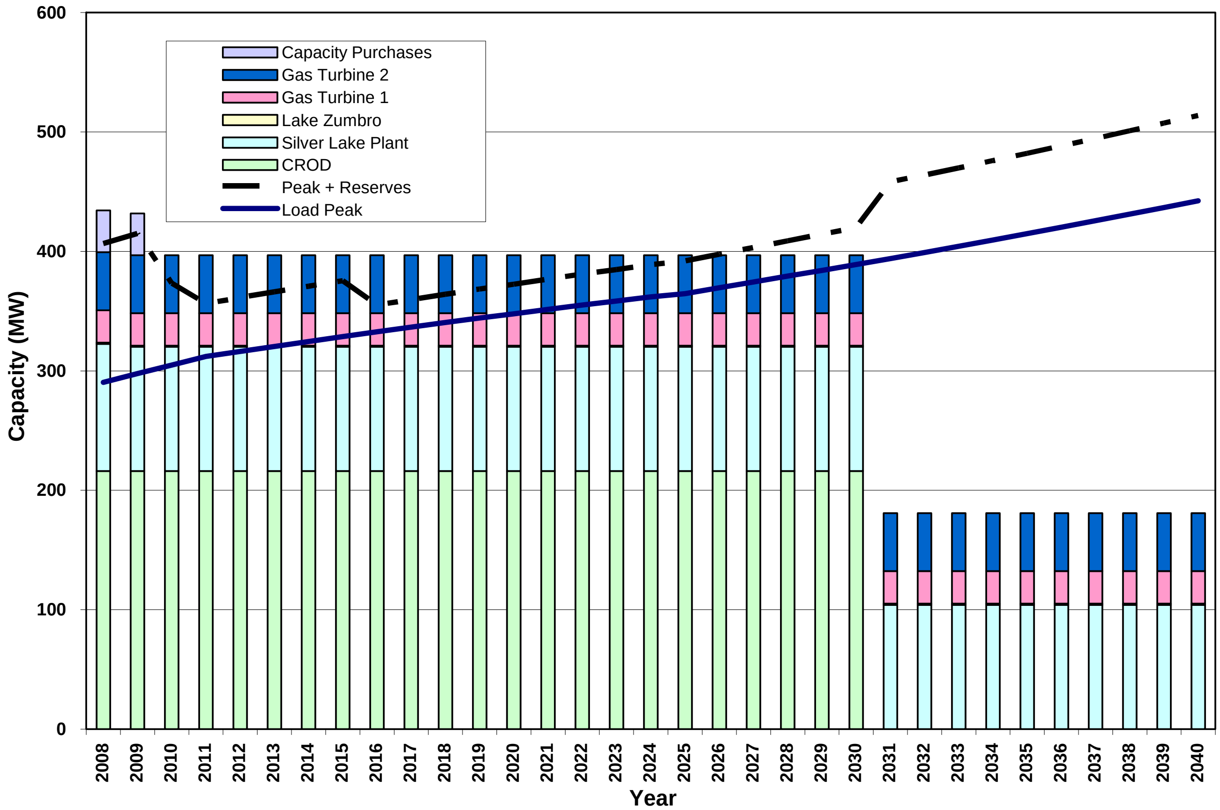
ES.4 BALANCE OF LOADS AND RESOURCES

RPU is responsible to meet the electrical energy needs of the citizens of Rochester, Minnesota and certain areas surrounding Rochester. The loads include general residential and commercial loads as is typical of large metro areas. Larger customers served by RPU include the various hospitals within Rochester, such as the Mayo Clinic, and a large IBM facility. RPU is also a member of the Southern Minnesota Municipal Power Agency (SMMPA) which provides RPU with a major portion of its energy requirements through a contract rate of delivery (CROD) agreement scheduled through 2030. In addition to CROD, RPU has a number of resources to meet its demand and energy requirements. These include a diverse mix of coal, gas, landfill gas and hydro-electric generating units. The units owned and operated by RPU are the following:

- Silver Lake Power Plant (Units 1-4)
- Cascade Creek (Units 1-2)
- Olmstead Waste-to-Energy Facility (OWEF)
- Lake Zumbro Hydro Plant

A balance of loads and resources (BLR) based on the load forecast and resources that RPU will have available to meet its obligations over the time period 2008 through 2040 and assuming the SMMPA CROD contract expires in 2030 is shown in Figures ES-1.

Figure ES-1: RPU Balance of Loads and Resources without SMMPA



ES.5 SMMPA CONTRACT EXTENSION ANALYSIS

B&McD analyzed potential RPU futures with and without the SMMPA CROD extended beyond 2030 and its subsequent impact to RPU's capacity and energy needs and renewable energy requirements over a study period of 2025 through 2044. The various resource planning assumptions and scenarios were developed and analyzed using the popular resource planning software tool called Strategist.

To meet RPU's load requirements, a diverse mix of both baseload/intermediate and peaking type resources were available as potential new resources over the study period. When supply resources were not available or economical, a market capacity resource was used to maintain reserve margins throughout the study period. Market capacity resources were modeled as temporary supply resources, expiring at the end of each year. Table ES-2 shows the new resources and corresponding capacity levels populated in the

Strategist model as potential new resource alternatives for meeting RPU's future demand and energy requirements. Further operating and cost assumptions for the new resources can be found in Appendix A.

Table ES-2: New Resource Options Modeled

Resource Option	Min. Project Cap. (MW)	Capital Cost (2009$/kW)	Earliest In-Service Yr	Fixed O&M ($/kW-yr)	Var. O&M ($/MWh)
Market Capacity	As Needed	-	2009	$76.38	-
Wartsila Engine Sets	16.8	$1,122	2013	$8.32	$8.42
FT8 TwinPac	50	$1,351	2013	$12.88	$1.58
1 x 1 7EA NGCC	146	$1,955	2014	$21.22	$5.04
1 x 1 7FA NGCC	330	$1,318	2014	$18.54	$4.64
Wind	25	-	2011	-	$70.00
Solar	5	$4,000	2011	-	-
SLP 1-3 Biomass	40	$2,275	2016	$132.00	$3.50

Note: All costs shown in 2009$.

Four scenarios were developed to analyze the CROD extension decision and also the resulting impact on RPU's renewable portfolio standard (RPS) requirements based on a future with or without CROD. The four cases were developed in an attempt to bound the broadly different futures potentially present for RPU and analyze the economic benefits of each. The four cases and their high level constraints include:

- Case 1 – RPU future with SMMPA CROD contract extended beyond 2030; RPS requirement of 25 percent renewable energy by 2025 not enforced.
- Case 2 – RPU future with SMMPA CROD contract extended beyond 2030; RPS requirement of 25 percent renewable energy by 2025 enforced.
- Case 3 – RPU future without SMMPA CROD contract beyond 2030; RPS requirement of 25 percent renewable energy by 2025 not enforced.
- Case 4 – RPU future without SMMPA CROD contract beyond 2030; RPS requirement of 25 percent renewable energy by 2025 enforced.

Using all potential combinations of new resources available for selection that satisfy the scenario constraints, the Strategist model provided thousands of portfolio options, ranked by a net present value (NPV) cost. The option resulting in the lowest 20-year NPV cost for each case is shown in Table ES-3.

The lower NPV cost expansion plans generally picked a 1x1 7FA combined cycle facility to replace energy and capacity from the CROD starting in 2031. Aside from this resource decision, the model chose a variety of smaller Wartsila engine sets or Wind over the study period in the lower cost expansion plans, with and without SMMPA. At the assumed carbon tax levels, it was shown that there was production cost benefits to adding renewable wind energy at the assumed pricing. Appendix B provides a more detailed breakdown of energy sources and costs for each of the cases summarized herein.

Table ES-3: Strategist Lowest NPV Scenario Expansion Plan Summary

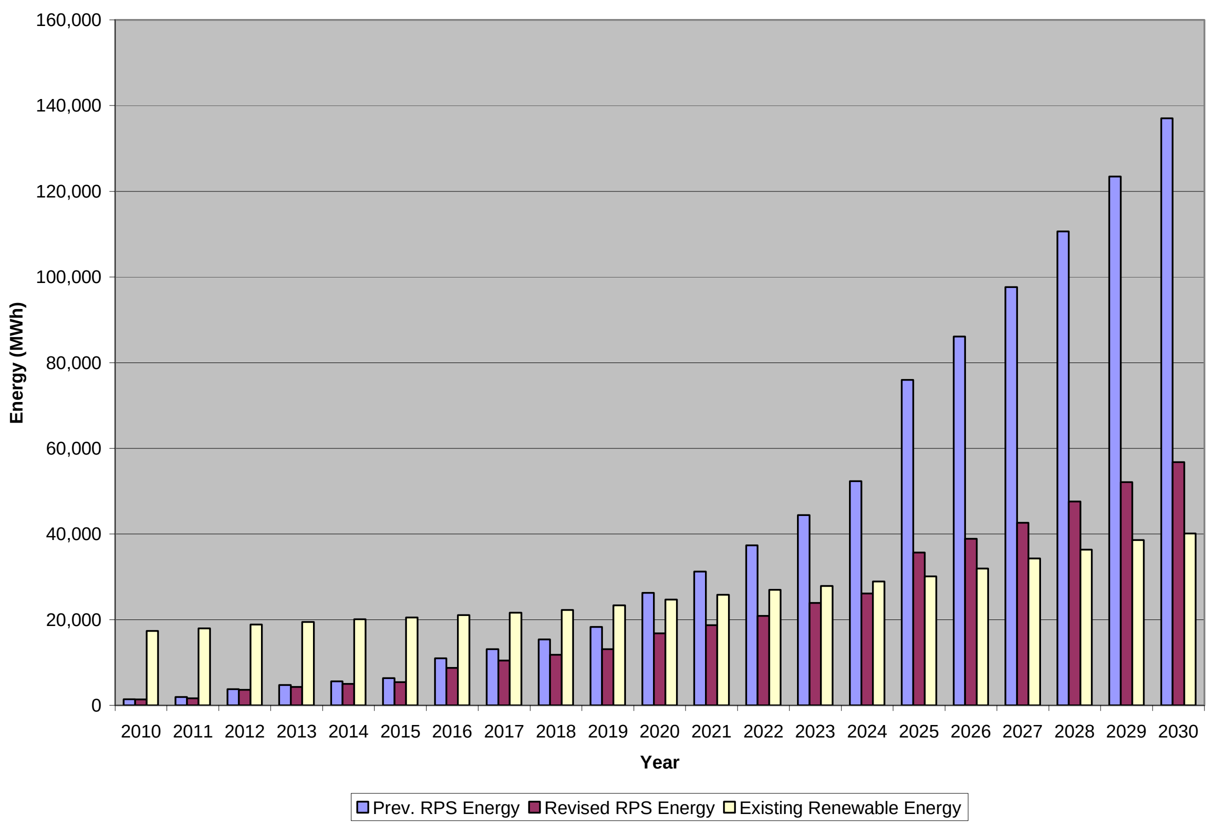
Year	Plan:	1-With SMMPA	2-With SMMPA/ Renewables	3-W/O SMMPA	4-W/O SMMPA/ Renewables
2025		Wartsila(34)	Wartsila(17) Wind (25)	Market(2)	Wind(25)
2026			Wartsila(17)	Market(7)	Market(3)
2027				Market(13)	Market(9)
2028		Wartsila(17)	Wind(25)	Market(18)	Market(15)
2029				Market(24)	Market(20)
2030		Wartsila(17)	Wartsila(17)	Market(29)	Market(26)
2031			Wind(25)	7FACC(330)	7FACC(330)
2032			Wind(25)		Wind(25)
2033		Wartsila(17)	Wartsila(17)		
2034					Wind(25)
2035			Wind(25)	Wartsila(17)	Wind(50)
2036		Wartsila(17)	Wartsila(17)		Wind(25)
2037			Wind(25)		Wind(50)
2038		Wartsila(17)		Wartsila(17)	Wind(50)
2039			Wartsila(17) Wind(25)		Wind(25)
2040		Wartsila(17)		Wartsila(17)	
2041			Wind(25)		Wartsila(17)
2042			Wind(25)	Wartsila(17)	
2043		Wartsila(17)	Wartsila(17)		Wartsila(17)
2044			Wind(50)		
NPV ($000)		$3,836,070	$3,387,527	$2,960,876	$2,818,040

ES.6 RENEWABLE ENERGY REQUIREMENTS ANALYSIS

RPU is located in the state of Minnesota, which currently has RPS legislation requiring utilities to meet a growing percentage of their energy needs through renewable resources with the ultimate goal of serving 25 percent of energy needs through renewable resources by 2025. Based on previous resource planning analysis and a higher load forecast, it was shown that adding up to 50 MW of wind could be beneficial to RPU and its customers. RPU further investigated this by issuing a request for proposals (RFP) for new wind projects. B&McD assisted RPU throughout the RFP process and evaluated the proposals to identify the more economically beneficial projects. Further information regarding the RFP process and evaluation can be found in Section 3 of this report.

Following the RFP and proposal evaluations, B&McD analyzed RPU's renewable energy requirements over the time period 2010 through 2030 through hourly production cost modeling analysis. The first step in the production cost analysis was to determine the appropriate amount of wind energy to evaluate based on RPU's RPS requirements over the study period. RPU currently generates some renewable energy through its Lake Zumbro hydro facility and OWEF landfill gas facility. RPU's renewable energy requirements over the study period were then calculated based on the updated load forecast and after accounting for existing renewable energy sources. Figure ES-2 shows a comparison of RPU's expected RPS energy requirements by year based on the initial load forecast used in the previous resource planning analyses, the requirements based on the updated load forecast from SMMPA discussed in Section 2, and the amount of existing renewable energy available to RPU from Lake Zumbro and OWEF. Based on this figure and current load forecast projections, RPU will not require any new renewable energy to satisfy Minnesota RPS requirements until approximately 2025.

Figure ES-2: RPU RPS Energy Requirements Above CROD Load

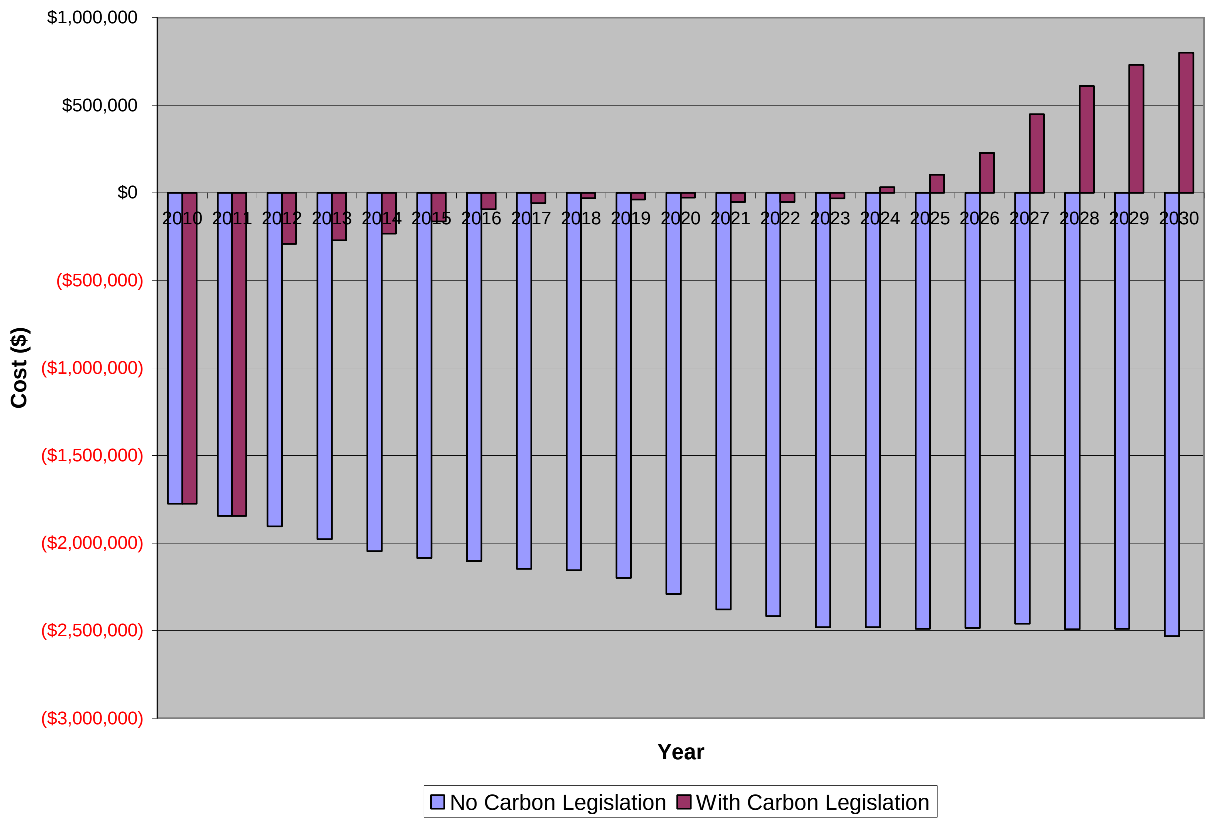


Another factor to consider is the time of day when wind energy is typically available. Wind energy is predominantly available in the evening and off peak hours. Therefore, a majority of the wind energy over much of the study period would only be available to RPU during times when all energy requirements are met by the SMMPA CROD. This would require RPU to sell the unused wind energy to the market at the prevailing market energy price. Therefore, the larger the project size, the more RPU would be reliant on market prices to recoup the wind contract energy cost. Based on the amount of renewable energy required over the study period and the potential market energy price risk, it was determined that over the short-term, any potential project for wind should be relatively small.

Based on the project size analysis, a 24 MW project proposed through the RFP process was evaluated in an hourly production cost model to determine the potential economic benefits. The proposed wind project was added to RPU's system starting in 2010 at the costs proposed and evaluated on an hourly basis against a case over the same time period which did not include the wind project. These cases were evaluated with and without a carbon tax. The carbon tax was assumed to start in 2012 and costs were assumed from the same basis as the contract extension analysis described in Section 2. The annual production cost between the cases with and without a carbon tax was compared to see if any economic benefit resulted from adding the wind resource in 2010.

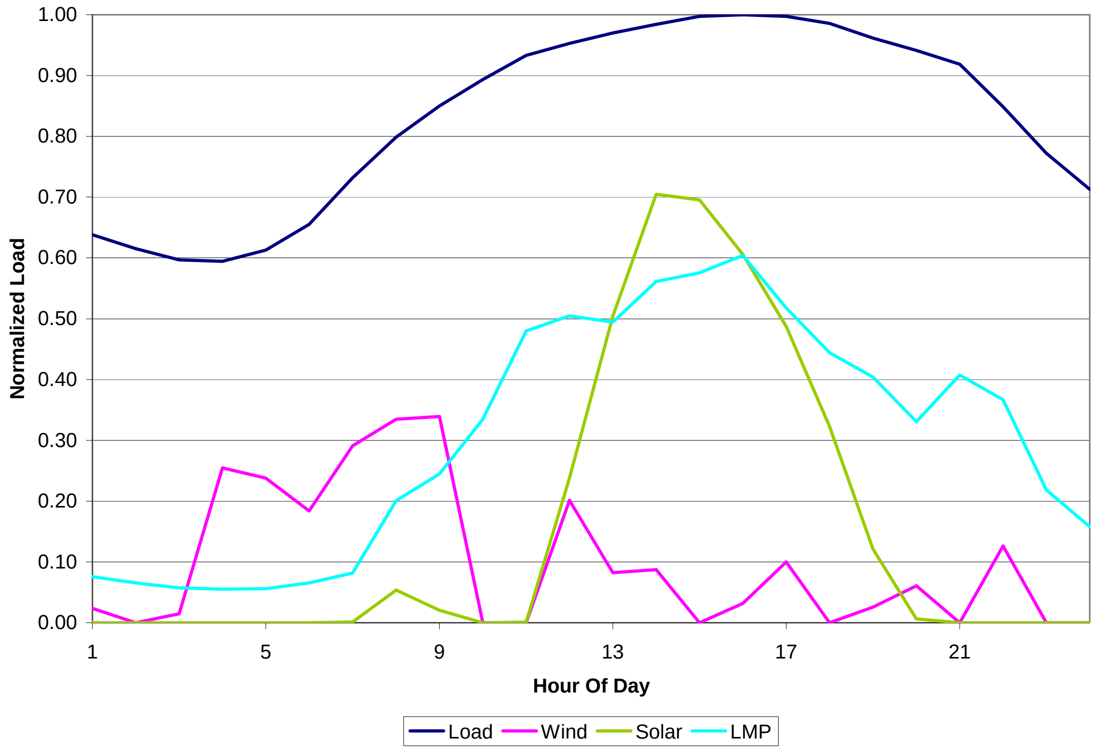
Figure ES-3 shows the annual production cost delta with and without the addition of the wind project for the cases with and without an assumed carbon tax. In cases with and without a future carbon tax, the production cost delta between the case with wind subtracted from the case without wind resulted in a negative NPV. This indicated a negative economic impact of adding the wind project in 2010 under the pricing assumptions based on the RFP response. Appendix C provides a more detailed breakdown of energy sources and costs for each of the cases summarized herein.

Figure ES-3: Annual Production Cost Delta, Wind Case Minus No Wind Case



Based on current load projections, RPU does not have to add short-term resources (renewable or otherwise) unless they provide an economic benefit to RPU and its customers. RPU currently has an all-requirements CROD through SMMPA up to 216 MW, and RPU generally does not generate significant amounts of energy through its own resources except during peak load times. Because of this and the hourly generation profile of wind, the energy from wind cannot provide a significant portion of native load requirements to RPU until load grows significantly beyond its current point. This condition makes renewable energy generated over the peak hours a better fit to meet RPU native load over the duration of the CROD agreement. For this reason, solar projects may be a more compatible resource to fulfill any RPS requirements through the end of the CROD. Figure ES-4 shows a normalized curve of RPU's load compared against RPU's day ahead LMP in MISO and the output of both wind and fixed axis solar resources for RPU's peak month of July.

Figure ES-4: Normalized Load vs. Output of Wind and Solar Resources, July



ES.7 RESOURCE STRATEGY

Overall, RPU is in relatively good condition to meet its load requirements for several years without any additions to its resource mix. Challenges to RPU in the area of transmission reliability and adjusting to potential future market and regulatory risks are typical of the environment in which utilities operate today and should be a primary focus of RPU into the future. Plant related issues will include the decision of whether or not to continue investing in SLP for long-term operation. The following is a brief discussion of these and other issues to RPU's long range resource plan.

Regional Coal Plant Participation

In following the recommendations of the initial long range infrastructure plan, RPU initiated the study of an opportunity to participate in a regional coal-fired power plant. B&McD analyzed the terms of this project in the context of adding a 50 MW tranche in 2015 and studied the economic benefits through an hourly production cost analysis. This analysis found the project to be uneconomical to RPU through the time period considered.

Subsequent to the initial long range plan, additional environmental scrutiny has been focused on coal-fired power plants, with nearly every new coal project challenged by environmental groups in court. As discussed previously in this study update, there is ongoing legislative debate as to how and if carbon emissions should have stricter regulation(s). One possible method for limiting carbon emissions is through a carbon tax or cap and trade. This potential regulatory cost makes the outlook for coal-fired power plants as a long-term economic power generator much less certain. Based on this regulatory risk and the development challenges that new coal-fired plants face, it is expected that RPU should look to add new generation, as necessary, through natural gas-fired or other more economical power generation means.

Load Forecast Impacts

As discussed throughout the various analyses summarized in this update study, RPU's load forecast was adjusted significantly from the initial forecast used in the 2005 Infrastructure Plan based on recent SMMPA projections. The adjusted forecast can be attributed to many factors including increased DSM programs and end-user efficiency. Therefore, it is inherently assumed in the forecast that the aggressive DSM reviewed in the initial Infrastructure Plan is capturing sufficient demand and energy to result in the SMMPA revised forecast. Figures ES-5 and ES-6 show a comparison of the initial and revised demand and energy forecasts, respectively.

Figure ES-5: Comparison of Previous and Current RPU Demand Forecast

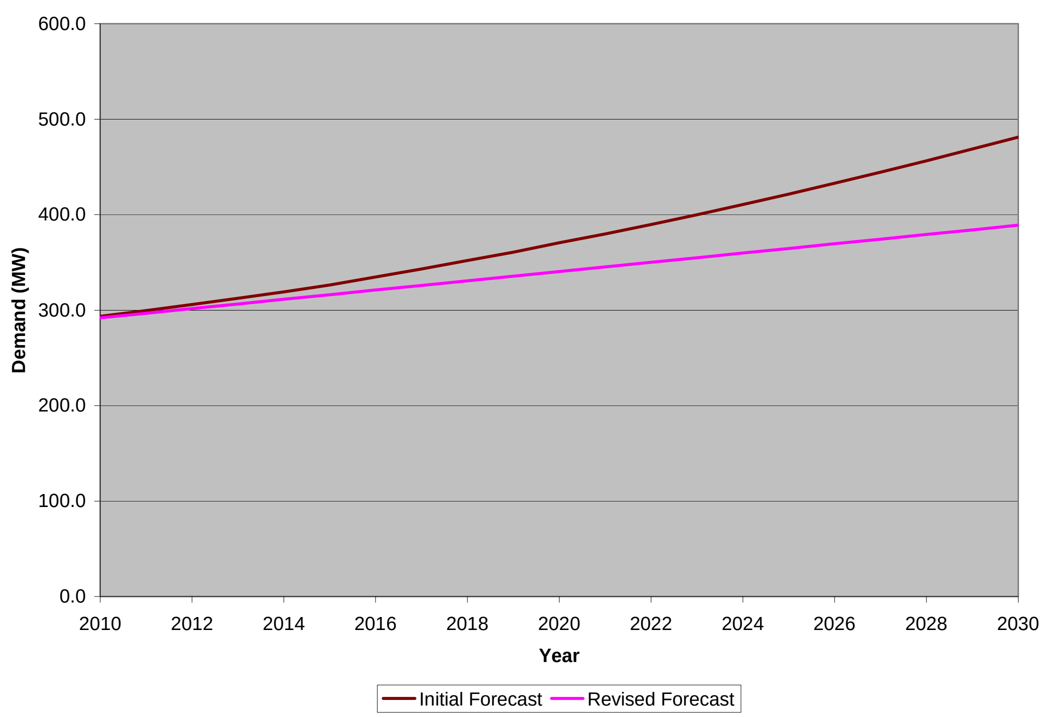
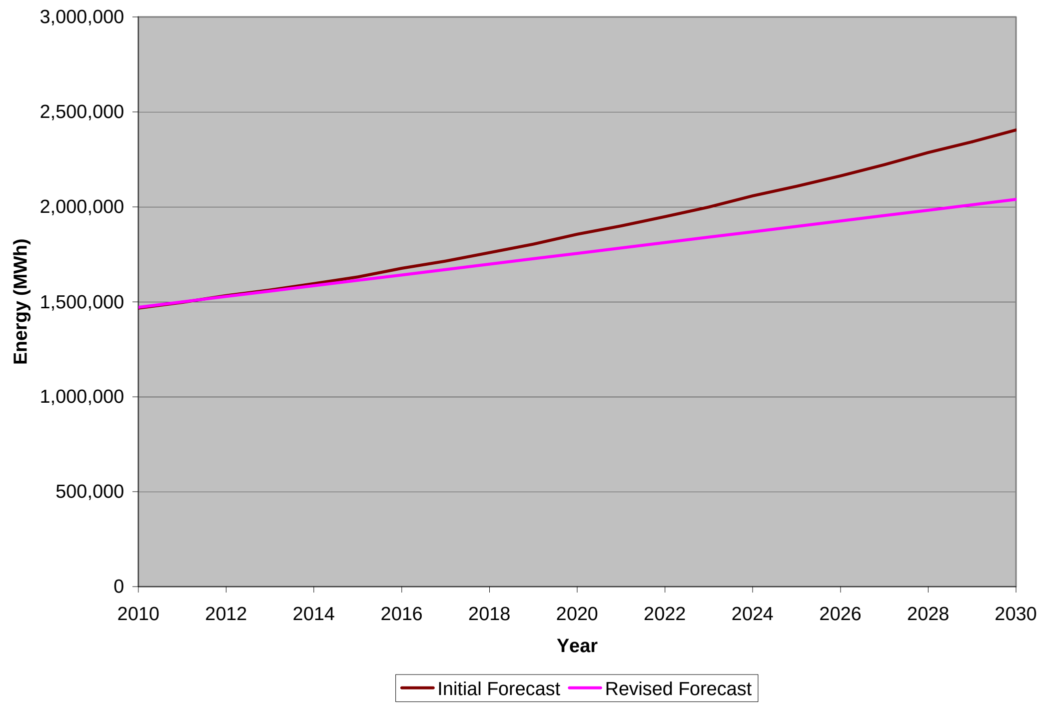


Figure ES-6: Comparison of Previous and Current RPU Energy Forecast



Load forecast projections beyond 2030 were based on the average growth rate over the previous five years.

SMMPA Contract Extension

RPU is faced with determining whether or not to extend the current 216 MW CROD contract with SMMPA beyond 2030. B&McD analyzed RPU's potential future with and without the CROD extended beyond 2030 and its subsequent impact to RPU's capacity and energy needs and renewable energy requirements. Based on this analysis, it was found that a future without SMMPA would be more economically beneficial than extending the current CROD contract, even considering the additional renewable energy burden required without the SMMPA CROD. This is likely a function of many complex factors including but not limited to:

- CROD rates assumed in this study
- Carbon tax levels assumed in this study and RPU's exposure to coal-based energy through SMMPA
- Based on its size and load requirements, RPU would not be able to achieve economies of scale or efficient operations replacing CROD energy and capacity through a large coal-fired power plant, which would have greater capacity and energy than RPU alone would need

- RPU can utilize economies of scale and operating efficiencies replacing CROD energy and capacity with a large natural gas-fired resource that serves as a baseload resource in a carbon tax environment

Renewable Resource Development

Based on the analysis in this update study, RPU does not require additional renewable energy to meet current Minnesota RPS requirements until approximately 2025. Until that time, a majority of native load requirements above CROD levels occur during peak hours. Because of this constraint, wind, which generally has an output profile inverse to load requirements, is not a great fit for supplying renewable energy to RPU above CROD. It is expected that RPU would have to sell a significant amount of wind energy over the short-term into the open market, subjecting considerable market price risk to that energy.

If RPU wishes to pursue additional renewable energy projects prior to approximately the 2025 timeframe, it is expected that solar resources (or any resource that provides more energy during peak hours) would be a better fit to serve RPU native load requirements above CROD. This is based on the assumption that RPU native load requirements above CROD will occur during peak hours more often than not until the conclusion of the SMMPA CROD. The addition of any new renewable energy above Minnesota RPS requirements should still be subject to a production cost analysis to determine its suitability and economic benefit to RPU and its customers.

Suggested Long Range Planning Activities

The decision of whether or not to extend the CROD contract with SMMPA is currently the largest resource planning issue confronting RPU over the next 20 years. Based on Burns & McDonnell's understanding, RPU has determined not to renew the SMMPA contract. This indicates that the CROD will not be available to RPU past 2030.

Assuming aggressive DSM and increased energy efficiency as assumed in the forecast used in this analysis, RPU will not face capacity or energy deficits until approximately 2026. Planning for the CROD replacement will need to begin approximately eight to ten years prior to the end of the SMMPA contract due to the size of the resource. In addition, based on current load projections, RPU will need to start planning for the addition of its next resource two to three years prior to needing the capacity and energy. Also, based on the current load projections, additional renewable resources to meet Minnesota RPS requirements will not be required until approximately 2025. A summary activity chart showing the timing of the previous activities as well as suggested periods to review the long range plan against current conditions is shown in Table ES-4.

Table ES-4: Summary of Long Range Plan Development Activities

Activity:	**2009**	2010	2011	2012	2013	**2014**	2015	2016	2017	2018	**2019**	2020	2021	**2022**	2023	**2024**	2025	2026	2027	2028	**2029**	2030
Aggressive DSM	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
CROD Replacement Resource														■	■	■	■	■	■	■	■	■
Next Resource Based on Load Growth																■	■	■	■			
Next Renewable Resource														■	■	■						
Long Range Plan Review	X					X					X					X					X	

ES.8 CONCLUSIONS

Based on the analysis provided in this Update Study, Burns & McDonnell has developed the following conclusions and recommendations:

1. RPU has determined that the resource expansion should consider the CROD expiring in 2030.
2. The next resource that RPU will need to acquire is in the 2027 time frame. The resource identified is an engine based plant. The lead time for this type of plant is approximately three years from beginning of permitting to commercial operation. Therefore, RPU would need to begin the formal project to install this unit in 2024.
3. RPU will need to begin planning for the expiration of the CROD in the 2020 to 2022 time frame. This will provide sufficient lead time for RPU to investigate the approaches to replacing the capacity and construct a resource should that be the selected approach.
4. Due to the CROD, the best renewable option that fits the RPU load curve is solar photovoltaic. Encouragement of installation of solar PV should be considered.
5. RPU should continue to pursue aggressive demand side management activities for both peak demand reduction and energy savings. Pursuit of time of use and dynamic pricing should be considered to provide incentives to the customer to reduce consumption.
6. RPU should continue to provide periodic updates to this plan. The main variable will be the success of the demand side management activities and the resultant load that has to be met. Should the load be greater than that assumed in the analysis, adjustments to the capacity requirements will be necessary.

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SECTION 1.0

INTRODUCTION

1.0 INTRODUCTION

Burns & McDonnell Engineering Company (B&McD) was retained by Rochester Public Utilities (RPU) to perform an Update to the 2005-2030 Baseline Infrastructure Study (Study or Study Update) to evaluate and update as necessary the key findings and recommendations of the original long range strategy developed in 2005. This report provides information on the generation resource planning and other analyses undertaken to make updated decisions and recommendations on RPU's long term strategy.

1.1 STUDY OBJECTIVES

The updated analysis required to support the ongoing long term resource decisions is the subject of this report. The objective of this update was to analyze the power supply needs and regulatory requirements of RPU to the 2045 time frame in order to identify any longer term issues which could impact shorter term decisions. The major regulatory and power supply resource issues which confront RPU include:

- The long range development of power supply resources in anticipation of a contract extension or termination with SMMPA in 2030
- The development of renewable resources to meet Minnesota requirements
- The benefit of the Silver Lake power plant as a long term resource
- The examination of DSM impacts to RPU's long range resource plan

1.2 STUDY BACKGROUND

The Infrastructure Study prepared for RPU in 2005 included several supply and demand side activities which RPU could pursue. These activities included emission control programs for the Silver Lake Plant, demand side management activities and consideration to acquire additional renewable energy. As an ongoing activity, RPU is reviewing ways to obtain power supply that would reduce its operating costs and, therefore, the rates to its customers.

RPU has initiated the emission control program for the Silver Lake Plant. Financing has been secured and the project has moved into the construction phase. Ongoing progress for the plant can be monitored through the RPU website.

RPU is also actively engaged in discussing transmission expansion in the vicinity. Upgrades to the 161kV transmission system have been proposed. These improvements will help alleviate current transmission constraints in the area, which will benefit RPU. It is expected that these transmission improvements will be in service in [2014].

RPU has continued to aggressively pursue demand side measures that allow customers to reduce their energy consumption. The programs include numerous appliance efficiency upgrades, lighting change out and direct load control programs. Information provided by RPU indicates that approximately 3.6MW has been removed from the system.

1.3 STUDY METHODOLOGY

The analysis of power supply options and issues associated with the SMMPA contract extension required the projection of RPU's demand and energy over the study period. The forecast for the energy and demand was provided by RPU. The forecast was used as the basis for determining when additional resources would be needed to maintain the capacity reserve margins required by the Midwest Independent Transmission System Operator (MISO) and North American Electric Reliability Corporation (NERC).

The analysis of power supply options was performed using the Strategist resource expansion program. This program analyzes the capacity and energy needs of a utility and adds resources from options provided to the program. Various assumptions were developed for such things as capital costs, fixed operations and maintenance costs, fuel supply and variable operating costs of potential new resources. In addition, Burns & McDonnell developed assumptions for market costs at the SMP.RPU MISO node. The time frame for the updated resource analysis was from 2010 to 2045.

For the review of wind and long term renewable energy requirements, a request for proposals was prepared and issued for response. The responses were evaluated and compared against the ability for RPU to make use of the energy. An hourly production cost model was used to analyze the costs and benefits of the wind energy.

The estimates and projections contained in this report are based on Burns & McDonnell's experience, qualifications and judgment as a professional consultant and reflect screening level assumptions about the facilities represented and are not site specific. While the estimates are considered suitable for use in production cost modeling analyses to select preferable resource options to pursue, Burns & McDonnell has no control over the numerous factors affecting actual costs should any of the facilities included herein be pursued. Therefore, Burns & McDonnell does not guarantee that actual values realized over time will not vary from the estimates and projections prepared by Burns & McDonnell for purposes of this planning study.

1.4 ORGANIZATION OF REPORT

This report is organized into several separate chapters and supporting appendices. These individual sections are listed below along with a brief description of their contents.

- Executive Summary: An executive summary of the 2009 Infrastructure Update.
- Section 1.0 – Introduction: A description of the Study's objectives and methodology.
- Section 2.0 – Review of SMMPA CROD Extension: Includes the analysis of various futures associated with extending the CROD past 2030.
- Section 3.0 – Review of Renewable Energy Requirements: Provides a description of the RFP for wind energy and a renewable energy requirements evaluation.
- Section 4.0 – Resource Strategy provides a resource expansion plan for RPU based on the renewable and CROD analysis.

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SECTION 2.0

SMMPA CONTRACT EXTENSION ANALYSIS

2.0 SMMPA CONTRACT EXTENSION ANALYSIS

This part of the report addresses the various resource planning assumptions and scenarios that were developed and analyzed using Ventyx's Strategist software to study the decision of whether or not to extend the existing SMMPA Contract Rate of Delivery (CROD) past 2030. The Strategist model is a resource portfolio optimization model that allows an analysis of several different resources with a variety of characteristics to meet the load requirements and any other defined constraints over a finite period of time. The model develops potentially thousands of resource combinations based on the scenario-defined constraints, ranking these combinations by net present value (NPV) over the study period. This allows the selection of the lowest cost combination of resources, including optimal size and implementation schedules for new resources, based on the performance and construction costs provided. Four scenarios were developed to analyze the CROD extension decision and also the resulting impact on RPU's RPS requirements based on a future with or without CROD.

2.1 SCENARIO BACKGROUND & ASSUMPTIONS

The following is a discussion of the assumptions developed to analyze the future resource requirements of RPU with and without CROD.

2.1.1 General Assumptions

The analysis began with the development of the baseline assumptions and constraints as applicable for RPU. The following general assumptions are applicable to the analysis:

- The study period covers the years 2025 through 2044.
- Except where noted otherwise, all assumptions were escalated in real dollar terms based on 2009$.
- RPU must maintain capacity reserves of 15 percent above peak load (net of CROD) throughout the study period.
- In scenarios where CROD is not continued, the contract terminates December 31, 2030. In scenarios where CROD is continued, the contract continues at 216 MW and its other current terms through the study period.
- No RPU resources are retired throughout the study period.
- The hourly load shape provided by RPU for the 2006 calendar year was used as the basis for the study load shape adjusted based on future load growth projections.

- Future load growth projections were based on recent estimates from SMMPA.
- The discount rate for RPU for financing terms was 6.0 percent, with longer term resources financed over 30 years, and shorter term resources financed over 20 years.

2.1.2 Load Forecast

The load forecast was based on linear growth of a recent SMMPA projection for RPU demand and energy requirements in 2030, which reflect increased DSM and end-user efficiency. The historical load for 2006 was provided on an hourly basis by RPU and used as a starting load shape, modified based on future load growth projections. The forecast is summarized on an annual basis over the study period in Table 2-1.

Table 2-1: RPU Demand and Energy Forecast

	Demand (MW)	Energy (GWh)
2025	364.7	1,897.5
2026	369.6	1,925.9
2027	374.4	1,954.4
2028	379.3	1,982.8
2029	384.1	2,011.2
2030	389.0	2,039.7
2031	394.0	2,069.4
2032	399.1	2,099.5
2033	404.3	2,130.1
2034	409.6	2,161.1
2035	414.9	2,192.5
2036	420.2	2,224.4
2037	425.7	2,256.8
2038	431.2	2,289.7
2039	436.8	2,323.0
2040	442.5	2,356.8
2041	448.2	2,391.1
2042	454.0	2,426.0
2043	459.9	2,461.3
2044	465.8	2,497.1

2.1.3 RPU Resources

RPU has a number of resources to meet its demand and energy requirements. These include a diverse mix of coal, gas, landfill gas and hydro-electric generating units. RPU also has a significant amount of energy provided under its contract with SMMPA, which currently runs through 2030. The units owned and operated by RPU are the following:

- Silver Lake Power Plant (Units 1-4)
- Cascade Creek (Units 1-2)
- Olmstead Waste-to-Energy Facility (OWEF)
- Lake Zumbro Hydro Plant

A balance of loads and resources (BLR) based on the load forecast and resources that RPU will have available to meet its obligations with and without SMMPA are shown in Figures 2-1 and 2-2, respectively.

Figure 2-1: RPU Balance of Loads and Resources with SMMPA

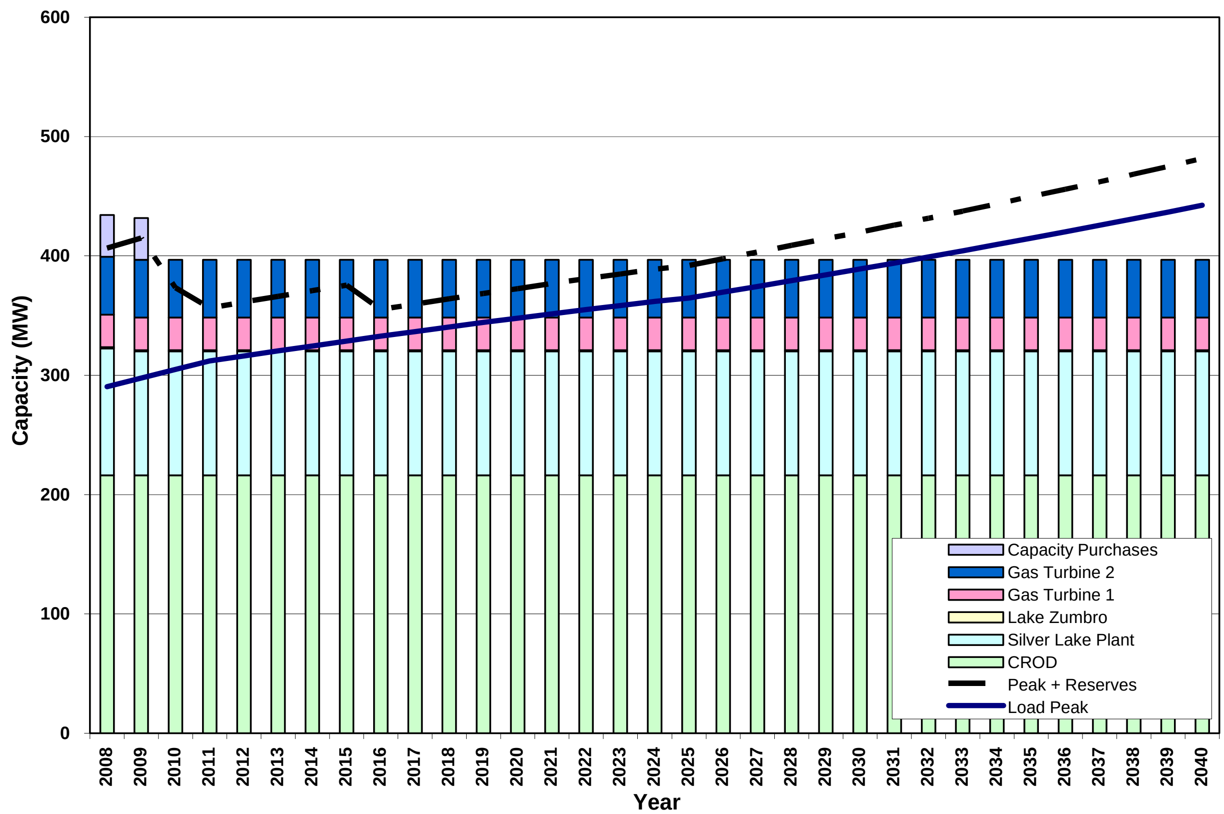
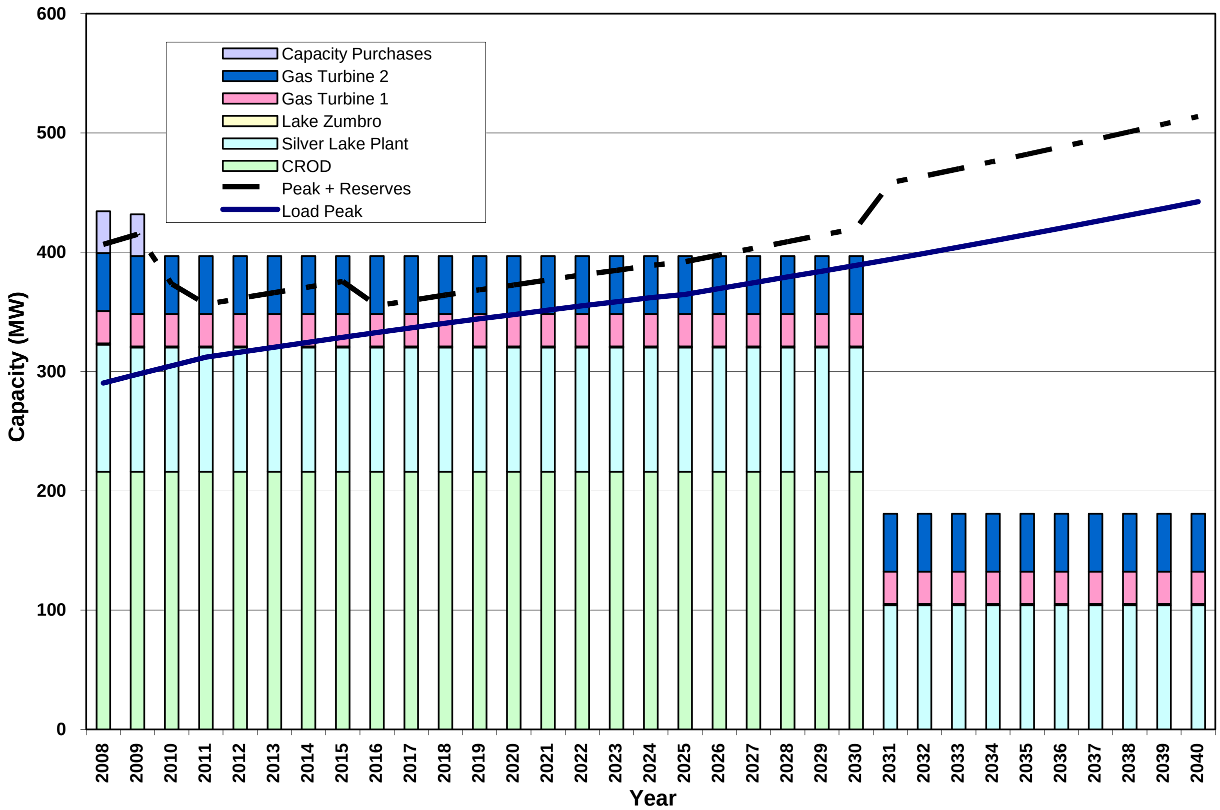


Figure 2-2: RPU Balance of Loads and Resources without SMMPA



As shown in the previous figures, with or without SMMPA, RPU does not become resource deficit until approximately 2026. However, depending on whether or not RPU continues the SMMPA CROD will have a significant impact on future resource requirements past 2030. High level assumptions about the units and their operating parameters can be found in Appendix A.

2.1.4 New Resources

The capacity and energy needs of RPU are projected to potentially increase substantially over the study period. To meet these needs a diverse mix of both baseload/intermediate and peaking type resources were available as potential new resources over the study period. When supply resources were not available or economical, a market capacity resource was used to maintain reserve margins throughout the study period. Market capacity resources are modeled as temporary supply resources, expiring at the end of each year. Table 2-2 summarizes the new resource and corresponding capacity levels populated in the Strategist model as potential new resource alternatives for meeting RPU's future demand and energy requirements. Further operating and cost assumptions for the new resources can be found in Appendix A.

Table 2-2: New Resource Options Modeled

Resource Option	Min. Project Cap. (MW)	Capital Cost (2009$/kW)	Earliest In-Service Yr	Fixed O&M ($/kW-yr)	Var. O&M ($/MWh)
Market Capacity	As Needed	-	2009	$76.38	-
Wartsila Engine Sets	16.8	$1,122	2013	$8.32	$8.42
FT8 TwinPac	50	$1,351	2013	$12.88	$1.58
1 x 1 7EA NGCC	146	$1,955	2014	$21.22	$5.04
1 x 1 7FA NGCC	330	$1,318	2014	$18.54	$4.64
Wind	25	-	2011	-	$70.00
Solar	5	$4,000	2011	-	-
SLP 1-3 Biomass	40	$2,275	2016	$132.00	$3.50

Note: All costs shown in 2009$.

2.2 FUEL CONSIDERATIONS/FORECASTS

Most of the generating resources considered in the analysis require an associated fuel for power generation. The analysis utilized gas, coal, biomass, and spot market pricing to help determine production costs for each of the various supply alternatives considered. The following paragraphs discuss each of the various fuel forecasts used in this analysis.

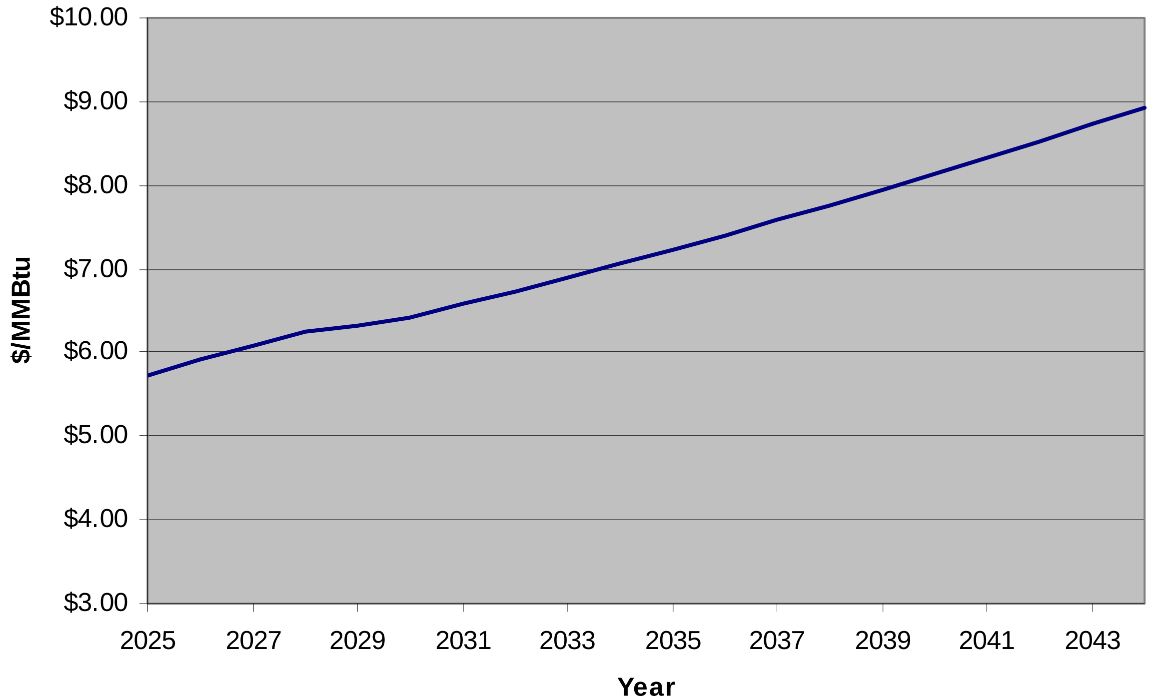
2.2.1 Coal and Biomass

For the SLP 1-3 repower project, it was assumed that the new facility would burn a ratio of 50/50 coal and biomass fuel. Since SLP is a coal-fired facility, coal is already delivered to the site and it was assumed that the same source would be used for coal in the repowered facility. The coal delivered to SLP was assumed to cost $3.60/MMBtu in 2008 dollars, subject to 3 percent annual real escalation after 2008. The biomass fuel delivered to SLP was assumed to cost $2.27/MMBtu in 2008 dollars, subject to 3 percent annual real escalation after 2008.

2.2.2 Natural Gas

Natural gas has seen severe price fluctuations over the past decade due to supply and demand issues, natural disasters such as Hurricane Katrina, and increasing geopolitical tensions. For a base natural gas price forecast, the Study relied on the Energy Information Administration's (EIA) annually published long-term natural gas forecast for electric power producers. This annual forecast is published in real dollars by the U.S. Department of Energy and runs through 2030. The EIA short-term forecast for natural gas at Henry Hub was blended with the long-term EIA to raise the long-term forecast to a starting point more reflective of today's prices. Applying the average real dollar escalation rate to prices past 2030, the study forecast is shown in Figure 2-3. This forecast was used as the base natural gas price for all resource alternatives that required the use of natural gas as a fuel. The volatility of natural gas will lead to certain years having low pricing and some years having high prices due to supply and demand impacts around the world. The current market price for natural gas is lower than forecast due to these conditions.

Figure 2-3: Modified EIA Natural Gas Forecast, Real$



2.2.3 Market Energy Prices

The spot market energy price forecast was developed using the hourly day-ahead LMP pricing of the SMP.RPU node in MISO from January through December 2008. On-peak energy prices for 2009 and beyond were projected using the same underlying annual escalation as the EIA natural gas forecast and off-peak energy prices were projected using the same underlying annual real escalation as coal throughout the study period.

2.3 CARBON TAX ASSUMPTIONS

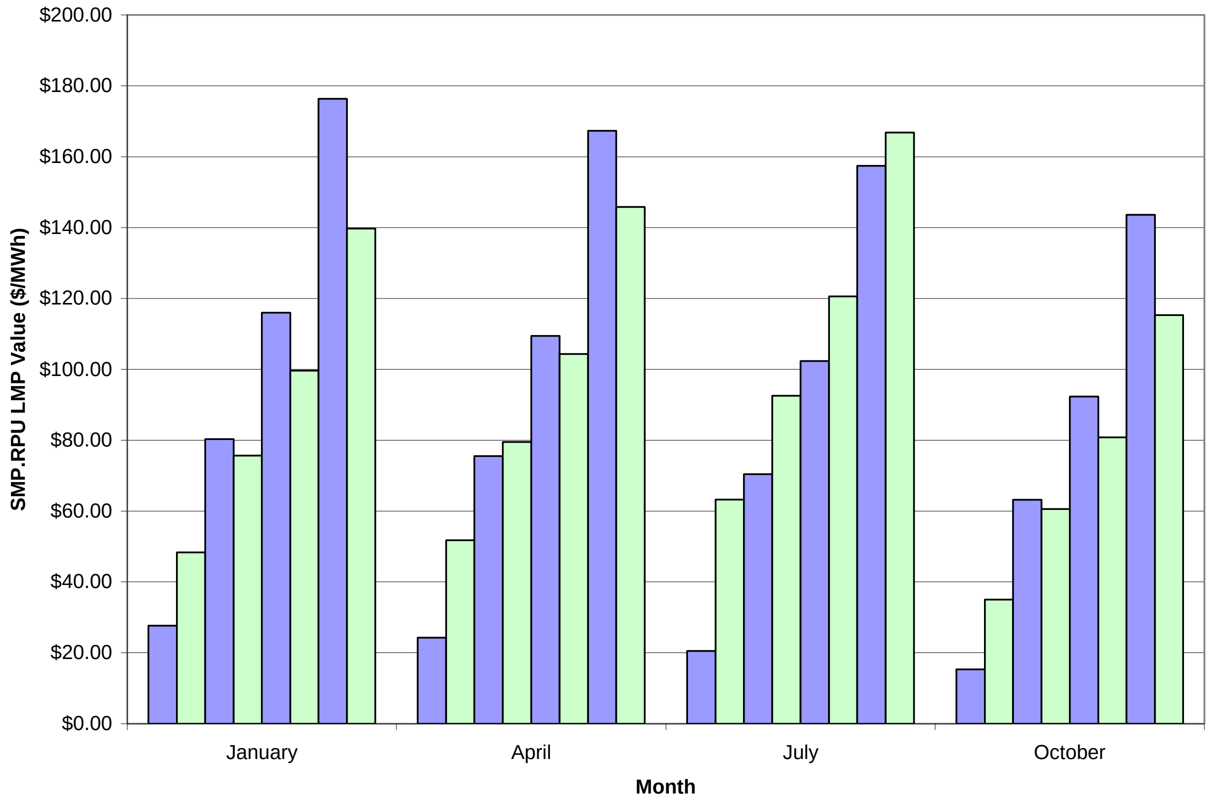
Significant debate on the approach to legislating carbon emissions is ongoing in state and federal governments. The two major approaches considered for limiting electric utility emissions are a carbon tax or a cap and trade system, similar to the method used to control sulfur dioxide. This Study has used a carbon tax as a proxy to capture the expected cost impacts of carbon legislation on fossil fuel fired resources. The tax rate, by year, applied to all carbon emissions over the study period is shown in nominal dollars in Table 2-3.

Table 2-3: Annual Carbon Tax Rate, $/Ton

Year	CO_2 Tax
2025	$48.00
2026	$50.00
2027	$53.00
2028	$56.00
2029	$59.00
2030	$61.00
2031	$63.00
2032	$66.00
2033	$69.00
2034	$72.00
2035	$74.00
2036	$77.00
2037	$80.00
2038	$84.00
2039	$89.00
2040	$93.00
2041	$98.00
2042	$103.00
2043	$108.00
2044	$113.00

Because of the carbon tax, it was assumed that the spot market price of electric energy would also increase to account for the increase in the cost of generation across the market. A $1/ton CO_2 tax roughly translates into a $1/MWh increase in the cost of generation for a coal-fired resource. Therefore, it is reasonable to expect that the typical off-peak market energy, which is predominantly priced at the margin by baseload, coal-fired resources, would see the market price of energy increase at a rate ($/MWh) equal to the carbon tax ($/ton) level. Natural gas-fired resources typically have CO_2 emissions rates that are half as much as coal-fired resources and predominantly make up the market energy provided during peak hours. Therefore, market energy during peak hours was increased at half the price of the carbon tax. For example, in 2025, off-peak market prices were increased by $48/MWh, and on-peak market prices were increased by $24/MWh. Over the study period, the spread in on and off-peak pricing eventually narrowed and was eliminated. Figure 2-4 shows the relationship between on and off-peak pricing in select months in different years of the study period.

Figure 2-4: Monthly On/Off-Peak Price Relationship Over Time



CROD energy was also included in the consideration of carbon tax costs assuming the energy supplied to RPU consisted of approximately 75 percent coal energy and 25 percent renewable energy. In this way, 75 percent of the MWh's supplied by CROD were subjected to the corresponding $/ton carbon tax rate in each year the energy was provided.

2.4 PRODUCTION COST RESULTS

Using the assumptions described previously in this Section, four different scenarios were developed for the SMMPA contract extension analysis in Strategist. The four cases were developed in an attempt to bound the broadly different futures potentially present for RPU and analyze the economic benefits of each. The four cases and their high level constraints include:

- Case 1 – RPU future with SMMPA CROD contract extended beyond 2030; RPS requirement of 25 percent renewable energy by 2025 not enforced.
- Case 2 – RPU future with SMMPA CROD contract extended beyond 2030; RPS requirement of 25 percent renewable energy by 2025 enforced.
- Case 3 – RPU future without SMMPA CROD contract beyond 2030; RPS requirement of 25 percent renewable energy by 2025 not enforced.

- Case 4 – RPU future without SMMPA CROD contract beyond 2030; RPS requirement of 25 percent renewable energy by 2025 enforced.

Using all potential combinations of new resources available for selection that satisfy the scenario constraints, the model provides thousands of portfolio options, ranked by a net present value (NPV) cost. The option resulting in the lowest 20-year NPV cost for each case is shown in Table 2-4.

At a high level in the lower NPV cost expansion plans, the model consistently picks a 1x1 7FA combined cycle facility to replace energy and capacity from the CROD starting in 2031. Aside from this resource decision, the model picks a variety of smaller Wartsila engine sets or Wind over the study period in the lower cost expansion plans, with and without SMMPA. At the assumed carbon tax levels, it was shown that there was production cost benefit to adding renewable energy at the assumed pricing. Appendix B provides a more detailed breakdown of energy sources and costs for each of the cases summarized herein.

Table 2-4: Strategist Lowest NPV Scenario Expansion Plan Summary

Year	Plan:	1-With SMMPA	2-With SMMPA/ Renewables	3-W/O SMMPA	4-W/O SMMPA/ Renewables
2025		Wartsila(34)	Wartsila(17) Wind (25)	Market(2)	Wind(25)
2026			Wartsila(17)	Market(7)	Market(3)
2027				Market(13)	Market(9)
2028		Wartsila(17)	Wind(25)	Market(18)	Market(15)
2029				Market(24)	Market(20)
2030		Wartsila(17)	Wartsila(17)	Market(29)	Market(26)
2031			Wind(25)	7FACC(330)	7FACC(330)
2032			Wind(25)		Wind(25)
2033		Wartsila(17)	Wartsila(17)		
2034					Wind(25)
2035			Wind(25)	Wartsila(17)	Wind(50)
2036		Wartsila(17)	Wartsila(17)		Wind(25)
2037			Wind(25)		Wind(50)
2038		Wartsila(17)		Wartsila(17)	Wind(50)
2039			Wartsila(17) Wind(25)		Wind(25)
2040		Wartsila(17)		Wartsila(17)	
2041			Wind(25)		Wartsila(17)
2042			Wind(25)	Wartsila(17)	
2043		Wartsila(17)	Wartsila(17)		Wartsila(17)
2044			Wind(50)		
NPV ($000)		$3,836,070	$3,387,527	$2,960,876	$2,818,040

2.5 CONCLUSIONS

Based on the analysis provided above on various futures that could be pursued by RPU associated with the SMMPA contract extension, Burns & McDonnell has developed the following conclusions.

With SMMPA

7. The majority of the energy provided by SMMPA will be exposed to carbon legislation and coal pricing due its sourcing from the SMMPA share of Sherco Unit 3.
8. The Sherco facility will be approximately 50 years old in 2030. This will place the majority of the energy provided by SMMPA from an aged resource that will likely require significant life extension upgrades to sustain efficient operations.
9. RPU will have little ability to influence SMMPA directions and costs for the length of the contract beyond what it has been able to do in the past.
10. RPU is responsible to share in upgrades or replacement of Sherco and other resources SMMPA may pursue which is an off balance sheet debt of RPU.
11. The trajectory of carbon cap and trade legislation being debated in Congress will try to force retirement of coal plants. If this occurs, and Sherco Unit 3 is retired, this will require a major investment in a replacement resource(s) or change in cost structure for SMMPA.
12. The resource options available to RPU would not benefit significantly from economies of scale unless opportunities arose for clean coal or nuclear plant construction. There would be no advantage over market opportunities.

Without SMMPA

13. RPU will be operating with over half of its capacity from a new resource(s) in 2031 to replace the CROD. This provides an opportunity to obtain this capacity from multiple sources.
14. With or without SMMPA, the retirement of SLP is a consideration as it continues to age. Although the capacity would be more important if the CROD has to be replaced, ongoing investment in the units will be necessary. The development of biomass fuels may provide an opportunity to consider conversion of SLP to burn biomass, which would reduce its exposure to carbon legislation costs.
15. Replacing the CROD will require investments in new capacity and additional resource planning by RPU. This future would place all decisions associated with investments under direct management by RPU.

16. RPU would have the opportunity to partner with other utilities on a project by project basis. These opportunities could gain potential economies of scale when compared to projects that RPU would pursue alone.
17. The requirement for RPU to replace the CROD energy would provide the ability for RPU to take advantage of new technology and to move away from carbon fuels.
18. The replacement of the CROD will require that RPU provide an increased amount of renewable energy to meet the current Minnesota RPS.

* * * * *

SECTION 3.0

RENEWABLE ENERGY REQUIREMENTS ANALYSIS

3.0 RENEWABLE ENERGY REQUIREMENTS ANALYSIS

RPU is located in the state of Minnesota, which currently has RPS legislation requiring utilities to meet a certain percentage of their energy needs through renewable resources. The following Section describes the gathering of potential renewable energy project proposals and evaluating them in the context of RPU's projected renewable energy needs over the time period 2010 through 2030.

3.1 RFP SUMMARY

The following paragraphs provide a summary of the process and results of RPU's Request for Proposal (RFP) for up to 100 MW of wind resources and to transmit information about the RFP results to RPU. B&McD worked with RPU to develop the RFP and RFP parameters which included:

- The Purpose of Request for Proposals
- Instructions to Bidders
- Proposal Organization
- Proposal Content
- Proposal Evaluation and Contract Negotiations

Once the RFP was developed, the following tasks were undertaken in such a manner that the entire RFP process and evaluation were unbiased and met the criteria of the Edgar standards.

- Issuing the RFP
- Bids Received
- Evaluation of Bids
- Short List of Bidders
- Final Evaluation

3.1.1 Issuing the RFP

The RFP shown in Appendix D was issued for bid on September 22, 2008 with bids due on November 14, 2008. The RFP was directly emailed to a comprehensive list of power marketers, utilities and renewable developers who would possibly have an interest. Attached in Appendix E is the list of directly emailed recipients.

Burns & McDonnell created a web site specifically for this RFP with the name www.RPUWindRFP.com. The web site used for the RFP included:

- A link to download the entire RFP and exhibits
- A link to ask questions
- Answers to questions from bidders
- Links to Burns & McDonnell and RPU's company web sites

In addition to the directly emailed RFPs, advertising was placed in MegaWatt Daily for five days during the week of September 22, 2008. The advertising from MegaWatt Daily is shown in Appendix F. The ad directed interested parties to visit the web site listed to download a copy of the RFP.

Burns & McDonnell was the exclusive contact for all bidder correspondence related to this RFP, and there was no other contact with RPU representatives concerning this RFP. Burns & McDonnell set-up an e-mail address to collect all communication from potential bidders as well as to provide uniform communication including updates and specific detail as necessary from time to time through this bidding process. Questions addressed during the process were collected in the web site. Answers to questions from bidders were developed by Burns & McDonnell for review by RPU.

The following is a list of companies that submitted PPA proposals:

Company	Project Name	Company	Project Name
Acciona	Bitterfoot	Just Wind	Just Wind
Acciona	Tatanka	National Wind	North Star
Avant Energy/MMPA	Oak Glen	National Wind	Goodhue Wind
Avant Energy/MMPA	Shell Rock	National Wind	Root River
Avant Energy/MMPA	200 MW	National Wind	High Country
Clipper Windpower	Aurora	National Wind	Lake Country
enXco	Lakefield	Nature Energies	Eyota-Viola
Getty Wind	Getty Wind	Nature Energies	Triple Creek
Horizon	Pioneer Prairie II	RES	Pleasant Valley
Iberdrola Renewables	Buffalo Ridge II	Scheinder Power	Hilltop
Iberdrola Renewables	Barton Wind	Geronimo –S. Fork	South Fork
Iberdrola Renewables	Rugby Wind	Geronimo -Albany	Albany
Invenergy	Hurricane lake	Geronimo -Goodhue	Goodhue Wind

The following companies submitted ownership proposals:

Company	Project Name	Company	Project Name
Avant Energy/MMPA	Oak Glen	Just Wind	Logan County
Avant Energy/MMPA	Shell Rock	RES	Pleasant Vally
Avant Energy/MMPA	200 MW	Scheinder Power	Hilltop
Clipper Windpower	Aurora		

The projects were in various stages of development and located in several states including Minnesota, Iowa, North Dakota, and South Dakota. The proposals had various levels of MW, start dates, capacity factors, escalation rates, pricing, term lengths, MISO CPNodes and load profiles.

3.1.2 RFP Response Evaluation

The evaluation of the proposals was based on the following key inputs:

- MW
- Start Date
- Location
- Pricing
- Escalation Rate(s)
- Term
- Load Profile
- Forecasted MISO Prices

Based on the above key inputs, the following short list of bidders was selected.

- Nature Energies -Eyota Viola
- Nature Energies -Triple Creek
- National Wind: Goodhue
- National Wind: High Country
- RES PPA
- Horizon Pioneer Prairie: -12 years
- Clipper PPA
- Geronimo -South Fork
- Geronimo -Albany

- Geronimo -Goodhue

For each bidder, an estimated $/MWh levelized power cost over the term of the bid was developed based on their price, escalation, term, MW, capacity factor and start date. The levelized power cost is the net present value of the estimated $/MWh power cost for each year over the term of the proposal. The NPV of the total cost and NPV of the total benefit of each proposal were also developed. These were then combined to determine the Net NPV of each project. During the evaluation phase bidders were given the opportunity to refresh their prices and modify their proposals to supply a lower amount of MWs if possible. Table 3-1 shows the results of the evaluation analysis.

Table 3-1: Wind RFP Response Evaluation NPV Results

PPA Bidder	Levelized 2009 $/MWh	Raw NPV Cost	Raw NPV Benefit	Net NPV
Horizon Pioneer Prairie II -12 years	$70.00	$79,354,955	$61,044,806	($18,310,150)
Clipper PPA	$72.37	$104,022,109	$84,713,465	($19,308,645)
Nature Energies -Viola	**$66.74**	**$43,004,786**	**$37,459,428**	**($5,545,358)**
Nature Energies Triple Creek	$66.74	$91,385,170	$79,601,285	($11,783,885)
REVISED Nature Energies -Viola	$66.71	$43,620,287	$37,459,428	($6,160,859)
REVISED Nature Energies Triple Creek	$66.71	$92,693,110	$79,601,285	($13,091,825)
Goodhue GE Turbines	$67.40	$71,927,402	$63,343,383	($8,584,019)
Goodhue SW Turbines	$67.40	$69,037,347	$60,798,236	($8,239,111)
RES PPA	$64.76	$158,624,577	$137,743,331	($20,881,246)
Geronimo -South Fork	**$63.75**	**$42,060,594**	**$37,381,290**	**($4,679,305)**
Geronimo -Albany	$66.60	$105,639,380	$88,854,919	($16,784,460)
Geronimo -Goodhue	$63.43	$109,232,072	$95,283,670	($13,948,402)

Based on these results, the two bids with the highest Net NPV's were Nature Energies –Viola and Geronimo –South Fork. The above results were used in the production cost analysis by Burns & McDonnell to evaluate the wind alternative integrated into the balance of the RPU resource mix.

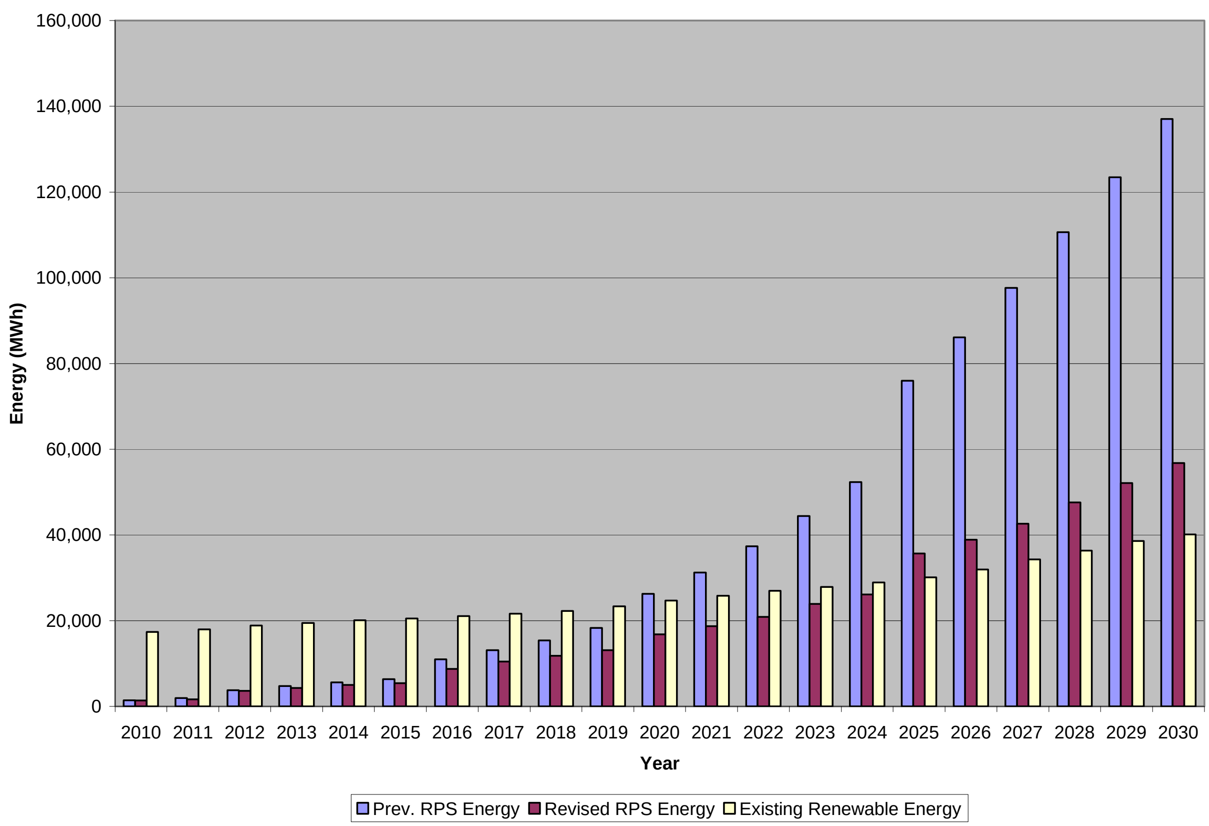
3.2 PRODUCTION COST ANALYSES

As previously described, a request for proposals (RFP) for wind projects was performed to determine the market pricing and availability for wind projects near RPU. The next step after gathering and summarizing the proposal responses was to analyze the more competitive responses in combination with RPU's system operations to determine the economic outlook of a potential wind project. This was done using Ventyx's PROMOD IV hourly production cost modeling software. The production cost modeling analysis was performed over the period 2010 through 2030 and used the same load forecast as that used in the contract extension analysis. The various steps of the production cost analyses are discussed in the following paragraphs.

3.2.1 Project Size Analysis

The first step in the production cost analysis was to determine the appropriate amount of wind energy to evaluate based on RPU's RPS requirements over the study period. RPU currently generates some renewable energy through its Lake Zumbro hydro facility and OWEF landfill gas facility. RPU's renewable energy requirements over the study period were then calculated based on the updated load forecast which incorporates aggressive DSM and increased system efficiencies and after accounting for existing renewable energy sources. Figure 3-1 shows a comparison of RPU's expected RPS energy requirements by year based on the initial load forecast used in previous renewable energy analyses, the requirements based on the updated load forecast from SMMPA discussed in Section 2, and the amount of existing renewable energy available to RPU from Lake Zumbro and OWEF. Based on this figure and current load forecast projections, RPU will not require any new renewable energy to satisfy Minnesota RPS requirements until approximately 2025.

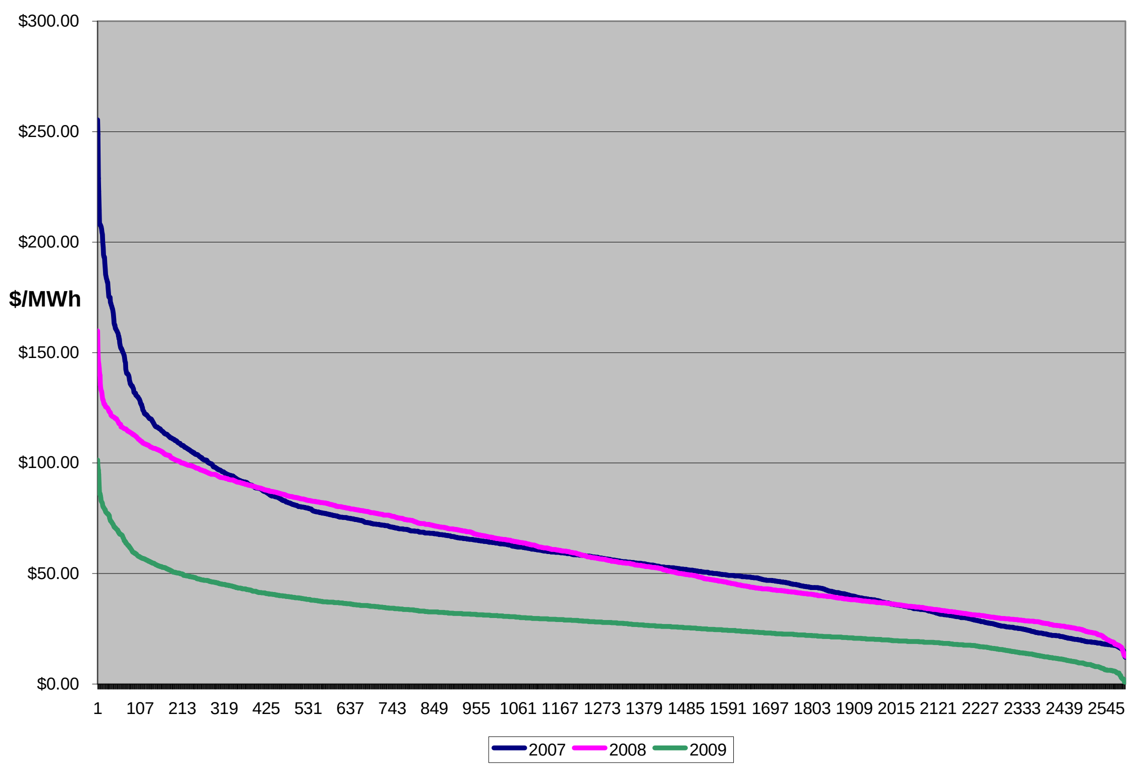
Figure 3-1: RPU RPS Energy Requirements Above CROD Load



Another factor to consider is the time during the day when wind energy is typically available. Wind energy is predominately available in the evening and off peak hours. Therefore, a majority of the wind energy over much of the study period would only be available to RPU during times when all energy requirements are met by the SMMPA CROD. This would require RPU to sell the unused wind energy to the market at the prevailing market energy price. Therefore, the larger the project size, the more RPU would be reliant on market prices to recoup the wind contract energy cost.

Figure 3-2 shows recent historical market energy price duration curves for the first four months of the year over the period 2007 through 2009. For a risk assessment, this figure should be looked at in context of the contract energy price of potential wind energy compared against the potential market price for selling that energy back into the market. This shows a potentially high risk of selling back a high portion of wind energy to the market at a loss. Based on the amount of renewable energy required over the study period and the potential market energy price risk, it was determined that over the short-term, any potential project for wind should be relatively small.

Figure 3-2: Historical Day Ahead Market Price Duration Curves from MN Hub



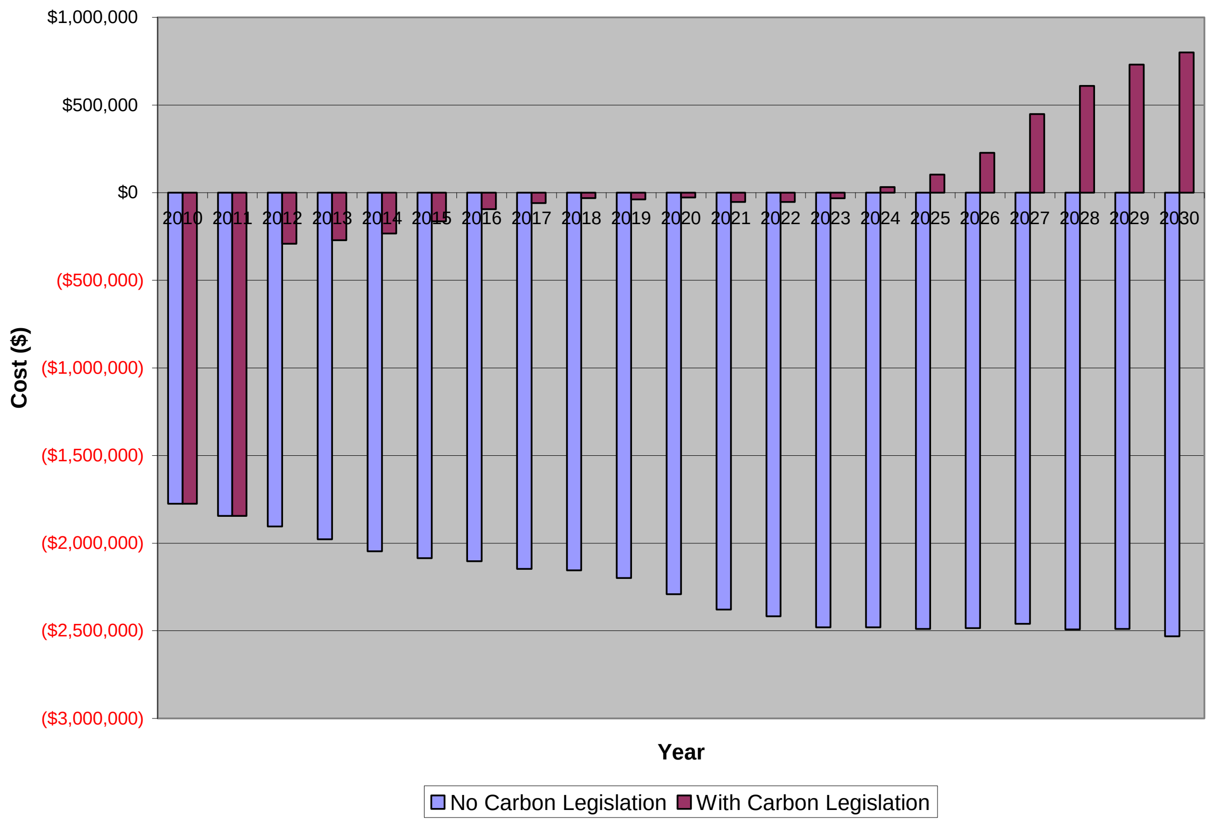
As seen from the above figure, market prices have declined substantially in 2009 from previous levels.

3.2.2 Wind Project Production Cost Analysis

Based on the project size analysis, a 24 MW project proposed through the RFP process was evaluated in an hourly production cost model to determine the potential economic benefits. The proposed wind project was added to RPU's system starting in 2010 at the costs proposed and evaluated on an hourly basis against a case over the same time period which did not include the wind project. These cases were evaluated with and without a carbon tax. The carbon tax was assumed to start in 2012 and costs were assumed from the same basis as the contract extension analysis described in the previous Section. The annual production cost between the cases with and without a carbon tax was compared to see if any economic benefit resulted from adding the wind resource in 2010.

Figure 3-3 shows the annual production cost delta with and without the addition of the wind project for the cases with and without an assumed carbon tax. In cases with and without a future carbon tax, the production cost delta between the case with wind subtracted from the case without wind resulted in a negative NPV. This indicated a negative economic impact of adding the wind project in 2010 under the pricing assumptions based on the RFP response. Appendix C provides a more detailed breakdown of energy sources and costs for each of the cases summarized herein.

Figure 3-3: Annual Production Cost Delta, Wind Case Minus No Wind Case



3.3 SOLAR ENERGY CONSIDERATIONS

As discussed previously, based on current load projections, RPU does not have to add short-term resources (renewable or otherwise) unless they provide an economic benefit to RPU and its customers. RPU currently has an all-requirements CROD through SMMPA up to 216 MW, and RPU generally does not generate significant amounts of energy through its own resources except during peak load times. Because of this and the hourly generation profile of wind, the energy from wind cannot provide a significant portion of native load requirements to RPU until load grows significantly beyond its current point. This condition makes renewable energy generated over the peak hours a better fit to meet RPU native load over the duration of the CROD agreement. For this reason, solar projects may be a more compatible resource to fulfill any RPS requirements through the end of the CROD. Figures 3-4 through 3-7 show a normalized curve of RPU's load compared against RPU's day ahead LMP in MISO and the output of both wind and fixed axis solar resources for the months of January, April, July, and October, respectively.

Figure 3-4: Normalized Load vs. Output of Wind and Solar Resources, Jan.

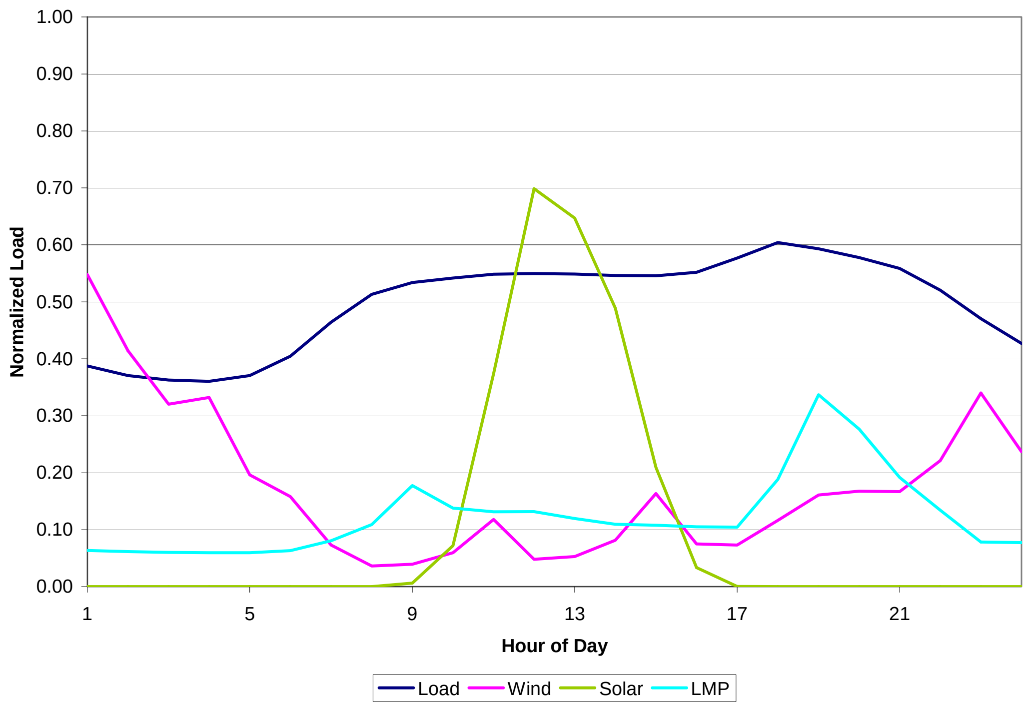


Figure 3-5: Normalized Load vs. Output of Wind and Solar Resources, April

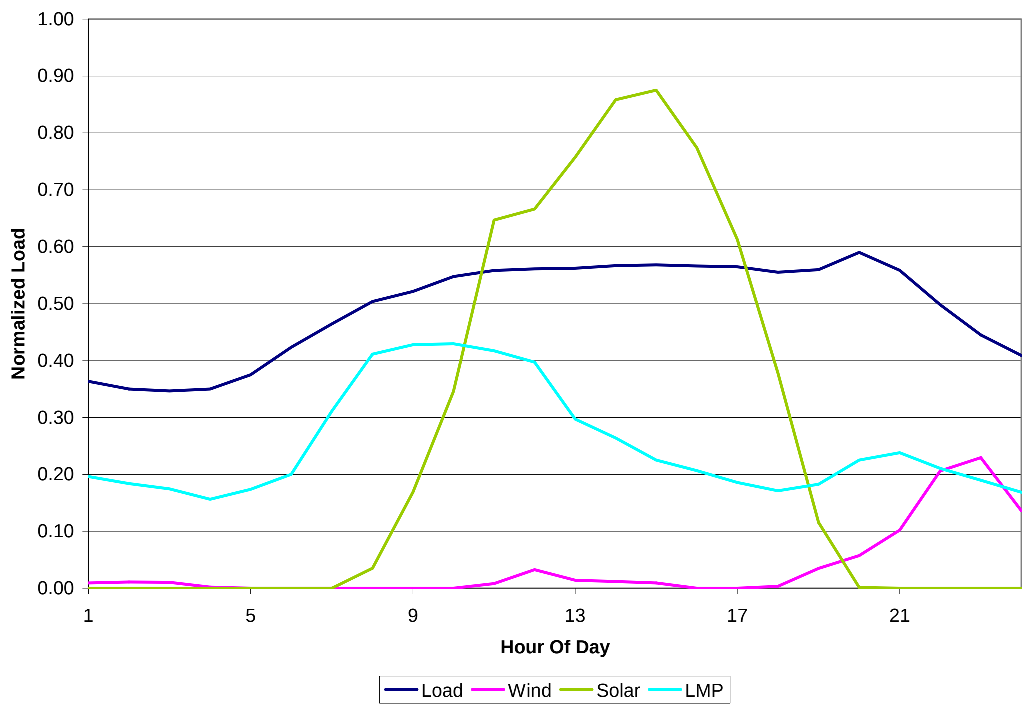


Figure 3-6: Normalized Load vs. Output of Wind and Solar Resources, July

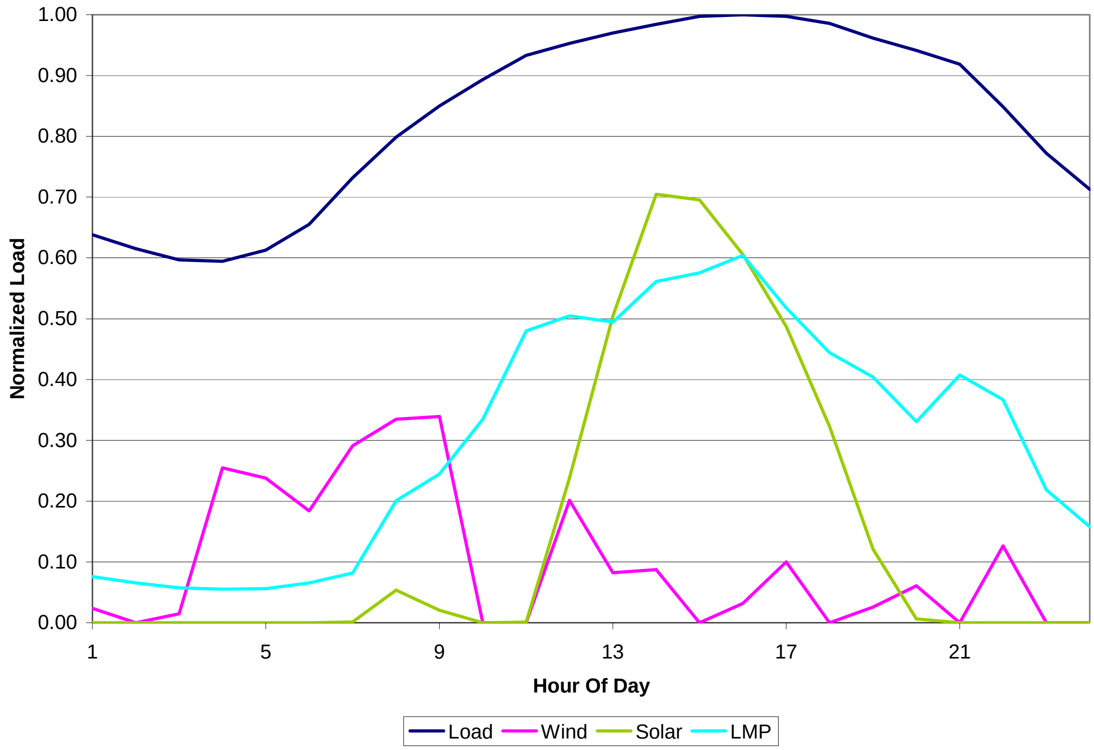
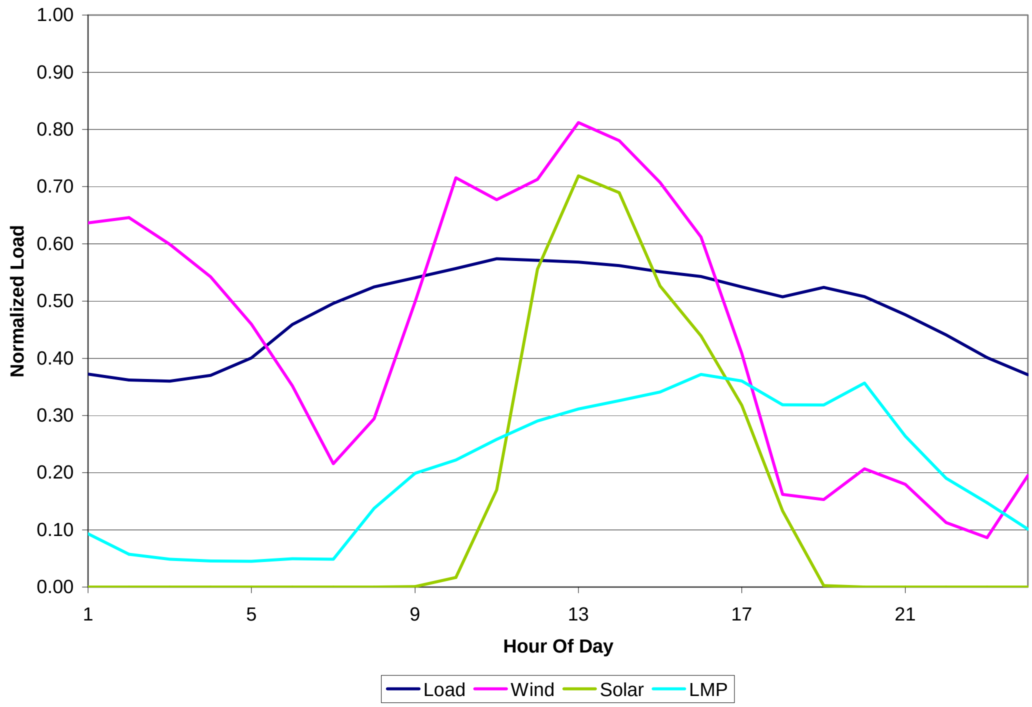


Figure 3-7: Normalized Load vs. Output of Wind and Solar Resources, Oct.



3.4 CONCLUSIONS

Based on the analysis provided above on the acquisition of new renewable energy in the short-term, Burns & McDonnell has developed the following conclusions.

1. Projected energy above CROD with lower forecast and current renewable energy expected to be available from Zumbro Hydro and OWEF does not show RPS energy deficit until about 2025.
2. With CROD and wind profile, significant amount of wind energy is unused by RPU and sold into MISO market at hourly LMP.
3. Based on hourly production cost analysis and current market conditions, significant amounts of new wind energy would be sold back to market at a loss in the short-term. Higher market prices, whether through a new carbon tax or other means, will improve economics of wind project as analyzed in this update, however not necessarily make it economically worthwhile.
4. RPU should not pursue wind at the current time, but continue to monitor market conditions to determine when beneficial economics exist.
5. If RPU considers providing renewable energy programs for its customers beyond that required in the RPS, then solar energy may be an option to consider. Due to the CROD, solar energy more closely matches the RPU requirements.

* * * * *

SECTION 4.0

RESOURCE STRATEGY

4.0 RESOURCE STRATEGY

Overall, RPU is in relatively good condition to meet its load requirements for several years without any additions to its resource mix. Challenges to RPU in the area of transmission reliability and adjusting to potential future market and regulatory risks are typical of the environment in which utilities operate today and should be a primary focus of RPU into the future. Plant related issues will include the decision of whether or not to continue investing in SLP for long-term operation. A discussion of these and other issues to RPU's long range resource plan are provided in this Section.

4.1 REGIONAL COAL PLANT PARTICIPATION

In following the recommendations of the initial long range infrastructure plan, RPU initiated the study of an opportunity to participate in a regional coal-fired power plant. B&McD analyzed the terms of this project in the context of adding a 50 MW tranche in 2015 and studied the economic benefits through an hourly production cost analysis. This analysis found the project to be uneconomical to RPU through the time period considered.

Subsequent to the initial long range plan, additional environmental scrutiny has been focused on coal-fired power plants, with nearly every new coal project challenged by environmental groups in court. As discussed previously in this study update, there is ongoing legislative debate as to how and if carbon emissions should have stricter regulation(s). One possible method for limiting carbon emissions is through a carbon tax or cap and trade. This potential regulatory cost makes the outlook for coal-fired power plants as a long-term economic power generator much less certain. Based on this regulatory risk and the development challenges that new coal-fired plants face, it is expected that RPU should look to add new generation, as necessary, through natural gas-fired or other more economical power generation means.

4.2 LOAD FORECAST IMPACTS

As discussed throughout the various analyses summarized in this update study, RPU's load forecast was adjusted significantly from the initial forecast used in the 2005 Infrastructure Plan based on recent SMMPA projections. The adjusted forecast can be attributed to many factors including increased DSM programs and end-user efficiency. Therefore, it is inherently assumed in the forecast that the aggressive DSM reviewed in the initial Infrastructure Plan is capturing sufficient demand and energy to result in the

SMMPA revised forecast. Figures 4-1 and 4-2 show a comparison of the initial and revised demand and energy forecasts, respectively.

Figure 4-1: Comparison of Previous and Current RPU Demand Forecast

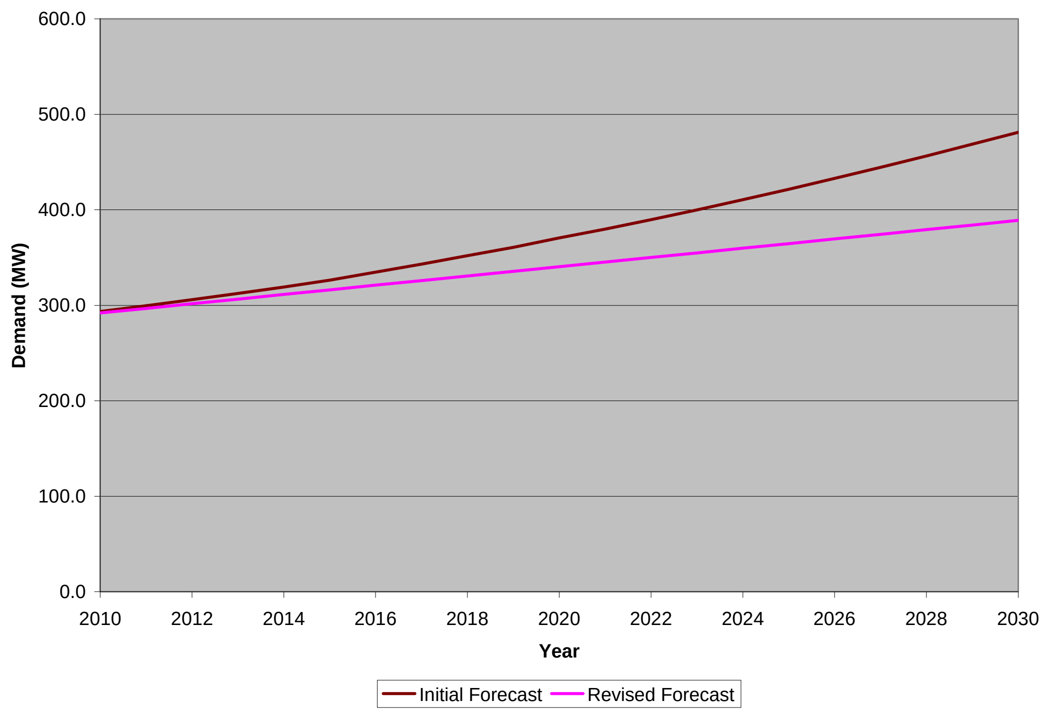
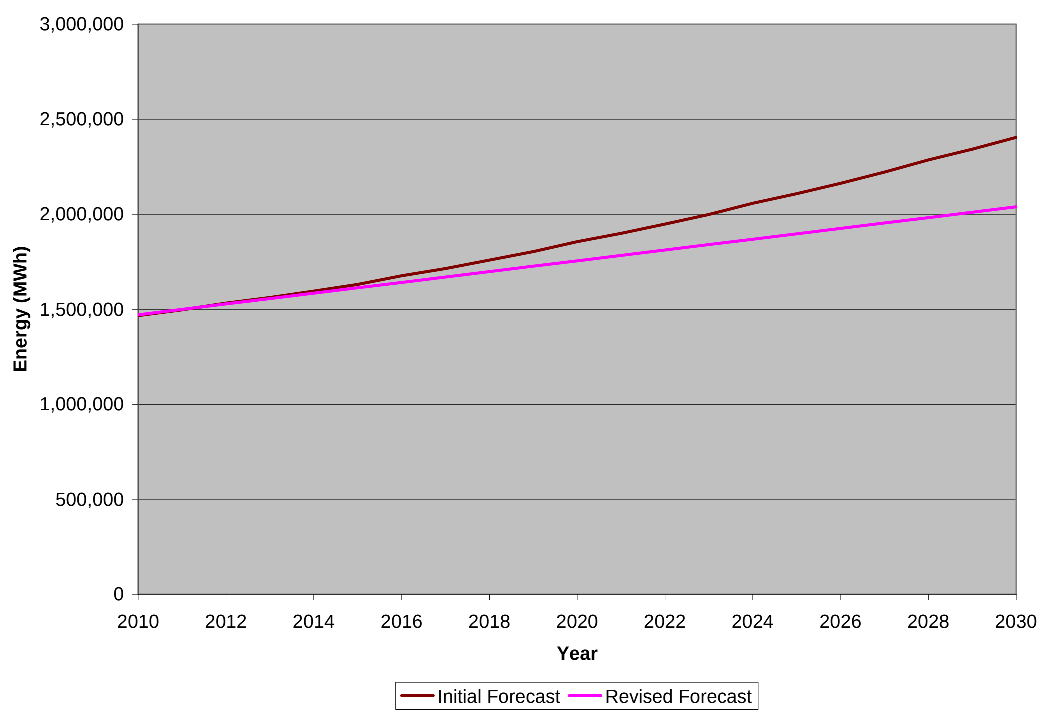


Figure 4-2: Comparison of Previous and Current RPU Energy Forecast



Load forecast projections beyond 2030 were based on the average growth rate over the previous five years.

4.3 SMMPA CONTRACT EXTENSION

RPU is faced with determining whether or not to extend the current 216 MW CROD contract with SMMPA beyond 2030. B&McD analyzed RPU's potential future with and without the CROD extended beyond 2030 and its subsequent impact to RPU's capacity and energy needs and renewable energy requirements. Based on this analysis, it was found that a future without SMMPA would be more economically beneficial than extending the current CROD contract, even considering the additional renewable energy burden required without the SMMPA CROD. This is likely a function of many complex factors including but not limited to:

- CROD rates assumed in this study
- Carbon tax levels assumed in this study and RPU's exposure to coal-based energy through SMMPA
- Based on its size and load requirements, RPU would not be able to achieve economies of scale or efficient operations replacing CROD energy and capacity through a large coal-fired power plant, which would have greater capacity and energy than RPU alone would need
- RPU can utilize economies of scale and operating efficiencies replacing CROD energy and capacity with a large natural gas-fired resource that serves as a baseload resource in a carbon tax environment

4.4 RENEWABLE RESOURCE DEVELOPMENT

Based on the analysis in this update study, RPU does not require additional renewable energy to meet current Minnesota RPS requirements until approximately 2025. Until that time, a majority of native load requirements above CROD levels occur during peak hours. Because of this constraint, wind, which generally has an output profile inverse to load requirements, is not a great fit for supplying renewable energy to RPU above CROD. It is expected that RPU would have to sell a significant amount of wind energy over the short-term into the open market, subjecting considerable market price risk to that energy.

If RPU wishes to pursue additional renewable energy projects prior to approximately the 2025 timeframe, it is expected that solar resources (or any resource that provides more energy during peak hours) would be a better fit to serve RPU native load requirements above CROD. This is based on the assumption that RPU native load requirements above CROD will occur during peak hours more often than not until the conclusion of the SMMPA CROD. The addition of any new renewable energy above Minnesota RPS requirements should still be subject to a production cost analysis to determine its suitability and economic benefit to RPU and its customers.

4.5 SUGGESTED LONG RANGE PLANNING ACTIVITIES

The decision of whether or not to extend the CROD contract with SMMPA is currently the largest resource planning issue confronting RPU over the next 20 years. Based on Burns & McDonnell's understanding, RPU has determined not to renew the SMMPA contract. This indicates that the CROD will not be available to RPU past 2030.

Assuming aggressive DSM and increased energy efficiency, RPU will not face capacity or energy deficits until approximately 2026. Planning for the CROD replacement will need to begin approximately eight to ten years prior to the end of the SMMPA contract due to the size of the resource. In addition, based on current load projections, RPU will need to start planning for the addition of its next resource two to three years prior to needing the capacity and energy. Also, based on the current load projections, additional renewable resources to meet Minnesota RPS requirements will not be required until approximately 2025. A summary activity chart showing the timing of the previous activities as well as suggested periods to review the long range plan against current conditions is shown in Table 4-1.

Table 4-1: Summary of Long Range Plan Development Activities

Activity:	**2009**	2010	2011	2012	2013	**2014**	2015	2016	2017	2018	**2019**	2020	2021	**2022**	2023	**2024**	2025	2026	2027	2028	**2029**	2030
Aggressive DSM																						
CROD Replacement Resource																						
Next Resource Based on Load Growth																						
Next Renewable Resource																						
Long Range Plan Review	X					X					X					X					X	

4.6 CONCLUSIONS

Based on the analysis provided above, Burns & McDonnell has developed the following conclusions and recommendations:

6. RPU has determined that the resource expansion should consider the CROD expiring in 2030.

7. The next resource that RPU will need to acquire is in the 2027 time frame. The resource identified is an engine based plant. The lead time for this type of plant is approximately three years from beginning of permitting to commercial operation. Therefore, RPU would need to begin the formal project to install this unit in 2024.
8. RPU will need to begin planning for the expiration of the CROD in the 2020 to 2022 time frame. This will provide sufficient lead time for RPU to investigate the approaches to replacing the capacity and construct a resource should that be the selected approach.
9. Due to the CROD, the best renewable option that fits the RPU load curve is solar photovoltaic. Encouragement of installation of solar PV should be considered.
10. RPU should continue to pursue aggressive demand side management activities for both peak demand reduction and energy savings. Pursuit of time of use and dynamic pricing should be considered to provide incentives to the customer to reduce consumption.
11. RPU should continue to provide periodic updates to this plan. The main variable will be the success of the demand side management activities and the resultant load that has to be met. Should the load be greater than that assumed in the above analysis, adjustments to the capacity requirements will be necessary.

* * * * *

APPENDIX A

STUDY ASSUMPTIONS

Rochester Public Utilities

Project 49188 Resource Planning Assumptions

Rochester Public Utilities
Load Forecast Assumptions

	Demand (MW)	Energy (GWh)
2025	364.7	1,897.5
2026	369.6	1,925.9
2027	374.4	1,954.4
2028	379.3	1,982.8
2029	384.1	2,011.2
2030	389.0	2,039.7
2031	394.0	2,069.4
2032	399.1	2,099.5
2033	404.3	2,130.1
2034	409.6	2,161.1
2035	414.9	2,192.5
2036	420.2	2,224.4
2037	425.7	2,256.8
2038	431.2	2,289.7
2039	436.8	2,323.0
2040	442.5	2,356.8
2041	448.2	2,391.1
2042	454.0	2,426.0
2043	459.9	2,461.3
2044	465.8	2,497.1

[1]Load forecast based on linear projection of SMMPA's projection of RPU 2030 peak of 389 MW and energy of 2,039,674 MWh.

Rochester Public Utilities
Project 49188 Resource Planning Assumptions

Rochester Public Utilities
Existing Resource Operating Assumptions

Unit	Fuel	Summer Capacity (MW)	Full Load Heat Rate (Btu/kWh)	FO&M[1] ($/kw-yr) (2009$)	VO&M[1] ($/MWh) (2009$)	Forced Outage	CO_2[4] (lbs/mmBtu)	SO_2[4] (lbs/mmBtu)	NO_X[4] (lbs/mmBtu)
Cascade Creek1	Gas	27	15,112	$0.00	$10.01	4.8%	120.4	0.00	0.09
Cascade Creek2	Gas	48	10,917	$0.00	$10.01	4.8%	119.9	0.00	0.10
CROD	N/A	216	-	[2]	[2]	-	-	-	-
Lake Zumbro	N/A	2	-	$9.56	$0.00	-	-	-	-
OWEF[3]	N/A	5	-	$0.00	$0.00	-	-	-	-
Silver Lake1	Coal	9.5	14,155	$67.88	$3.08	9.0%	204.3	1.55	0.42
Silver Lake2	Coal	14	14,705	$67.88	$3.08	9.0%	204.3	1.55	0.42
Silver Lake3	Coal	24	11,943	$67.88	$3.08	9.0%	204.3	1.55	0.42
Silver Lake4	Coal	45	12,078	$67.88	$3.08	9.0%	204.3	1.55	0.42

[1]Study uses 2009 real$ throughout and assumes no escalation to 2009$ Fixed and Variable O&M, respectively.
[2]CROD ends Dec. 31, 2030;rate projections to that point same as those used in Austin analysis.
[3]OWEF energy assumed 90% capacity factor and available only for native load requirements above CROD.
[4]Reported Unit Information From EPA's Clean Air Markets Website: http://camddataandmaps.epa.gov/gdm/;see 'Emissions-Historical' worksheet for more data.

Rochester Public Utilities

Project 49188 Resource Planning Assumptions

									*Study Adjusted ***Real*** Rates			
	On-Peak ($/MWh)	Off-Peak ($/MWh)	Demand ($/kW-yr)	Trans. ($/kW-yr)	Esc from Base	Esc from Base	Assumed Real Esc	Assumed Real Esc	Adj. On-Peak ($/MWh)	Adj. Off-Peak ($/MWh)	Demand ($/kW-yr)	Trans. ($/kW-yr)
2009	$46.16	$34.98	$10.66	$2.66					$46.16	$34.98	$10.66	$2.66
2010	$51.68	$39.09	$10.66	$2.66	11.95%	11.75%	1.50%	1.50%	$46.85	$35.50	$10.66	$2.66
2011	$55.25	$41.79	$10.66	$2.66	6.92%	6.91%	1.50%	1.50%	$47.56	$36.04	$10.66	$2.66
2012	$57.49	$43.48	$10.66	$2.66	4.05%	4.03%	1.50%	1.50%	$48.27	$36.58	$10.66	$2.66
2013	$60.45	$45.71	$10.66	$2.66	5.16%	5.14%	1.50%	1.50%	$48.99	$37.13	$10.66	$2.66
2014	$63.08	$47.69	$10.66	$2.66	4.35%	4.33%	1.50%	1.50%	$49.73	$37.68	$10.66	$2.66
2015	$61.18	$46.24	$10.66	$2.66	-3.02%	-3.04%	1.50%	1.50%	$50.47	$38.25	$10.66	$2.66
2016	$64.80	$48.96	$10.66	$2.66	5.92%	5.88%	1.50%	1.50%	$51.23	$38.82	$10.66	$2.66
2017	$68.43	$51.68	$10.66	$2.66	5.61%	5.55%	1.50%	1.50%	$52.00	$39.40	$10.66	$2.66
2018	$72.70	$54.86	$10.66	$2.66	6.23%	6.16%	1.50%	1.50%	$52.78	$40.00	$10.66	$2.66
2019	$72.08	$54.35	$10.66	$2.66	-0.85%	-0.93%	1.50%	1.50%	$53.57	$40.60	$10.66	$2.66
2020	$74.74	$56.30	$10.66	$2.66	3.68%	3.58%	1.50%	1.50%	$54.37	$41.20	$10.66	$2.66
2021	$77.24	$58.11	$10.66	$2.66	3.35%	3.23%	1.50%	1.50%	$55.19	$41.82	$10.66	$2.66
2022	$80.64	$60.59	$10.66	$2.66	4.40%	4.26%	1.50%	1.50%	$56.02	$42.45	$10.66	$2.66
2023	$84.61	$63.47	$10.66	$2.66	4.92%	4.76%	1.50%	1.50%	$56.86	$43.09	$10.66	$2.66
2024	$88.86	$66.55	$10.66	$2.66	5.02%	4.85%	1.50%	1.50%	$57.71	$43.73	$10.66	$2.66
2025	$92.76	$69.35	$10.66	$2.66	4.39%	4.21%	1.50%	1.50%	$58.58	$44.39	$10.66	$2.66
2026	$86.80	$64.78	$10.66	$2.66	-6.42%	-6.60%	1.50%	1.50%	$59.46	$45.05	$10.66	$2.66
2027	$80.45	$59.92	$10.66	$2.66	-7.32%	-7.50%	1.50%	1.50%	$60.35	$45.73	$10.66	$2.66
2028	$83.79	$62.28	$10.66	$2.66	4.16%	3.94%	1.50%	1.50%	$61.25	$46.42	$10.66	$2.66
2029	$87.74	$65.07	$10.66	$2.66	4.71%	4.49%	1.50%	1.50%	$62.17	$47.11	$10.66	$2.66
2030	$92.88	$68.73	$10.66	$2.66	5.85%	5.62%	1.50%	1.50%	$63.10	$47.82	$10.66	$2.66
2031	$95.66	$70.79	$10.66	$2.66	3.00%	3.00%	1.50%	1.50%	$64.05	$48.54	$10.66	$2.66
2032	$98.53	$72.91	$10.66	$2.66	3.00%	3.00%	1.50%	1.50%	$65.01	$49.27	$10.66	$2.66
2033	$101.49	$75.10	$10.66	$2.66	3.00%	3.00%	1.50%	1.50%	$65.99	$50.00	$10.66	$2.66
2034	$104.53	$77.35	$10.66	$2.66	3.00%	3.00%	1.50%	1.50%	$66.98	$50.75	$10.66	$2.66
2035	$107.67	$79.67	$10.66	$2.66	3.00%	3.00%	1.50%	1.50%	$67.98	$51.52	$10.66	$2.66
2036	$110.90	$82.06	$10.66	$2.66	3.00%	3.00%	1.50%	1.50%	$69.00	$52.29	$10.66	$2.66
2037	$114.22	$84.53	$10.66	$2.66	3.00%	3.00%	1.50%	1.50%	$70.03	$53.07	$10.66	$2.66
2038	$117.65	$87.06	$10.66	$2.66	3.00%	3.00%	1.50%	1.50%	$71.09	$53.87	$10.66	$2.66
2039	$121.18	$89.67	$10.66	$2.66	3.00%	3.00%	1.50%	1.50%	$72.15	$54.68	$10.66	$2.66
2040	$124.82	$92.36	$10.66	$2.66	3.00%	3.00%	1.50%	1.50%	$73.23	$55.50	$10.66	$2.66
2041	$128.56	$95.13	$10.66	$2.66	3.00%	3.00%	1.50%	1.50%	$74.33	$56.33	$10.66	$2.66
2042	$132.42	$97.99	$10.66	$2.66	3.00%	3.00%	1.50%	1.50%	$75.45	$57.17	$10.66	$2.66
2043	$136.39	$100.93	$10.66	$2.66	3.00%	3.00%	1.50%	1.50%	$76.58	$58.03	$10.66	$2.66
2044	$140.48	$103.96	$10.66	$2.66	3.00%	3.00%	1.50%	1.50%	$77.73	$58.90	$10.66	$2.66
2045	$144.70	$107.07	$10.66	$2.66	3.00%	3.00%	1.50%	1.50%	$78.89	$59.79	$10.66	$2.66
2046	$149.04	$110.29	$10.66	$2.66	3.00%	3.00%	1.50%	1.50%	$80.08	$60.68	$10.66	$2.66
2047	$153.51	$113.60	$10.66	$2.66	3.00%	3.00%	1.50%	1.50%	$81.28	$61.59	$10.66	$2.66
2048	$158.11	$117.00	$10.66	$2.66	3.00%	3.00%	1.50%	1.50%	$82.50	$62.52	$10.66	$2.66
2049	$162.86	$120.51	$10.66	$2.66	3.00%	3.00%	1.50%	1.50%	$83.74	$63.45	$10.66	$2.66
2050	$167.74	$124.13	$10.66	$2.66	3.00%	3.00%	1.50%	1.50%	$84.99	$64.41	$10.66	$2.66
2051	$172.77	$127.85	$10.66	$2.66	3.00%	3.00%	1.50%	1.50%	$86.27	$65.37	$10.66	$2.66

Base Case Rates from Austin files 'Rate Forecast to 2050.xls'

Rochester Public Utilities
Project 49188 Resource Planning Assumptions

Rochester Public Utilities
New Resource Cost & Operating Assumptions

Unit	Type	Fuel[1]	Earliest COD	Capital Cost ($/kW) [2]	Yrs Debt Service Amortized	Summer Capacity (MW) [3]	Full Load Heat Rate (Btu/kWh)	FO&M ($/kw-yr) (2009$)	VO&M ($/MWh) (2009$)	Forced Outage	CO_2 (lbs/mmBtu)	SO_2 (lbs/mmBtu)	NO_X (lbs/mmBtu)
Short-term Market	Contract	Gas	2009	-	1	-	-	$76.38	$0.00	0.0%	-	-	-
Wartsila (2 Engines)	Simple Cycle	Gas	2013	$1,122	20	16.8	8,642	$8.32	$8.42	4.8%	125	0.0051	0.02
FT8 TwinPac	Simple Cycle	Gas	2013	$1,351	20	50	10,346	$12.88	$1.58	4.8%	133	0.0051	0.1
1x1 7EA (duct-fired)	Combined Cycle	Gas	2014	$1,955	30	134	7,849	$21.22	$5.04	5.0%	118	-	0.007
1x1 7FA (duct-fired)	Combined Cycle	Gas	2014	$1,318	30	330	6,966	$18.54	$4.64	5.0%	118	-	0.007
Wind	PPA	N/A	2011	-	-	25	-	$0.00	$70.00	0.0%	-	-	-
Solar	Fixed-Axis PV	N/A	2011	$4,000	20	5	-	$0.00	$0.00	0.0%	-	-	-
RPS Biomass[4]	Contract	TDF/Coal	2016	$2,275	20	40	11,085	$132.00	$3.50	0.0%	118	0.05	0.11

[1]New gas-fired resources use same forecast as existing gas-fired resources;Biomass resource fired 50/50 on Coal/TDF; TDF fuel price of $2.34/MMBtu (2009$) escalated 3.0% annually.
[2]Capital costs for lignite-fired resource and greenfield 1x1 7EA previously presented to SMEPA. Simple cycle 7EA estimate is derived from the same CCGT estimate.
All capital cost estimates are planning level only and presented in 2013$ with the exception of the 1x1 7FA CCGT and RPS Biomass resources, which are presented in 2012$ and 2008$, respectivel
All capital costs are entered as levelized annual debt service payments based on a 6.5% cost of debt, amortized over the number of years specified.
Capital cost is escalated 3% annually from the estimate year basis to the in-service year (if any) as selected by Strategist.
[3]Summer Capacity includes the months of May through September; Winter Capacity for all other months.

Rochester Public Utilities

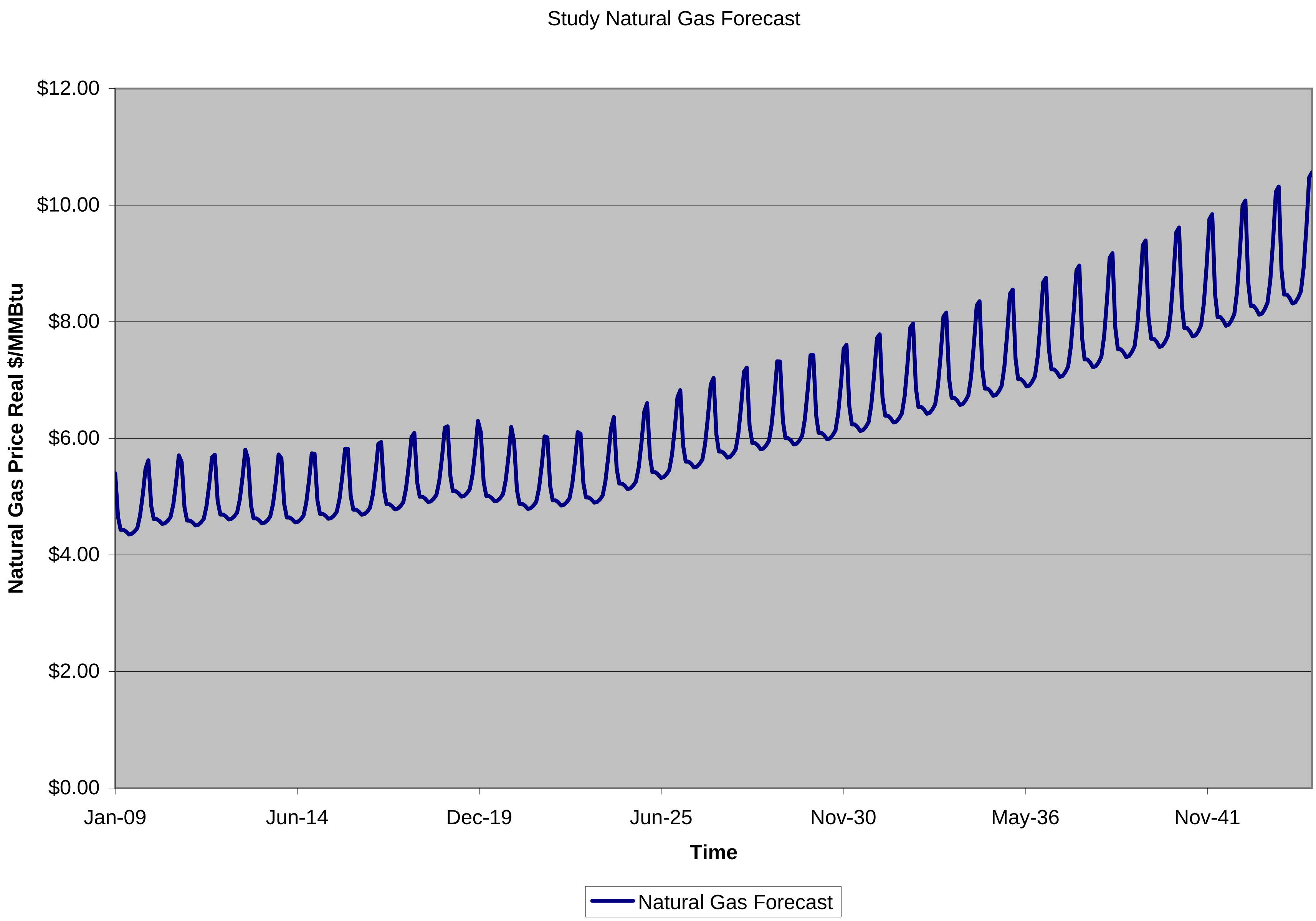
Project 49188 Resource Planning Assumptions

State	Facility Name	Facility ID	Unit ID	Associated Stack(s)	Year	Program(s)	Operating Time	# of Months Reported	SO2 Tons	SO2 Rate (lb/mmBtu)	Avg. NOx Rate (lb/mmBtu)	NOx Tons	NOx Rate (lb/mmBtu)	CO2 Tons	CO2 Rate (lb/mmBtu)	Heat Input (mmBtu)
MN	Cascade Creek	6058	CT2		2003	ARP	256	12	0.1	0.00451	0.13	2.6	0.11718	2,765.80	124.65577	44,375
MN	Cascade Creek	6058	CT2		2004	ARP	158	12	0	0.00000	0.1	1.2	0.09109	1,568.60	119.07238	26,347
MN	Cascade Creek	6058	CT2		2005	ARP	265	12	0	0.00000	0.09	1.8	0.08852	2,448.90	120.42783	40,670
MN	Cascade Creek	6058	CT2		2006	ARP	922	12	0.1	0.00090	0.09	9.4	0.08449	13,224.80	118.87247	222,504
MN	Cascade Creek	6058	CT2		2007	ARP	1,422	12	0.1	0.00057	0.1	15	0.08573	20,810.50	118.94569	349,916
	Unit Averages									**0.00120**	0.10200		**0.09340**		**120.39483**	
MN	Cascade Creek	6058	CT3		2003	ARP	214	12	0.1	0.00563	0.14	2.4	0.13518	2,180.50	122.82085	35,507
MN	Cascade Creek	6058	CT3		2004	ARP	174	12	0	0.00000	0.09	1.3	0.09252	1,677.70	119.40075	28,102
MN	Cascade Creek	6058	CT3		2005	ARP	241	12	0	0.00000	0.09	1.7	0.09157	2,214.00	119.25988	37,129
MN	Cascade Creek	6058	CT3		2006	ARP	913	12	0.1	0.00090	0.09	9	0.08137	13,146.60	118.86672	221,199
MN	Cascade Creek	6058	CT3		2007	ARP	1,349	12	0.1	0.00062	0.11	15.3	0.09444	19,269.70	118.94766	324,003
	Unit Averages									**0.00143**	0.10400		**0.09902**		**119.85917**	
MN	Silver Lake	2008	4		2003	ARP	5,725	12	1,913.30	1.64003	0.43	533.9	0.45764	238,894.80	204.77393	2,333,254
MN	Silver Lake	2008	4		2004	ARP	6,649	12	2,201.50	1.58361	0.4	595.5	0.42836	284,386.00	204.56775	2,780,360
MN	Silver Lake	2008	4		2005	ARP	5,224	12	1,575.10	1.57115	0.41	435.5	0.43441	204,487.80	203.97562	2,005,022
MN	Silver Lake	2008	4		2006	ARP	4,238	12	1,260.30	1.51089	0.38	330.6	0.39634	170,038.70	203.84875	1,668,283
MN	Silver Lake	2008	4		2007	ARP	6,234	12	1,837.00	1.46551	0.38	482.4	0.38485	256,161.10	204.35888	2,506,973
	Unit Averages									**1.55424**	0.40000		**0.42032**		**204.30499**	

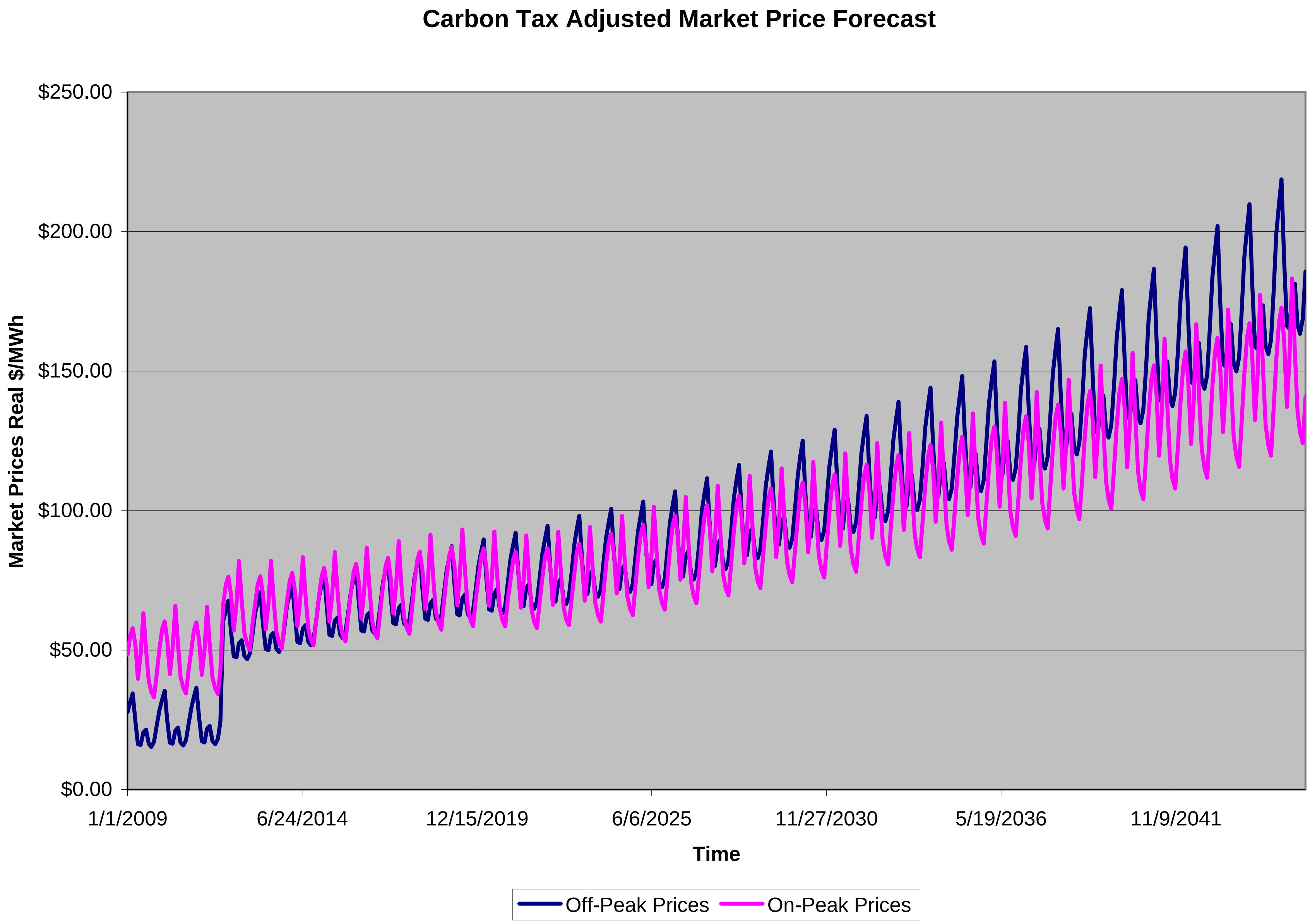
[1]Reported Unit Information From EPA's Clean Air Markets Website: http://camddataandmaps.epa.gov/gdm/

Annual Carbon Tax Assumptions

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
CO_2 Cost	$0.00	$0.00	$0.00	$30.00	$32.00	$34.00	$36.00	$37.00	$39.00	$40.00	$41.00	$42.00	$43.00	$44.00	$46.00
Year	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
CO_2 Cost	$47.00	$48.00	$50.00	$53.00	$56.00	$59.00	$61.00	$63.00	$66.00	$69.00	$72.00	$74.00	$77.00	$80.00	$84.00
Year	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050			
CO_2 Cost	$89.00	$93.00	$98.00	$103.00	$108.00	$113.00	$119.00	$125.00	$130.00	$137.00	$144.00	$151.00			



Study Natural Gas Forecast
$12.00
$10.00
$8.00
$6.00
$4.00
$2.00
$0.00
Natural Gas Price Real $/MMBtu
Jan-09
Jun-14
Dec-19
Jun-25
Nov-30
May-36
Nov-41
Time
Natural Gas Forecast



Carbon Tax Adjusted Market Price Forecast
$250.00
$200.00
$150.00
$100.00
$50.00
$0.00
Market Prices Real $/MWh
1/1/2009
6/24/2014
12/15/2019
6/6/2025
11/27/2030
5/19/2036
11/9/2041
Time
Off-Peak Prices
On-Peak Prices

APPENDIX B

CONTRACT EXTENSION ANALYSIS

DETAILED PRODUCTION COST OUTPUT

Rochester Public Utilities
Project 49188 - Infrastructure Update
SMMPA Contract Extension Analysis

Data Item	Units	Description	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
ENERGY REQUIREMENTS	GWH	RPU	1,897	1,926	1,954	1,983	2,011	2,040	2,069	2,099	2,130	2,161	2,193	2,224	2,257	2,290	2,323	2,357	2,391	2,426	2,461	2,497
PEAK DEMAND	MW	RPU	364.7	369.6	374.4	379.3	384.1	389.0	394.0	399.1	404.3	409.6	414.9	420.2	425.7	431.2	436.8	442.5	448.2	454.0	459.9	465.8
ECONOMY INTERCHANGE PURCHASE ENER(	GWH		84	84	95	95	101	94	93	90	90	106	103	107	98	109	100	113	106	111	111	105
ECONOMY INTERCHANGE PURCHASE COST	$000		$28,287	$29,792	$32,754	$32,719	$36,032	$38,001	$36,482	$35,355	$38,295	$42,496	$42,291	$44,249	$43,953	$47,336	$46,855	$51,910	$52,661	$53,173	$56,272	$53,107
FIRM CAPACITY	MW	Cascade Creek1	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
FIRM CAPACITY	MW	Cascade Creek2	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0
FIRM CAPACITY	MW	Lake Zumbro	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
FIRM CAPACITY	MW	Silver Lake1	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
FIRM CAPACITY	MW	Silver Lake2	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
FIRM CAPACITY	MW	Silver Lake3	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
FIRM CAPACITY	MW	Silver Lake4	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
FIRM CAPACITY	MW	Wartsila:2025:700	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
FIRM CAPACITY	MW	Wartsila:2026:699	0.0	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
FIRM CAPACITY	MW	Wartsila:2030:698	0.0	0.0	0.0	0.0	0.0	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
FIRM CAPACITY	MW	Wartsila:2033:697	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
FIRM CAPACITY	MW	Wartsila:2036:696	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
FIRM CAPACITY	MW	Wartsila:2039:695	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.8	16.8	16.8	16.8	16.8	16.8
FIRM CAPACITY	MW	Wartsila:2043:694	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.8	16.8
GENERATION	GWH	Cascade Creek1	1	1	1	3	3	2	2	2	1	2	2	1	1	1	1	1	1	1	1	1
GENERATION	GWH	Cascade Creek2	21	18	19	19	20	17	17	16	14	15	16	13	13	13	10	12	13	13	11	9
GENERATION	GWH	Lake Zumbro	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
GENERATION	GWH	Silver Lake1	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	GWH	Silver Lake2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	GWH	Silver Lake3	6	6	5	4	4	4	4	3	3	3	3	3	3	3	2	3	3	3	2	2
GENERATION	GWH	Silver Lake4	7	6	6	6	7	6	6	5	4	5	5	4	4	4	3	4	4	4	4	3
GENERATION	GWH	Wartsila:2025:700	19	16	17	16	17	16	15	15	15	14	15	14	14	14	13	13	13	13	13	12
GENERATION	GWH	Wartsila:2026:699	0	21	21	20	21	18	18	17	16	16	16	15	15	16	14	15	15	14	14	14
GENERATION	GWH	Wartsila:2030:698	0	0	0	0	0	22	21	21	18	18	18	17	17	17	16	16	16	16	15	15
GENERATION	GWH	Wartsila:2033:697	0	0	0	0	0	0	0	0	22	22	21	19	19	19	17	17	18	17	16	16
GENERATION	GWH	Wartsila:2036:696	0	0	0	0	0	0	0	0	0	0	0	22	22	23	19	19	19	19	18	17
GENERATION	GWH	Wartsila:2039:695	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	22	22	21	20	19
GENERATION	GWH	Wartsila:2043:694	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	21
CAPACITY FACTOR	%	Cascade Creek1	0.40%	0.28%	0.33%	1.08%	1.26%	0.85%	0.81%	0.78%	0.52%	0.67%	0.67%	0.40%	0.43%	0.46%	0.29%	0.39%	0.43%	0.42%	0.30%	0.26%
CAPACITY FACTOR	%	Cascade Creek2	5.00%	4.25%	4.43%	4.43%	4.79%	4.08%	3.98%	3.72%	3.24%	3.65%	3.71%	3.15%	3.10%	3.15%	2.42%	2.94%	3.08%	3.08%	2.53%	2.23%
CAPACITY FACTOR	%	Lake Zumbro	76.52%	76.52%	76.52%	76.31%	76.52%	76.52%	76.52%	76.31%	76.52%	76.52%	76.52%	76.31%	76.52%	76.52%	76.52%	76.31%	76.52%	76.52%	76.52%	76.31%
CAPACITY FACTOR	%	Silver Lake1	0.51%	0.35%	0.74%	0.47%	0.52%	0.66%	0.63%	0.62%	0.47%	0.55%	0.55%	0.42%	0.45%	0.48%	0.32%	0.38%	0.43%	0.45%	0.34%	0.30%
CAPACITY FACTOR	%	Silver Lake2	0.28%	0.19%	0.23%	0.26%	0.28%	0.19%	0.19%	0.18%	0.12%	0.16%	0.16%	0.23%	0.25%	0.27%	0.18%	0.21%	0.24%	0.24%	0.18%	0.16%
CAPACITY FACTOR	%	Silver Lake3	3.04%	2.64%	2.56%	1.88%	1.91%	1.74%	1.68%	1.61%	1.32%	1.47%	1.57%	1.35%	1.35%	1.38%	1.02%	1.29%	1.30%	1.32%	1.11%	0.97%
CAPACITY FACTOR	%	Silver Lake4	1.81%	1.64%	1.60%	1.58%	1.70%	1.50%	1.43%	1.34%	1.03%	1.22%	1.28%	1.08%	1.05%	1.08%	0.83%	1.06%	1.10%	1.09%	0.91%	0.78%
CAPACITY FACTOR	%	Wartsila:2025:700	12.97%	11.16%	11.40%	10.69%	11.39%	10.91%	10.50%	10.47%	10.06%	9.84%	10.13%	9.51%	9.47%	9.76%	8.86%	9.09%	9.04%	8.98%	8.67%	8.38%
CAPACITY FACTOR	%	Wartsila:2026:699		14.05%	14.59%	13.58%	14.36%	12.42%	11.92%	11.78%	11.15%	10.85%	11.11%	10.48%	10.44%	10.70%	9.76%	9.92%	10.01%	9.78%	9.46%	9.28%
CAPACITY FACTOR	%	Wartsila:2030:698						14.83%	14.29%	14.42%	12.56%	12.18%	12.21%	11.51%	11.42%	11.62%	10.64%	10.78%	10.96%	10.62%	10.18%	10.04%
CAPACITY FACTOR	%	Wartsila:2033:697									14.95%	14.68%	14.59%	12.78%	12.72%	13.05%	11.65%	11.72%	11.96%	11.57%	11.03%	10.83%
CAPACITY FACTOR	%	Wartsila:2036:696												14.77%	14.70%	15.57%	13.00%	12.93%	13.17%	12.73%	12.12%	11.76%
CAPACITY FACTOR	%	Wartsila:2039:695															14.80%	14.72%	14.63%	14.22%	13.39%	12.85%
CAPACITY FACTOR	%	Wartsila:2043:694																			14.66%	13.98%
TOTAL O AND M COST	$000	Cascade Creek1	$9	$6	$8	$25	$29	$20	$19	$18	$12	$15	$15	$9	$10	$11	$7	$9	$10	$10	$7	$6
TOTAL O AND M COST	$000	Cascade Creek2	$204	$173	$181	$182	$196	$167	$163	$152	$132	$149	$152	$129	$127	$129	$99	$121	$126	$126	$104	$92
TOTAL O AND M COST	$000	Lake Zumbro	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19
TOTAL O AND M COST	$000	Silver Lake1	$627	$627	$628	$627	$627	$628	$628	$628	$627	$627	$627	$627	$627	$627	$627	$627	$627	$627	$627	$627
TOTAL O AND M COST	$000	Silver Lake2	$924	$923	$923	$924	$924	$923	$923	$923	$923	$923	$923	$923	$924	$924	$923	$923	$923	$923	$923	$923
TOTAL O AND M COST	$000	Silver Lake3	$1,601	$1,598	$1,598	$1,593	$1,594	$1,593	$1,592	$1,592	$1,590	$1,591	$1,591	$1,590	$1,590	$1,590	$1,588	$1,590	$1,590	$1,590	$1,589	$1,588
TOTAL O AND M COST	$000	Silver Lake4	$2,987	$2,985	$2,984	$2,984	$2,986	$2,983	$2,982	$2,981	$2,978	$2,980	$2,981	$2,978	$2,978	$2,978	$2,975	$2,978	$2,979	$2,978	$2,976	$2,975
TOTAL O AND M COST	$000	Wartsila:2025:700	$300	$278	$281	$273	$281	$275	$270	$270	$264	$262	$265	$258	$257	$261	$250	$253	$252	$251	$247	$244
TOTAL O AND M COST	$000	Wartsila:2026:699	$0	$314	$321	$308	$318	$294	$287	$286	$278	$274	$277	$270	$269	$272	$261	$263	$264	$261	$257	$255
TOTAL O AND M COST	$000	Wartsila:2030:698	$0	$0	$0	$0	$0	$324	$317	$319	$295	$291	$291	$283	$281	$284	$272	$274	$276	$271	$266	$265
TOTAL O AND M COST	$000	Wartsila:2033:697	$0	$0	$0	$0	$0	$0	$0	$0	$325	$322	$321	$299	$297	$302	$284	$285	$288	$283	$276	$274
TOTAL O AND M COST	$000	Wartsila:2036:696	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$323	$322	$333	$301	$300	$303	$298	$290	$286
TOTAL O AND M COST	$000	Wartsila:2039:695	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$323	$323	$321	$316	$306	$299
TOTAL O AND M COST	$000	Wartsila:2043:694	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$321	$314
VARIABLE O AND M COSTS	$/MWH	Cascade Creek1	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72
VARIABLE O AND M COSTS	$/MWH	Cascade Creek2	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72
VARIABLE O AND M COSTS	$/MWH	Silver Lake1	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99
VARIABLE O AND M COSTS	$/MWH	Silver Lake2	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99
VARIABLE O AND M COSTS	$/MWH	Silver Lake3	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99

Rochester Public Utilities
Project 49188 - Infrastructure Update
SMMPA Contract Extension Analysis

Data Item	Units	Description	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
VARIABLE O AND M COSTS	$/MWH	Silver Lake4	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99
VARIABLE O AND M COSTS	$/MWH	Wartsila:2025:700	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42
VARIABLE O AND M COSTS	$/MWH	Wartsila:2026:699	$0.00	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42
VARIABLE O AND M COSTS	$/MWH	Wartsila:2030:698	$0.00	$0.00	$0.00	$0.00	$0.00	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42
VARIABLE O AND M COSTS	$/MWH	Wartsila:2033:697	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42
VARIABLE O AND M COSTS	$/MWH	Wartsila:2036:696	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42
VARIABLE O AND M COSTS	$/MWH	Wartsila:2039:695	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42
VARIABLE O AND M COSTS	$/MWH	Wartsila:2043:694	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$8.42	$8.42
FIXED O AND M COST	$000	Cascade Creek1	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
FIXED O AND M COST	$000	Cascade Creek2	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
FIXED O AND M COST	$000	Lake Zumbro	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19
FIXED O AND M COST	$000	Silver Lake1	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626
FIXED O AND M COST	$000	Silver Lake2	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923
FIXED O AND M COST	$000	Silver Lake3	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582
FIXED O AND M COST	$000	Silver Lake4	$2,966	$2,965	$2,965	$2,965	$2,965	$2,965	$2,965	$2,965	$2,965	$2,965	$2,966	$2,966	$2,965	$2,965	$2,965	$2,966	$2,965	$2,965	$2,965	$2,965
FIXED O AND M COST	$000	Wartsila:2025:700	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140
FIXED O AND M COST	$000	Wartsila:2026:699	$0	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140
FIXED O AND M COST	$000	Wartsila:2030:698	$0	$0	$0	$0	$0	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140
FIXED O AND M COST	$000	Wartsila:2033:697	$0	$0	$0	$0	$0	$0	$0	$0	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140
FIXED O AND M COST	$000	Wartsila:2036:696	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$140	$140	$140	$140	$140	$140	$140	$140	$140
FIXED O AND M COST	$000	Wartsila:2039:695	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$140	$140	$140	$140	$140	$140
FIXED O AND M COST	$000	Wartsila:2043:694	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$140	$140
ANNUAL DEBT SERVICE	$000	Wartsila:2025:700	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643
ANNUAL DEBT SERVICE	$000	Wartsila:2026:699	$0	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643
ANNUAL DEBT SERVICE	$000	Wartsila:2030:698	$0	$0	$0	$0	$0	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643
ANNUAL DEBT SERVICE	$000	Wartsila:2033:697	$0	$0	$0	$0	$0	$0	$0	$0	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643
ANNUAL DEBT SERVICE	$000	Wartsila:2036:696	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643
ANNUAL DEBT SERVICE	$000	Wartsila:2039:695	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643
ANNUAL DEBT SERVICE	$000	Wartsila:2043:694	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,643	$1,643
TOTAL FUEL COST	$000	Cascade Creek1	$75	$55	$68	$225	$266	$182	$178	$175	$120	$158	$163	$99	$109	$120	$78	$105	$120	$118	$88	$77
TOTAL FUEL COST	$000	Cascade Creek2	$1,227	$1,078	$1,159	$1,194	$1,303	$1,127	$1,124	$1,081	$960	$1,109	$1,153	$1,003	$1,010	$1,052	$828	$1,030	$1,102	$1,125	$950	$861
TOTAL FUEL COST	$000	Silver Lake1	$36	$25	$55	$36	$41	$53	$53	$54	$42	$50	$51	$40	$45	$49	$34	$41	$48	$52	$40	$36
TOTAL FUEL COST	$000	Silver Lake2	$29	$21	$26	$31	$33	$24	$24	$24	$16	$22	$23	$35	$39	$43	$29	$36	$41	$42	$33	$31
TOTAL FUEL COST	$000	Silver Lake3	$454	$405	$406	$307	$320	$302	$299	$295	$249	$286	$314	$280	$287	$303	$231	$300	$312	$325	$282	$253
TOTAL FUEL COST	$000	Silver Lake4	$512	$477	$479	$491	$543	$493	$482	$468	$368	$452	$487	$424	$425	$447	$353	$470	$501	$507	$438	$387
TOTAL FUEL COST	$000	Wartsila:2025:700	$887	$787	$832	$799	$863	$840	$825	$846	$830	$829	$876	$844	$857	$909	$843	$885	$902	$914	$904	$902
TOTAL FUEL COST	$000	Wartsila:2026:699	$0	$997	$1,073	$1,022	$1,094	$958	$938	$954	$921	$916	$962	$932	$945	$997	$930	$968	$1,000	$996	$988	$1,000
TOTAL FUEL COST	$000	Wartsila:2030:698	$0	$0	$0	$0	$0	$1,150	$1,129	$1,177	$1,040	$1,033	$1,059	$1,025	$1,036	$1,084	$1,014	$1,054	$1,097	$1,084	$1,064	$1,082
TOTAL FUEL COST	$000	Wartsila:2033:697	$0	$0	$0	$0	$0	$0	$0	$0	$1,244	$1,253	$1,273	$1,141	$1,157	$1,223	$1,113	$1,149	$1,199	$1,183	$1,154	$1,168
TOTAL FUEL COST	$000	Wartsila:2036:696	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,324	$1,344	$1,467	$1,245	$1,271	$1,323	$1,305	$1,271	$1,271
TOTAL FUEL COST	$000	Wartsila:2039:695	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,425	$1,456	$1,475	$1,464	$1,409	$1,392
TOTAL FUEL COST	$000	Wartsila:2043:694	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,548	$1,519
CO2	TONS	Cascade Creek1	851	603	715	2,324	2,709	1,827	1,744	1,673	1,126	1,441	1,450	860	931	999	635	832	932	893	651	557
CO2	TONS	Cascade Creek2	13,748	11,678	12,175	12,232	13,187	11,236	10,945	10,257	8,899	10,042	10,219	8,684	8,521	8,663	6,667	8,117	8,484	8,460	6,973	6,163
CO2	TONS	Silver Lake1	613	417	888	571	620	789	762	754	570	664	656	501	540	574	389	454	513	543	409	357
CO2	TONS	Silver Lake2	507	350	419	481	508	358	345	333	223	289	288	430	468	501	333	392	445	439	337	300
CO2	TONS	Silver Lake3	7,799	6,761	6,578	4,832	4,890	4,474	4,308	4,129	3,382	3,774	4,020	3,481	3,467	3,550	2,628	3,312	3,344	3,381	2,854	2,485
CO2	TONS	Silver Lake4	8,795	7,961	7,766	7,716	8,286	7,316	6,946	6,547	4,988	5,956	6,230	5,267	5,127	5,238	4,014	5,188	5,368	5,280	4,423	3,798
CO2	TONS	Wartsila:2025:700	10,306	8,874	9,065	8,521	9,053	8,676	8,350	8,342	8,000	7,819	8,056	7,579	7,529	7,760	7,042	7,246	7,188	7,135	6,888	6,677
CO2	TONS	Wartsila:2026:699	0	11,171	11,594	10,820	11,414	9,873	9,475	9,386	8,861	8,625	8,828	8,354	8,297	8,502	7,758	7,909	7,953	7,773	7,523	7,400
CO2	TONS	Wartsila:2030:698	0	0	0	0	0	11,786	11,358	11,497	9,981	9,684	9,705	9,173	9,076	9,234	8,457	8,596	8,715	8,444	8,095	8,003
CO2	TONS	Wartsila:2033:697	0	0	0	0	0	0	0	0	11,883	11,671	11,598	10,187	10,108	10,376	9,264	9,342	9,510	9,196	8,768	8,631
CO2	TONS	Wartsila:2036:696	0	0	0	0	0	0	0	0	0	0	0	11,770	11,688	12,373	10,332	10,305	10,472	10,123	9,633	9,377
CO2	TONS	Wartsila:2039:695	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11,768	11,734	11,627	11,305	10,640	10,241
CO2	TONS	Wartsila:2043:694	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11,653	11,144
CO2 (Theoretical)	TONS	CROD	1,293,918	1,305,661	1,316,578	1,285,827	1,298,936	1,315,723	1,287,766	1,258,058	1,272,264	1,282,100	1,252,419	1,264,457	1,241,755	1,256,522	1,229,453	1,239,775	1,216,282	1,187,735	1,202,298	1,129,195
NOx	TONS	Cascade Creek1	1	0	1	2	2	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0
NOx	TONS	Cascade Creek2	11	10	10	10	11	9	9	8	7	8	8	7	7	7	6	7	7	7	6	5
NOx	TONS	Silver Lake1	1	1	2	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1
NOx	TONS	Silver Lake2	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1
NOx	TONS	Silver Lake3	16	14	14	10	10	9	9	8	7	8	8	7	7	7	5	7	7	7	6	5
NOx	TONS	Silver Lake4	18	16	16	16	17	15	14	13	10	12	13	11	11	11	8	11	11	11	9	8
NOx	TONS	Wartsila:2025:700	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
NOx	TONS	Wartsila:2026:699	0	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1
NOx	TONS	Wartsila:2030:698	0	0	0	0	0	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1

Rochester Public Utilities
Project 49188 - Infrastructure Update
SMMPA Contract Extension Analysis

Data Item	Units	Description	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
NOx	TONS	Wartsila:2033:697	0	0	0	0	0	0	0	0	2	2	2	2	2	2	1	1	2	1	1	1
NOx	TONS	Wartsila:2036:696	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	2
NOx	TONS	Wartsila:2039:695	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2
NOx	TONS	Wartsila:2043:694	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
SO2	TONS	Cascade Creek1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SO2	TONS	Cascade Creek2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SO2	TONS	Silver Lake1	5	3	7	4	5	6	6	6	4	5	5	4	4	4	3	3	4	4	3	3
SO2	TONS	Silver Lake2	4	3	3	4	4	3	3	3	2	2	2	3	4	4	3	3	3	3	3	2
SO2	TONS	Silver Lake3	59	51	50	37	37	34	33	31	26	29	31	26	26	27	20	25	25	26	22	19
SO2	TONS	Silver Lake4	67	61	59	59	63	56	53	50	38	45	47	40	39	40	31	39	41	40	34	29
SO2	TONS	Wartsila:2025:700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SO2	TONS	Wartsila:2026:699	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SO2	TONS	Wartsila:2030:698	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SO2	TONS	Wartsila:2033:697	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SO2	TONS	Wartsila:2036:696	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
SO2	TONS	Wartsila:2039:695	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SO2	TONS	Wartsila:2043:694	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SYSTEM EFFLUENT EXPENSE	$000	NOx	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SYSTEM EFFLUENT EXPENSE	$000	SO2	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SYSTEM EFFLUENT EXPENSE	$000	CO2	$2,046	$2,391	$2,608	$2,660	$2,989	$3,436	$3,417	$3,492	$3,996	$4,317	$4,518	$5,104	$5,260	$5,693	$6,167	$6,829	$7,306	$7,516	$8,515	$8,490
THEORETICAL CROD EFFLUENT EXPENSE	$000	CO2	$62,108	$65,283	$69,779	$72,006	$76,637	$80,259	$81,129	$83,032	$87,786	$92,311	$92,679	$97,363	$99,340	$105,548	$109,421	$115,299	$119,196	$122,337	$129,848	$127,599
FIRM CAPACITY	MW	CROD OFF	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0
FIRM CAPACITY	MW	CROD ON	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0
FIRM CAPACITY	MW	OWEF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FIRM CAPACITY	MW	Wind:2025:400	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.7
FIRM CAPACITY	MW	Wind:2028:399	0.0	0.0	0.0	3.8	3.8	3.8	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.7
FIRM CAPACITY	MW	Wind:2031:398	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.7
FIRM CAPACITY	MW	Wind:2032:397	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.7	3.8	3.8	3.8	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.7
FIRM CAPACITY	MW	Wind:2035:396	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.8	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.7
FIRM CAPACITY	MW	Wind:2037:395	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.7
FIRM CAPACITY	MW	Wind:2039:394	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	3.8	3.8	3.8	3.8	3.7
FIRM CAPACITY	MW	Wind:2041:393	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.8	3.8	3.7
FIRM CAPACITY	MW	Wind:2042:392	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.8	3.7
FIRM CAPACITY	MW	Wind:2044:390	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7
FIRM CAPACITY	MW	Wind:2044:391	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7
MAXIMUM CAPACITY	MW	CROD OFF	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0
MAXIMUM CAPACITY	MW	CROD ON	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0
MAXIMUM CAPACITY	MW	OWEF	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
MAXIMUM CAPACITY	MW	Wind:2025:400	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
MAXIMUM CAPACITY	MW	Wind:2028:399	0.0	0.0	0.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
MAXIMUM CAPACITY	MW	Wind:2031:398	0.0	0.0	0.0	0.0	0.0	0.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
MAXIMUM CAPACITY	MW	Wind:2032:397	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
MAXIMUM CAPACITY	MW	Wind:2035:396	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
MAXIMUM CAPACITY	MW	Wind:2037:395	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
MAXIMUM CAPACITY	MW	Wind:2039:394	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	25.0	25.0	25.0	25.0	25.0
MAXIMUM CAPACITY	MW	Wind:2041:393	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	25.0	25.0	25.0
MAXIMUM CAPACITY	MW	Wind:2042:392	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	25.0	25.0
MAXIMUM CAPACITY	MW	Wind:2044:390	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0
MAXIMUM CAPACITY	MW	Wind:2044:391	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0
ENERGY TAKEN OR SOLD	GWH	CROD OFF	1,040	1,052	1,062	1,036	1,050	1,064	1,039	1,010	1,028	1,040	1,014	1,024	1,004	1,021	997	1,006	988	962	976	914
ENERGY TAKEN OR SOLD	GWH	CROD ON	621	624	628	614	617	625	614	604	605	606	594	599	589	592	581	585	573	562	567	535
ENERGY TAKEN OR SOLD	GWH	OWEF	12	13	14	13	14	15	14	13	15	15	15	15	15	15	15	15	15	15	16	14
ENERGY TAKEN OR SOLD	GWH	Wind:2025:400	71	71	71	71	71	71	71	72	71	71	71	71	71	71	71	72	71	71	71	71
ENERGY TAKEN OR SOLD	GWH	Wind:2028:399	0	0	0	71	71	71	71	72	71	71	71	71	71	71	71	72	71	71	71	71
ENERGY TAKEN OR SOLD	GWH	Wind:2031:398	0	0	0	0	0	0	71	72	71	71	71	71	71	71	71	72	71	71	71	71
ENERGY TAKEN OR SOLD	GWH	Wind:2032:397	0	0	0	0	0	0	0	72	71	71	71	71	71	71	71	72	71	71	71	71
ENERGY TAKEN OR SOLD	GWH	Wind:2035:396	0	0	0	0	0	0	0	0	0	0	71	71	71	71	71	72	71	71	71	71
ENERGY TAKEN OR SOLD	GWH	Wind:2037:395	0	0	0	0	0	0	0	0	0	0	0	0	71	71	71	72	71	71	71	71
ENERGY TAKEN OR SOLD	GWH	Wind:2039:394	0	0	0	0	0	0	0	0	0	0	0	0	0	0	71	72	71	71	71	71
ENERGY TAKEN OR SOLD	GWH	Wind:2041:393	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	71	71	71	71
ENERGY TAKEN OR SOLD	GWH	Wind:2042:392	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	71	71	71
ENERGY TAKEN OR SOLD	GWH	Wind:2044:390	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	71
ENERGY TAKEN OR SOLD	GWH	Wind:2044:391	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	71
CAPACITY FACTOR	%	OWEF	28.15%	30.72%	32.74%	30.10%	32.26%	35.00%	32.40%	30.36%	33.14%	34.83%	33.13%	34.95%	33.94%	34.99%	33.99%	35.24%	34.84%	33.47%	35.61%	32.41%

Rochester Public Utilities

Project 49188 - Infrastructure Update

SMMPA Contract Extension Analysis

Data Item	Units	Description	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
CAPACITY FACTOR	%	Wind:2025:400	32.53%	32.65%	32.57%	32.51%	32.61%	32.56%	32.53%	32.65%	32.55%	32.53%	32.61%	32.52%	32.65%	32.57%	32.55%	32.57%	32.56%	32.53%	32.65%	32.55%
CAPACITY FACTOR	%	Wind:2028:399				32.51%	32.61%	32.56%	32.53%	32.65%	32.55%	32.53%	32.61%	32.52%	32.65%	32.57%	32.55%	32.57%	32.56%	32.53%	32.65%	32.55%
CAPACITY FACTOR	%	Wind:2031:398							32.53%	32.65%	32.55%	32.53%	32.61%	32.52%	32.65%	32.57%	32.55%	32.57%	32.56%	32.53%	32.65%	32.55%
CAPACITY FACTOR	%	Wind:2032:397								32.65%	32.55%	32.53%	32.61%	32.52%	32.65%	32.57%	32.55%	32.57%	32.56%	32.53%	32.65%	32.55%
CAPACITY FACTOR	%	Wind:2035:396											32.61%	32.52%	32.65%	32.57%	32.55%	32.57%	32.56%	32.53%	32.65%	32.55%
CAPACITY FACTOR	%	Wind:2037:395													32.65%	32.57%	32.55%	32.57%	32.56%	32.53%	32.65%	32.55%
CAPACITY FACTOR	%	Wind:2039:394															32.55%	32.57%	32.56%	32.53%	32.65%	32.55%
CAPACITY FACTOR	%	Wind:2041:393																	32.56%	32.53%	32.65%	32.55%
CAPACITY FACTOR	%	Wind:2042:392																		32.53%	32.65%	32.55%
CAPACITY FACTOR	%	Wind:2044:390																				32.55%
CAPACITY FACTOR	%	Wind:2044:391																				32.55%
CROD OFF PEAK ENERGY RATE	$/MWH	CROD OFF	$44.39	$45.05	$45.73	$46.42	$47.11	$47.82	$48.54	$49.27	$50.00	$50.75	$51.52	$52.29	$53.07	$53.87	$54.68	$55.50	$56.33	$57.17	$58.03	$58.90
CROD ON PEAK ENERGY RATE	$/MWH	CROD ON	$58.58	$59.46	$60.35	$61.25	$62.17	$63.10	$64.05	$65.01	$65.99	$66.98	$67.98	$69.00	$70.03	$71.09	$72.15	$73.23	$74.33	$75.45	$76.58	$77.73
CROD TRANSMISSION CHARGE	$/KW-MO	CROD	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66
CROD DEMAND CHARGE	$/KW-MO	CROD	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66
CROD OFF PEAK ENERGY COST	$000	CROD OFF	$46,145	$47,382	$48,581	$48,102	$49,459	$50,876	$50,413	$49,780	$51,417	$52,781	$52,216	$53,567	$53,310	$54,980	$54,510	$55,851	$55,647	$55,015	$56,629	$53,863
CROD ON PEAK ENERGY COST	$000	CROD ON	$36,389	$37,112	$37,871	$37,614	$38,386	$39,431	$39,341	$39,287	$39,904	$40,566	$40,374	$41,298	$41,276	$42,094	$41,927	$42,835	$42,611	$42,422	$43,448	$41,578
CROD TRANSMISSION CHARGE	$000	CROD	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895
CROD DEMAND CHARGE	$000	CROD	$27,566	$27,613	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631
TOTAL COST OR REVENUE	$000	Wind:2025:400	$4,986	$5,005	$4,992	$4,998	$4,999	$4,992	$4,986	$5,018	$4,990	$4,986	$4,999	$4,999	$5,005	$4,992	$4,990	$5,007	$4,992	$4,986	$5,005	$5,004
TOTAL COST OR REVENUE	$000	Wind:2028:399	$0	$0	$0	$4,998	$4,999	$4,992	$4,986	$5,018	$4,990	$4,986	$4,999	$4,999	$5,005	$4,992	$4,990	$5,007	$4,992	$4,986	$5,005	$5,004
TOTAL COST OR REVENUE	$000	Wind:2031:398	$0	$0	$0	$0	$0	$0	$4,986	$5,018	$4,990	$4,986	$4,999	$4,999	$5,005	$4,992	$4,990	$5,007	$4,992	$4,986	$5,005	$5,004
TOTAL COST OR REVENUE	$000	Wind:2032:397	$0	$0	$0	$0	$0	$0	$0	$5,018	$4,990	$4,986	$4,999	$4,999	$5,005	$4,992	$4,990	$5,007	$4,992	$4,986	$5,005	$5,004
TOTAL COST OR REVENUE	$000	Wind:2035:396	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$4,999	$4,999	$5,005	$4,992	$4,990	$5,007	$4,992	$4,986	$5,005	$5,004
TOTAL COST OR REVENUE	$000	Wind:2037:395	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$5,005	$4,992	$4,990	$5,007	$4,992	$4,986	$5,005	$5,004
TOTAL COST OR REVENUE	$000	Wind:2039:394	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$4,990	$5,007	$4,992	$4,986	$5,005	$5,004
TOTAL COST OR REVENUE	$000	Wind:2041:393	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$4,992	$4,986	$5,005	$5,004
TOTAL COST OR REVENUE	$000	Wind:2042:392	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$4,986	$5,005	$5,004
TOTAL COST OR REVENUE	$000	Wind:2044:390	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$5,004
TOTAL COST OR REVENUE	$000	Wind:2044:391	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$5,004
PERCENT RENEWABLE ENERGY	%		35%	34%	32%	47%	46%	45%	55%	62%	60%	58%	64%	62%	67%	65%	69%	67%	71%	73%	72%	76%
SYSTEM CO2 EMISSIONS (EXCL MKT)	TONS	RPU PLUS CROD	1,336,536	1,353,477	1,365,777	1,333,324	1,349,605	1,372,057	1,341,998	1,310,975	1,330,176	1,342,064	1,313,470	1,330,744	1,307,508	1,324,292	1,298,742	1,313,202	1,290,834	1,260,707	1,281,145	1,204,330
TOTAL CO2 EMISSIONS (EXCL MKT)	TONS		26,360,963																			
RPU FIXED O&M COST	$000		$6,254	$6,394	$6,394	$6,394	$6,394	$6,534	$6,534	$6,534	$6,673	$6,673	$6,673	$6,813	$6,813	$6,813	$6,953	$6,953	$6,953	$6,953	$7,093	$7,093
RPU DEBT SERVICE	$000		$1,643	$3,286	$3,286	$3,286	$3,286	$4,929	$4,929	$4,929	$6,572	$6,572	$6,572	$8,215	$8,215	$8,215	$9,858	$9,858	$9,858	$9,858	$11,501	$11,501
CROD FIXED COST	$000		$34,461	$34,508	$34,525	$34,525	$34,525	$34,525	$34,525	$34,525	$34,525	$34,525	$34,525	$34,525	$34,525	$34,525	$34,525	$34,525	$34,525	$34,525	$34,525	$34,525
TOTAL FIXED COST	$000		$42,358	$44,188	$44,205	$44,205	$44,205	$45,988	$45,988	$45,988	$47,771	$47,771	$47,771	$49,553	$49,553	$49,553	$51,336	$51,336	$51,336	$51,336	$53,119	$53,119
RPU VARIABLE O&M COST	$000		$5,403	$5,535	$5,541	$10,536	$10,576	$10,674	$15,625	$20,727	$20,731	$20,724	$25,785	$25,890	$30,917	$30,869	$35,907	$36,058	$40,956	$45,878	$46,160	$56,114
RPU FUEL COST	$000		$3,219	$3,846	$4,098	$4,105	$4,463	$5,129	$5,052	$5,075	$5,791	$6,109	$6,361	$7,148	$7,253	$7,694	$8,125	$8,764	$9,121	$9,116	$10,169	$9,980
RPU CO2 EMISSIONS COST	$000		$2,046	$2,391	$2,608	$2,660	$2,989	$3,436	$3,417	$3,492	$3,996	$4,317	$4,518	$5,104	$5,260	$5,693	$6,167	$6,829	$7,306	$7,516	$8,515	$8,490
MARKET ENERGY COST	$000		$28,287	$29,792	$32,754	$32,719	$36,032	$38,001	$36,482	$35,355	$38,295	$42,496	$42,291	$44,249	$43,953	$47,336	$46,855	$51,910	$52,661	$53,173	$56,272	$53,107
CROD ENERGY COST	$000		$82,534	$84,494	$86,451	$85,716	$87,845	$90,307	$89,755	$89,066	$91,321	$93,347	$92,591	$94,865	$94,586	$97,074	$96,437	$98,686	$98,258	$97,436	$100,077	$95,441
CROD CO2 EMISSIONS COST	$000		$62,108	$65,283	$69,779	$72,006	$76,637	$80,259	$81,129	$83,032	$87,786	$92,311	$92,679	$97,363	$99,340	$105,548	$109,421	$115,299	$119,196	$122,337	$129,848	$127,599
TOTAL VARIABLE COST	$000		$183,597	$191,341	$201,230	$207,742	$218,544	$227,806	$231,460	$236,748	$247,919	$259,304	$264,224	$274,618	$281,311	$294,213	$302,911	$317,546	$327,498	$335,456	$351,042	$350,732
TOTAL COST	$000		$225,955	$235,529	$245,435	$251,947	$262,749	$273,794	$277,448	$282,736	$295,690	$307,075	$311,995	$324,172	$330,864	$343,766	$354,247	$368,882	$378,834	$386,792	$404,161	$403,851
NPV @ 6.0%	$000		**$3,387,527**																			

Rochester Public Utilities

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SMMPA Contract Extension Analysis

Data Item	Units	Description	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
ENERGY REQUIREMENTS	GWH	RPU	1,897	1,926	1,954	1,983	2,011	2,040	2,069	2,099	2,130	2,161	2,193	2,224	2,257	2,290	2,323	2,357	2,391	2,426	2,461	2,497
PEAK DEMAND	MW	RPU	364.7	369.6	374.4	379.3	384.1	389.0	394.0	399.1	404.3	409.6	414.9	420.2	425.7	431.2	436.8	442.5	448.2	454.0	459.9	465.8
ECONOMY INTERCHANGE PURCHASE ENER(	GWH		96	106	118	131	141	145	625	635	653	671	683	663	677	620	606	622	604	615	593	607
ECONOMY INTERCHANGE PURCHASE COST	$000		$30,490	$34,347	$37,608	$42,688	$47,759	$52,834	$43,514	$45,740	$48,735	$52,319	$55,132	$55,069	$58,191	$54,925	$55,791	$60,183	$58,828	$62,214	$60,039	$63,769
FIRM CAPACITY	MW	7FA Combined Cycle :2031:700	0.0	0.0	0.0	0.0	0.0	0.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0
FIRM CAPACITY	MW	Cascade Creek1	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
FIRM CAPACITY	MW	Cascade Creek2	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0
FIRM CAPACITY	MW	Lake Zumbro	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
FIRM CAPACITY	MW	Market Firm Purchases	0.0	3.4	9.0	14.6	20.2	25.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FIRM CAPACITY	MW	Silver Lake1	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
FIRM CAPACITY	MW	Silver Lake2	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
FIRM CAPACITY	MW	Silver Lake3	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
FIRM CAPACITY	MW	Silver Lake4	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
FIRM CAPACITY	MW	Wartsila:2041:699	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.8	16.8	16.8	16.8
FIRM CAPACITY	MW	Wartsila:2043:698	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.8	16.8
GENERATION	GWH	7FA Combined Cycle :2031:700	0	0	0	0	0	0	859	875	889	903	920	901	918	869	847	862	908	931	976	996
GENERATION	GWH	Cascade Creek1	2	2	2	4	5	6	5	5	6	6	6	6	6	5	5	5	5	5	5	5
GENERATION	GWH	Cascade Creek2	26	27	28	29	30	32	14	15	15	15	15	15	15	15	14	14	14	14	13	14
GENERATION	GWH	Lake Zumbro	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
GENERATION	GWH	Market Firm Purchases	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	GWH	Silver Lake1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
GENERATION	GWH	Silver Lake2	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2
GENERATION	GWH	Silver Lake3	7	7	8	6	6	6	5	5	5	5	5	5	5	5	4	5	4	5	4	4
GENERATION	GWH	Silver Lake4	8	8	8	8	9	9	7	7	8	8	8	8	8	7	7	7	7	7	7	7
GENERATION	GWH	Wartsila:2041:699	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	10	11	11
GENERATION	GWH	Wartsila:2043:698	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	12
CAPACITY FACTOR	%	7FA Combined Cycle :2031:700							29.71%	30.18%	30.76%	31.22%	31.81%	31.08%	31.76%	30.08%	29.31%	29.72%	31.40%	32.21%	33.75%	34.37%
CAPACITY FACTOR	%	Cascade Creek1	0.70%	0.76%	0.86%	1.75%	2.30%	2.40%	2.15%	2.20%	2.33%	2.36%	2.41%	2.34%	2.41%	2.25%	2.19%	2.25%	2.08%	2.13%	1.94%	1.96%
CAPACITY FACTOR	%	Cascade Creek2	6.15%	6.54%	6.71%	6.78%	7.15%	7.58%	3.40%	3.46%	3.51%	3.56%	3.64%	3.59%	3.63%	3.45%	3.30%	3.36%	3.21%	3.32%	3.17%	3.24%
CAPACITY FACTOR	%	Lake Zumbro	76.52%	76.52%	76.52%	76.31%	76.52%	76.52%	76.52%	76.31%	76.52%	76.52%	76.52%	76.31%	76.52%	76.52%	76.52%	76.31%	76.52%	76.52%	76.52%	76.31%
CAPACITY FACTOR	%	Market Firm Purchases	#DIV/0!	0.00%	0.00%	0.00%	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
CAPACITY FACTOR	%	Silver Lake1	0.73%	0.74%	0.92%	0.82%	0.94%	1.17%	1.59%	1.63%	1.69%	1.70%	1.75%	1.70%	1.75%	1.64%	1.58%	1.61%	1.49%	1.59%	1.47%	1.53%
CAPACITY FACTOR	%	Silver Lake2	0.42%	0.44%	0.49%	0.50%	0.48%	0.50%	1.33%	1.36%	1.42%	1.43%	1.48%	1.45%	1.50%	1.40%	1.35%	1.37%	1.27%	1.32%	1.21%	1.24%
CAPACITY FACTOR	%	Silver Lake3	3.32%	3.43%	3.59%	2.87%	2.67%	2.82%	2.26%	2.31%	2.25%	2.28%	2.34%	2.30%	2.36%	2.20%	2.14%	2.15%	2.07%	2.15%	2.01%	2.07%
CAPACITY FACTOR	%	Silver Lake4	1.97%	2.02%	2.08%	2.11%	2.19%	2.33%	1.81%	1.85%	1.92%	1.94%	1.99%	1.94%	2.01%	1.88%	1.84%	1.87%	1.78%	1.84%	1.71%	1.75%
CAPACITY FACTOR	%	Wartsila:2041:699																	6.88%	7.09%	7.14%	7.13%
CAPACITY FACTOR	%	Wartsila:2043:698																			7.93%	7.94%
TOTAL O AND M COST	$000	7FA Combined Cycle :2031:700	$0	$0	$0	$0	$0	$0	$10,103	$10,177	$10,244	$10,306	$10,385	$10,298	$10,379	$10,152	$10,049	$10,116	$10,330	$10,438	$10,645	$10,742
TOTAL O AND M COST	$000	Cascade Creek1	$16	$17	$20	$40	$53	$55	$49	$51	$53	$54	$55	$54	$55	$52	$50	$52	$48	$49	$45	$45
TOTAL O AND M COST	$000	Cascade Creek2	$251	$267	$274	$278	$292	$310	$139	$142	$144	$145	$149	$147	$149	$141	$135	$138	$131	$136	$130	$133
TOTAL O AND M COST	$000	Lake Zumbro	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19
TOTAL O AND M COST	$000	Market Firm Purchases	$0	$246	$648	$1,050	$1,451	$1,853	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL O AND M COST	$000	Silver Lake1	$628	$628	$628	$628	$628	$629	$630	$630	$630	$630	$630	$630	$630	$630	$630	$630	$630	$630	$630	$630
TOTAL O AND M COST	$000	Silver Lake2	$924	$924	$924	$924	$924	$924	$927	$928	$928	$928	$928	$928	$928	$928	$928	$928	$927	$927	$927	$927
TOTAL O AND M COST	$000	Silver Lake3	$1,602	$1,603	$1,604	$1,600	$1,598	$1,599	$1,596	$1,596	$1,596	$1,596	$1,596	$1,596	$1,596	$1,595	$1,595	$1,595	$1,595	$1,595	$1,594	$1,595
TOTAL O AND M COST	$000	Silver Lake4	$2,989	$2,989	$2,990	$2,990	$2,991	$2,993	$2,987	$2,987	$2,988	$2,988	$2,989	$2,988	$2,989	$2,988	$2,987	$2,988	$2,986	$2,987	$2,986	$2,986
TOTAL O AND M COST	$000	Wartsila:2041:699	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$225	$228	$228	$228
TOTAL O AND M COST	$000	Wartsila:2043:698	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$238	$238
VARIABLE O AND M COSTS	$/MWH	7FA Combined Cycle :2031:700	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$4.64	$4.64	$4.64	$4.64	$4.64	$4.64	$4.64	$4.64	$4.64	$4.64	$4.64	$4.64	$4.64	$4.64
VARIABLE O AND M COSTS	$/MWH	Cascade Creek1	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72
VARIABLE O AND M COSTS	$/MWH	Cascade Creek2	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72
VARIABLE O AND M COSTS	$/MWH	Silver Lake1	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99
VARIABLE O AND M COSTS	$/MWH	Silver Lake2	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99
VARIABLE O AND M COSTS	$/MWH	Silver Lake3	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99
VARIABLE O AND M COSTS	$/MWH	Silver Lake4	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99
VARIABLE O AND M COSTS	$/MWH	Wartsila:2041:699	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$8.42	$8.42	$8.42	$8.42
VARIABLE O AND M COSTS	$/MWH	Wartsila:2043:698	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$8.42	$8.42
FIXED O AND M COST	$000	7FA Combined Cycle :2031:700	$0	$0	$0	$0	$0	$0	$6,118	$6,118	$6,118	$6,118	$6,118	$6,118	$6,118	$6,118	$6,118	$6,118	$6,118	$6,118	$6,118	$6,118
FIXED O AND M COST	$000	Cascade Creek1	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
FIXED O AND M COST	$000	Cascade Creek2	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
FIXED O AND M COST	$000	Lake Zumbro	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19
FIXED O AND M COST	$000	Market Firm Purchases	$0	$246	$648	$1,050	$1,451	$1,853	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
FIXED O AND M COST	$000	Silver Lake1	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626
FIXED O AND M COST	$000	Silver Lake2	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923

Rochester Public Utilities

Project 49188 - Infrastructure Update

SMMPA Contract Extension Analysis

Data Item	Units	Description	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
FIXED O AND M COST	$000	Silver Lake3	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582
FIXED O AND M COST	$000	Silver Lake4	$2,965	$2,965	$2,965	$2,965	$2,965	$2,965	$2,966	$2,965	$2,965	$2,965	$2,965	$2,965	$2,965	$2,965	$2,965	$2,965	$2,965	$2,965	$2,965	$2,965
FIXED O AND M COST	$000	Wartsila:2041:699	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$140	$140	$140	$140
FIXED O AND M COST	$000	Wartsila:2043:698	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$140	$140
ANNUAL DEBT SERVICE	$000	7FA Combined Cycle :2031:700	$0	$0	$0	$0	$0	$0	$31,593	$31,593	$31,593	$31,593	$31,593	$31,593	$31,593	$31,593	$31,593	$31,593	$31,593	$31,593	$31,593	$31,593
ANNUAL DEBT SERVICE	$000	Wartsila:2041:699	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,643	$1,643	$1,643	$1,643
ANNUAL DEBT SERVICE	$000	Wartsila:2043:698	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,643	$1,643
TOTAL FUEL COST	$000	7FA Combined Cycle :2031:700	$0	$0	$0	$0	$0	$0	$41,717	$43,414	$45,112	$46,854	$48,824	$49,067	$51,130	$49,641	$49,488	$51,531	$55,347	$58,054	$61,991	$64,767
TOTAL FUEL COST	$000	Cascade Creek1	$133	$149	$175	$366	$487	$515	$490	$514	$556	$577	$605	$602	$633	$604	$601	$637	$601	$629	$586	$608
TOTAL FUEL COST	$000	Cascade Creek2	$1,511	$1,665	$1,765	$1,835	$1,957	$2,108	$1,018	$1,062	$1,100	$1,141	$1,196	$1,209	$1,251	$1,216	$1,189	$1,243	$1,208	$1,278	$1,246	$1,311
TOTAL FUEL COST	$000	Silver Lake1	$51	$53	$69	$63	$74	$95	$133	$141	$150	$156	$164	$165	$175	$168	$168	$176	$168	$183	$175	$188
TOTAL FUEL COST	$000	Silver Lake2	$45	$49	$56	$58	$58	$62	$170	$180	$193	$201	$213	$216	$229	$220	$219	$229	$219	$234	$221	$233
TOTAL FUEL COST	$000	Silver Lake3	$496	$527	$568	$469	$449	$488	$403	$425	$426	$445	$469	$476	$503	$483	$482	$500	$497	$530	$511	$542
TOTAL FUEL COST	$000	Silver Lake4	$558	$588	$625	$654	$697	$763	$612	$645	$688	$717	$757	$763	$812	$781	$786	$827	$807	$861	$825	$873
TOTAL FUEL COST	$000	Wartsila:2041:699	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$705	$744	$766	$787
TOTAL FUEL COST	$000	Wartsila:2043:698	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$849	$874
CO2	TONS	7FA Combined Cycle :2031:700	0	0	0	0	0	0	377,647	383,721	389,462	394,930	402,005	394,825	401,597	381,301	371,767	378,037	396,624	406,099	423,435	431,767
CO2	TONS	Cascade Creek1	1,504	1,631	1,849	3,783	4,955	5,161	4,627	4,745	5,005	5,067	5,188	5,045	5,183	4,837	4,706	4,861	4,481	4,578	4,166	4,222
CO2	TONS	Cascade Creek2	16,911	17,980	18,464	18,702	19,680	20,850	9,366	9,539	9,664	9,781	10,015	9,901	9,999	9,500	9,088	9,280	8,842	9,132	8,718	8,949
CO2	TONS	Silver Lake1	878	891	1,110	995	1,126	1,407	1,917	1,969	2,031	2,049	2,103	2,053	2,108	1,972	1,906	1,939	1,798	1,908	1,764	1,848
CO2	TONS	Silver Lake2	781	810	911	918	892	915	2,442	2,510	2,618	2,641	2,726	2,688	2,758	2,580	2,491	2,531	2,347	2,432	2,230	2,284
CO2	TONS	Silver Lake3	8,524	8,789	9,196	7,380	6,858	7,239	5,801	5,935	5,781	5,855	6,002	5,912	6,061	5,654	5,479	5,521	5,321	5,515	5,165	5,319
CO2	TONS	Silver Lake4	9,598	9,803	10,117	10,293	10,649	11,309	8,800	9,017	9,335	9,438	9,676	9,478	9,790	9,139	8,934	9,121	8,641	8,957	8,336	8,558
CO2	TONS	Wartsila:2041:699	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,465	5,637	5,672	5,686
CO2	TONS	Wartsila:2043:698	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,306	6,329
CO2 (Theoretical)	TONS	CROD	1,293,916	1,305,657	1,316,574	1,326,583	1,338,328	1,353,302	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOx	TONS	7FA Combined Cycle :2031:700	0	0	0	0	0	0	22	23	23	23	24	23	24	23	22	22	24	24	25	26
NOx	TONS	Cascade Creek1	1	1	1	3	4	4	4	4	4	4	4	4	4	4	4	4	3	4	3	3
NOx	TONS	Cascade Creek2	14	15	15	15	16	17	8	8	8	8	8	8	8	8	8	8	7	8	7	7
NOx	TONS	Silver Lake1	2	2	2	2	2	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4
NOx	TONS	Silver Lake2	2	2	2	2	2	2	5	5	5	5	6	6	6	5	5	5	5	5	5	5
NOx	TONS	Silver Lake3	18	18	19	15	14	15	12	12	12	12	12	12	12	12	11	11	11	11	11	11
NOx	TONS	Silver Lake4	20	20	21	21	22	23	18	19	19	19	20	19	20	19	18	19	18	18	17	18
NOx	TONS	Wartsila:2041:699	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
NOx	TONS	Wartsila:2043:698	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
SO2	TONS	7FA Combined Cycle :2031:700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SO2	TONS	Cascade Creek1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SO2	TONS	Cascade Creek2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SO2	TONS	Silver Lake1	7	7	8	8	9	11	15	15	15	16	16	16	16	15	15	15	14	15	13	14
SO2	TONS	Silver Lake2	6	6	7	7	7	7	19	19	20	20	21	20	21	20	19	19	18	18	17	17
SO2	TONS	Silver Lake3	65	67	70	56	52	55	44	45	44	45	46	45	46	43	42	42	40	42	39	40
SO2	TONS	Silver Lake4	73	75	77	78	81	86	67	69	71	72	74	72	74	70	68	69	66	68	63	65
SO2	TONS	Wartsila:2041:699	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SO2	TONS	Wartsila:2043:698	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SYSTEM EFFLUENT EXPENSE	$0	NOx	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SYSTEM EFFLUENT EXPENSE	$0	SO2	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SYSTEM EFFLUENT EXPENSE	$0	CO2	$1,833	$1,995	$2,207	$2,356	$2,605	$2,860	$25,868	$27,551	$29,249	$30,943	$32,391	$33,102	$35,000	$34,859	$35,989	$38,250	$42,485	$45,758	$50,305	$53,671
THEORETICAL CROD EFFLUENT EXPENSE	$000	CO2	$62,108	$65,283	$69,778	$74,289	$78,961	$82,551	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
FIRM CAPACITY	MW	CROD OFF	216.0	216.0	216.0	216.0	216.0	216.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FIRM CAPACITY	MW	CROD ON	216.0	216.0	216.0	216.0	216.0	216.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FIRM CAPACITY	MW	OWEF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FIRM CAPACITY	MW	Wind:2025	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.7
FIRM CAPACITY	MW	Wind:2031	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.7
FIRM CAPACITY	MW	Wind:2031	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.7
FIRM CAPACITY	MW	Wind:2031	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.7
FIRM CAPACITY	MW	Wind:2031	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.7
FIRM CAPACITY	MW	Wind:2031	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.7
FIRM CAPACITY	MW	Wind:2031	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.7
FIRM CAPACITY	MW	Wind:2036	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.8	3.8	3.7	3.8	3.8	3.8	3.8	3.7
FIRM CAPACITY	MW	Wind:2038	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.7	3.8	3.8	3.8	3.8	3.7
FIRM CAPACITY	MW	Wind:2038	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	3.7	3.8	3.8	3.8	3.8	3.7
FIRM CAPACITY	MW	Wind:2039	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	3.8	3.8	3.8	3.8	3.7

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Data Item	Units	Description	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
MAXIMUM CAPACITY	MW	CROD OFF	216.0	216.0	216.0	216.0	216.0	216.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAXIMUM CAPACITY	MW	CROD ON	216.0	216.0	216.0	216.0	216.0	216.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAXIMUM CAPACITY	MW	OWEF	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
MAXIMUM CAPACITY	MW	Wind:2025	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
MAXIMUM CAPACITY	MW	Wind:2031	0.0	0.0	0.0	0.0	0.0	0.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
MAXIMUM CAPACITY	MW	Wind:2031	0.0	0.0	0.0	0.0	0.0	0.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
MAXIMUM CAPACITY	MW	Wind:2031	0.0	0.0	0.0	0.0	0.0	0.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
MAXIMUM CAPACITY	MW	Wind:2031	0.0	0.0	0.0	0.0	0.0	0.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
MAXIMUM CAPACITY	MW	Wind:2031	0.0	0.0	0.0	0.0	0.0	0.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
MAXIMUM CAPACITY	MW	Wind:2031	0.0	0.0	0.0	0.0	0.0	0.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
MAXIMUM CAPACITY	MW	Wind:2036	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
MAXIMUM CAPACITY	MW	Wind:2038	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
MAXIMUM CAPACITY	MW	Wind:2038	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
MAXIMUM CAPACITY	MW	Wind:2039	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	25.0	25.0	25.0	25.0	25.0
ENERGY TAKEN OR SOLD	GWH	CROD OFF	1,040	1,052	1,062	1,072	1,086	1,098	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENERGY TAKEN OR SOLD	GWH	CROD ON	621	624	628	630	632	639	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENERGY TAKEN OR SOLD	GWH	OWEF	12	13	14	15	17	18	39	39	39	39	39	39	39	39	39	39	39	39	39	39
ENERGY TAKEN OR SOLD	GWH	Wind:2025	71	71	71	71	71	71	71	72	71	71	71	71	71	71	71	72	71	71	71	71
ENERGY TAKEN OR SOLD	GWH	Wind:2031	0	0	0	0	0	0	71	72	71	71	71	71	71	71	71	72	71	71	71	71
ENERGY TAKEN OR SOLD	GWH	Wind:2031	0	0	0	0	0	0	71	72	71	71	71	71	71	71	71	72	71	71	71	71
ENERGY TAKEN OR SOLD	GWH	Wind:2031	0	0	0	0	0	0	71	72	71	71	71	71	71	71	71	72	71	71	71	71
ENERGY TAKEN OR SOLD	GWH	Wind:2031	0	0	0	0	0	0	71	72	71	71	71	71	71	71	71	72	71	71	71	71
ENERGY TAKEN OR SOLD	GWH	Wind:2031	0	0	0	0	0	0	71	72	71	71	71	71	71	71	71	72	71	71	71	71
ENERGY TAKEN OR SOLD	GWH	Wind:2031	0	0	0	0	0	0	71	72	71	71	71	71	71	71	71	72	71	71	71	71
ENERGY TAKEN OR SOLD	GWH	Wind:2036	0	0	0	0	0	0	0	0	0	0	0	71	71	71	71	72	71	71	71	71
ENERGY TAKEN OR SOLD	GWH	Wind:2038	0	0	0	0	0	0	0	0	0	0	0	0	0	71	71	72	71	71	71	71
ENERGY TAKEN OR SOLD	GWH	Wind:2038	0	0	0	0	0	0	0	0	0	0	0	0	0	71	71	72	71	71	71	71
ENERGY TAKEN OR SOLD	GWH	Wind:2039	0	0	0	0	0	0	0	0	0	0	0	0	0	0	71	72	71	71	71	71
CAPACITY FACTOR	%	OWEF	28.15%	30.72%	32.74%	35.13%	38.54%	41.98%	89.78%	89.78%	89.78%	89.78%	89.82%	89.82%	89.82%	89.60%	89.22%	89.36%	89.42%	89.51%	89.58%	89.63%
CAPACITY FACTOR	%	Wind:2025	32.53%	32.65%	32.57%	32.51%	32.61%	32.56%	32.53%	32.65%	32.55%	32.53%	32.61%	32.52%	32.65%	32.57%	32.55%	32.57%	32.56%	32.53%	32.65%	32.55%
CAPACITY FACTOR	%	Wind:2031							32.53%	32.65%	32.55%	32.53%	32.61%	32.52%	32.65%	32.57%	32.55%	32.57%	32.56%	32.53%	32.65%	32.55%
CAPACITY FACTOR	%	Wind:2031							32.53%	32.65%	32.55%	32.53%	32.61%	32.52%	32.65%	32.57%	32.55%	32.57%	32.56%	32.53%	32.65%	32.55%
CAPACITY FACTOR	%	Wind:2031							32.53%	32.65%	32.55%	32.53%	32.61%	32.52%	32.65%	32.57%	32.55%	32.57%	32.56%	32.53%	32.65%	32.55%
CAPACITY FACTOR	%	Wind:2031							32.53%	32.65%	32.55%	32.53%	32.61%	32.52%	32.65%	32.57%	32.55%	32.57%	32.56%	32.53%	32.65%	32.55%
CAPACITY FACTOR	%	Wind:2031							32.53%	32.65%	32.55%	32.53%	32.61%	32.52%	32.65%	32.57%	32.55%	32.57%	32.56%	32.53%	32.65%	32.55%
CAPACITY FACTOR	%	Wind:2031							32.53%	32.65%	32.55%	32.53%	32.61%	32.52%	32.65%	32.57%	32.55%	32.57%	32.56%	32.53%	32.65%	32.55%
CAPACITY FACTOR	%	Wind:2036												32.52%	32.65%	32.57%	32.55%	32.57%	32.56%	32.53%	32.65%	32.55%
CAPACITY FACTOR	%	Wind:2038														32.57%	32.55%	32.57%	32.56%	32.53%	32.65%	32.55%
CAPACITY FACTOR	%	Wind:2038														32.57%	32.55%	32.57%	32.56%	32.53%	32.65%	32.55%
CAPACITY FACTOR	%	Wind:2039															32.55%	32.57%	32.56%	32.53%	32.65%	32.55%
CROD OFF PEAK ENERGY RATE	$/MWH	CROD OFF	$44.39	$45.05	$45.73	$46.42	$47.11	$47.82	$48.54	$49.27	$50.00	$50.75	$51.52	$52.29	$53.07	$53.87	$54.68	$55.50	$56.33	$57.17	$58.03	$58.90
CROD ON PEAK ENERGY RATE	$/MWH	CROD ON	$58.58	$59.46	$60.35	$61.25	$62.17	$63.10	$64.05	$65.01	$65.99	$66.98	$67.98	$69.00	$70.03	$71.09	$72.15	$73.23	$74.33	$75.45	$76.58	$77.73
CROD TRANSMISSION CHARGE	$/KW-MO	CROD	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66
CROD DEMAND CHARGE	$/KW-MO	CROD	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66
CROD OFF PEAK ENERGY COST	$000	CROD OFF	$46,145	$47,382	$48,580	$49,776	$51,143	$52,511	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
CROD ON PEAK ENERGY COST	$000	CROD ON	$36,389	$37,112	$37,871	$38,609	$39,307	$40,317	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
CROD TRANSMISSION CHARGE	$000	CROD	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895
CROD DEMAND CHARGE	$000	CROD	$27,566	$27,613	$27,631	$27,631	$27,631	$27,631	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL COST OR REVENUE	$000	Wind:2025	$4,986	$5,005	$4,992	$4,998	$4,999	$4,992	$4,986	$5,018	$4,990	$4,986	$4,999	$4,999	$5,005	$4,992	$4,990	$5,007	$4,992	$4,986	$5,005	$5,004
TOTAL COST OR REVENUE	$000	Wind:2031	$0	$0	$0	$0	$0	$0	$4,986	$5,018	$4,990	$4,986	$4,999	$4,999	$5,005	$4,992	$4,990	$5,007	$4,992	$4,986	$5,005	$5,004
TOTAL COST OR REVENUE	$000	Wind:2031	$0	$0	$0	$0	$0	$0	$4,986	$5,018	$4,990	$4,986	$4,999	$4,999	$5,005	$4,992	$4,990	$5,007	$4,992	$4,986	$5,005	$5,004
TOTAL COST OR REVENUE	$000	Wind:2031	$0	$0	$0	$0	$0	$0	$4,986	$5,018	$4,990	$4,986	$4,999	$4,999	$5,005	$4,992	$4,990	$5,007	$4,992	$4,986	$5,005	$5,004
TOTAL COST OR REVENUE	$000	Wind:2031	$0	$0	$0	$0	$0	$0	$4,986	$5,018	$4,990	$4,986	$4,999	$4,999	$5,005	$4,992	$4,990	$5,007	$4,992	$4,986	$5,005	$5,004
TOTAL COST OR REVENUE	$000	Wind:2031	$0	$0	$0	$0	$0	$0	$4,986	$5,018	$4,990	$4,986	$4,999	$4,999	$5,005	$4,992	$4,990	$5,007	$4,992	$4,986	$5,005	$5,004
TOTAL COST OR REVENUE	$000	Wind:2031	$0	$0	$0	$0	$0	$0	$4,986	$5,018	$4,990	$4,986	$4,999	$4,999	$5,005	$4,992	$4,990	$5,007	$4,992	$4,986	$5,005	$5,004
TOTAL COST OR REVENUE	$000	Wind:2036	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$4,999	$5,005	$4,992	$4,990	$5,007	$4,992	$4,986	$5,005	$5,004
TOTAL COST OR REVENUE	$000	Wind:2038	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$4,992	$4,990	$5,007	$4,992	$4,986	$5,005	$5,004
TOTAL COST OR REVENUE	$000	Wind:2038	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$4,992	$4,990	$5,007	$4,992	$4,986	$5,005	$5,004
TOTAL COST OR REVENUE	$000	Wind:2039	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$4,990	$5,007	$4,992	$4,986	$5,005	$5,004
PERCENT RENEWABLE ENERGY	%		35%	34%	32%	31%	30%	30%	26%	26%	25%	25%	25%	27%	27%	33%	35%	35%	34%	34%	34%	33%
SYSTEM CO2 EMISSIONS (EXCL MKT)	TONS	RPU PLUS CROD	1,332,112	1,345,561	1,358,220	1,368,654	1,382,489	1,400,183	410,601	417,436	423,896	429,761	437,714	429,902	437,497	414,983	404,372	411,290	433,518	444,257	465,790	474,960
TOTAL CO2 EMISSIONS (EXCL MKT)	TONS		14,223,195																			

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Data Item	Units	Description	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
CO2 EMISSIONS DELTA W/O SMMPA	TONS	SMMPA MINUS W/O SMMPA	4,425	7,916	7,558	-35,330	-32,883	-28,126	931,397	893,539	906,280	912,304	875,756	900,841	870,011	909,308	894,370	901,912	857,316	816,450	815,355	729,369
AVOIDED CO2 TAX FROM EMISSIONS DELTA	$000		$212	$396	$401	-$1,978	-$1,940	-$1,716	$58,678	$58,974	$62,533	$65,686	$64,806	$69,365	$69,601	$76,382	$79,599	$83,878	$84,017	$84,094	$88,058	$82,419
NPV OF SMMPA CO2 RISK @ 6.0%	$000		$463,104																			
RPU FIXED O&M COST	$000		$6,114	$6,361	$6,762	$7,164	$7,566	$7,968	$12,233	$12,233	$12,233	$12,233	$12,233	$12,233	$12,233	$12,233	$12,233	$12,233	$12,372	$12,372	$12,512	$12,512
RPU DEBT SERVICE	$000		$0	$0	$0	$0	$0	$0	$31,593	$31,593	$31,593	$31,593	$31,593	$31,593	$31,593	$31,593	$31,593	$31,593	$33,236	$33,236	$34,879	$34,879
CROD FIXED COST	$000		$34,461	$34,508	$34,525	$34,525	$34,525	$34,525	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895
TOTAL FIXED COST	$000		$40,575	$40,869	$41,288	$41,689	$42,091	$42,493	$50,720	$50,720	$50,720	$50,720	$50,720	$50,720	$50,720	$50,720	$50,720	$50,720	$52,503	$52,503	$54,286	$54,286
RPU VARIABLE O&M COST	$000		$5,301	$5,338	$5,338	$5,363	$5,391	$5,406	$39,123	$39,425	$39,301	$39,337	$39,513	$44,421	$44,553	$54,195	$59,053	$59,306	$59,426	$59,487	$59,984	$60,073
RPU FUEL COST	$000		$2,795	$3,031	$3,257	$3,447	$3,723	$4,031	$44,543	$46,381	$48,226	$50,090	$52,228	$52,499	$54,733	$53,114	$52,933	$55,143	$59,552	$62,514	$67,171	$70,183
RPU CO2 EMISSIONS COST	$000		$1,833	$1,995	$2,207	$2,356	$2,605	$2,860	$25,868	$27,551	$29,249	$30,943	$32,391	$33,102	$35,000	$34,859	$35,989	$38,250	$42,485	$45,758	$50,305	$53,671
MARKET ENERGY COST	$000		$30,490	$34,347	$37,608	$42,688	$47,759	$52,834	$43,514	$45,740	$48,735	$52,319	$55,132	$55,069	$58,191	$54,925	$55,791	$60,183	$58,828	$62,214	$60,039	$63,769
CROD ENERGY COST	$000		$82,534	$84,494	$86,451	$88,386	$90,450	$92,828	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
CROD CO2 EMISSIONS COST	$000		$62,108	$65,283	$69,778	$74,289	$78,961	$82,551	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL VARIABLE COST	$000		$185,062	$194,488	$204,639	$216,528	$228,890	$240,511	$153,047	$159,097	$165,511	$172,688	$179,263	$185,092	$192,477	$197,093	$203,767	$212,882	$220,291	$229,973	$237,498	$247,696
TOTAL COST	$000		$225,637	$235,357	$245,927	$258,218	$270,982	$283,003	$203,767	$209,817	$216,231	$223,409	$229,984	$235,812	$243,197	$247,814	$254,487	$263,603	$272,794	$282,476	$291,784	$301,982
NPV @ 6.0%	$000		**$2,818,040**																			

Rochester Public Utilities
Project 49188 - Infrastructure Update
SMMPA Contract Extension Analysis

Data Item	Units	Description	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
ENERGY REQUIREMENTS	GWH	RPU	1,897	1,926	1,954	1,983	2,011	2,040	2,069	2,099	2,130	2,161	2,193	2,224	2,257	2,290	2,323	2,357	2,391	2,426	2,461	2,497
PEAK DEMAND	MW	RPU	364.7	369.6	374.4	379.3	384.1	389.0	394.0	399.1	404.3	409.6	414.9	420.2	425.7	431.2	436.8	442.5	448.2	454.0	459.9	465.8
ECONOMY INTERCHANGE PURCHASE ENER(	GWH		87	97	110	115	123	117	128	141	145	166	177	182	189	200	209	224	230	247	259	277
ECONOMY INTERCHANGE PURCHASE COST	$000		$31,141	$34,642	$39,043	$44,137	$51,259	$55,785	$60,586	$66,269	$71,487	$77,389	$82,865	$85,752	$92,759	$96,642	$105,670	$110,688	$120,487	$128,727	$134,443	$141,321
FIRM CAPACITY	MW	Cascade Creek1	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
FIRM CAPACITY	MW	Cascade Creek2	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0
FIRM CAPACITY	MW	Lake Zumbro	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
FIRM CAPACITY	MW	Silver Lake1	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
FIRM CAPACITY	MW	Silver Lake2	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
FIRM CAPACITY	MW	Silver Lake3	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
FIRM CAPACITY	MW	Silver Lake4	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
FIRM CAPACITY	MW	Wartsila:2025:699	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
FIRM CAPACITY	MW	Wartsila:2025:700	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
FIRM CAPACITY	MW	Wartsila:2028:698	0.0	0.0	0.0	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
FIRM CAPACITY	MW	Wartsila:2030:697	0.0	0.0	0.0	0.0	0.0	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
FIRM CAPACITY	MW	Wartsila:2033:696	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
FIRM CAPACITY	MW	Wartsila:2036:695	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
FIRM CAPACITY	MW	Wartsila:2038:694	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.8	16.8	16.8	16.8	16.8	16.8	16.8
FIRM CAPACITY	MW	Wartsila:2040:693	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.8	16.8	16.8	16.8	16.8
FIRM CAPACITY	MW	Wartsila:2043:692	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.8	16.8
GENERATION	GWH	Cascade Creek1	1	1	1	2	3	1	2	2	1	2	2	1	2	1	1	1	1	1	1	1
GENERATION	GWH	Cascade Creek2	19	20	20	17	19	16	17	18	15	17	18	15	16	13	14	12	14	15	12	13
GENERATION	GWH	Lake Zumbro	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
GENERATION	GWH	Silver Lake1	0	0	1	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0
GENERATION	GWH	Silver Lake2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	GWH	Silver Lake3	5	6	6	4	4	4	4	4	3	4	4	3	4	3	3	3	3	3	3	3
GENERATION	GWH	Silver Lake4	6	7	7	6	6	6	6	6	5	6	6	5	5	4	4	4	4	5	4	4
GENERATION	GWH	Wartsila:2025:699	20	22	24	19	20	19	19	20	19	19	21	20	21	19	21	19	21	22	20	21
GENERATION	GWH	Wartsila:2025:700	16	17	18	16	17	16	17	18	17	17	18	18	19	17	18	16	18	19	17	18
GENERATION	GWH	Wartsila:2028:698	0	0	0	23	26	21	22	24	22	22	24	22	25	21	24	21	24	26	23	25
GENERATION	GWH	Wartsila:2030:697	0	0	0	0	0	28	30	34	28	28	31	27	30	26	30	25	28	31	28	30
GENERATION	GWH	Wartsila:2033:696	0	0	0	0	0	0	0	0	35	35	37	32	35	32	34	30	33	35	33	34
GENERATION	GWH	Wartsila:2036:695	0	0	0	0	0	0	0	0	0	0	0	37	39	35	38	34	37	38	36	38
GENERATION	GWH	Wartsila:2038:694	0	0	0	0	0	0	0	0	0	0	0	0	0	39	41	37	40	40	39	41
GENERATION	GWH	Wartsila:2040:693	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	42	43	41	43
GENERATION	GWH	Wartsila:2043:692	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43	44
CAPACITY FACTOR	%	Cascade Creek1	0.25%	0.33%	0.42%	0.91%	1.11%	0.61%	0.71%	0.88%	0.62%	0.77%	0.90%	0.50%	0.64%	0.45%	0.58%	0.39%	0.48%	0.56%	0.41%	0.52%
CAPACITY FACTOR	%	Cascade Creek2	4.46%	4.73%	4.80%	4.09%	4.43%	3.86%	4.11%	4.21%	3.59%	3.96%	4.27%	3.64%	3.90%	3.11%	3.38%	2.89%	3.26%	3.54%	2.85%	3.03%
CAPACITY FACTOR	%	Lake Zumbro	76.52%	76.52%	76.52%	76.31%	76.52%	76.52%	76.52%	76.31%	76.52%	76.52%	76.52%	76.31%	76.52%	76.52%	76.52%	76.31%	76.52%	76.52%	76.52%	76.31%
CAPACITY FACTOR	%	Silver Lake1	0.32%	0.41%	0.79%	0.37%	0.43%	0.52%	0.58%	0.68%	0.53%	0.61%	0.67%	0.48%	0.58%	0.45%	0.54%	0.38%	0.45%	0.54%	0.41%	0.50%
CAPACITY FACTOR	%	Silver Lake2	0.17%	0.22%	0.28%	0.21%	0.23%	0.13%	0.16%	0.21%	0.15%	0.18%	0.22%	0.28%	0.34%	0.26%	0.31%	0.22%	0.26%	0.30%	0.23%	0.28%
CAPACITY FACTOR	%	Silver Lake3	2.61%	2.85%	2.81%	1.79%	1.82%	1.69%	1.78%	1.81%	1.53%	1.71%	1.91%	1.62%	1.79%	1.34%	1.46%	1.27%	1.42%	1.56%	1.24%	1.29%
CAPACITY FACTOR	%	Silver Lake4	1.63%	1.72%	1.68%	1.52%	1.64%	1.41%	1.51%	1.51%	1.20%	1.40%	1.55%	1.26%	1.36%	1.04%	1.13%	1.02%	1.14%	1.24%	1.00%	1.03%
CAPACITY FACTOR	%	Wartsila:2025:699	13.93%	15.29%	16.12%	12.56%	13.45%	12.67%	13.02%	13.70%	12.84%	12.86%	14.06%	13.35%	14.19%	12.92%	13.98%	12.62%	13.95%	14.69%	13.44%	14.45%
CAPACITY FACTOR	%	Wartsila:2025:700	11.20%	11.82%	12.17%	10.86%	11.65%	11.16%	11.47%	12.23%	11.64%	11.59%	12.45%	11.90%	12.71%	11.56%	12.43%	11.13%	12.24%	12.79%	11.75%	12.52%
CAPACITY FACTOR	%	Wartsila:2028:698				15.88%	17.44%	14.40%	15.09%	16.54%	14.66%	14.97%	16.63%	15.18%	16.72%	14.60%	16.20%	14.32%	16.08%	17.36%	15.64%	17.09%
CAPACITY FACTOR	%	Wartsila:2030:697						18.92%	20.58%	22.71%	18.88%	19.25%	20.83%	18.56%	20.56%	17.83%	20.25%	16.72%	19.17%	20.86%	18.97%	20.32%
CAPACITY FACTOR	%	Wartsila:2033:696									23.79%	23.88%	25.42%	21.72%	23.66%	21.44%	23.35%	20.25%	22.59%	23.47%	22.17%	23.19%
CAPACITY FACTOR	%	Wartsila:2036:695												24.96%	26.73%	24.11%	25.90%	22.98%	25.04%	25.74%	24.57%	25.57%
CAPACITY FACTOR	%	Wartsila:2038:694														26.74%	28.10%	25.19%	27.02%	27.51%	26.66%	27.47%
CAPACITY FACTOR	%	Wartsila:2040:693																26.91%	28.78%	29.14%	28.14%	28.88%
CAPACITY FACTOR	%	Wartsila:2043:692																			29.25%	30.02%
TOTAL O AND M COST	$000	Cascade Creek1	$6	$8	$10	$21	$25	$14	$16	$20	$14	$18	$21	$12	$15	$10	$13	$9	$11	$13	$9	$12
TOTAL O AND M COST	$000	Cascade Creek2	$182	$193	$196	$168	$181	$158	$168	$172	$147	$162	$174	$149	$159	$127	$138	$118	$133	$145	$116	$124
TOTAL O AND M COST	$000	Lake Zumbro	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19
TOTAL O AND M COST	$000	Silver Lake1	$627	$627	$628	$627	$627	$627	$628	$628	$627	$628	$628	$627	$627	$627	$627	$627	$627	$627	$627	$627
TOTAL O AND M COST	$000	Silver Lake2	$923	$923	$924	$923	$923	$923	$923	$923	$923	$923	$923	$924	$924	$924	$924	$923	$924	$924	$923	$924
TOTAL O AND M COST	$000	Silver Lake3	$1,598	$1,600	$1,599	$1,593	$1,593	$1,592	$1,593	$1,593	$1,591	$1,592	$1,594	$1,592	$1,593	$1,590	$1,591	$1,590	$1,591	$1,591	$1,589	$1,590
TOTAL O AND M COST	$000	Silver Lake4	$2,985	$2,986	$2,985	$2,983	$2,985	$2,982	$2,983	$2,983	$2,980	$2,982	$2,984	$2,980	$2,982	$2,978	$2,979	$2,978	$2,979	$2,980	$2,977	$2,978
TOTAL O AND M COST	$000	Wartsila:2025:699	$312	$329	$340	$296	$306	$297	$301	$310	$299	$299	$314	$306	$316	$300	$313	$297	$313	$322	$306	$319
TOTAL O AND M COST	$000	Wartsila:2025:700	$279	$286	$291	$275	$284	$278	$282	$292	$284	$283	$294	$288	$297	$283	$294	$278	$291	$298	$285	$295
TOTAL O AND M COST	$000	Wartsila:2028:698	$0	$0	$0	$337	$356	$318	$327	$345	$321	$325	$346	$328	$347	$321	$341	$318	$339	$355	$334	$352
TOTAL O AND M COST	$000	Wartsila:2030:697	$0	$0	$0	$0	$0	$374	$395	$422	$374	$378	$398	$370	$395	$361	$391	$347	$377	$398	$375	$392
TOTAL O AND M COST	$000	Wartsila:2033:696	$0	$0	$0	$0	$0	$0	$0	$0	$435	$436	$455	$410	$433	$405	$429	$391	$420	$431	$414	$428
TOTAL O AND M COST	$000	Wartsila:2036:695	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$450	$471	$439	$461	$425	$450	$459	$444	$457
TOTAL O AND M COST	$000	Wartsila:2038:694	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$471	$488	$453	$475	$481	$470	$481

Rochester Public Utilities

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SMMPA Contract Extension Analysis

Data Item	Units	Description	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
TOTAL O AND M COST	$000	Wartsila:2040:693	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$474	$496	$501	$489	$499
TOTAL O AND M COST	$000	Wartsila:2043:692	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$502	$513
VARIABLE O AND M COSTS	$/MWH	Cascade Creek1	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72
VARIABLE O AND M COSTS	$/MWH	Cascade Creek2	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72
VARIABLE O AND M COSTS	$/MWH	Silver Lake1	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99
VARIABLE O AND M COSTS	$/MWH	Silver Lake2	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99
VARIABLE O AND M COSTS	$/MWH	Silver Lake3	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99
VARIABLE O AND M COSTS	$/MWH	Silver Lake4	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99
VARIABLE O AND M COSTS	$/MWH	Wartsila:2025:699	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42
VARIABLE O AND M COSTS	$/MWH	Wartsila:2025:700	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42
VARIABLE O AND M COSTS	$/MWH	Wartsila:2028:698	$0.00	$0.00	$0.00	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42
VARIABLE O AND M COSTS	$/MWH	Wartsila:2030:697	$0.00	$0.00	$0.00	$0.00	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42
VARIABLE O AND M COSTS	$/MWH	Wartsila:2033:696	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42
VARIABLE O AND M COSTS	$/MWH	Wartsila:2036:695	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42
VARIABLE O AND M COSTS	$/MWH	Wartsila:2038:694	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42
VARIABLE O AND M COSTS	$/MWH	Wartsila:2040:693	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42
VARIABLE O AND M COSTS	$/MWH	Wartsila:2043:692	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$8.42	$8.42	$8.42	$8.42	$8.42
FIXED O AND M COST	$000	Cascade Creek1	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
FIXED O AND M COST	$000	Cascade Creek2	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
FIXED O AND M COST	$000	Lake Zumbro	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19
FIXED O AND M COST	$000	Silver Lake1	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626
FIXED O AND M COST	$000	Silver Lake2	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923
FIXED O AND M COST	$000	Silver Lake3	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582
FIXED O AND M COST	$000	Silver Lake4	$2,965	$2,965	$2,965	$2,965	$2,965	$2,965	$2,965	$2,965	$2,965	$2,965	$2,965	$2,966	$2,965	$2,965	$2,966	$2,966	$2,965	$2,965	$2,965	$2,965
FIXED O AND M COST	$000	Wartsila:2025:699	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140
FIXED O AND M COST	$000	Wartsila:2025:700	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140
FIXED O AND M COST	$000	Wartsila:2028:698	$0	$0	$0	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140
FIXED O AND M COST	$000	Wartsila:2030:697	$0	$0	$0	$0	$0	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140
FIXED O AND M COST	$000	Wartsila:2033:696	$0	$0	$0	$0	$0	$0	$0	$0	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140
FIXED O AND M COST	$000	Wartsila:2036:695	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$140	$140	$140	$140	$140	$140	$140	$140	$140
FIXED O AND M COST	$000	Wartsila:2038:694	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$140	$140	$140	$140	$140	$140	$140
FIXED O AND M COST	$000	Wartsila:2040:693	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$140	$140	$140	$140	$140
FIXED O AND M COST	$000	Wartsila:2043:692	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$140	$140
ANNUAL DEBT SERVICE	$000	Wartsila:2025:699	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643
ANNUAL DEBT SERVICE	$000	Wartsila:2025:700	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643
ANNUAL DEBT SERVICE	$000	Wartsila:2028:698	$0	$0	$0	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643
ANNUAL DEBT SERVICE	$000	Wartsila:2030:697	$0	$0	$0	$0	$0	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643
ANNUAL DEBT SERVICE	$000	Wartsila:2033:696	$0	$0	$0	$0	$0	$0	$0	$0	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643
ANNUAL DEBT SERVICE	$000	Wartsila:2036:695	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643
ANNUAL DEBT SERVICE	$000	Wartsila:2038:694	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643
ANNUAL DEBT SERVICE	$000	Wartsila:2040:693	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,643	$1,643	$1,643	$1,643	$1,643
ANNUAL DEBT SERVICE	$000	Wartsila:2043:692	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,643	$1,643
TOTAL FUEL COST	$000	Cascade Creek1	$47	$66	$85	$190	$234	$130	$157	$198	$143	$181	$218	$124	$161	$115	$153	$107	$133	$158	$119	$157
TOTAL FUEL COST	$000	Cascade Creek2	$1,095	$1,200	$1,256	$1,102	$1,205	$1,064	$1,161	$1,223	$1,064	$1,201	$1,325	$1,158	$1,270	$1,037	$1,154	$1,009	$1,164	$1,295	$1,067	$1,168
TOTAL FUEL COST	$000	Silver Lake1	$22	$29	$59	$28	$34	$42	$49	$58	$47	$55	$63	$47	$58	$46	$57	$42	$50	$62	$49	$62
TOTAL FUEL COST	$000	Silver Lake2	$18	$25	$32	$24	$28	$17	$21	$28	$20	$26	$32	$41	$52	$41	$51	$36	$44	$53	$42	$53
TOTAL FUEL COST	$000	Silver Lake3	$390	$438	$445	$293	$305	$292	$317	$333	$290	$333	$383	$336	$380	$293	$329	$295	$341	$384	$314	$339
TOTAL FUEL COST	$000	Silver Lake4	$462	$502	$505	$472	$524	$461	$509	$528	$428	$515	$590	$496	$549	$433	$481	$450	$516	$578	$483	$510
TOTAL FUEL COST	$000	Wartsila:2025:699	$958	$1,094	$1,196	$946	$1,029	$982	$1,035	$1,121	$1,068	$1,098	$1,236	$1,202	$1,306	$1,217	$1,350	$1,245	$1,414	$1,525	$1,426	$1,582
TOTAL FUEL COST	$000	Wartsila:2025:700	$766	$835	$891	$813	$886	$860	$905	$994	$964	$984	$1,087	$1,062	$1,162	$1,082	$1,193	$1,090	$1,231	$1,318	$1,238	$1,361
TOTAL FUEL COST	$000	Wartsila:2028:698	$0	$0	$0	$1,213	$1,350	$1,124	$1,210	$1,371	$1,228	$1,290	$1,474	$1,377	$1,552	$1,384	$1,575	$1,425	$1,641	$1,819	$1,670	$1,885
TOTAL FUEL COST	$000	Wartsila:2030:697	$0	$0	$0	$0	$0	$1,497	$1,670	$1,901	$1,602	$1,678	$1,860	$1,697	$1,924	$1,705	$1,987	$1,677	$1,970	$2,203	$2,044	$2,252
TOTAL FUEL COST	$000	Wartsila:2033:696	$0	$0	$0	$0	$0	$0	$0	$0	$2,033	$2,094	$2,286	$1,995	$2,223	$2,062	$2,299	$2,047	$2,334	$2,486	$2,400	$2,579
TOTAL FUEL COST	$000	Wartsila:2036:695	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$2,301	$2,520	$2,326	$2,558	$2,331	$2,594	$2,731	$2,667	$2,853
TOTAL FUEL COST	$000	Wartsila:2038:694	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$2,584	$2,783	$2,560	$2,804	$2,922	$2,897	$3,070
TOTAL FUEL COST	$000	Wartsila:2040:693	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$2,737	$2,990	$3,103	$3,062	$3,230
TOTAL FUEL COST	$000	Wartsila:2043:692	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$3,186	$3,360
CO2	TONS	Cascade Creek1	533	718	895	1,960	2,379	1,304	1,536	1,897	1,341	1,652	1,947	1,078	1,368	960	1,239	851	1,030	1,199	883	1,131
CO2	TONS	Cascade Creek2	12,280	12,999	13,193	11,292	12,194	10,613	11,311	11,602	9,874	10,885	11,744	10,030	10,730	8,546	9,306	7,963	8,965	9,750	7,830	8,363
CO2	TONS	Silver Lake1	382	492	951	445	522	623	703	816	640	731	807	582	699	544	650	458	540	646	499	606
CO2	TONS	Silver Lake2	313	411	510	381	430	245	295	386	270	339	406	509	624	478	579	401	476	548	427	523
CO2	TONS	Silver Lake3	6,702	7,308	7,212	4,608	4,661	4,326	4,565	4,649	3,936	4,393	4,896	4,176	4,588	3,425	3,738	3,254	3,651	3,998	3,172	3,330
CO2	TONS	Silver Lake4	7,948	8,380	8,186	7,416	7,998	6,834	7,329	7,381	5,812	6,789	7,550	6,167	6,618	5,066	5,472	4,969	5,534	6,019	4,879	5,004
CO2	TONS	Wartsila:2025:699	11,072	12,151	12,814	10,014	10,693	10,067	10,351	10,919	10,204	10,224	11,178	10,638	11,280	10,270	11,113	10,058	11,088	11,673	10,684	11,516
CO2	TONS	Wartsila:2025:700	8,904	9,396	9,674	8,652	9,259	8,869	9,121	9,745	9,249	9,214	9,893	9,481	10,107	9,185	9,877	8,872	9,731	10,168	9,344	9,979

Rochester Public Utilities
Project 49188 - Infrastructure Update
SMMPA Contract Extension Analysis

Data Item	Units	Description	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
CO2	TONS	Wartsila:2028:698	0	0	0	12,657	13,864	11,446	11,999	13,187	11,652	11,896	13,217	12,099	13,291	11,605	12,877	11,417	12,779	13,800	12,431	13,623
CO2	TONS	Wartsila:2030:697	0	0	0	0	0	15,041	16,363	18,103	15,007	15,304	16,560	14,797	16,342	14,172	16,099	13,324	15,234	16,581	15,079	16,200
CO2	TONS	Wartsila:2033:696	0	0	0	0	0	0	0	0	18,914	18,980	20,205	17,310	18,810	17,040	18,558	16,143	17,960	18,654	17,620	18,483
CO2	TONS	Wartsila:2036:695	0	0	0	0	0	0	0	0	0	0	0	19,897	21,250	19,164	20,584	18,315	19,906	20,463	19,531	20,379
CO2	TONS	Wartsila:2038:694	0	0	0	0	0	0	0	0	0	0	0	0	0	21,256	22,333	20,082	21,482	21,870	21,191	21,895
CO2	TONS	Wartsila:2040:693	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21,448	22,880	23,166	22,371	23,021
CO2	TONS	Wartsila:2043:692	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23,249	23,929
CO2 (Theoretical)	TONS	CROD	1,334,788	1,344,434	1,353,004	1,360,999	1,369,856	1,381,787	1,390,726	1,396,687	1,401,402	1,405,520	1,410,919	1,416,219	1,423,483	1,427,746	1,431,724	1,436,841	1,439,148	1,443,458	1,442,854	1,445,146
NOx	TONS	Cascade Creek1	0	1	1	2	2	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1
NOx	TONS	Cascade Creek2	10	11	11	9	10	9	9	10	8	9	10	8	9	7	8	7	7	8	6	7
NOx	TONS	Silver Lake1	1	1	2	1	1	1	1	2	1	2	2	1	1	1	1	1	1	1	1	1
NOx	TONS	Silver Lake2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
NOx	TONS	Silver Lake3	14	15	15	9	10	9	9	10	8	9	10	9	9	7	8	7	8	8	7	7
NOx	TONS	Silver Lake4	16	17	17	15	16	14	15	15	12	14	16	13	14	10	11	10	11	12	10	10
NOx	TONS	Wartsila:2025:699	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
NOx	TONS	Wartsila:2025:700	1	2	2	1	1	1	1	2	1	1	2	2	2	1	2	1	2	2	1	2
NOx	TONS	Wartsila:2028:698	0	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
NOx	TONS	Wartsila:2030:697	0	0	0	0	0	2	3	3	2	2	3	2	3	2	3	2	2	3	2	3
NOx	TONS	Wartsila:2033:696	0	0	0	0	0	0	0	0	3	3	3	3	3	3	3	3	3	3	3	3
NOx	TONS	Wartsila:2036:695	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3	3	3	3	3	3
NOx	TONS	Wartsila:2038:694	0	0	0	0	0	0	0	0	0	0	0	0	0	3	4	3	3	3	3	4
NOx	TONS	Wartsila:2040:693	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	4	4	4	4
NOx	TONS	Wartsila:2043:692	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4
SO2	TONS	Cascade Creek1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SO2	TONS	Cascade Creek2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SO2	TONS	Silver Lake1	3	4	7	3	4	5	5	6	5	6	6	4	5	4	5	3	4	5	4	5
SO2	TONS	Silver Lake2	2	3	4	3	3	2	2	3	2	3	3	4	5	4	4	3	4	4	3	4
SO2	TONS	Silver Lake3	51	56	55	35	35	33	35	35	30	33	37	32	35	26	28	25	28	30	24	25
SO2	TONS	Silver Lake4	60	64	62	56	61	52	56	56	44	52	57	47	50	39	42	38	42	46	37	38
SO2	TONS	Wartsila:2025:699	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SO2	TONS	Wartsila:2025:700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SO2	TONS	Wartsila:2028:698	0	0	0	1	1	0	0	1	0	0	1	0	1	0	1	0	1	1	1	1
SO2	TONS	Wartsila:2030:697	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SO2	TONS	Wartsila:2033:696	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
SO2	TONS	Wartsila:2036:695	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1
SO2	TONS	Wartsila:2038:694	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1
SO2	TONS	Wartsila:2040:693	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
SO2	TONS	Wartsila:2043:692	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
SYSTEM EFFLUENT EXPENSE	$000	NOx	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SYSTEM EFFLUENT EXPENSE	$000	SO2	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SYSTEM EFFLUENT EXPENSE	$000	CO2	$2,310	$2,593	$2,832	$3,216	$3,658	$4,232	$4,635	$5,193	$5,996	$6,509	$7,282	$8,221	$9,257	$10,224	$11,786	$12,793	$14,823	$16,329	$18,273	$20,112
THEORETICAL CROD EFFLUENT EXPENSE	$000	CO2	$64,070	$67,222	$71,709	$76,216	$80,821	$84,289	$87,616	$92,181	$96,697	$101,197	$104,408	$109,049	$113,879	$119,931	$127,423	$133,626	$141,036	$148,676	$155,828	$163,301
FIRM CAPACITY	MW	CROD OFF	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0
FIRM CAPACITY	MW	CROD ON	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0
FIRM CAPACITY	MW	OWEF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAXIMUM CAPACITY	MW	CROD OFF	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0
MAXIMUM CAPACITY	MW	CROD ON	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0
MAXIMUM CAPACITY	MW	OWEF	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
ENERGY TAKEN OR SOLD	GWH	CROD OFF	1,076	1,087	1,096	1,105	1,117	1,128	1,137	1,140	1,151	1,160	1,166	1,171	1,179	1,183	1,188	1,197	1,197	1,200	1,201	1,202
ENERGY TAKEN OR SOLD	GWH	CROD ON	637	638	640	641	641	646	648	653	648	644	645	647	648	649	650	647	650	653	651	653
ENERGY TAKEN OR SOLD	GWH	OWEF	15	16	18	20	22	24	25	26	28	28	29	29	31	32	33	33	35	35	36	36
CAPACITY FACTOR	%	OWEF	33.66%	36.97%	40.70%	45.56%	50.71%	54.39%	56.80%	59.24%	62.93%	64.18%	66.30%	67.04%	70.23%	71.92%	74.93%	75.72%	79.42%	80.82%	82.29%	82.35%
CROD OFF PEAK ENERGY RATE	$/MWH	CROD OFF	$44.39	$45.05	$45.73	$46.42	$47.11	$47.82	$48.54	$49.27	$50.00	$50.75	$51.52	$52.29	$53.07	$53.87	$54.68	$55.50	$56.33	$57.17	$58.03	$58.90
CROD ON PEAK ENERGY RATE	$/MWH	CROD ON	$58.58	$59.46	$60.35	$61.25	$62.17	$63.10	$64.05	$65.01	$65.99	$66.98	$67.98	$69.00	$70.03	$71.09	$72.15	$73.23	$74.33	$75.45	$76.58	$77.73
CROD TRANSMISSION CHARGE	$/KW-MO	CROD	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66
CROD DEMAND CHARGE	$/KW-MO	CROD	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66
CROD OFF PEAK ENERGY COST	$000	CROD OFF	$47,766	$48,985	$50,129	$51,312	$52,638	$53,940	$55,172	$56,140	$57,548	$58,857	$60,076	$61,239	$62,555	$63,753	$64,930	$66,423	$67,451	$68,612	$69,701	$70,787
CROD ON PEAK ENERGY COST	$000	CROD ON	$37,323	$37,956	$38,649	$39,288	$39,851	$40,739	$41,527	$42,461	$42,750	$43,158	$43,832	$44,614	$45,411	$46,139	$46,908	$47,409	$48,297	$49,242	$49,843	$50,765
CROD TRANSMISSION CHARGE	$000	CROD	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895
CROD DEMAND CHARGE	$000	CROD	$27,566	$27,613	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631	$27,631

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SMMPA Contract Extension Analysis

Data Item	Units	Description	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
SYSTEM CO2 EMISSIONS (EXCL MKT)	TONS	RPU PLUS CROD	1,382,922	1,396,289	1,406,439	1,418,424	1,431,855	1,451,156	1,464,300	1,475,372	1,488,303	1,495,927
TOTAL CO2 EMISSIONS (EXCL MKT)	TONS		30,098,055									
RPU FIXED O&M COST	$000		$6,394	$6,394	$6,394	$6,534	$6,534	$6,673	$6,673	$6,673	$6,813	$6,813
RPU DEBT SERVICE	$000		$3,286	$3,286	$3,286	$4,929	$4,929	$6,572	$6,572	$6,572	$8,215	$8,215
CROD FIXED COST	$000		$34,461	$34,508	$34,525	$34,525	$34,525	$34,525	$34,525	$34,525	$34,525	$34,525
TOTAL FIXED COST	$000		$44,141	$44,188	$44,205	$45,988	$45,988	$47,771	$47,771	$47,771	$49,553	$49,553
RPU VARIABLE O&M COST	$000		$537	$577	$597	$708	$766	$909	$961	$1,034	$1,200	$1,232
RPU FUEL COST	$000		$3,759	$4,190	$4,468	$5,080	$5,596	$6,467	$7,033	$7,754	$8,887	$9,456
RPU CO2 EMISSIONS COST	$000		$2,310	$2,593	$2,832	$3,216	$3,658	$4,232	$4,635	$5,193	$5,996	$6,509
MARKET ENERGY COST	$000		$31,141	$34,642	$39,043	$44,137	$51,259	$55,785	$60,586	$66,269	$71,487	$77,389
CROD ENERGY COST	$000		$85,089	$86,941	$88,778	$90,600	$92,489	$94,678	$96,698	$98,601	$100,299	$102,015
CROD CO2 EMISSIONS COST	$000		$64,070	$67,222	$71,709	$76,216	$80,821	$84,289	$87,616	$92,181	$96,697	$101,197
TOTAL VARIABLE COST	$000		$186,906	$196,164	$207,428	$219,957	$234,589	$246,360	$257,529	$271,033	$284,567	$297,799
TOTAL COST	$000		$231,047	$240,352	$251,633	$265,945	$280,577	$294,131	$305,299	$318,804	$334,120	$347,352
NPV @ 6.0%	$000		**$3,836,070**									

Data Item	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
SYSTEM CO2 EMISSIONS (EXCL MKT)	1,509,321	1,522,985	1,539,190	1,549,458	1,564,149	1,574,397	1,590,403	1,601,993	1,612,044	1,623,127
TOTAL CO2 EMISSIONS (EXCL MKT)										
RPU FIXED O&M COST	$6,813	$6,953	$6,953	$7,093	$7,093	$7,233	$7,233	$7,233	$7,372	$7,372
RPU DEBT SERVICE	$8,215	$9,858	$9,858	$11,501	$11,501	$13,144	$13,144	$13,144	$14,786	$14,786
CROD FIXED COST	$34,525	$34,525	$34,525	$34,525	$34,525	$34,525	$34,525	$34,525	$34,525	$34,525
TOTAL FIXED COST	$49,553	$51,336	$51,336	$53,119	$53,119	$54,901	$54,901	$54,901	$56,684	$56,684
RPU VARIABLE O&M COST	$1,336	$1,501	$1,624	$1,761	$1,914	$2,015	$2,212	$2,310	$2,509	$2,638
RPU FUEL COST	$10,553	$11,835	$13,157	$14,323	$15,970	$17,052	$19,227	$20,637	$22,664	$24,460
RPU CO2 EMISSIONS COST	$7,282	$8,221	$9,257	$10,224	$11,786	$12,793	$14,823	$16,329	$18,273	$20,112
MARKET ENERGY COST	$82,865	$85,752	$92,759	$96,642	$105,670	$110,688	$120,487	$128,727	$134,443	$141,321
CROD ENERGY COST	$103,909	$105,853	$107,967	$109,892	$111,838	$113,831	$115,748	$117,854	$119,544	$121,552
CROD CO2 EMISSIONS COST	$104,408	$109,049	$113,879	$119,931	$127,423	$133,626	$141,036	$148,676	$155,828	$163,301
TOTAL VARIABLE COST	$310,352	$322,210	$338,641	$352,773	$374,601	$390,004	$413,534	$434,534	$453,261	$473,385
TOTAL COST	$359,905	$373,546	$389,977	$405,891	$427,720	$444,906	$468,435	$489,436	$509,945	$530,069
NPV @ 6.0%										

Rochester Public Utilities
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Data Item	Units	Description	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
ENERGY REQUIREMENTS	GWH	RPU	1,897	1,926	1,954	1,983	2,011	2,040	2,069	2,099	2,130	2,161	2,193	2,224	2,257	2,290	2,323	2,357	2,391	2,426	2,461	2,497
PEAK DEMAND	MW	RPU	364.7	369.6	374.4	379.3	384.1	389.0	394.0	399.1	404.3	409.6	414.9	420.2	425.7	431.2	436.8	442.5	448.2	454.0	459.9	465.8
ECONOMY INTERCHANGE PURCHASE ENER(	GWH		110	122	136	151	162	169	922	938	960	980	934	949	968	925	944	905	917	887	901	919
ECONOMY INTERCHANGE PURCHASE COST	$000		$35,621	$39,718	$44,505	$52,449	$60,891	$68,593	$67,688	$71,559	$75,874	$80,598	$76,411	$80,559	$85,252	$81,710	$87,052	$84,072	$89,029	$87,093	$92,071	$97,960
FIRM CAPACITY	MW	7FA Combined Cycle :2031:700	0.0	0.0	0.0	0.0	0.0	0.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0
FIRM CAPACITY	MW	Cascade Creek1	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
FIRM CAPACITY	MW	Cascade Creek2	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0
FIRM CAPACITY	MW	Lake Zumbro	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
FIRM CAPACITY	MW	Market Firm Purchases	1.6	7.2	12.7	18.3	23.9	29.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FIRM CAPACITY	MW	Silver Lake1	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
FIRM CAPACITY	MW	Silver Lake2	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
FIRM CAPACITY	MW	Silver Lake3	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
FIRM CAPACITY	MW	Silver Lake4	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
FIRM CAPACITY	MW	Wartsila:2035:699	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8
FIRM CAPACITY	MW	Wartsila:2038:698	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.8	16.8	16.8	16.8	16.8	16.8	16.8
FIRM CAPACITY	MW	Wartsila:2040:697	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.8	16.8	16.8	16.8	16.8
FIRM CAPACITY	MW	Wartsila:2042:696	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.8	16.8	16.8
GENERATION	GWH	7FA Combined Cycle :2031:700	0	0	0	0	0	0	1,049	1,062	1,071	1,081	1,147	1,162	1,174	1,235	1,248	1,304	1,322	1,371	1,385	1,401
GENERATION	GWH	Cascade Creek1	2	2	2	5	6	6	7	7	8	8	7	7	8	7	7	6	7	6	6	6
GENERATION	GWH	Cascade Creek2	27	29	30	30	33	35	18	18	18	18	19	19	20	20	20	19	19	18	19	19
GENERATION	GWH	Lake Zumbro	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
GENERATION	GWH	Market Firm Purchases	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	GWH	Silver Lake1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	1	1	1
GENERATION	GWH	Silver Lake2	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
GENERATION	GWH	Silver Lake3	7	8	8	6	6	7	6	7	6	6	6	7	7	6	6	6	6	5	6	6
GENERATION	GWH	Silver Lake4	8	8	9	9	9	10	10	10	10	10	10	10	11	10	10	9	9	8	9	9
GENERATION	GWH	Wartsila:2035:699	0	0	0	0	0	0	0	0	0	0	13	13	14	14	14	15	16	16	17	17
GENERATION	GWH	Wartsila:2038:698	0	0	0	0	0	0	0	0	0	0	0	0	0	16	16	17	18	17	19	19
GENERATION	GWH	Wartsila:2040:697	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	20	19	21	21
GENERATION	GWH	Wartsila:2042:696	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	24	24
CAPACITY FACTOR	%	7FA Combined Cycle :2031:700							36.28%	36.64%	37.05%	37.41%	39.67%	40.08%	40.60%	42.74%	43.18%	44.97%	45.75%	47.43%	47.93%	48.34%
CAPACITY FACTOR	%	Cascade Creek1	0.80%	0.85%	0.93%	1.93%	2.48%	2.64%	3.05%	3.07%	3.22%	3.25%	3.09%	3.13%	3.20%	2.95%	3.01%	2.71%	2.79%	2.35%	2.43%	2.43%
CAPACITY FACTOR	%	Cascade Creek2	6.49%	6.91%	7.12%	7.15%	7.75%	8.43%	4.21%	4.24%	4.28%	4.35%	4.54%	4.62%	4.67%	4.70%	4.69%	4.49%	4.63%	4.26%	4.40%	4.46%
CAPACITY FACTOR	%	Lake Zumbro	76.52%	76.52%	76.52%	76.31%	76.52%	76.52%	76.52%	76.31%	76.52%	76.52%	76.52%	76.31%	76.52%	76.52%	76.52%	76.31%	76.52%	76.52%	76.52%	76.31%
CAPACITY FACTOR	%	Market Firm Purchases	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
CAPACITY FACTOR	%	Silver Lake1	0.77%	0.79%	0.98%	0.92%	1.04%	1.29%	2.27%	2.30%	2.34%	2.36%	2.22%	2.26%	2.30%	2.10%	2.12%	1.85%	1.91%	1.67%	1.74%	1.80%
CAPACITY FACTOR	%	Silver Lake2	0.45%	0.47%	0.53%	0.53%	0.51%	0.54%	1.91%	1.94%	1.99%	2.01%	1.88%	1.92%	1.96%	1.78%	1.78%	1.54%	1.58%	1.32%	1.37%	1.39%
CAPACITY FACTOR	%	Silver Lake3	3.56%	3.80%	3.92%	3.08%	2.87%	3.12%	3.07%	3.10%	3.00%	3.04%	3.04%	3.11%	3.16%	3.05%	3.07%	2.79%	2.88%	2.58%	2.67%	2.72%
CAPACITY FACTOR	%	Silver Lake4	2.07%	2.12%	2.18%	2.19%	2.29%	2.44%	2.54%	2.57%	2.62%	2.66%	2.56%	2.61%	2.68%	2.52%	2.57%	2.34%	2.41%	2.11%	2.19%	2.22%
CAPACITY FACTOR	%	Wartsila:2035:699											8.51%	8.62%	9.49%	9.49%	9.84%	10.30%	10.78%	10.82%	11.51%	11.50%
CAPACITY FACTOR	%	Wartsila:2038:698														10.64%	11.13%	11.44%	12.01%	11.85%	12.67%	12.72%
CAPACITY FACTOR	%	Wartsila:2040:697																12.92%	13.63%	13.20%	14.17%	14.36%
CAPACITY FACTOR	%	Wartsila:2042:696																		15.00%	16.11%	16.52%
TOTAL O AND M COST	$000	7FA Combined Cycle :2031:700	$0	$0	$0	$0	$0	$0	$10,985	$11,046	$11,088	$11,136	$11,439	$11,509	$11,565	$11,851	$11,909	$12,167	$12,255	$12,481	$12,547	$12,620
TOTAL O AND M COST	$000	Cascade Creek1	$18	$19	$21	$45	$57	$61	$70	$71	$74	$75	$71	$72	$74	$68	$69	$62	$64	$54	$56	$56
TOTAL O AND M COST	$000	Cascade Creek2	$265	$282	$291	$293	$317	$345	$172	$174	$175	$178	$185	$189	$191	$192	$192	$184	$189	$174	$180	$183
TOTAL O AND M COST	$000	Lake Zumbro	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19
TOTAL O AND M COST	$000	Market Firm Purchases	$114	$516	$918	$1,320	$1,721	$2,123	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL O AND M COST	$000	Silver Lake1	$628	$628	$628	$628	$629	$629	$632	$632	$632	$632	$632	$632	$632	$631	$631	$631	$631	$630	$630	$631
TOTAL O AND M COST	$000	Silver Lake2	$924	$924	$925	$925	$924	$925	$930	$930	$930	$930	$929	$930	$930	$929	$929	$928	$928	$927	$928	$928
TOTAL O AND M COST	$000	Silver Lake3	$1,604	$1,605	$1,606	$1,601	$1,600	$1,601	$1,601	$1,601	$1,600	$1,601	$1,601	$1,601	$1,601	$1,601	$1,601	$1,599	$1,600	$1,598	$1,598	$1,599
TOTAL O AND M COST	$000	Silver Lake4	$2,990	$2,990	$2,991	$2,991	$2,992	$2,994	$2,995	$2,996	$2,996	$2,997	$2,996	$2,996	$2,997	$2,995	$2,996	$2,993	$2,994	$2,990	$2,991	$2,992
TOTAL O AND M COST	$000	Wartsila:2035:699	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$245	$247	$257	$257	$262	$268	$273	$274	$282	$283
TOTAL O AND M COST	$000	Wartsila:2038:698	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$272	$278	$282	$289	$287	$297	$298
TOTAL O AND M COST	$000	Wartsila:2040:697	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$300	$309	$303	$315	$318
TOTAL O AND M COST	$000	Wartsila:2042:696	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$326	$339	$345
VARIABLE O AND M COSTS	$/MWH	7FA Combined Cycle :2031:700	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$4.64	$4.64	$4.64	$4.64	$4.64	$4.64	$4.64	$4.64	$4.64	$4.64	$4.64	$4.64	$4.64	$4.64
VARIABLE O AND M COSTS	$/MWH	Cascade Creek1	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72
VARIABLE O AND M COSTS	$/MWH	Cascade Creek2	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72	$9.72
VARIABLE O AND M COSTS	$/MWH	Silver Lake1	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99
VARIABLE O AND M COSTS	$/MWH	Silver Lake2	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99
VARIABLE O AND M COSTS	$/MWH	Silver Lake3	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99
VARIABLE O AND M COSTS	$/MWH	Silver Lake4	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99	$2.99
VARIABLE O AND M COSTS	$/MWH	Wartsila:2035:699	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42
VARIABLE O AND M COSTS	$/MWH	Wartsila:2038:698	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42	$8.42

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Data Item	Units	Description	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
VARIABLE O AND M COSTS	$/MWH	Wartsila:2040:697	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$8.42	$8.42	$8.42	$8.42	$8.42
VARIABLE O AND M COSTS	$/MWH	Wartsila:2042:696	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$8.42	$8.42	$8.42
FIXED O AND M COST	$000	7FA Combined Cycle :2031:700	$0	$0	$0	$0	$0	$0	$6,118	$6,118	$6,118	$6,118	$6,118	$6,118	$6,118	$6,118	$6,118	$6,118	$6,118	$6,118	$6,118	$6,118
FIXED O AND M COST	$000	Cascade Creek1	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
FIXED O AND M COST	$000	Cascade Creek2	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
FIXED O AND M COST	$000	Lake Zumbro	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19	$19
FIXED O AND M COST	$000	Market Firm Purchases	$114	$516	$918	$1,320	$1,721	$2,123	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
FIXED O AND M COST	$000	Silver Lake1	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626	$626
FIXED O AND M COST	$000	Silver Lake2	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923	$923
FIXED O AND M COST	$000	Silver Lake3	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582	$1,582
FIXED O AND M COST	$000	Silver Lake4	$2,965	$2,966	$2,965	$2,965	$2,965	$2,965	$2,965	$2,965	$2,965	$2,965	$2,965	$2,966	$2,965	$2,965	$2,965	$2,966	$2,965	$2,965	$2,965	$2,965
FIXED O AND M COST	$000	Wartsila:2035:699	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$140	$140	$140	$140	$140	$140	$140	$140	$140	$140
FIXED O AND M COST	$000	Wartsila:2038:698	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$140	$140	$140	$140	$140	$140	$140
FIXED O AND M COST	$000	Wartsila:2040:697	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$140	$140	$140	$140	$140
FIXED O AND M COST	$000	Wartsila:2042:696	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$140	$140	$140
ANNUAL DEBT SERVICE	$000	7FA Combined Cycle :2031:700	$0	$0	$0	$0	$0	$0	$31,593	$31,593	$31,593	$31,593	$31,593	$31,593	$31,593	$31,593	$31,593	$31,593	$31,593	$31,593	$31,593	$31,593
ANNUAL DEBT SERVICE	$000	Wartsila:2035:699	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643
ANNUAL DEBT SERVICE	$000	Wartsila:2038:698	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643	$1,643
ANNUAL DEBT SERVICE	$000	Wartsila:2040:697	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,643	$1,643	$1,643	$1,643	$1,643
ANNUAL DEBT SERVICE	$000	Wartsila:2042:696	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,643	$1,643	$1,643
TOTAL FUEL COST	$000	7FA Combined Cycle :2031:700	$0	$0	$0	$0	$0	$0	$49,624	$51,446	$53,022	$54,790	$59,054	$61,255	$63,323	$67,835	$70,048	$74,585	$77,400	$81,895	$84,724	$87,744
TOTAL FUEL COST	$000	Cascade Creek1	$153	$167	$188	$404	$524	$566	$700	$724	$776	$803	$780	$811	$847	$798	$834	$771	$810	$698	$739	$759
TOTAL FUEL COST	$000	Cascade Creek2	$1,600	$1,766	$1,883	$1,945	$2,138	$2,371	$1,263	$1,307	$1,347	$1,400	$1,495	$1,561	$1,614	$1,661	$1,695	$1,664	$1,752	$1,649	$1,744	$1,816
TOTAL FUEL COST	$000	Silver Lake1	$54	$57	$73	$71	$82	$105	$190	$198	$208	$216	$209	$219	$230	$216	$224	$202	$215	$193	$208	$221
TOTAL FUEL COST	$000	Silver Lake2	$48	$52	$60	$62	$62	$67	$244	$256	$271	$281	$270	$286	$300	$280	$289	$258	$272	$235	$250	$261
TOTAL FUEL COST	$000	Silver Lake3	$531	$584	$621	$504	$482	$540	$547	$571	$567	$593	$610	$643	$672	$669	$692	$651	$690	$637	$679	$712
TOTAL FUEL COST	$000	Silver Lake4	$586	$617	$654	$680	$730	$801	$857	$896	$941	$982	$973	$1,025	$1,080	$1,047	$1,100	$1,033	$1,092	$988	$1,053	$1,103
TOTAL FUEL COST	$000	Wartsila:2035:699	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$755	$786	$883	$908	$963	$1,037	$1,108	$1,142	$1,242	$1,276
TOTAL FUEL COST	$000	Wartsila:2038:698	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,014	$1,086	$1,148	$1,231	$1,246	$1,364	$1,408
TOTAL FUEL COST	$000	Wartsila:2040:697	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,294	$1,394	$1,385	$1,522	$1,587
TOTAL FUEL COST	$000	Wartsila:2042:696	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,572	$1,729	$1,824
CO2	TONS	7FA Combined Cycle :2031:700	0	0	0	0	0	0	447,619	452,953	456,059	460,247	484,616	490,918	495,372	518,104	522,730	543,808	550,970	569,143	574,819	581,170
CO2	TONS	Cascade Creek1	1,730	1,820	1,990	4,174	5,331	5,671	6,557	6,627	6,929	6,993	6,644	6,752	6,881	6,341	6,473	5,846	5,995	5,052	5,229	5,242
CO2	TONS	Cascade Creek2	17,867	19,001	19,600	19,712	21,324	23,197	11,580	11,705	11,785	11,961	12,482	12,734	12,850	12,929	12,893	12,388	12,735	11,726	12,113	12,313
CO2	TONS	Silver Lake1	927	952	1,185	1,109	1,257	1,551	2,730	2,773	2,820	2,842	2,669	2,722	2,768	2,526	2,545	2,229	2,302	2,006	2,097	2,168
CO2	TONS	Silver Lake2	831	862	980	970	943	989	3,516	3,581	3,670	3,696	3,457	3,555	3,611	3,273	3,287	2,849	2,918	2,439	2,527	2,559
CO2	TONS	Silver Lake3	9,130	9,736	10,062	7,918	7,366	8,004	7,866	7,982	7,692	7,808	7,803	7,989	8,102	7,831	7,862	7,182	7,389	6,622	6,860	6,985
CO2	TONS	Silver Lake4	10,078	10,290	10,596	10,690	11,140	11,881	12,336	12,517	12,757	12,928	12,439	12,726	13,022	12,250	12,499	11,394	11,703	10,278	10,638	10,813
CO2	TONS	Wartsila:2035:699	0	0	0	0	0	0	0	0	0	0	6,762	6,870	7,547	7,542	7,820	8,207	8,566	8,603	9,153	9,168
CO2	TONS	Wartsila:2038:698	0	0	0	0	0	0	0	0	0	0	0	0	0	8,456	8,849	9,115	9,548	9,417	10,072	10,142
CO2	TONS	Wartsila:2040:697	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10,298	10,832	10,489	11,264	11,448
CO2	TONS	Wartsila:2042:696	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11,922	12,809	13,168
CO2 (Theoretical)	TONS	CROD	1,334,785	1,344,432	1,353,001	1,360,994	1,369,852	1,381,782	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NOx	TONS	7FA Combined Cycle :2031:700	0	0	0	0	0	0	27	27	27	27	29	29	29	31	31	32	33	34	34	34
NOx	TONS	Cascade Creek1	1	1	2	3	4	4	5	5	5	5	5	5	5	5	5	5	5	4	4	4
NOx	TONS	Cascade Creek2	15	16	16	16	18	19	10	10	10	10	10	11	11	11	11	10	11	10	10	10
NOx	TONS	Silver Lake1	2	2	2	2	3	3	6	6	6	6	5	6	6	5	5	5	5	4	4	4
NOx	TONS	Silver Lake2	2	2	2	2	2	2	7	7	8	8	7	7	7	7	7	6	6	5	5	5
NOx	TONS	Silver Lake3	19	20	21	16	15	16	16	16	16	16	16	16	17	16	16	15	15	14	14	14
NOx	TONS	Silver Lake4	21	21	22	22	23	24	25	26	26	27	26	26	27	25	26	23	24	21	22	22
NOx	TONS	Wartsila:2035:699	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1
NOx	TONS	Wartsila:2038:698	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2
NOx	TONS	Wartsila:2040:697	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2
NOx	TONS	Wartsila:2042:696	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
SO2	TONS	7FA Combined Cycle :2031:700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SO2	TONS	Cascade Creek1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SO2	TONS	Cascade Creek2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SO2	TONS	Silver Lake1	7	7	9	8	10	12	21	21	21	22	20	21	21	19	19	17	18	15	16	16
SO2	TONS	Silver Lake2	6	7	7	7	7	8	27	27	28	28	26	27	27	25	25	22	22	19	19	19
SO2	TONS	Silver Lake3	69	74	77	60	56	61	60	61	59	59	59	61	62	60	60	55	56	50	52	53
SO2	TONS	Silver Lake4	77	78	81	81	85	90	94	95	97	98	95	97	99	93	95	87	89	78	81	82
SO2	TONS	Wartsila:2035:699	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SO2	TONS	Wartsila:2038:698	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SO2	TONS	Wartsila:2040:697	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Data Item	Units	Description	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
SO2	TONS	Wartsila:2042:696	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
SYSTEM EFFLUENT EXPENSE	$000	NOx	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SYSTEM EFFLUENT EXPENSE	$000	SO2	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SYSTEM EFFLUENT EXPENSE	$000	CO2	$1,947	$2,133	$2,354	$2,496	$2,794	$3,129	$31,009	$32,877	$34,618	$36,466	$39,729	$41,908	$44,012	$48,657	$52,061	$57,038	$61,050	$66,713	$71,019	$75,165
THEORETICAL CROD EFFLUENT EXPENSE	$000	CO2	$64,070	$67,222	$71,709	$76,216	$80,821	$84,289	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
FIRM CAPACITY	MW	CROD OFF	216.0	216.0	216.0	216.0	216.0	216.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FIRM CAPACITY	MW	CROD ON	216.0	216.0	216.0	216.0	216.0	216.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FIRM CAPACITY	MW	OWEF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAXIMUM CAPACITY	MW	CROD OFF	216.0	216.0	216.0	216.0	216.0	216.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAXIMUM CAPACITY	MW	CROD ON	216.0	216.0	216.0	216.0	216.0	216.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MAXIMUM CAPACITY	MW	OWEF	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
ENERGY TAKEN OR SOLD	GWH	CROD OFF	1,076	1,087	1,096	1,105	1,117	1,128	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENERGY TAKEN OR SOLD	GWH	CROD ON	637	638	640	641	641	646	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENERGY TAKEN OR SOLD	GWH	OWEF	15	16	18	20	22	24	39	39	39	39	39	39	39	39	39	39	39	39	39	39
CAPACITY FACTOR	%	OWEF	33.66%	36.97%	40.70%	45.56%	50.71%	54.39%	89.78%	89.78%	89.78%	89.78%	89.82%	89.82%	89.82%	89.82%	89.82%	89.82%	89.82%	89.82%	89.82%	89.82%
CROD OFF PEAK ENERGY RATE	$/MWH	CROD OFF	$44.39	$45.05	$45.73	$46.42	$47.11	$47.82	$48.54	$49.27	$50.00	$50.75	$51.52	$52.29	$53.07	$53.87	$54.68	$55.50	$56.33	$57.17	$58.03	$58.90
CROD ON PEAK ENERGY RATE	$/MWH	CROD ON	$58.58	$59.46	$60.35	$61.25	$62.17	$63.10	$64.05	$65.01	$65.99	$66.98	$67.98	$69.00	$70.03	$71.09	$72.15	$73.23	$74.33	$75.45	$76.58	$77.73
CROD TRANSMISSION CHARGE	$/KW-MO	CROD	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66	$2.66
CROD DEMAND CHARGE	$/KW-MO	CROD	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66	$10.66
CROD OFF PEAK ENERGY COST	$000	CROD OFF	$47,766	$48,985	$50,129	$51,312	$52,638	$53,939	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
CROD ON PEAK ENERGY COST	$000	CROD ON	$37,323	$37,956	$38,649	$39,288	$39,851	$40,739	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
CROD TRANSMISSION CHARGE	$000	CROD	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895
CROD DEMAND CHARGE	$000	CROD	$27,566	$27,613	$27,631	$27,631	$27,631	$27,631	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SYSTEM CO2 EMISSIONS (EXCL MKT)	TONS	RPU PLUS CROD	1,375,349	1,387,093	1,397,415	1,405,568	1,417,212	1,433,073	492,203	498,136	501,712	506,476	536,872	544,265	550,153	579,252	584,958	613,315	622,959	647,698	657,580	665,175
TOTAL CO2 EMISSIONS (EXCL MKT)	TONS		16,416,464																			
CO2 EMISSIONS DELTA W/O SMMPA	TONS	SMMPA MINUS W/O SMMPA	7,574	9,197	9,024	12,856	14,643	18,083	972,097	977,236	986,590	989,450	972,450	978,719	989,037	970,206	979,191	961,082	967,445	954,295	954,464	957,951
AVOIDED CO2 TAX FROM EMISSIONS DELTA	$000		$364	$460	$478	$720	$864	$1,103	$61,242	$64,498	$68,075	$71,240	$71,961	$75,361	$79,123	$81,497	$87,148	$89,381	$94,810	$98,292	$103,082	$108,249
NPV OF SMMPA CO2 RISK @ 6.0%	$000		$521,935																			
RPU FIXED O&M COST	$000		$6,229	$6,631	$7,032	$7,434	$7,836	$8,238	$12,233	$12,233	$12,233	$12,233	$12,372	$12,372	$12,372	$12,512	$12,512	$12,652	$12,652	$12,792	$12,792	$12,792
RPU DEBT SERVICE	$000		$0	$0	$0	$0	$0	$0	$31,593	$31,593	$31,593	$31,593	$33,236	$33,236	$33,236	$34,879	$34,879	$36,522	$36,522	$38,165	$38,165	$38,165
CROD FIXED COST	$000		$34,461	$34,508	$34,525	$34,525	$34,525	$34,525	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895	$6,895
TOTAL FIXED COST	$000		$40,690	$41,139	$41,558	$41,959	$42,361	$42,763	$50,720	$50,720	$50,720	$50,720	$52,503	$52,503	$52,503	$54,286	$54,286	$56,069	$56,069	$57,851	$57,851	$57,851
RPU VARIABLE O&M COST	$000		$334	$354	$367	$387	$423	$459	$5,170	$5,235	$5,282	$5,334	$5,744	$5,823	$5,893	$6,303	$6,373	$6,781	$6,898	$7,271	$7,391	$7,479
RPU FUEL COST	$000		$2,973	$3,242	$3,480	$3,664	$4,018	$4,449	$53,424	$55,400	$57,132	$59,063	$64,145	$66,587	$68,948	$74,428	$76,931	$82,643	$85,965	$91,639	$95,254	$98,710
RPU CO2 EMISSIONS COST	$000		$1,947	$2,133	$2,354	$2,496	$2,794	$3,129	$31,009	$32,877	$34,618	$36,466	$39,729	$41,908	$44,012	$48,657	$52,061	$57,038	$61,050	$66,713	$71,019	$75,165
MARKET ENERGY COST	$000		$35,621	$39,718	$44,505	$52,449	$60,891	$68,593	$67,688	$71,559	$75,874	$80,598	$76,411	$80,559	$85,252	$81,710	$87,052	$84,072	$89,029	$87,093	$92,071	$97,960
CROD ENERGY COST	$000		$85,089	$86,941	$88,778	$90,600	$92,488	$94,678	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
CROD CO2 EMISSIONS COST	$000		$64,070	$67,222	$71,709	$76,216	$80,821	$84,289	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL VARIABLE COST	$000		$190,035	$199,609	$211,193	$225,812	$241,436	$255,597	$157,291	$165,071	$172,906	$181,461	$186,029	$194,877	$204,105	$211,098	$222,417	$230,534	$242,942	$252,716	$265,735	$279,314
TOTAL COST	$000		$230,724	$240,748	$252,751	$267,772	$283,797	$298,360	$208,012	$215,791	$223,626	$232,181	$238,532	$247,380	$256,608	$265,383	$276,703	$286,603	$299,010	$310,567	$323,586	$337,165
NPV @ 6.0%	$000		**$2,960,876**																			

APPENDIX C
WIND ANALYSIS
DETAILED PRODUCTION COST OUTPUT

Rochester Public Utilities
Project 49188 - Infrastructure Update
Renewable Energy Requirements Analysis

Data Item	UnitDescription	UnitCategc	UOM	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
PeakLoad			(MW)	292.0	296.8	301.7	306.5	311.4	316.2	321.1	325.9	330.8	335.6	340.5	345.3	350.2	355.0	359.9	364.7	369.6	374.4	379.3	384.1	389.0
EnergyDemand			(MWH)	1,470,894	1,499,330	1,527,771	1,556,212	1,584,648	1,613,083	1,641,525	1,669,959	1,698,404	1,726,845	1,755,281	1,783,719	1,812,166	1,840,600	1,869,039	1,897,478	1,925,917	1,954,353	1,982,801	2,011,238	2,039,677
MarketPurchase			(MWH)	1,782	2,919	4,919	7,014	9,741	9,132	12,462	18,981	22,304	26,335	27,587	33,639	39,128	50,333	54,763	61,651	64,829	72,178	87,911	99,016	109,182
CostOfMarketPurchases			($)	$56,592	$100,746	$174,752	$260,778	$377,832	$348,215	$487,947	$745,890	$903,264	$1,090,485	$1,168,208	$1,421,232	$1,659,926	$2,111,975	$2,372,263	$2,762,767	$3,076,886	$3,421,470	$4,222,700	$4,950,153	$5,483,603
MarketSale			(MWH)	71,249	70,654	70,395	69,715	69,407	68,713	68,723	67,007	66,732	65,958	65,680	64,581	63,032	60,838	59,920	58,520	55,950	55,698	53,111	51,172	48,637
RevenueFromMarketSales			($)	$2,479,521	$2,470,608	$2,510,128	$2,482,750	$2,500,428	$2,517,314	$2,599,438	$2,581,253	$2,639,198	$2,665,457	$2,654,696	$2,625,252	$2,617,739	$2,547,913	$2,615,185	$2,631,523	$2,582,254	$2,714,242	$2,627,375	$2,587,011	$2,512,299
MaxCap	Cascade Creek1	CT Gas	(MW)	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
MaxCap	Cascade Creek2	CT Gas	(MW)	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0
MaxCap	Lake Zumbro	Hydro Run	(MW)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
MaxCap	Silver Lake1	ST Coal	(MW)	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
MaxCap	Silver Lake2	ST Coal	(MW)	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
MaxCap	Silver Lake3	ST Coal	(MW)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
MaxCap	Silver Lake4	ST Coal	(MW)	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
UnitGeneration	Cascade Creek1	CT Gas	(MWH)			105	120			60		109	135	135	820	285	660	1,383	1,134	2,078	1,750	1,395	2,062	3,082
UnitGeneration	Cascade Creek2	CT Gas	(MWH)	500	1,976	466	709	2,512	2,816	3,339	4,369	3,923	4,020	23,422	23,088	25,931	25,963	28,210	29,148	27,988	34,042	33,124	36,247	37,946
UnitGeneration	Lake Zumbro	Hydro Run	(MWH)	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411
UnitGeneration	Silver Lake1	ST Coal	(MWH)	33	509	32		79	170	33		193	233	141	416	191	113	365	298	896	815	747	927	718
UnitGeneration	Silver Lake2	ST Coal	(MWH)					24	112			129	235		454	64		151	166	642	537	446	708	445
UnitGeneration	Silver Lake3	ST Coal	(MWH)	6,975	7,501	8,595	9,959	9,441	10,516	11,943	11,042	11,447	11,771	6,655	6,966	6,940	6,114	7,499	7,943	9,192	10,061	10,526	9,037	8,986
UnitGeneration	Silver Lake4	ST Coal	(MWH)	5,595	4,926	8,672	8,838	9,238	10,905	10,823	12,600	14,957	16,621	5,848	5,506	6,605	7,451	6,503	8,137	11,530	10,903	12,524	11,906	13,159
CapacityFactor	Cascade Creek1	CT Gas	(%)	0.00	0.00	0.04	0.05	0.00	0.00	0.03	0.00	0.05	0.06	0.06	0.35	0.12	0.28	0.58	0.48	0.88	0.74	0.59	0.87	1.30
CapacityFactor	Cascade Creek2	CT Gas	(%)	0.12	0.47	0.11	0.17	0.60	0.67	0.79	1.04	0.93	0.96	5.56	5.49	6.17	6.17	6.69	6.93	6.66	8.10	7.86	8.62	9.02
CapacityFactor	Lake Zumbro	Hydro Run	(%)	76.55	76.55	76.34	76.55	76.55	76.55	76.34	76.55	76.55	76.55	76.34	76.55	76.55	76.55	76.34	76.55	76.55	76.55	76.34	76.55	76.55
CapacityFactor	Silver Lake1	ST Coal	(%)	0.04	0.61	0.04	0.00	0.09	0.20	0.04	0.00	0.23	0.28	0.17	0.50	0.23	0.14	0.44	0.36	1.08	0.98	0.89	1.11	0.86
CapacityFactor	Silver Lake2	ST Coal	(%)	0.00	0.00	0.00	0.00	0.02	0.09	0.00	0.00	0.11	0.19	0.00	0.37	0.05	0.00	0.12	0.14	0.52	0.44	0.36	0.58	0.36
CapacityFactor	Silver Lake3	ST Coal	(%)	3.32	3.57	4.08	4.74	4.49	5.00	5.67	5.25	5.44	5.60	3.16	3.31	3.30	2.91	3.56	3.78	4.37	4.79	4.99	4.30	4.27
CapacityFactor	Silver Lake4	ST Coal	(%)	1.42	1.25	2.19	2.24	2.34	2.77	2.74	3.20	3.79	4.22	1.48	1.40	1.68	1.89	1.65	2.06	2.93	2.77	3.17	3.02	3.34
FixedOMCost	Lake Zumbro	Hydro Run	($)	$18,510	$18,510	$18,809	$18,510	$18,510	$18,510	$18,460	$18,859	$18,510	$18,510	$18,460	$18,510	$18,510	$18,859	$18,460	$18,510	$18,510	$18,510	$18,809	$18,510	$18,510
FixedOMCost	Silver Lake1	ST Coal	($)	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050
FixedOMCost	Silver Lake2	ST Coal	($)	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600
FixedOMCost	Silver Lake3	ST Coal	($)	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600
FixedOMCost	Silver Lake4	ST Coal	($)	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500
VarOMCost	Cascade Creek1	CT Gas	($)			$1,021	$1,166			$583		$1,058	$1,312	$1,312	$7,969	$2,770	$6,415	$13,440	$11,020	$20,198	$17,010	$13,557	$20,040	$29,955
VarOMCost	Cascade Creek2	CT Gas	($)	$4,860	$19,206	$4,527	$6,891	$24,414	$27,376	$32,453	$42,463	$38,131	$39,072	$227,665	$224,419	$252,054	$252,364	$274,205	$283,318	$272,046	$330,889	$321,968	$352,318	$368,833
VarOMCost	Silver Lake1	ST Coal	($)	$98	$1,521	$96		$236	$508	$100		$578	$696	$421	$1,244	$572	$339	$1,093	$891	$2,679	$2,438	$2,233	$2,773	$2,147
VarOMCost	Silver Lake2	ST Coal	($)					$72	$334			$386	$704		$1,358	$191		$451	$498	$1,921	$1,607	$1,333	$2,117	$1,330
VarOMCost	Silver Lake3	ST Coal	($)	$20,855	$22,428	$25,699	$29,779	$28,229	$31,443	$35,711	$33,016	$34,227	$35,197	$19,898	$20,828	$20,751	$18,282	$22,423	$23,749	$27,484	$30,082	$31,471	$27,022	$26,868
VarOMCost	Silver Lake4	ST Coal	($)	$16,729	$14,729	$25,930	$26,427	$27,623	$32,607	$32,362	$37,673	$44,721	$49,696	$17,487	$16,464	$19,749	$22,278	$19,444	$24,331	$34,476	$32,601	$37,447	$35,600	$39,344
ReceiptsFuelCost	Cascade Creek1	CT Gas	($)			$7,327	$8,238			$4,271		$8,132	$10,223	$10,080	$59,918	$20,944	$48,982	$107,621	$91,496	$173,839	$151,093	$123,738	$185,155	$281,100
ReceiptsFuelCost	Cascade Creek2	CT Gas	($)	$24,861	$97,484	$23,532	$35,491	$125,603	$143,036	$171,582	$229,218	$210,941	$221,324	$1,267,411	$1,216,332	$1,382,292	$1,399,022	$1,593,072	$1,709,319	$1,702,091	$2,138,254	$2,134,538	$2,374,100	$2,526,933
ReceiptsFuelCost	Silver Lake1	ST Coal	($)	$1,782	$28,373	$1,838		$4,809	$10,659	$2,150		$13,233	$16,415	$10,229	$31,111	$14,731	$8,990	$29,846	$25,074	$77,648	$72,777	$68,648	$87,815	$70,027
ReceiptsFuelCost	Silver Lake2	ST Coal	($)					$1,518	$7,275			$9,179	$17,242		$35,268	$5,119		$12,812	$14,544	$57,835	$49,840	$42,576	$69,651	$45,054
ReceiptsFuelCost	Silver Lake3	ST Coal	($)	$318,770	$352,931	$416,518	$496,875	$485,010	$556,338	$650,702	$619,595	$661,568	$700,638	$407,788	$439,430	$450,857	$409,069	$516,856	$563,926	$672,144	$757,877	$816,611	$722,101	$739,387
ReceiptsFuelCost	Silver Lake4	ST Coal	($)	$258,591	$234,403	$425,013	$445,927	$479,953	$583,464	$596,348	$714,979	$874,166	$1,000,458	$362,431	$351,276	$433,937	$504,098	$453,256	$584,213	$852,753	$830,517	$982,613	$961,957	$1,094,895
CO2	Cascade Creek1	CT Gas	(LBS)			191,038	218,329			109,164		198,006	245,620	245,620	1,491,744	518,531	1,200,808	2,515,709	2,062,693	3,780,688	3,183,932	2,537,533	3,751,140	5,606,983
CO2	Cascade Creek2	CT Gas	(LBS)	654,251	2,585,502	609,426	927,692	3,286,573	3,685,365	4,368,847	5,716,372	5,133,218	5,259,808	30,648,099	30,211,135	33,931,332	33,973,174	36,913,375	38,140,100	36,622,709	44,544,116	43,343,169	47,428,824	49,652,183
CO2	Silver Lake1	ST Coal	(LBS)	95,132	1,471,368	92,542		228,432	491,598	96,289		558,710	672,935	407,273	1,203,323	553,277	327,870	1,056,683	861,797	2,590,962	2,357,646	2,159,285	2,682,076	2,076,706
CO2	Silver Lake2	ST Coal	(LBS)					72,103	335,529			387,536	706,868		1,364,074	192,276		453,592	499,884	1,929,782	1,614,605	1,339,193	2,127,311	1,336,109
CO2	Silver Lake3	ST Coal	(LBS)	17,019,292	18,302,204	20,971,860	24,301,129	23,036,511	25,659,164	29,142,017	26,943,120	27,931,304	28,722,489	16,237,739	16,996,908	16,934,016	14,919,280	18,298,591	19,380,772	22,428,210	24,548,806	25,682,381	22,051,195	21,925,896
CO2	Silver Lake4	ST Coal	(LBS)	13,806,101	12,155,802	21,399,795	21,809,442	22,796,380	26,910,047	26,707,857	31,091,114	36,907,321	41,013,562	14,431,629	13,587,341	16,298,583	18,385,230	16,046,985	20,079,569	28,452,560	26,905,403	30,904,531	29,380,042	32,470,285
NOx	Cascade Creek1	CT Gas	(LBS)			148	169			85		154	191	191	1,157	402	932	1,952	1,600	2,933	2,470	1,969	2,910	4,350
NOx	Cascade Creek2	CT Gas	(LBS)	541	2,136	503	766	2,715	3,045	3,609	4,723	4,241	4,345	25,320	24,959	28,032	28,067	30,496	31,509	30,255	36,800	35,807	39,183	41,020
NOx	Silver Lake1	ST Coal	(LBS)	196	3,027	190		470	1,011	198		1,149	1,384	838	2,476	1,138	675	2,174	1,773	5,330	4,850	4,442	5,518	4,272
NOx	Silver Lake2	ST Coal	(LBS)					148	690			797	1,454		2,806	396		933	1,028	3,970	3,322	2,755	4,377	2,749
NOx	Silver Lake3	ST Coal	(LBS)	35,014	37,653	43,146	49,995	47,393	52,789	59,954	55,430	57,464	59,091	33,406	34,968	34,839	30,694	37,646	39,872	46,142	50,505	52,837	45,366	45,109
NOx	Silver Lake4	ST Coal	(LBS)	28,404	25,008	44,026	44,869	46,899	55,363	54,947	63,964	75,930	84,378	29,690	27,953	33,531	37,824	33,014	41,310	58,536	55,353	63,580	60,444	66,802
SO2	Cascade Creek1	CT Gas	(LBS)			2	2			1		2	2	2	15	5	12	25	21	38	32	25	37	56
SO2	Cascade Creek2	CT Gas	(LBS)	8	31	7	11	39	44	52	68	61	63	366	360	405	405	440	455	437	531	517	566	592
SO2	Silver Lake1	ST Coal	(LBS)	724	11,193	704		1,738	3,740	733		4,250	5,119	3,098	9,154	4,209	2,494	8,039	6,556	19,711	17,936	16,427	20,404	15,798
SO2	Silver Lake2	ST Coal	(LBS)					549	2,553			2,948	5,377		10,377	1,463		3,451	3,803	14,681	12,283	10,188	16,183	10,164
SO2	Silver Lake3	ST Coal	(LBS)	129,473	139,233	159,542	184,869	175,249	195,201	221,696	204,968	212,486	218,505	123,528	129,303	128,825	113,498	139,205	147,438	170,621	186,754	195,377	167,753	166,800
SO2	Silver Lake4	ST Coal	(LBS)	105,029	92,475	162,798	165,914	173,422	204,717	203,179	236,524	280,771	312,009	109,788	103,365	123,991	139,865	122,077	152,754	216,452	204,682	235,105	223,507	247,016
PurchEnergyByComp	CROD OFF		(MWH)	876,734	893,813	910,482	925,682	939,343	956,159	970,005	985,983	1,000,799	1,015,460	1,027,253	1,043,186	1,056,505	1,067,953	1,082,083	1,092,367	1,104,230	1,115,396	1,122,742	1,134,977	1,144,545

Rochester Public Utilities
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Data Item	UnitDescription	UnitCatego	UOM	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
PurchEnergyByComp	CROD ON		(MWH)	562,051	569,653	574,831	582,896	592,151	600,346	608,932	611,238	617,599	623,527	633,985	637,300	641,821	644,105	647,785	653,964	658,074	660,126	661,036	660,183	661,446
PurchEnergyByComp	OWEF		(MWH)	3,203	3,741	4,740	5,567	6,180	6,611	7,196	7,844	8,501	9,326	10,489	11,656	12,781	13,836	14,827	15,843	17,380	18,973	20,369	22,171	23,664
PurchEnergyByComp	Wind PPA		(MWH)	71,857	71,532	71,913	71,728	71,933	71,616	72,041	71,498	71,764	71,728	72,034	71,857	71,532	71,498	71,976	71,933	71,616	71,857	71,681	71,763	71,728
PurchCap	CROD OFF		(MW)	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0
PurchCap	CROD ON		(MW)	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0
PurchCap	OWEF		(MW)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
PurchCap	Wind PPA		(MW)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
PurchEnergyCost	Wind PPA		($/MWH)	$60.05	$61.19	$62.35	$63.54	$64.75	$65.98	$67.23	$68.51	$69.81	$71.13	$72.49	$73.86	$75.27	$76.70	$78.15	$79.64	$81.15	$82.69	$84.27	$85.87	$87.50
AvgMktPurchEnergyCost	Mkt Purchases		($/MWH)	$31.75	$34.51	$35.53	$37.18	$38.79	$38.13	$39.15	$39.30	$40.50	$41.41	$42.35	$42.25	$42.42	$41.96	$43.32	$44.81	$47.46	$47.40	$48.03	$49.99	$50.22
AvgMktSalesEnergyRev	Mkt Sales		($/MWH)	$34.80	$34.97	$35.66	$35.61	$36.03	$36.64	$37.82	$38.52	$39.55	$40.41	$40.42	$40.65	$41.53	$41.88	$43.64	$44.97	$46.15	$48.73	$49.47	$50.56	$51.65
PurchEnergyCost	CROD OFF		($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
PurchEnergyCost	CROD ON		($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
PurchEnergyCost	OWEF		($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
PurchEnergyCost	Wind PPA		($)	$4,315,013	$4,377,132	$4,484,019	$4,557,483	$4,657,350	$4,724,938	$4,843,229	$4,898,078	$5,009,683	$5,102,340	$5,221,448	$5,307,601	$5,384,000	$5,483,645	$5,625,210	$5,728,669	$5,811,796	$5,942,124	$6,040,221	$6,162,038	$6,276,018
RPU Wind Energy for Native Load			(MWH)	608	879	1,518	2,013	2,526	2,903	3,318	4,491	5,031	5,770	6,354	7,276	8,501	10,660	12,056	13,413	15,666	16,159	18,570	20,591	23,091
RPU Renewable Energy Serving Native Load			(%)	54%	50%	46%	44%	42%	41%	38%	35%	34%	32%	32%	31%	30%	29%	29%	28%	28%	27%	26%	26%	26%
RPU Total Renewable Energy Available			(%)	276%	247%	212%	190%	172%	162%	148%	128%	117%	108%	102%	94%	86%	77%	72%	67%	63%	58%	53%	50%	47%
RPU Total Fixed O&M			($)	$6,114,260	$6,114,260	$6,114,560	$6,114,260	$6,114,260	$6,114,260	$6,114,210	$6,114,609	$6,114,260	$6,114,260	$6,114,210	$6,114,260	$6,114,260	$6,114,609	$6,114,210	$6,114,260	$6,114,260	$6,114,260	$6,114,560	$6,114,260	$6,114,260
RPU Total Variable O&M			($)	$42,543	$57,884	$57,273	$64,263	$80,573	$92,268	$101,209	$113,153	$119,100	$126,676	$266,783	$272,282	$296,087	$299,678	$331,056	$343,806	$358,803	$414,627	$408,008	$439,869	$468,478
RPU Total Fuel			($)	$604,003	$713,190	$874,228	$986,532	$1,096,894	$1,300,772	$1,425,053	$1,563,793	$1,777,220	$1,966,300	$2,057,939	$2,133,335	$2,307,881	$2,370,162	$2,713,463	$2,988,571	$3,536,310	$4,000,357	$4,168,723	$4,400,778	$4,757,396
RPU Total Mkt Purchases			($)	$56,592	$100,746	$174,752	$260,778	$377,832	$348,215	$487,947	$745,890	$903,264	$1,090,485	$1,168,208	$1,421,232	$1,659,926	$2,111,975	$2,372,263	$2,762,767	$3,076,886	$3,421,470	$4,222,700	$4,950,153	$5,483,603
RPU Total Wind Cost			($)	$4,315,013	$4,377,132	$4,484,019	$4,557,483	$4,657,350	$4,724,938	$4,843,229	$4,898,078	$5,009,683	$5,102,340	$5,221,448	$5,307,601	$5,384,000	$5,483,645	$5,625,210	$5,728,669	$5,811,796	$5,942,124	$6,040,221	$6,162,038	$6,276,018
RPU Total Mkt Wind Rev			($)	$2,479,521	$2,470,608	$2,510,128	$2,482,750	$2,500,428	$2,517,314	$2,599,438	$2,581,253	$2,639,198	$2,665,457	$2,654,696	$2,625,252	$2,617,739	$2,547,913	$2,615,185	$2,631,523	$2,582,254	$2,714,242	$2,627,375	$2,587,011	$2,512,299
RPU Total Cost			($)	$8,652,891	$8,892,605	$9,194,703	$9,500,566	$9,826,481	$10,063,140	$10,372,210	$10,854,270	$11,284,330	$11,734,604	$12,173,892	$12,623,457	$13,144,414	$13,832,157	$14,541,017	$15,306,549	$16,315,801	$17,178,596	$18,326,837	$19,480,087	$20,587,456
RPU Total Cost w/o Wind			($)	$6,878,805	$7,048,679	$7,291,028	$7,522,240	$7,780,528	$7,978,519	$8,269,208	$8,707,428	$9,129,746	$9,535,245	$9,883,005	$10,244,988	$10,727,618	$11,352,099	$12,061,477	$12,817,099	$13,831,005	$14,718,463	$15,834,520	$16,989,922	$18,056,701
Cost of Wind to RPU			($)	($1,774,085)	($1,843,926)	($1,903,675)	($1,978,327)	($2,045,953)	($2,084,621)	($2,103,002)	($2,146,842)	($2,154,584)	($2,199,360)	($2,290,886)	($2,378,470)	($2,416,795)	($2,480,058)	($2,479,541)	($2,489,450)	($2,484,796)	($2,460,133)	($2,492,317)	($2,490,165)	($2,530,755)
NPV of Cost of Wind to RPU @ 6.0%			**($)**	**($25,490,269)**																				

Rochester Public Utilities

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Renewable Energy Requirements Analysis

Data Item	UnitDescription	UnitCatego	UOM	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
PeakLoad			(MW)	292.0	296.8	301.7	306.5	311.4	316.2	321.1	325.9	330.8	335.6	340.5	345.3	350.2	355.0	359.9	364.7	369.6	374.4	379.3	384.1	389.0
EnergyDemand			(MWH)	1,470,894	1,499,330	1,527,771	1,556,212	1,584,648	1,613,083	1,641,525	1,669,959	1,698,404	1,726,845	1,755,281	1,783,719	1,812,166	1,840,600	1,869,039	1,897,478	1,925,917	1,954,353	1,982,801	2,011,238	2,039,677
MarketPurchase			(MWH)	2,454	3,854	6,486	9,139	12,271	12,092	15,836	23,511	27,332	32,121	33,937	40,960	47,634	60,999	66,827	75,202	80,723	88,362	106,511	119,604	132,256
CostOfMarketPurchases			($)	$79,959	$134,542	$231,276	$339,160	$471,065	$463,633	$619,822	$920,350	$1,101,070	$1,325,037	$1,427,947	$1,719,991	$2,006,142	$2,561,650	$2,896,576	$3,375,966	$3,831,480	$4,179,285	$5,131,710	$5,967,480	$6,646,892
MaxCap	Cascade Creek1	CT Gas	(MW)	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
MaxCap	Cascade Creek2	CT Gas	(MW)	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0
MaxCap	Lake Zumbro	Hydro Run	(MW)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
MaxCap	Silver Lake1	ST Coal	(MW)	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
MaxCap	Silver Lake2	ST Coal	(MW)	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
MaxCap	Silver Lake3	ST Coal	(MW)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
MaxCap	Silver Lake4	ST Coal	(MW)	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
UnitGeneration	Cascade Creek1	CT Gas	(MWH)	300	390	150	165	195	45	90	30	154	135	330	880	525	780	1,503	1,209	2,348	1,945	2,010	2,932	4,237
UnitGeneration	Cascade Creek2	CT Gas	(MWH)	1,550	2,876	1,110	981	2,932	3,166	3,809	4,542	4,325	4,280	23,340	22,964	25,758	25,899	28,145	29,129	27,889	33,970	33,054	35,957	37,293
UnitGeneration	Lake Zumbro	Hydro Run	(MWH)	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411
UnitGeneration	Silver Lake1	ST Coal	(MWH)	33	509	32		79	170	33		193	233	141	448	191	113	365	298	896	815	747	927	718
UnitGeneration	Silver Lake2	ST Coal	(MWH)					24	112			129	235		454	64		151	166	642	537	446	708	445
UnitGeneration	Silver Lake3	ST Coal	(MWH)	5,714	6,689	7,959	9,334	9,101	10,129	11,485	10,878	11,179	11,591	6,598	6,963	6,952	6,114	7,499	7,778	9,192	10,000	10,418	9,037	8,986
UnitGeneration	Silver Lake4	ST Coal	(MWH)	5,870	4,647	8,751	9,426	9,163	10,983	10,891	12,466	15,040	16,581	5,980	5,590	6,509	7,451	6,503	8,137	11,146	10,903	12,056	11,906	13,159
CapacityFactor	Cascade Creek1	CT Gas	(%)	0.13	0.16	0.06	0.07	0.08	0.02	0.04	0.01	0.07	0.06	0.14	0.37	0.22	0.33	0.63	0.51	0.99	0.82	0.85	1.24	1.79
CapacityFactor	Cascade Creek2	CT Gas	(%)	0.37	0.68	0.26	0.23	0.70	0.75	0.90	1.08	1.03	1.02	5.54	5.46	6.13	6.16	6.68	6.93	6.63	8.08	7.84	8.55	8.87
CapacityFactor	Lake Zumbro	Hydro Run	(%)	76.55	76.55	76.34	76.55	76.55	76.55	76.34	76.55	76.55	76.55	76.34	76.55	76.55	76.55	76.34	76.55	76.55	76.55	76.34	76.55	76.55
CapacityFactor	Silver Lake1	ST Coal	(%)	0.04	0.61	0.04	0.00	0.09	0.20	0.04	0.00	0.23	0.28	0.17	0.54	0.23	0.14	0.44	0.36	1.08	0.98	0.89	1.11	0.86
CapacityFactor	Silver Lake2	ST Coal	(%)	0.00	0.00	0.00	0.00	0.02	0.09	0.00	0.00	0.11	0.19	0.00	0.37	0.05	0.00	0.12	0.14	0.52	0.44	0.36	0.58	0.36
CapacityFactor	Silver Lake3	ST Coal	(%)	2.72	3.18	3.78	4.44	4.33	4.82	5.45	5.17	5.32	5.51	3.13	3.31	3.31	2.91	3.56	3.70	4.37	4.76	4.94	4.30	4.27
CapacityFactor	Silver Lake4	ST Coal	(%)	1.49	1.18	2.21	2.39	2.32	2.79	2.76	3.16	3.82	4.21	1.51	1.42	1.65	1.89	1.65	2.06	2.83	2.77	3.05	3.02	3.34
FixedOMCost	Lake Zumbro	Hydro Run	($)	$18,510	$18,510	$18,809	$18,510	$18,510	$18,510	$18,460	$18,859	$18,510	$18,510	$18,460	$18,510	$18,510	$18,859	$18,460	$18,510	$18,510	$18,510	$18,809	$18,510	$18,510
FixedOMCost	Silver Lake1	ST Coal	($)	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050
FixedOMCost	Silver Lake2	ST Coal	($)	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600
FixedOMCost	Silver Lake3	ST Coal	($)	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600
FixedOMCost	Silver Lake4	ST Coal	($)	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500
VarOMCost	Cascade Creek1	CT Gas	($)	$2,916	$3,791	$1,458	$1,604	$1,895	$437	$875	$292	$1,495	$1,312	$3,208	$8,553	$5,103	$7,582	$14,606	$11,749	$22,822	$18,905	$19,534	$28,496	$41,181
VarOMCost	Cascade Creek2	CT Gas	($)	$15,066	$27,954	$10,789	$9,532	$28,496	$30,778	$37,025	$44,151	$42,036	$41,599	$226,865	$223,214	$250,364	$251,742	$273,567	$283,132	$271,081	$330,187	$321,288	$349,499	$362,484
VarOMCost	Silver Lake1	ST Coal	($)	$98	$1,521	$96		$236	$508	$100		$578	$696	$421	$1,340	$572	$339	$1,093	$891	$2,679	$2,438	$2,233	$2,773	$2,147
VarOMCost	Silver Lake2	ST Coal	($)					$72	$334			$386	$704		$1,358	$191		$451	$498	$1,921	$1,607	$1,333	$2,117	$1,330
VarOMCost	Silver Lake3	ST Coal	($)	$17,084	$19,999	$23,797	$27,910	$27,211	$30,285	$34,339	$32,524	$33,426	$34,658	$19,728	$20,819	$20,787	$18,282	$22,423	$23,257	$27,484	$29,901	$31,148	$27,022	$26,868
VarOMCost	Silver Lake4	ST Coal	($)	$17,550	$13,896	$26,165	$28,182	$27,399	$32,841	$32,564	$37,274	$44,969	$49,579	$17,882	$16,715	$19,462	$22,278	$19,444	$24,331	$33,328	$32,601	$36,048	$35,600	$39,344
ReceiptsFuelCost	Cascade Creek1	CT Gas	($)	$20,615	$26,596	$10,468	$11,335	$13,514	$3,221	$6,409	$2,168	$11,469	$10,223	$24,617	$64,260	$38,542	$57,880	$116,970	$97,981	$197,869	$168,884	$180,336	$267,159	$390,456
ReceiptsFuelCost	Cascade Creek2	CT Gas	($)	$77,063	$141,894	$56,028	$49,010	$146,460	$160,796	$195,942	$238,305	$232,546	$235,515	$1,262,974	$1,209,828	$1,373,077	$1,395,580	$1,589,365	$1,709,012	$1,696,163	$2,133,950	$2,131,073	$2,353,992	$2,482,375
ReceiptsFuelCost	Silver Lake1	ST Coal	($)	$1,782	$28,373	$1,838		$4,809	$10,659	$2,150		$13,233	$16,415	$10,229	$33,504	$14,731	$8,990	$29,846	$25,074	$77,648	$72,777	$68,648	$87,815	$70,027
ReceiptsFuelCost	Silver Lake2	ST Coal	($)					$1,518	$7,275			$9,179	$17,242		$35,268	$5,119		$12,812	$14,544	$57,835	$49,840	$42,576	$69,651	$45,054
ReceiptsFuelCost	Silver Lake3	ST Coal	($)	$261,125	$314,716	$385,693	$465,695	$467,527	$535,848	$625,703	$610,358	$646,085	$689,920	$404,314	$439,244	$451,636	$409,069	$516,856	$552,193	$672,144	$753,310	$808,215	$722,101	$739,387
ReceiptsFuelCost	Silver Lake4	ST Coal	($)	$271,287	$221,138	$428,861	$475,552	$476,065	$587,643	$600,069	$707,397	$879,013	$998,087	$370,610	$356,634	$427,631	$504,098	$453,256	$584,213	$824,291	$830,517	$945,820	$961,957	$1,094,895
CO2	Cascade Creek1	CT Gas	(LBS)	545,822	709,569	272,911	300,202	354,784	81,873	163,747	54,582	279,880	245,620	600,404	1,600,909	955,188	1,419,137	2,734,038	2,199,148	4,271,928	3,538,716	3,656,468	5,334,024	7,708,398
CO2	Cascade Creek2	CT Gas	(LBS)	2,028,179	3,763,155	1,452,438	1,283,209	3,836,143	4,143,341	4,984,342	5,943,525	5,658,820	5,600,019	30,540,481	30,048,971	33,703,944	33,889,387	36,827,490	38,115,120	36,492,783	44,449,648	43,251,574	47,049,358	48,797,375
CO2	Silver Lake1	ST Coal	(LBS)	95,132	1,471,368	92,542		228,432	491,598	96,289		558,710	672,935	407,273	1,295,865	553,277	327,870	1,056,683	861,797	2,590,962	2,357,646	2,159,285	2,682,076	2,076,706
CO2	Silver Lake2	ST Coal	(LBS)					72,103	335,529			387,536	706,868		1,364,074	192,276		453,592	499,884	1,929,782	1,614,605	1,339,193	2,127,311	1,336,109
CO2	Silver Lake3	ST Coal	(LBS)	13,941,633	16,320,495	19,419,791	22,776,171	22,206,075	24,714,164	28,022,405	26,541,432	27,277,609	28,283,108	16,099,412	16,989,725	16,963,297	14,919,281	18,298,591	18,978,667	22,428,211	24,401,207	25,418,859	22,051,195	21,925,896
CO2	Silver Lake4	ST Coal	(LBS)	14,483,914	11,467,857	21,593,531	23,258,387	22,611,685	27,102,789	26,874,684	30,761,450	37,111,941	40,916,351	14,757,350	13,794,618	16,061,695	18,385,230	16,046,985	20,079,570	27,505,003	26,905,405	29,749,695	29,380,043	32,470,284
NOx	Cascade Creek1	CT Gas	(LBS)	423	550	212	233	275	64	127	42	217	191	466	1,242	741	1,101	2,121	1,706	3,314	2,745	2,837	4,138	5,980
NOx	Cascade Creek2	CT Gas	(LBS)	1,676	3,109	1,200	1,060	3,169	3,423	4,118	4,910	4,675	4,626	25,231	24,825	27,844	27,997	30,425	31,488	30,148	36,721	35,732	38,869	40,313
NOx	Silver Lake1	ST Coal	(LBS)	196	3,027	190		470	1,011	198		1,149	1,384	838	2,666	1,138	675	2,174	1,773	5,330	4,850	4,442	5,518	4,272
NOx	Silver Lake2	ST Coal	(LBS)					148	690			797	1,454		2,806	396		933	1,028	3,970	3,322	2,755	4,377	2,749
NOx	Silver Lake3	ST Coal	(LBS)	28,682	33,576	39,953	46,858	45,685	50,845	57,651	54,604	56,119	58,187	33,122	34,953	34,899	30,694	37,646	39,045	46,142	50,201	52,295	45,366	45,109
NOx	Silver Lake4	ST Coal	(LBS)	29,798	23,593	44,425	47,850	46,519	55,759	55,290	63,286	76,351	84,178	30,361	28,380	33,044	37,824	33,014	41,310	56,587	55,353	61,205	60,444	66,802
SO2	Cascade Creek1	CT Gas	(LBS)	5	7	3	3	4	1	2	1	3	2	6	16	10	14	27	22	43	35	36	53	77
SO2	Cascade Creek2	CT Gas	(LBS)	24	45	17	15	46	49	59	71	68	67	364	359	402	404	439	455	435	530	516	561	582
SO2	Silver Lake1	ST Coal	(LBS)	724	11,193	704		1,738	3,740	733		4,250	5,119	3,098	9,858	4,209	2,494	8,039	6,556	19,711	17,936	16,427	20,404	15,798
SO2	Silver Lake2	ST Coal	(LBS)					549	2,553			2,948	5,377		10,377	1,463		3,451	3,803	14,681	12,283	10,188	16,183	10,164
SO2	Silver Lake3	ST Coal	(LBS)	106,060	124,157	147,735	173,268	168,931	188,012	213,179	201,912	207,513	215,162	122,475	129,248	129,047	113,498	139,205	144,379	170,621	185,631	193,372	167,753	166,800
SO2	Silver Lake4	ST Coal	(LBS)	110,186	87,241	164,272	176,937	172,017	206,183	204,448	234,016	282,327	311,269	112,266	104,942	122,189	139,865	122,077	152,754	209,243	204,682	226,319	223,507	247,016
PurchEnergyByComp	CROD OFF		(MWH)	876,738	893,782	910,462	925,618	939,361	956,178	969,992	985,977	1,000,777	1,015,453	1,027,143	1,043,176	1,056,503	1,067,953	1,082,078	1,092,351	1,104,245	1,115,374	1,122,715	1,134,693	1,144,318
PurchEnergyByComp	CROD ON		(MWH)	561,804	569,543	574,790	582,791	592,023	600,272	608,842	611,306	617,481	623,521	633,959	637,256	641,866	644,069	647,759	653,960	657,985	660,073	661,067	660,004	661,292
PurchEnergyByComp	OWEF		(MWH)	3,019	3,628	4,619	5,345	6,087	6,524	7,135	7,836	8,383	9,282	10,440	11,616	12,751	13,809	14,797	15,835	17,438	18,960	20,366	22,058	23,562

Rochester Public Utilities
Project 49188 - Infrastructure Update
Renewable Energy Requirements Analysis

Data Item	UnitDescription	UnitCatego	UOM	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
PurchCap	CROD OFF		(MW)	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0
PurchCap	CROD ON		(MW)	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0
PurchCap	OWEF		(MW)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
PurchEnergyCost	CROD OFF		($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
PurchEnergyCost	CROD ON		($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
PurchEnergyCost	OWEF		($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
RPU Wind Energy for Native Load			(MWH)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RPU Renewable Energy Serving Native Load			(%)	51%	47%	42%	39%	37%	35%	33%	29%	27%	26%	25%	24%	23%	21%	20%	19%	19%	18%	17%	16%	16%
RPU Total Renewable Energy Available			(%)	51%	47%	42%	39%	37%	35%	33%	29%	27%	26%	25%	24%	23%	21%	20%	19%	19%	18%	17%	16%	16%
RPU Total Fixed O&M			($)	$6,114,260	$6,114,260	$6,114,560	$6,114,260	$6,114,260	$6,114,260	$6,114,210	$6,114,609	$6,114,260	$6,114,260	$6,114,210	$6,114,260	$6,114,260	$6,114,609	$6,114,210	$6,114,260	$6,114,260	$6,114,260	$6,114,560	$6,114,260	$6,114,260
RPU Total Variable O&M			($)	$52,715	$67,161	$62,305	$67,228	$85,310	$95,183	$104,903	$114,240	$122,889	$128,547	$268,104	$271,998	$296,480	$300,222	$331,585	$343,857	$359,314	$415,640	$411,583	$445,507	$473,354
RPU Total Fuel			($)	$631,872	$732,717	$882,887	$1,001,592	$1,109,893	$1,305,442	$1,430,273	$1,558,228	$1,791,526	$1,967,401	$2,072,745	$2,138,737	$2,310,736	$2,375,617	$2,719,105	$2,983,016	$3,525,950	$4,009,278	$4,176,668	$4,462,675	$4,822,194
RPU Total Mkt Purchases			($)	$79,959	$134,542	$231,276	$339,160	$471,065	$463,633	$619,822	$920,350	$1,101,070	$1,325,037	$1,427,947	$1,719,991	$2,006,142	$2,561,650	$2,896,576	$3,375,966	$3,831,480	$4,179,285	$5,131,710	$5,967,480	$6,646,892
RPU Total Wind Cost			($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
RPU Total Mkt Wind Rev			($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
RPU Total Cost			($)	$6,878,805	$7,048,679	$7,291,028	$7,522,240	$7,780,528	$7,978,519	$8,269,208	$8,707,428	$9,129,746	$9,535,245	$9,883,005	$10,244,988	$10,727,618	$11,352,099	$12,061,477	$12,817,099	$13,831,005	$14,718,463	$15,834,520	$16,989,922	$18,056,701

Rochester Public Utilities
Project 49188 - Infrastructure Update
Renewable Energy Requirements Analysis

Data Item	UnitDescription	UnitCategc	UOM	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
PeakLoad			(MW)	292.0	296.8	301.7	306.5	311.4	316.2	321.1	325.9	330.8	335.6	340.5	345.3	350.2	355.0	359.9	364.7	369.6	374.4	379.3	384.1	389.0
EnergyDemand			(MWH)	1,470,894	1,499,330	1,527,771	1,556,212	1,584,648	1,613,083	1,641,525	1,669,959	1,698,404	1,726,845	1,755,281	1,783,719	1,812,166	1,840,600	1,869,039	1,897,478	1,925,917	1,954,353	1,982,801	2,011,238	2,039,677
MarketPurchase			(MWH)	1,782	2,919	7,057	9,146	11,546	11,324	14,269	21,264	26,724	29,448	30,091	35,894	40,458	53,011	58,473	65,322	69,889	76,416	93,139	104,421	112,991
CostOfMarketPurchases			($)	$56,592	$100,742	$427,383	$558,712	$717,285	$713,977	$919,019	$1,372,198	$1,825,866	$2,008,785	$2,073,698	$2,490,014	$2,799,809	$3,705,147	$4,244,417	$4,867,028	$5,523,675	$6,120,650	$7,675,967	$9,029,943	$9,792,577
MarketSale			(MWH)	71,249	70,654	69,884	69,065	68,839	68,303	68,256	66,543	66,036	65,634	65,175	64,010	62,712	60,569	59,479	58,125	55,710	55,002	53,149	51,035	48,903
RevenueFromMarketSales			($)	$2,479,523	$2,470,629	$4,032,467	$4,081,444	$4,201,755	$4,320,084	$4,473,494	$4,502,362	$4,573,397	$4,670,795	$4,677,080	$4,695,632	$4,728,121	$4,675,111	$4,749,849	$4,776,505	$4,761,078	$4,991,297	$5,015,570	$4,998,417	$4,995,586
MaxCap	Cascade Creek1	CT Gas	(MW)	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
MaxCap	Cascade Creek2	CT Gas	(MW)	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0
MaxCap	Lake Zumbro	Hydro Run	(MW)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
MaxCap	Silver Lake1	ST Coal	(MW)	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
MaxCap	Silver Lake2	ST Coal	(MW)	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
MaxCap	Silver Lake3	ST Coal	(MW)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
MaxCap	Silver Lake4	ST Coal	(MW)	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
UnitGeneration	Cascade Creek1	CT Gas	(MWH)			285	600	510	429	759	240	750	670	1,034	2,607	1,958	4,644	4,143	4,042	5,066	5,718	6,287	6,577	8,758
UnitGeneration	Cascade Creek2	CT Gas	(MWH)	500	1,976	12,977	13,764	16,340	17,745	18,509	21,155	20,360	23,167	25,361	25,262	28,969	28,603	31,010	32,688	32,650	38,864	37,971	40,848	43,470
UnitGeneration	Lake Zumbro	Hydro Run	(MWH)	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411
UnitGeneration	Silver Lake1	ST Coal	(MWH)	33	509				69				24		172		30	36		149	81	72	216	144
UnitGeneration	Silver Lake2	ST Coal	(MWH)												95					88	74		202	104
UnitGeneration	Silver Lake3	ST Coal	(MWH)	6,975	7,501	1,199	1,891	1,372	2,488	3,137	2,503	2,875	3,295	3,565	3,991	3,722	2,732	3,618	3,598	4,683	4,795	4,572	3,322	3,803
UnitGeneration	Silver Lake4	ST Coal	(MWH)	5,595	4,926	492	804	937	1,455	1,823	1,641	2,158	2,794	3,595	2,709	4,051	1,877	1,670	3,069	5,136	4,428	4,726	4,473	5,094
CapacityFactor	Cascade Creek1	CT Gas	(%)	0.00	0.00	0.12	0.25	0.22	0.18	0.32	0.10	0.32	0.28	0.44	1.10	0.83	1.96	1.75	1.71	2.14	2.42	2.65	2.78	3.70
CapacityFactor	Cascade Creek2	CT Gas	(%)	0.12	0.47	3.08	3.27	3.89	4.22	4.39	5.03	4.84	5.51	6.01	6.01	6.89	6.80	7.35	7.77	7.76	9.24	9.01	9.71	10.34
CapacityFactor	Lake Zumbro	Hydro Run	(%)	76.55	76.55	76.34	76.55	76.55	76.55	76.34	76.55	76.55	76.55	76.34	76.55	76.55	76.55	76.34	76.55	76.55	76.55	76.34	76.55	76.55
CapacityFactor	Silver Lake1	ST Coal	(%)	0.04	0.61	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.03	0.00	0.21	0.00	0.04	0.04	0.00	0.18	0.10	0.09	0.26	0.17
CapacityFactor	Silver Lake2	ST Coal	(%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.07	0.06	0.00	0.16	0.08
CapacityFactor	Silver Lake3	ST Coal	(%)	3.32	3.57	0.57	0.90	0.65	1.18	1.49	1.19	1.37	1.57	1.69	1.90	1.77	1.30	1.72	1.71	2.23	2.28	2.17	1.58	1.81
CapacityFactor	Silver Lake4	ST Coal	(%)	1.42	1.25	0.12	0.20	0.24	0.37	0.46	0.42	0.55	0.71	0.91	0.69	1.03	0.48	0.42	0.78	1.30	1.12	1.20	1.13	1.29
FixedOMCost	Lake Zumbro	Hydro Run	($)	$18,510	$18,510	$18,809	$18,510	$18,510	$18,510	$18,460	$18,859	$18,510	$18,510	$18,460	$18,510	$18,510	$18,859	$18,460	$18,510	$18,510	$18,510	$18,809	$18,510	$18,510
FixedOMCost	Silver Lake1	ST Coal	($)	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050
FixedOMCost	Silver Lake2	ST Coal	($)	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600
FixedOMCost	Silver Lake3	ST Coal	($)	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600
FixedOMCost	Silver Lake4	ST Coal	($)	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500
VarOMCost	Cascade Creek1	CT Gas	($)			$2,770	$5,832	$4,957	$4,174	$7,380	$2,333	$7,287	$6,510	$10,055	$25,343	$19,028	$45,139	$40,267	$39,284	$49,238	$55,584	$61,114	$63,925	$85,129
VarOMCost	Cascade Creek2	CT Gas	($)	$4,860	$19,206	$126,135	$133,789	$158,823	$172,484	$179,909	$205,623	$197,899	$225,178	$246,505	$245,549	$281,574	$278,021	$301,413	$317,730	$317,361	$377,761	$369,081	$397,040	$422,525
VarOMCost	Silver Lake1	ST Coal	($)	$98	$1,521				$205				$72		$515		$89	$109		$447	$242	$215	$645	$432
VarOMCost	Silver Lake2	ST Coal	($)												$283					$264	$220		$604	$311
VarOMCost	Silver Lake3	ST Coal	($)	$20,855	$22,428	$3,584	$5,654	$4,104	$7,439	$9,380	$7,485	$8,597	$9,851	$10,659	$11,932	$11,128	$8,168	$10,817	$10,758	$14,002	$14,336	$13,669	$9,933	$11,371
VarOMCost	Silver Lake4	ST Coal	($)	$16,729	$14,729	$1,471	$2,404	$2,801	$4,349	$5,450	$4,907	$6,453	$8,353	$10,750	$8,100	$12,112	$5,613	$4,994	$9,177	$15,357	$13,239	$14,130	$13,376	$15,231
ReceiptsFuelCost	Cascade Creek1	CT Gas	($)			$19,879	$41,485	$35,331	$30,131	$54,221	$17,599	$56,237	$51,081	$77,475	$190,652	$144,353	$345,071	$322,875	$327,520	$423,996	$496,469	$562,166	$596,639	$806,259
ReceiptsFuelCost	Cascade Creek2	CT Gas	($)	$24,861	$97,484	$655,988	$686,305	$817,535	$900,000	$951,097	$1,109,984	$1,096,992	$1,272,994	$1,373,803	$1,332,765	$1,547,476	$1,546,135	$1,756,618	$1,924,960	$1,996,367	$2,457,404	$2,463,728	$2,695,205	$2,918,326
ReceiptsFuelCost	Silver Lake1	ST Coal	($)	$1,782	$28,373				$4,295				$1,693		$12,877		$2,363	$2,973		$12,944	$7,231	$6,620	$20,431	$14,078
ReceiptsFuelCost	Silver Lake2	ST Coal	($)												$7,363					$7,949	$6,824		$19,870	$10,536
ReceiptsFuelCost	Silver Lake3	ST Coal	($)	$318,770	$352,931	$58,091	$94,330	$70,504	$131,620	$170,923	$140,459	$166,157	$196,103	$218,438	$251,750	$241,784	$182,772	$249,321	$255,423	$342,442	$361,118	$354,677	$265,408	$312,917
ReceiptsFuelCost	Silver Lake4	ST Coal	($)	$258,591	$234,403	$24,112	$40,565	$48,664	$77,828	$100,431	$93,122	$126,136	$168,156	$222,807	$172,817	$266,131	$127,017	$116,408	$220,360	$379,817	$337,266	$370,741	$361,425	$423,848
CO_2	Cascade Creek1	CT Gas	(LBS)			518,531	1,091,644	927,897	781,242	1,381,472	436,658	1,363,998	1,218,600	1,882,156	4,743,777	3,561,752	8,449,211	7,537,326	7,353,287	9,216,364	10,404,222	11,439,432	11,965,582	15,934,639
CO_2	Cascade Creek2	CT Gas	(LBS)	654,251	2,585,502	16,980,281	18,010,628	21,380,643	23,219,699	24,219,320	27,680,826	26,641,005	30,313,421	33,184,391	33,055,751	37,905,366	37,427,052	40,576,091	42,772,647	42,722,924	50,854,036	49,685,443	53,449,350	56,880,160
CO_2	Silver Lake1	ST Coal	(LBS)	95,132	1,471,368				198,091				69,406		498,040		86,167	105,248		431,914	234,247	208,219	624,015	417,500
CO_2	Silver Lake2	ST Coal	(LBS)												284,795					265,254	221,061		606,870	312,448
CO_2	Silver Lake3	ST Coal	(LBS)	17,019,292	18,302,204	2,924,981	4,613,606	3,348,794	6,070,502	7,654,980	6,108,020	7,015,288	8,039,296	8,698,017	9,737,537	9,081,335	6,665,946	8,826,919	8,778,930	11,426,690	11,698,728	11,155,094	8,105,558	9,279,648
CO_2	Silver Lake4	ST Coal	(LBS)	13,806,101	12,155,802	1,214,057	1,983,947	2,311,355	3,589,488	4,497,918	4,049,511	5,325,537	6,893,626	8,871,847	6,684,543	9,995,855	4,632,529	4,121,328	7,573,899	12,673,777	10,926,014	11,661,338	11,038,676	12,569,746
NO_x	Cascade Creek1	CT Gas	(LBS)			402	847	720	606	1,072	339	1,058	945	1,460	3,680	2,763	6,555	5,847	5,705	7,150	8,071	8,874	9,283	12,362
NO_x	Cascade Creek2	CT Gas	(LBS)	541	2,136	14,028	14,879	17,663	19,183	20,008	22,868	22,009	25,043	27,415	27,309	31,315	30,920	33,521	35,336	35,295	42,012	41,047	44,156	46,991
NO_x	Silver Lake1	ST Coal	(LBS)	196	3,027				408				143		1,025		177	217		889	482	428	1,284	859
NO_x	Silver Lake2	ST Coal	(LBS)												586					546	455		1,249	643
NO_x	Silver Lake3	ST Coal	(LBS)	35,014	37,653	6,018	9,492	6,890	12,489	15,749	12,566	14,433	16,539	17,895	20,033	18,683	13,714	18,160	18,061	23,508	24,068	22,950	16,676	19,091
NO_x	Silver Lake4	ST Coal	(LBS)	28,404	25,008	2,498	4,082	4,755	7,385	9,254	8,331	10,956	14,182	18,252	13,752	20,565	9,531	8,479	15,582	26,074	22,478	23,991	22,710	25,860
SO_2	Cascade Creek1	CT Gas	(LBS)			5	11	9	8	14	4	14	12	19	47	36	84	75	73	92	104	114	119	159
SO_2	Cascade Creek2	CT Gas	(LBS)	8	31	203	215	255	277	289	330	318	362	396	394	452	447	484	510	510	607	593	638	679
SO_2	Silver Lake1	ST Coal	(LBS)	724	11,193				1,507				528		3,789		656	801		3,286	1,782	1,584	4,747	3,176
SO_2	Silver Lake2	ST Coal	(LBS)												2,167					2,018	1,682		4,617	2,377
SO_2	Silver Lake3	ST Coal	(LBS)	129,473	139,233	22,252	35,098	25,476	46,181	58,235	46,466	53,368	61,159	66,170	74,078	69,086	50,711	67,150	66,785	86,928	88,997	84,862	61,663	70,594
SO_2	Silver Lake4	ST Coal	(LBS)	105,029	92,475	9,236	15,093	17,584	27,307	34,218	30,806	40,514	52,443	67,492	50,852	76,043	35,242	31,353	57,618	96,415	83,119	88,713	83,976	95,624
CO_2	Cascade Creek1	CT Gas	($)			$7,778	$17,466	$15,774	$14,062	$25,557	$8,515	$27,280	$24,981	$39,525	$101,991	$78,359	$194,332	$177,127	$176,479	$230,409	$275,712	$320,304	$352,985	$486,006

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Data Item	UnitDescription	UnitCatego	UOM	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
CO2	Cascade Creek2	CT Gas	($)			$254,704	$288,170	$363,471	$417,955	$448,058	$539,776	$532,820	$621,425	$696,879	$710,719	$833,945	$860,823	$953,539	$1,026,543	$1,068,101	$1,347,744	$1,391,194	$1,576,756	$1,734,846
CO2	Silver Lake1	ST Coal	($)						$3,566				$1,423		$10,708		$1,982	$2,473		$10,798	$6,208	$5,830	$18,408	$12,734
CO2	Silver Lake2	ST Coal	($)												$6,123					$6,631	$5,858		$17,903	$9,530
CO2	Silver Lake3	ST Coal	($)			$43,875	$73,818	$56,930	$109,269	$141,617	$119,106	$140,306	$164,806	$182,658	$209,357	$199,789	$153,317	$207,433	$210,694	$285,668	$310,016	$312,343	$239,114	$283,029
CO2	Silver Lake4	ST Coal	($)			$18,211	$31,743	$39,293	$64,611	$83,211	$78,965	$106,511	$141,319	$186,309	$143,718	$219,909	$106,548	$96,851	$181,774	$316,845	$289,540	$326,518	$325,641	$383,377
PurchEnergyByComp	CROD OFF		(MWH)	876,734	893,813	910,446	925,621	939,324	956,084	969,954	985,920	1,000,706	1,015,435	1,027,183	1,043,135	1,056,373	1,067,751	1,081,909	1,092,094	1,103,955	1,115,227	1,122,795	1,134,764	1,144,280
PurchEnergyByComp	CROD ON		(MWH)	562,051	569,653	574,999	582,825	592,020	600,253	608,794	611,163	617,400	623,387	633,829	637,168	641,822	644,031	647,679	653,830	657,852	659,891	661,171	660,279	661,161
PurchEnergyByComp	OWEF		(MWH)	3,203	3,741	4,875	5,485	6,092	6,512	7,082	7,705	8,292	9,119	10,351	11,426	12,582	13,581	14,592	15,615	17,131	18,593	20,122	21,997	23,633
PurchEnergyByComp	Wind PPA		(MWH)	71,857	71,532	71,913	71,728	71,933	71,616	72,041	71,498	71,764	71,728	72,034	71,857	71,532	71,498	71,976	71,933	71,616	71,857	71,681	71,763	71,728
PurchCap	CROD OFF		(MW)	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0
PurchCap	CROD ON		(MW)	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0	216.0
PurchCap	OWEF		(MW)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
PurchCap	Wind PPA		(MW)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
PurchEnergyCost	Wind PPA		($/MWH)	$60.05	$61.19	$62.35	$63.54	$64.75	$65.98	$67.23	$68.51	$69.81	$71.13	$72.49	$73.86	$75.27	$76.70	$78.15	$79.64	$81.15	$82.69	$84.27	$85.87	$87.50
AvgMktPurchEnergyCost	Mkt Purchases		($/MWH)	$31.75	$34.51	$60.56	$61.09	$62.13	$63.05	$64.41	$64.53	$68.32	$68.22	$68.91	$69.37	$69.20	$69.89	$72.59	$74.51	$79.04	$80.10	$82.41	$86.48	$86.67
AvgMktSalesEnergyRev	Mkt Sales		($/MWH)	$34.80	$34.97	$57.70	$59.10	$61.04	$63.25	$65.54	$67.66	$69.26	$71.16	$71.76	$73.36	$75.39	$77.19	$79.86	$82.18	$85.46	$90.75	$94.37	$97.94	$102.15
PurchEnergyCost	CROD OFF		($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
PurchEnergyCost	CROD ON		($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
PurchEnergyCost	OWEF		($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
PurchEnergyCost	Wind PPA		($)	$4,315,013	$4,377,132	$4,484,019	$4,557,483	$4,657,346	$4,724,935	$4,843,230	$4,898,077	$5,009,684	$5,102,340	$5,221,447	$5,307,602	$5,383,999	$5,483,649	$5,625,212	$5,728,668	$5,811,795	$5,942,123	$6,040,226	$6,162,040	$6,276,014
RPU Wind Energy for Native Load			(MWH)	608	879	2,029	2,663	3,094	3,314	3,784	4,955	5,727	6,094	6,859	7,848	8,820	10,929	12,497	13,808	15,906	16,854	18,533	20,728	22,825
RPU Renewable Energy Serving Native Load			(%)	54%	50%	48%	45%	42%	41%	39%	36%	34%	33%	32%	32%	31%	29%	29%	28%	28%	27%	26%	26%	26%
RPU Total Renewable Energy Available			(%)	276%	247%	213%	190%	172%	161%	147%	127%	116%	107%	102%	94%	86%	76%	72%	67%	62%	58%	53%	50%	46%
RPU Total Fixed O&M			($)	$6,114,260	$6,114,260	$6,114,560	$6,114,260	$6,114,260	$6,114,260	$6,114,210	$6,114,609	$6,114,260	$6,114,260	$6,114,210	$6,114,260	$6,114,260	$6,114,609	$6,114,210	$6,114,260	$6,114,260	$6,114,260	$6,114,560	$6,114,260	$6,114,260
RPU Total Variable O&M			($)	$42,543	$57,884	$133,961	$147,679	$170,684	$188,651	$202,120	$220,347	$220,235	$249,965	$277,969	$291,723	$323,843	$337,031	$357,600	$376,949	$396,668	$461,382	$458,209	$485,522	$534,999
RPU Total Fuel			($)	$604,003	$713,190	$758,069	$862,684	$972,033	$1,143,874	$1,276,672	$1,361,165	$1,445,522	$1,690,027	$1,892,522	$1,968,224	$2,199,744	$2,203,357	$2,448,196	$2,728,264	$3,163,514	$3,666,311	$3,757,931	$3,958,978	$4,485,963
RPU CO2 Emissions			($)	$0	$0	$324,568	$411,197	$475,468	$609,463	$698,443	$746,363	$806,917	$953,954	$1,105,372	$1,182,616	$1,332,002	$1,317,002	$1,437,423	$1,595,490	$1,918,452	$2,235,078	$2,356,188	$2,530,807	$2,909,523
RPU Total Mkt Purchases			($)	$56,592	$100,742	$427,383	$558,712	$717,285	$713,977	$919,019	$1,372,198	$1,825,866	$2,008,785	$2,073,698	$2,490,014	$2,799,809	$3,705,147	$4,244,417	$4,867,028	$5,523,675	$6,120,650	$7,675,967	$9,029,943	$9,792,577
RPU Total Wind Cost			($)	$4,315,013	$4,377,132	$4,484,019	$4,557,483	$4,657,346	$4,724,935	$4,843,230	$4,898,077	$5,009,684	$5,102,340	$5,221,447	$5,307,602	$5,383,999	$5,483,649	$5,625,212	$5,728,668	$5,811,795	$5,942,123	$6,040,226	$6,162,040	$6,276,014
RPU Total Mkt Wind Rev			($)	$2,479,523	$2,470,629	$4,032,467	$4,081,444	$4,201,755	$4,320,084	$4,473,494	$4,502,362	$4,573,397	$4,670,795	$4,677,080	$4,695,632	$4,728,121	$4,675,111	$4,749,849	$4,776,505	$4,761,078	$4,991,297	$5,015,570	$4,998,417	$4,995,586
RPU Total Cost			($)	$8,652,889	$8,892,580	$8,210,092	$8,570,572	$8,905,321	$9,175,075	$9,580,201	$10,210,397	$10,849,087	$11,448,537	$12,008,139	$12,658,807	$13,425,536	$14,485,684	$15,477,209	$16,634,154	$18,167,286	$19,548,506	$21,387,512	$23,283,134	$25,117,751
With CO2																								
RPU Total Cost w/o Wind			($)	$6,878,806	$7,048,674	$7,918,045	$8,298,625	$8,672,453	$9,011,921	$9,485,267	$10,150,789	$10,817,607	$11,410,644	$11,981,166	$12,605,544	$13,372,365	$14,453,130	$15,508,203	$16,737,190	$18,395,228	$19,996,990	$21,996,855	$24,013,516	$25,917,511
Cost of Wind to RPU			($)	($1,774,083)	($1,843,905)	($292,047)	($271,947)	($232,868)	($163,155)	($94,934)	($59,608)	($31,481)	($37,893)	($26,973)	($53,263)	($53,170)	($32,554)	$30,994	$103,036	$227,943	$448,483	$609,343	$730,382	$799,760
NPV of Cost of Wind to RPU @ 6.0%			**($)**	**($3,325,059)**																				

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Renewable Energy Requirements Analysis

Data Item	UnitDescription	UnitCatego	UOM	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
PeakLoad			(MW)	292.0	296.8	301.7	306.5	311.4	316.2	321.1	325.9	330.8	335.6	340.5	345.3	350.2	355.0	359.9	364.7	369.6	374.4	379.3	384.1	389.0
EnergyDemand			(MWH)	1,470,894	1,499,330	1,527,771	1,556,212	1,584,648	1,613,083	1,641,525	1,669,959	1,698,404	1,726,845	1,755,281	1,783,719	1,812,166	1,840,600	1,869,039	1,897,478	1,925,917	1,954,353	1,982,801	2,011,238	2039676.75
MarketPurchase			(MWH)	2,454	3,854	9,137	11,913	14,680	14,922	18,116	26,445	32,681	35,572	36,950	43,829	49,469	64,454	71,275	79,198	85,822	93,419	111,748	125,279	136203.0088
CostOfMarketPurchases			($)	$79,959	$134,537	$552,600	$733,345	$912,288	$948,532	$1,152,595	$1,701,484	$2,224,298	$2,406,955	$2,535,363	$3,016,229	$3,391,818	$4,505,640	$5,160,557	$5,874,986	$6,721,225	$7,443,582	$9,168,554	$10,767,146	$11,752,139
MaxCap	Cascade Creek1	CT Gas	(MW)	324.0	324.0	324.0	324.0	324.0	324.0	324.0	324.0	324.0	324.0	324.0	324.0	324.0	324.0	324.0	324.0	324.0	324.0	324.0	324.0	324.0
MaxCap	Cascade Creek2	CT Gas	(MW)	576.0	576.0	576.0	576.0	576.0	576.0	576.0	576.0	576.0	576.0	576.0	576.0	576.0	576.0	576.0	576.0	576.0	576.0	576.0	576.0	576.0
MaxCap	Lake Zumbro	Hydro Run	(MW)	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
MaxCap	Silver Lake1	ST Coal	(MW)	114.0	114.0	114.0	114.0	114.0	114.0	114.0	114.0	114.0	114.0	114.0	114.0	114.0	114.0	114.0	114.0	114.0	114.0	114.0	114.0	114.0
MaxCap	Silver Lake2	ST Coal	(MW)	168.0	168.0	168.0	168.0	168.0	168.0	168.0	168.0	168.0	168.0	168.0	168.0	168.0	168.0	168.0	168.0	168.0	168.0	168.0	168.0	168.0
MaxCap	Silver Lake3	ST Coal	(MW)	288.0	288.0	288.0	288.0	288.0	288.0	288.0	288.0	288.0	288.0	288.0	288.0	288.0	288.0	288.0	288.0	288.0	288.0	288.0	288.0	288.0
MaxCap	Silver Lake4	ST Coal	(MW)	540.0	540.0	540.0	540.0	540.0	540.0	540.0	540.0	540.0	540.0	540.0	540.0	540.0	540.0	540.0	540.0	540.0	540.0	540.0	540.0	540.0
UnitGeneration	Cascade Creek1	CT Gas	(MWH)	300	390	720	1,035	1,125	1,132	1,494	720	1,077	730	1,941	3,012	2,333	5,093	4,668	4,867	6,099	6,813	7,953	8,467	10,963
UnitGeneration	Cascade Creek2	CT Gas	(MWH)	1,550	2,876	12,597	13,278	15,852	16,830	17,831	20,587	19,918	23,037	25,047	25,005	28,559	27,722	30,240	32,008	31,778	38,000	36,916	39,568	41,596
UnitGeneration	Lake Zumbro	Hydro Run	(MWH)	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411	13,411
UnitGeneration	Silver Lake1	ST Coal	(MWH)	33	509				69				24		172		30	36		149	81	72	216	144
UnitGeneration	Silver Lake2	ST Coal	(MWH)												95					88	74		202	104
UnitGeneration	Silver Lake3	ST Coal	(MWH)	5,714	6,689	1,235	1,909	1,372	2,536	3,209	2,503	2,935	3,295	3,330	3,934	3,722	2,732	3,590	3,545	4,774	4,693	4,589	3,358	3,717
UnitGeneration	Silver Lake4	ST Coal	(MWH)	5,870	4,647	660	1,020	937	1,455	1,895	1,641	2,158	2,794	3,595	2,817	4,051	1,877	1,670	3,141	5,208	4,572	4,726	4,473	5,094
CapacityFactor	Cascade Creek1	CT Gas	(%)	0.13	0.16	0.30	0.44	0.48	0.48	0.63	0.30	0.46	0.31	0.82	1.27	0.99	2.15	1.97	2.06	2.58	2.88	3.35	3.58	4.64
CapacityFactor	Cascade Creek2	CT Gas	(%)	0.37	0.68	2.99	3.16	3.77	4.00	4.23	4.90	4.74	5.48	5.94	5.95	6.79	6.59	7.17	7.61	7.56	9.04	8.76	9.41	9.89
CapacityFactor	Lake Zumbro	Hydro Run	(%)	76.55	76.55	76.34	76.55	76.55	76.55	76.34	76.55	76.55	76.55	76.34	76.55	76.55	76.55	76.34	76.55	76.55	76.55	76.34	76.55	76.55
CapacityFactor	Silver Lake1	ST Coal	(%)	0.04	0.61	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.03	0.00	0.21	0.00	0.04	0.04	0.00	0.18	0.10	0.09	0.26	0.17
CapacityFactor	Silver Lake2	ST Coal	(%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.07	0.06	0.00	0.16	0.08
CapacityFactor	Silver Lake3	ST Coal	(%)	2.72	3.18	0.59	0.91	0.65	1.21	1.52	1.19	1.40	1.57	1.58	1.87	1.77	1.30	1.70	1.69	2.27	2.23	2.18	1.60	1.77
CapacityFactor	Silver Lake4	ST Coal	(%)	1.49	1.18	0.17	0.26	0.24	0.37	0.48	0.42	0.55	0.71	0.91	0.71	1.03	0.48	0.42	0.80	1.32	1.16	1.20	1.13	1.29
FixedOMCost	Lake Zumbro	Hydro Run	($)	$18,510	$18,510	$18,809	$18,510	$18,510	$18,510	$18,460	$18,859	$18,510	$18,510	$18,460	$18,510	$18,510	$18,859	$18,460	$18,510	$18,510	$18,510	$18,809	$18,510	$18,510
FixedOMCost	Silver Lake1	ST Coal	($)	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050	$626,050
FixedOMCost	Silver Lake2	ST Coal	($)	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600	$922,600
FixedOMCost	Silver Lake3	ST Coal	($)	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600	$1,581,600
FixedOMCost	Silver Lake4	ST Coal	($)	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500	$2,965,500
VarOMCost	Cascade Creek1	CT Gas	($)	$2,916	$3,791	$6,998	$10,060	$10,935	$11,000	$14,525	$6,998	$10,465	$7,093	$18,864	$29,280	$22,673	$49,507	$45,376	$47,303	$59,283	$66,227	$77,303	$82,296	$106,562
VarOMCost	Cascade Creek2	CT Gas	($)	$15,066	$27,954	$122,443	$129,061	$154,086	$163,591	$173,314	$200,108	$193,605	$223,917	$243,458	$243,048	$277,589	$269,457	$293,931	$311,114	$308,885	$369,365	$358,821	$384,604	$404,314
VarOMCost	Silver Lake1	ST Coal	($)	$98	$1,521				$205				$72		$515		$89	$109		$447	$242	$215	$645	$432
VarOMCost	Silver Lake2	ST Coal	($)												$283					$264	$220		$604	$311
VarOMCost	Silver Lake3	ST Coal	($)	$17,084	$19,999	$3,692	$5,707	$4,104	$7,582	$9,596	$7,485	$8,776	$9,851	$9,956	$11,763	$11,128	$8,168	$10,734	$10,598	$14,274	$14,032	$13,722	$10,040	$11,113
VarOMCost	Silver Lake4	ST Coal	($)	$17,550	$13,896	$1,973	$3,050	$2,801	$4,349	$5,665	$4,907	$6,453	$8,353	$10,750	$8,423	$12,112	$5,613	$4,994	$9,393	$15,572	$13,670	$14,130	$13,376	$15,231
ReceiptsFuelCost	Cascade Creek1	CT Gas	($)	$20,615	$26,596	$50,263	$71,554	$78,099	$79,639	$106,676	$52,617	$80,690	$55,625	$145,823	$220,718	$175,746	$381,153	$366,749	$400,377	$520,674	$601,830	$723,898	$783,278	$1,027,849
ReceiptsFuelCost	Cascade Creek2	CT Gas	($)	$77,063	$141,894	$636,816	$662,016	$793,065	$853,457	$916,148	$1,080,082	$1,073,114	$1,265,853	$1,356,536	$1,318,924	$1,523,914	$1,497,452	$1,710,112	$1,880,706	$1,938,292	$2,397,087	$2,388,664	$2,601,797	$2,780,387
ReceiptsFuelCost	Silver Lake1	ST Coal	($)	$1,782	$28,373				$4,295				$1,693		$12,877		$2,363	$2,973		$12,944	$7,231	$6,620	$20,431	$14,078
ReceiptsFuelCost	Silver Lake2	ST Coal	($)												$7,363					$7,949	$6,824		$19,870	$10,536
ReceiptsFuelCost	Silver Lake3	ST Coal	($)	$261,125	$314,716	$59,835	$95,214	$70,504	$134,159	$174,846	$140,459	$169,625	$196,103	$204,046	$248,178	$241,784	$182,772	$247,412	$251,640	$349,092	$353,466	$356,053	$268,291	$305,787
ReceiptsFuelCost	Silver Lake4	ST Coal	($)	$271,287	$221,138	$32,345	$51,463	$48,664	$77,828	$104,398	$93,122	$126,136	$168,156	$222,807	$179,707	$266,131	$127,017	$116,408	$225,529	$385,141	$348,234	$370,741	$361,425	$423,848
CO2	Cascade Creek1	CT Gas	(LBS)	545,822	709,569	1,309,973	1,883,086	2,046,833	2,058,991	2,718,736	1,309,973	1,958,944	1,327,764	3,531,069	5,480,636	4,244,030	9,266,848	8,493,602	8,854,298	11,096,729	12,396,473	14,469,651	15,404,261	19,946,430
CO2	Cascade Creek2	CT Gas	(LBS)	2,028,179	3,763,155	16,483,189	17,374,073	20,742,939	22,022,558	23,331,441	26,938,484	26,063,031	30,143,657	32,774,261	32,718,973	37,368,906	36,274,114	39,568,830	41,882,053	41,581,970	49,723,706	48,304,378	51,775,224	54,428,500
CO2	Silver Lake1	ST Coal	(LBS)	95,132	1,471,368				198,091				69,406		498,040		86,167	105,248		431,914	234,247	208,219	624,015	417,500
CO2	Silver Lake2	ST Coal	(LBS)												284,795					265,254	221,061		606,870	312,448
CO2	Silver Lake3	ST Coal	(LBS)	13,941,633	16,320,495	3,012,821	4,656,848	3,348,794	6,187,622	7,830,660	6,108,020	7,161,689	8,039,296	8,124,934	9,599,359	9,081,335	6,665,946	8,759,357	8,648,903	11,648,604	11,450,855	11,198,288	8,193,399	9,068,482
CO2	Silver Lake4	ST Coal	(LBS)	14,483,914	11,467,857	1,628,613	2,516,949	2,311,355	3,589,488	4,675,585	4,049,511	5,325,537	6,893,626	8,871,847	6,951,044	9,995,856	4,632,529	4,121,328	7,751,566	12,851,444	11,281,348	11,661,338	11,038,677	12,569,746
NOx	Cascade Creek1	CT Gas	(LBS)	423	550	1,016	1,461	1,588	1,597	2,109	1,016	1,520	1,030	2,739	4,252	3,292	7,189	6,589	6,869	8,609	9,617	11,225	11,950	15,474
NOx	Cascade Creek2	CT Gas	(LBS)	1,676	3,109	13,617	14,353	17,137	18,194	19,275	22,255	21,532	24,903	27,076	27,030	30,872	29,967	32,689	34,600	34,352	41,079	39,906	42,773	44,965
NOx	Silver Lake1	ST Coal	(LBS)	196	3,027				408				143		1,025		177	217		889	482	428	1,284	859
NOx	Silver Lake2	ST Coal	(LBS)												586					546	455		1,249	643
NOx	Silver Lake3	ST Coal	(LBS)	28,682	33,576	6,198	9,581	6,890	12,730	16,110	12,566	14,734	16,539	16,716	19,749	18,683	13,714	18,021	17,794	23,965	23,558	23,038	16,856	18,657
NOx	Silver Lake4	ST Coal	(LBS)	29,798	23,593	3,351	5,178	4,755	7,385	9,619	8,331	10,956	14,182	18,252	14,301	20,565	9,531	8,479	15,947	26,440	23,209	23,991	22,710	25,860
SO2	Cascade Creek1	CT Gas	(LBS)	5	7	13	19	20	21	27	13	20	13	35	55	42	92	85	88	111	124	144	154	199
SO2	Cascade Creek2	CT Gas	(LBS)	24	45	197	207	247	263	278	321	311	360	391	390	446	433	472	500	496	593	576	618	649
SO2	Silver Lake1	ST Coal	(LBS)	724	11,193				1,507				528		3,789		656	801		3,286	1,782	1,584	4,747	3,176
SO2	Silver Lake2	ST Coal	(LBS)												2,167					2,018	1,682		4,617	2,377
SO2	Silver Lake3	ST Coal	(LBS)	106,060	124,157	22,920	35,427	25,476	47,072	59,571	46,466	54,482	61,159	61,810	73,027	69,086	50,711	66,636	65,796	88,616	87,112	85,190	62,331	68,988
SO2	Silver Lake4	ST Coal	(LBS)	110,186	87,241	12,390	19,148	17,584	27,307	35,569	30,806	40,514	52,443	67,492	52,880	76,043	35,242	31,353	58,970	97,767	85,822	88,713	83,976	95,624
CO2	Cascade Creek1	CT Gas	($)			$19,650	$30,129	$34,796	$37,062	$50,297	$25,544	$39,179	$27,219	$74,152	$117,834	$93,369	$213,137	$199,600	$212,503	$277,418	$328,507	$405,150	$454,426	$608,366
CO2	Cascade Creek2	CT Gas	($)			$247,248	$277,985	$352,630	$396,406	$431,632	$525,301	$521,261	$617,945	$688,267	$703,478	$822,142	$834,305	$929,868	$1,005,169	$1,039,577	$1,317,745	$1,352,524	$1,527,370	$1,660,070
CO2	Silver Lake1	ST Coal	($)						$3,566				$1,423		$10,708		$1,982	$2,473		$10,798	$6,208	$5,830	$18,408	$12,734

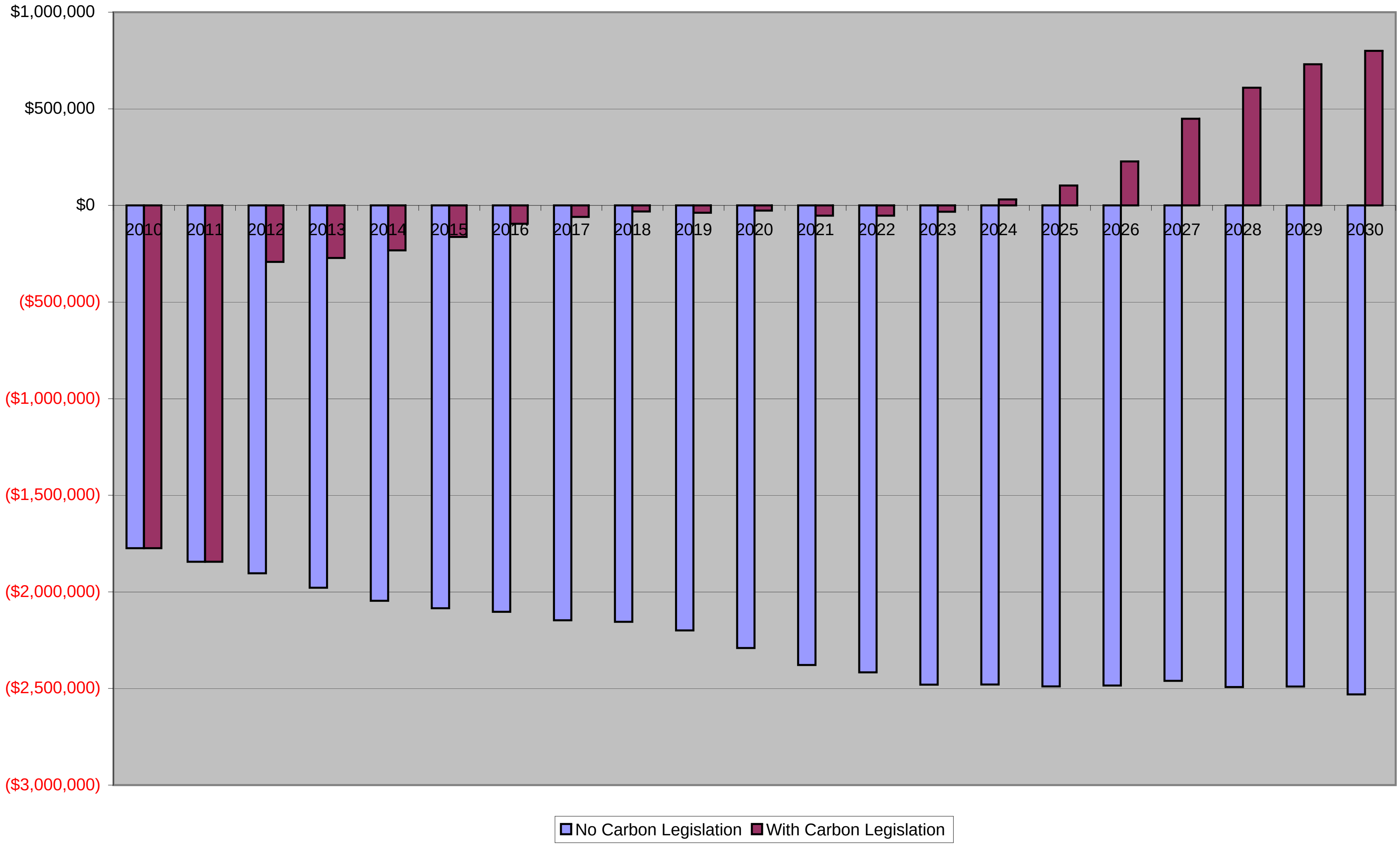
Rochester Public Utilities

Project 49188 - Infrastructure Update

Renewable Energy Requirements Analysis

Data Item	UnitDescription	UnitCategc	UOM	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
CO2	Silver Lake2	ST Coal	($)												$6,123					$6,631	$5,858		$17,903	$9,530
CO2	Silver Lake3	ST Coal	($)			$45,192	$74,510	$56,930	$111,377	$144,867	$119,106	$143,234	$164,806	$170,624	$206,386	$199,789	$153,317	$205,845	$207,574	$291,215	$303,448	$313,552	$241,705	$276,589
CO2	Silver Lake4	ST Coal	($)			$24,429	$40,271	$39,293	$64,611	$86,498	$78,965	$106,511	$141,319	$186,309	$149,448	$219,909	$106,548	$96,851	$186,038	$321,287	$298,956	$326,518	$325,641	$383,378
PurchEnergyByComp	CROD OFF		(MWH)	876,738	893,782	910,421	925,606	939,250	955,992	969,874	985,883	1,000,700	1,015,472	1,027,110	1,043,057	1,056,305	1,067,734	1,081,905	1,091,999	1,103,802	1,115,015	1,122,441	1,134,518	1,143,975
PurchEnergyByComp	CROD ON		(MWH)	561,804	569,543	574,800	582,703	591,988	600,279	608,695	611,095	617,301	623,373	633,671	637,066	641,759	643,981	647,655	653,740	657,732	659,793	660,948	659,932	661,012
PurchEnergyByComp	OWEF		(MWH)	3,019	3,628	4,789	5,336	6,031	6,456	6,998	7,672	8,221	9,136	10,225	11,320	12,557	13,565	14,587	15,568	17,051	18,481	19,996	21,813	23,457
PurchCap	CROD OFF		(MW)	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0
PurchCap	CROD ON		(MW)	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0	2,592.0
PurchCap	OWEF		(MW)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
PurchEnergyCost	CROD OFF		($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
PurchEnergyCost	CROD ON		($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
PurchEnergyCost	OWEF		($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
RPU Wind Energy for Native Load			(MWH)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RPU Renewable Energy Serving Native Load			(%)	51%	47%	43%	39%	36%	35%	32%	29%	27%	26%	25%	24%	23%	21%	20%	19%	19%	18%	17%	16%	16%
RPU Total Renewable Energy Available			(%)	51%	47%	43%	39%	36%	35%	32%	29%	27%	26%	25%	24%	23%	21%	20%	19%	19%	18%	17%	16%	16%
RPU Total Fixed O&M			($)	$6,114,260	$6,114,260	$6,114,560	$6,114,260	$6,114,260	$6,114,260	$6,114,210	$6,114,609	$6,114,260	$6,114,260	$6,114,210	$6,114,260	$6,114,260	$6,114,609	$6,114,210	$6,114,260	$6,114,260	$6,114,260	$6,114,560	$6,114,260	$6,114,260
RPU Total Variable O&M			($)	$52,715	$67,161	$135,106	$147,877	$171,925	$186,728	$203,100	$219,498	$219,300	$249,287	$283,029	$293,312	$323,503	$332,835	$355,143	$378,408	$398,725	$463,755	$464,192	$491,565	$537,961
RPU Total Fuel			($)	$631,872	$732,717	$779,260	$880,248	$990,331	$1,149,379	$1,302,068	$1,366,280	$1,449,565	$1,687,429	$1,929,212	$1,987,766	$2,207,575	$2,190,756	$2,443,655	$2,758,252	$3,214,092	$3,714,671	$3,845,976	$4,055,092	$4,562,484
RPU CO2 Emissions			($)	$0	$0	$336,519	$422,896	$483,649	$613,022	$713,294	$748,917	$810,184	$952,712	$1,119,352	$1,193,976	$1,335,210	$1,309,290	$1,434,638	$1,611,284	$1,946,926	$2,260,721	$2,403,574	$2,585,453	$2,950,666
RPU Total Mkt Purchases			($)	$79,959	$134,537	$552,600	$733,345	$912,288	$948,532	$1,152,595	$1,701,484	$2,224,298	$2,406,955	$2,535,363	$3,016,229	$3,391,818	$4,505,640	$5,160,557	$5,874,986	$6,721,225	$7,443,582	$9,168,554	$10,767,146	$11,752,139
RPU Total Wind Cost			($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
RPU Total Mkt Wind Rev			($)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
RPU Total Cost			($)	$6,878,806	$7,048,674	$7,918,045	$8,298,625	$8,672,453	$9,011,921	$9,485,267	$10,150,789	$10,817,607	$11,410,644	$11,981,166	$12,605,544	$13,372,365	$14,453,130	$15,508,203	$16,737,190	$18,395,228	$19,996,990	$21,996,855	$24,013,516	$25,917,511

Appendix C - Wind Analysis Detailed Production Cost Output
Annual Production Cost Delta, Wind Case Minus No Wind Case



APPENDIX D

RFP FOR WIND POWER SUPPLY

ROCHESTER PUBLIC UTILITIES

REQUEST FOR PROPOSALS FOR

WIND POWER SUPPLY

Table of Contents

1.0 Purpose of Request for Proposals

ROCHESTER PUBLIC UTILITIES (ROCHESTER) is seeking proposals for up to 100 MWs of wind resources in the 2009 to 2011 timeframe. ROCHESTER will consider Purchased Power Agreements (PPA) and Asset Ownership to satisfy this requirement.

Specific requirements for this Request for Proposals (RFP) are as follows:

- ROCHESTER is seeking up to 100 MWs of nameplate wind capacity
- PPA or Asset Ownership
- Wind resource delivery in the 2009 – 2011 timeframe
- Preference will be given to assets located in Minnesota or the Midwest ISO (MISO) footprint
- Proposals must be for a minimum block of 25 MWs
- Product is energy only and to include all environmental attributes

This RFP is being offered by ROCHESTER to evaluate opportunities available in the marketplace to meet potential future renewable requirements. Specifically, this RFP is focused on evaluating opportunities through a competitive RFP process to procure wind generation resources, either through PPAs or acquisitions.

ROCHESTER has retained Burns & McDonnell to act as an independent third party consultant to assist in the evaluation of this RFP. All proposers will directly interface with Burns & McDonnell for RFP clarification issues and RFP proposal submittal.

ROCHESTER, a division of the City of Rochester, MN, is the largest municipal utility in the state of Minnesota. ROCHESTER serves over 45,000 electric customers and over 34,000 water customers, and has revenues nearing $140 million annually. More information about the company is available on the Internet at: http://www.rpu.org.

2.0 Instructions to Proposers

2.1 General

2.1.1 Nothing contained in this Request for Proposals shall be construed to require or obligate ROCHESTER to select any proposals or limit the ability of ROCHESTER to reject all proposals in its sole and exclusive discretion. ROCHESTER further reserves the right to withdraw and terminate this RFP at any time prior to the execution of a contract.

2.1.2 The submission of a proposal to ROCHESTER shall constitute a proposer's acknowledgment and acceptance of all the terms, conditions and requirements of this RFP, including Exhibits.

2.1.3 Subject to 2.1.4, all proposals submitted to ROCHESTER pursuant to this RFP shall become the exclusive property of ROCHESTER and may be used for any reasonable purpose by ROCHESTER.

2.1.4 ROCHESTER and Burns & McDonnell shall consider materials provided by proposer in response to this RFP to be confidential only if such materials are clearly designated as "Confidential". Proposers should be aware that their proposal, even if marked “Confidential”, may be subject to discovery and disclosure in regulatory or judicial proceedings that may or may not be initiated by ROCHESTER. Proposers may be required to justify the requested confidential treatment under the provisions of a protective order issued in such proceedings. If required by an order of an agency or court of competent jurisdiction, ROCHESTER may produce the material in response to such order without prior consultation with the proposer.

2.1.5 Proposers shall be responsible for all costs and issues associated with proposals; contract negotiations; completion of the contract; all taxes, duties, fees and other charges associated with the delivery of energy under the contract; and compliance with all local, state and federal laws that may affect the contract.

2.1.6 ROCHESTER anticipates that transmission access and capacity factor will be factors in the selection of the final proposal(s). For purchased power, the delivery point shall be the **Minn.Hub** commercial pricing node within MISO (Delivery Point). All costs and coordination required for any applicable Transmission Service Requests to the Delivery Point shall be the responsibility of the proposer.

2.2 Overview of Process

2.2.1 ROCHESTER, through Burns & McDonnell, has set-up an email box to collect all written communication and questions from potential proposers as well as a web site to provide uniform communication including updates and specific detail as may be provided from time to time through this proposal process. The email address is **RPUWindRFP@burnsmcd.com.** The web site is www.RPUWindRFP.com.

2.2.2 The proposal process will include the activities and events as indicated in the schedule shown in **Exhibit A**. Proposal opening will be performed in private by Burns & McDonnell on a confidential basis. Proposals will be reviewed for completeness and offers that do not include the information requirements of this RFP will be notified and allowed five business days to conform. The evaluation of the proposals will be performed by ROCHESTER with assistance provided by Burns & McDonnell. Proposers selected for the Short List may be invited to begin negotiations of final details of the offers.

2.3 Notice of Intent to Propose

2.3.1 Each potential proposer is **requested** to advise ROCHESTER of its intent to submit a proposal by submitting a Notice of Intent to Propose (NOIP), attached hereto as **Exhibit B**.

2.3.2 The Notice of Intent to Propose form may be faxed or emailed, to the following address:

Jon Summerville
Burns & McDonnell
Fax: (816) 822-3027
Email: RPUWindRFP@burnsmcd.com

The proposer contact information as supplied in the NOIP response provides a vehicle for Burns & McDonnell to communicate any updates/revisions to the RFP in a timely manner. Therefore, we encourage proposers to submit a NOIP.

2.4 Deadline and Method for Submitting Proposals

2.4.1 Proposals must be submitted in the complete name of the party expecting to execute any resulting contract with ROCHESTER.

2.4.2 All proposals submitted in response to this RFP must be received by Burns & McDonnell no later than 4:00 PM Central Prevailing Time on the date shown in Exhibit A. **ROCHESTER will not accept proposals received after this date and time.**

2.4.3 Proposers are required to provide three (3) bound sets of all documents, including exhibits, as part of its proposal. It is further required that multiple proposals submitted by each proposer be identified separately. Proposals must be delivered to the following address:

ROCHESTER PUBLIC UTILITIES WIND RFP
c/o Jon Summerville
Burns & McDonnell
9400 Ward Parkway
Kansas City, MO 64114

Emailed proposals will NOT be accepted and will not be recognized as complying with the date and time requirements.

2.5 Questions and Interpretation of RFP

ROCHESTER requires that all questions concerning this RFP be submitted in writing to Burns & McDonnell at the email address indicated in Section 2.3.2. Answers will be posted as available to the web site. Proposers are encouraged to check the web site for updates. ROCHESTER will not be responsible for other explanations or interpretations of the RFP than those included on the web site.

Written questions will be accepted until seven days before the proposal submittal deadline. Answers will typically be posted on the website the first Monday after a week of receiving the questions.

It shall be the obligation of the proposer to identify any conflicting statements, need for clarification, or omissions of pertinent data from the RFP before proposals are due. Any questions not resolved by the proposal due date shall be identified in the proposal and a statement made as to the basis of the proposal.

2.6 Requirements of Product

2.6.1 The product requested consists of (i) energy from new or existing wind generation (ii) renewable energy credits (RECs), and (iii) all other environmental attributes. RECs are as defined by the Green-e program as administered by the Center for Resource Solutions. Delivery of physical energy and all environmental attributes shall be required by ROCHESTER from any resulting contract for ownership or power purchase. Proposal pricing shall be inclusive of the delivery of physical energy to the Delivery Point and for the environmental attributes.

2.6.2 All proposers must be able to deliver energy to the MISO Market. If the energy source is not currently located on the MISO system, it is the responsibility of the proposer to identify the transmission service necessary for delivery and account for any associated fees in the proposal pricing.

2.6.3 For purchased power, the delivery point shall be the **Minn.Hub** (Delivery Point) commercial pricing node within MISO. All costs and coordination required for any applicable Transmission Service Requests to the Delivery Point shall be the responsibility of the proposer.

2.6.4 For proposed ownership offers, the proposal will be screened based on current or anticipated congestion and loss charges associated with the transmission of power to the Delivery Point from the wind generator location.

2.6.4 The proposer shall indicate the interconnection point (MISO CP Node) for an existing generating source. If the proposed source is not currently connected to the MISO system, the connection point used in analysis will be the closest point on the grid monitored by MISO for LMPs.

2.6.5 Proposers located in MISO will be required to submit interconnection applications to MISO as appropriate for feasibility and obtain their approval for the planned interconnection to the grid.

2.6.6 Proposals shall indicate that the proposed resource(s) qualify as a Generation Resource, as such term is defined in the MISO Open Access Transmission and Energy Markets Tariff (TEMT) and MISO Business Rules and be registered for intermittent resource scheduling.

2.6.7 All proposals shall provide the results of the interconnection studies and any deliverability tests of MISO for assurance that the stated capacity is deliverable to the MISO system. If the generating facility(s) are located outside MISO, the Proposer shall identify the type of firm transmission service being provided for delivery to MISO.

3.0 Proposal Organization

The proposer understands that ROCHESTER will rely on the representations contained in the proposal and this Agreement in its evaluation and consideration of proposals submitted pursuant to the RFP. The proposer further understands that its inability to substantiate and verify any such representation may result in the termination of further consideration and/or evaluation of the proposal. All such representations made in the proposal are true and accurate to the best of the proposer's knowledge and belief. All proposals must include the following minimum components and are requested to provide the information in the order provided:

3.1 Summary

An executive summary providing the highlights and special features of the proposal is required.

3.2 Statements

3.2.1 A statement from the proposer clearly indicating the time period during which the proposal will remain effective. ROCHESTER requires that the structure of the proposals remain effective until December 31, 2008, at a minimum.

3.2.2 All documentation and signatures required depending on the nature of the proposal.

3.2.3 For an asset sale, a statement that the facility meets all technical requirements of NERC, MISO and Midwest Reliability Organization.

3.2.4 For PPA offers, a statement that all costs associated with delivery of the product to the Delivery Point are included in the product price.

3.3 Contract Terms

A comprehensive listing and description, including a rationale if warranted, of all contract terms and conditions that the proposer would seek during contract negotiations should be provided.

3.4 Proposal Limitations

A listing of any economic, operational or system conditions (including sensitivities to anticipated dispatch levels) that might affect the proposer's ability to deliver energy as offered and how the proposer will provide the proposed availability.

3.5 Term Sheet

3.5.1 Purchase Power Agreement

Information on the product, cost of the energy and other information shall be provided as per the sample Term Sheets contained in **Exhibit C** and **Exhibit D**. Proposals shall provide a fixed or indexed price for the energy for their proposed term including the cost for all losses, congestion costs, ancillary services, transmission delivery fees, MISO or other associated fees, taxes, duties, and any other costs associated with the furnishing of the associated energy to the proposed ROCHESTER Delivery Point. For consideration in the evaluation process, proposals must contain a statement that all such fees have been included in the proposed price.

3.5.2 Asset Sale/Purchase

Each proposal submitted for the sale of an asset to ROCHESTER must be structured such that there is a lump-sum payment due at closing. Though a lump sum price is required, ROCHESTER may also consider alternative purchase proposals for the same asset that utilize some form of construction period financing or progress payments.

3.6 Company Financial Data

Information on the makeup of the company and its parent organization shall be provided along with the most current annual financial reports and SEC Form 10-k (if applicable to the proposer). If this information is available on the company's web site, then proposer should provide the web page address where the information can be downloaded.

3.7 Security and Reliability of Physical Delivery

ROCHESTER requires secure and reliable physical delivery of the associated energy corresponding to all power supply offers. Security and reliability of physical delivery will be guaranteed by either (1) substantial evidence of contractual credit assurance by a third party, (2) parent corporation commitment accompanied by an investment level credit rating from a major rating agency, or (3) various combinations of 1 and 2. All forms of credit assurance are subject to approval by ROCHESTER.

4.0 Proposal Content

For consideration in the evaluation process, proposals **must** contain the information outlined in the sample Term Sheets provided in **Exhibit C** or **Exhibit D**.

Supporting information outlined in the following paragraphs for the respective proposal type will be beneficial in assisting the evaluation of the proposal. Should this information not be submitted with the proposal, ROCHESTER may require the proposer to submit this information in order to verify the proposer's ability to meet ROCHESTER's requirements and any future contract resulting from this RFP process.

4.1 Technical Information

Provide sufficient technical information to fully describe the project and allow a determination of the status and condition of proposed sources of wind energy. The information outlined in **Exhibit C** or **Exhibit D** should be provided.

4.2 Price Proposal

Proposals must provide a detailed description of the pricing terms and conditions. (See Sample Term Sheets in **Exhibit C** and **Exhibit D**). During any subsequent discussions and/or negotiations, ROCHESTER may request modification to the proposed pricing scheme in order to accommodate its own operational or administrative requirements. For consideration in the evaluation process, proposals must contain the information outlined in the following paragraphs for the respective proposal type.

4.2.1 Asset Sale/Purchase

Proposers may offer wind energy from new or existing resources on an asset/sale purchase basis. Under this arrangement, ROCHESTER acquires all future ownership responsibilities and provides a payment in accordance with a purchase agreement to be negotiated. The proposer must demonstrate that it has the requisite authorization to make an offer to purchase the facility represented in its proposal. Proposer must state that all facilities meet the technical requirements of NERC, MISO and Midwest Reliability Organization.

4.2.1.1 New Resources (See **Exhibit C or Exhibit D**)

Proposals for the Sale of New Resources should provide:

(i) Proposed purchase price to ROCHESTER must include all costs of developing, designing, constructing, and start-up of the facility to commercial operations. ROCHESTER will evaluate the financing of the equity purchase from its sources.

(ii) An estimate of the costs and timing of on-going annual capital additions associated with each proposed generation facility.

(iii) An estimate of annual fixed O&M costs associated with each proposed generation facility.

(iv) An estimate of annual variable O&M, and startup costs associated with each proposed wind facility for loading at its expected operating annual capacity factor.

(v) All costs associated with delivery of the energy to ROCHESTER's Delivery Point excluding any ancillary services to be provided by ROCHESTER.

4.2.1.2 Existing Resources

Proposals for the Sale of Existing Resources should provide:

(i) A lump sum purchase price, which includes all costs of acquisition of the proposed wind assets including transfer of title, permits, etc. to ROCHESTER.

(ii) An estimate of the costs and timing of on-going annual capital additions associated with each wind generation facility.

(iii) The annual variable O&M, and startup costs associated with each wind generation facility for loading at its expected operating annual capacity factor. The percent annual unit availability and guaranteed minimum percent annual unit availability.

(iv) All costs associated with delivery of the energy to ROCHESTER's Delivery Point excluding ancillary services to be provided by ROCHESTER.

4.2.2 Power Purchase Agreement

Proposers may offer wind energy from new or existing resources or from a utility system through a power purchase agreement. Under this arrangement, the proposer retains all ownership responsibilities and ROCHESTER provides only an energy payment in accordance with a purchase agreement to be negotiated. The proposer must demonstrate that it has the requisite regulatory authorization to make sales contemplated by its proposal.

4.2.2.1 Proposed availability and hourly output curve for new or existing resources shall be provided. ROCHESTER reserves the right to estimate the availability and output of a resource at its sole discretion if a reasonable availability and output curve is not provided by the proposer.

4.2.2.2 Proposed energy rates shall include all losses, wheeling and other charges associated with delivery to the ROCHESTER Delivery Point with the exception of ancillary services to be provided by ROCHESTER.

(i) The proposer shall provide the starting energy rate and applicable formula for escalation with proposed indices or a schedule of energy rates for the proposed contract term.

(ii) The actual delivered energy, in any month, shall be determined in accordance with the metering procedures as set forth in the contract which will be negotiated between ROCHESTER and the successful proposer.

(iii) The proposer should specify the basis (i.e. annually, quarterly, monthly, etc.) and type of all payments it expects to receive. The proposer may further specify a pricing formula, schedule, or some combination of the two, for determining these payments.

(iv) If outside the MISO area, the proposer shall identify the type of transmission service being provided, delivering parties and delivery point(s) of energy to the Delivery Point.

5.0 Proposal Evaluation and Contract Negotiations

5.1 Initial Review

5.1.1 Proposals will be evaluated based on but not limited to the following: price, transmission feasibility, economic analysis, cost of delivery, energy profile, relevant experience, credit rating and/or other evaluation criteria. The short list will be developed based upon the results of this initial analysis. Proposers whose proposals were considered to not meet the required threshold of this RFP will be notified via email that their proposal was unsuccessful in moving on to the Short List.

5.1.2 ROCHESTER may request that a proposer provide additional information or clarification to its original proposal. Burns & McDonnell shall make such requests in writing and will also specify a deadline for compliance. Failure to provide the requested information or clarification by the deadline may result in the disqualification of the proposal.

5.1.3 ROCHESTER may select any number of proposals, or reject all proposals or at any time withdraw and terminate this RFP pursuant to Section 2.1.1, as it, in its sole and exclusive judgment deems appropriate.

5.2 Short List Development

5.2.1 Burns & McDonnell will provide proposal information to ROCHESTER. ROCHESTER and Burns & McDonnell will evaluate the proposals based on prices, terms and other resource performance factors.

5.2.2 During the evaluation process, ROCHESTER or Burns & McDonnell may choose to initiate discussions with one or more proposers for the purposes of obtaining clarifying information. For purposes of this RFP, discussions shall simply indicate ROCHESTER's interest in a particular proposal and its desire to obtain from the proposer additional detailed information that may not necessarily be contained in the proposal. Discussions with a proposer shall in no way be construed as commencing "negotiations" with a proposer. ROCHESTER intends to use such discussions as a method of reducing the number of proposals to those, if any, that ROCHESTER determines warrant further evaluation and, possibly, contract negotiations. If ROCHESTER intends to initiate discussions, it will notify the proposer of such intention and require the proposer of such proposal to confirm, in writing, the offer and representations contained in its original proposal.

5.2.3 If ROCHESTER is not interested in a particular proposal, it will notify the proposer as soon as practical after such determination is made.

5.3 Contract Negotiations

5.3.1 ROCHESTER will notify a proposer in writing of its interest in commencing contract negotiations with that proposer. ROCHESTER's commencement of and active participation in such negotiations shall not be construed as a commitment from ROCHESTER to execute a contract. If, however, a contract is successfully negotiated, it shall not be effective unless and until fully executed by ROCHESTER in accordance with its procedures and any and all required regulatory approvals have been received to ROCHESTER’s satisfaction.

5.3.2 ROCHESTER will consider standard contracting formats in use by the industry or contracts proposed by proposers as the basis for any contract negotiations resulting from this RFP.

5.3.3 Proposers selected for the Short List will have the opportunity to refresh their pricing. Any short listed proposer that provides a refreshed price above that of the next best proposal not on the short list may be disqualified from the short list at ROCHESTER’s sole discretion.

5.3.4 During the contract negotiation phase, price will continue to be the primary evaluation factor. ROCHESTER will also be considering contract terms to determine the most attractive offer or set of offers.

5.3.5 ROCHESTER reserves the right at any time, during contract negotiations, at its sole discretion, to terminate or, once terminated, to resume negotiations with a proposer.

5.3.6 ROCHESTER will require that certain provisions be included in its contracts. Such provisions may include, but are not limited to, insurance, indemnification, performance guarantees, liquidated damages for non-performance, firm security (depending on the financial means and historical performance of the proposer), ability of ROCHESTER to reassign its entire rights, or a portion thereof, to the contract to another party, and a provision that allows ROCHESTER to terminate the contract in the event that certain state and federal regulatory approvals are not received to the satisfaction of ROCHESTER.

5.3.7 This RFP contains general guidelines and requirements for developing and submitting proposals. Nothing herein shall be construed to bind ROCHESTER unless and until a contract with a proposer has been successfully negotiated, executed, and is effective. Once effective, the contract will govern the relationship between and responsibilities of the parties. The costs for responding to the RFP and any subsequent contract negotiations are the responsibility of the proposer.

Exhibit A
Schedule

The schedule as outlined below and referred to throughout this document is based on ROCHESTER's expectations as of the release date of this RFP.

Release of RFP	September 19, 2008
Notice of Intent to Propose	October 3, 2008
Proposal Submittal Deadline	November 14, 2008
Initial Selection of Short List	December 19, 2008
Complete Negotiations	1st Quarter 2009

ROCHESTER reserves the right to extend or otherwise modify any portion of the schedule or terminate the RFP process at its sole discretion.

Exhibit B
NOTICE OF INTENT TO PROPOSE
Due by October 3, 2008

1. Upon reviewing the ROCHESTER RFP, we plan to submit a proposal.
2. Proposer: ____________________________________
3. Contact: ____________________________________
4. Mailing Address: ____________________________________

   email address: ____________________________________
5. Tel Number: (___)___________ Fax Number: (____)__________
6. Signature of respondent:

   Title: ____________________________________

   Date: ____________________________________

Fax to: 816.822.3027 Burns & McDonnell
Attn: Jon Summerville

Email to: RPUWindRFP@burnsmcd.com

Exhibit C -PPA
Sample Term Sheet

Note to proposer: Provide a separate term sheet for each different Term or Energy Price offering

Product	Unit Firm Wind energy and associated Renewable Energy Credits and other attributes.
Seller	____
Purchaser	ROCHESTER PUBLIC UTILITIES
Transmission Interconnection Point	____
Voltage Level of Interconnection	______________________
Delivery Point	MISO Node
Term of Contract (start/stop)	______________________
Project (new/existing/construction)	______________________
Capacity Amount	______________________ MW (Minimum of 25 MW) *ROCHESTER will evaluate any amount from 25 MW to the amount proposed, unless proposer so notes that only the Capacity Amount indicated can be evaluated.*
Annual energy to be provided	______________________MWh

Pricing Information:

a. Energy Pricing (the year of pricing $ is the 1st year of the term)

   a. Price Over Term __________________ ($/MWh starting)

      Escalating at __________________ % per year, or

   b. Scheduled Payment ___________________ ($/MWh) in Year 1

      ___________________ ($/MWh) in Year 2

      ___________________ ($/MWh) in Year 3

      …through end of Term

Note: Energy pricing to include all ancillary service costs, Midwest ISO charges, taxes and other fees necessary for delivery to the Delivery Point.

Load Profile:

Each project must provide its expected or historic energy output profile (MWh) for each hour of the year to sum to the proposed energy to be provided by the project. This must be provided on a CD in an Excel spreadsheet format.

Other Information:

Guaranteed Availability ___________%

Expected Forced Outage Rate ___________%

Years Meteorological Data Collected, Location, Height (m) ____, ____________, ____

Manufacturer and Type of Wind Turbine ___________________

Status of Wind Turbine Negotiations ____________________________________

Land Control (total acres and % in control) _________, _____ %

Assumed Transmission Interconnection Cost $____________

Please also provide any relevant experience with wind projects separately.

Exhibit D -Ownership
Sample Term Sheet

Note to proposer: Provide a separate term sheet for each different Term or Energy Price offering

Product	Unit Firm Wind energy and associated Renewable Energy Credits
Seller	______________________________________
Purchaser	ROCHESTER PUBLIC UTILITIES
Transmission Interconnection Point	______________________________________
Voltage Level of Interconnection	_____________________
Delivery Point	MISO Node
Term of Ownership (start/stop)	_____________________
Project (new/existing/construction)	_____________________
Capacity Amount or % Ownership	_____________________ MW or % (Minimum of 25 MW) *ROCHESTER will evaluate any amount from 25 MW to the amount proposal, unless proposer so notes that only the Capacity Amount indicated can be evaluated.*

Load Profile:

Each project must provide its expected or historic energy output profile (MWh) for each hour of the year to sum to the proposed energy to be provided by the project. This must be provided on a CD in an Excel spreadsheet format.

Pricing Information:

b. Purchase Price (the year of pricing $ is the 1st year of the term)

    a. Lump Sum $_____________

    b. Year of Payment _________

Other Information:

Guaranteed Availability ___________%

Expected Forced Outage Rate ___________%

Years Meteorological Data Collected, Location, Tower Height (m)____, ____________, ____

Manufacturer and Type of Wind Turbine ___________________

Status of Wind Turbine Negotiations ____________________________________

Land Control (total acres and % in control) _________, _____ %

Assumed Transmission Interconnection Cost $____________

Please also provide any relevant experience with wind projects separately.

APPENDIX E

RFP LIST OF E-MAIL RECIPIENTS

Company Name	Mr/Ms	Full Name	Title
UTILITIES:			
Alabama Electric Cooperative, Inc.	Mr.	Ken Skroback	Vice President, Bulk Power & Delivery
Allegheny Energy Supply Co., LLC		James Loder	
Allete d/b/a Minnesota Power	Mr.	Jeff Paulseth	
Alliant Energy	Mr.	Rich Friedman	
Alliant Energy Corporation		JP Brummond	
Alliant Energy	Mr.	Jeff Gibbons	
Alliant Energy	Mr.	Del Winter	
Ameren Energy Marketing	Mr.	Dennis Beutler	
Ameren Energy Marketing	Mr.	Don Mosier	Director, Ameren Energy Marketing
Ameren Energy Marketing	Mr.	Derek Waite	
Ameren Energy Marketing	Mr.	Tom Leigh	Manager
Ameren Energy Marketing		Sung Kim	
Ameren Energy Marketing		RT Desk	
Ameren Energy Marketing	Mr.	Craig Gordon	Sales
Ameren Energy Marketing	Mr.	Brian Gordon	Sales
American Electric Power	Mr.	Jason C. Jerecki	Marketing and Origination
American Electric Power	Mr.	Keven Brady	Marketing and Origination
American Electric Power		Ashley Clark	
American Electric Power	Mr.	Brian Whitlatch	Marketing and Origination
American Electric Power Service Corp	Mr.	Vince Findley	Manager
Aquila, Inc.	Mr.	Robert Shanklin	Director, Asset Management
Associated Electric Cooperative	Mr.	Duane Highley	Director, Power Production
Avant Energy	Ms.	Joni Hanson	
Avant Energy/Minnesota Power Agency		Joe Fulliero	
Basin Electric Power Cooperative		Jeremy Woeste	
Big Rivers Electric Corporation	Mr.	Bill Blackburn	Vice President, Power Supply
BPU -Board of Public Utilities	Mr.	Larry Adair	
Consumers Energy Company	Mr.	Mark Devereaux	Senior Engineer
Consumers Energy Company		Mary Caldwell	
CMS Energy		Jeff Arnold	
CMS Energy	Mr.	David Zwitter	
Duke Energy Americas, LLC	Ms.	Renee Marko	Director Marketing
Duke Energy Americas, LLC	Mr.	Scott E. Tharp	Manager, Midwest Origination
Duke Energy Generation	Mr.	Robert Parrett	
Duke Energy Generation	Mr.	Robert Neihaus	
Electric Energy Inc.	Mr.	Mike Pullen	
Empire District Electric Co	Mr.	Bradley P. Beecher	Vice President, Energy Supply
Energy Authority (Springfield, IL)		Jim Richardson	
Exelon Generation Company, LLC		Kevin Kilgallen	
Exelon Generation Company, LLC		Bruce Murray	
First Energy	Mr.	Marty Bolan	
First Energy Solutions Corporation		Ryan Foster	
First Energy (Wholesale)		Lisa Medas	
First Energy (Wholesale)		Craig Truesdell	
FirstEnergy Solutions		Lou D'Alessandris	
Great Plains Power	Mr.	Stephen T. Easley	President and CEO
Great River Energy		Bruce Froyum	
Great River Energy		Jon Olson	
Great River Energy		Stacee Baldwin	
Hoosier Energy REC, Inc.	Mr.	David Sandefur	Vice President, Power Supply
Hoosier Energy REC, Inc.	Mr.	Mike Mooney	
Indiana Municipal Power Agency		Frank Smarto	
Indianapolis Power and Light	Mr.	Herman Schkabla	Director
KCPL	Mr.	Derek Sunderman	
LG&E Energy Inc.	Mr.	Charlie Freibert	
Madison Gas and Electric	Mr.	Jeff Block	
Manitoba Hydro		Daryl Maxwell	
Manitoba Hydro	Mr.	Greg McNeill	Power Marketer
MidAmerican Energy		Dan Mandernach	
MidAmerican Energy	Mr.	Robert P. Henson	Long Term Contracts/Capacity
MidAmerican Energy	Mr.	Greg Merrigan	
MidAmerican Energy	Mr.	Andrew Jensen	
Midwest Generation	Mr.	Paul Jacob	President, Edison Mission Marketing ar
Minnesota Municipal Power Agency	Mr.	Rohit Menon	
Minnesota Power		Kevin Lindstrom	
NIPSCO	Mr.	Roger Huhn	
NIPSCO	Mr.	Tom Pysh	
NIPSCO	Mr.	Jim Orlando	
Old Dominion Electric Cooperative		Lisa Johnson	
Omaha Public Power District	Mr.	Rick Yanovich	

Company Name	Mr/Ms	Full Name	Title
Owensboro Municipal Utilities	Mr.	Daniel Fleming	Manager of Business Development and
Reliant Energy	Mr.	Ken Gfroerer	Director Origination, PJM/MISO
Santee Cooper	Mr.	Lonnie N. Carter	President and CEO
Southern Illinois Electric Cooperative		Cathy Belcher	
Southern Illinois Power Cooperative	Mr.	William Hutchison	Manager, Power Marketing
Southern Power Company	Mr.	John Massey	
The Energy Authority	Mr.	Tim Beckett	
The Energy Authority	Mr.	Jim Richardson	
TVA	Mr.	Porter, John A	Trader, Energy Origination
Union Electric	Mr.	Jaime Haro	
Union Electric	Mr.	John Brickey	
Union Electric		Andrew Meyer	
Wabash Valley		Lee Wilmes	
Washington Gas Energy Services		Jeff Borek	
Waverly Light and Power		Cara Jensen	
We Energies		Dave Sims	
We Energies	Mr.	Donald Splinter	Power Marketer
Westar	Mr.	John Olsen	
Western Resources		Tim Beckett	
Wisconsin Electric Power Co	Mr.	Dave Sims	
Wisconsin Public Service		Dave Hathaway	
Wisconsin Public Service		Day Ahead Desk	
Wisconsin Public Service		Real Time Desk	
Wolverine Energy	Mr.	John Miceli	
Xcel Energy	Mr.	Ian Benson	Director, Origination - North
Xcel Energy	Ms.	Connie L Paoletti	
Xcel Energy	Mr.	Edward Johnson	
MARKETERS:			
ACES Power Marketing	Ms.	Jennifer L. Perrenot	Director of Business Development
ACES Power Marketing		Chamroeun Kong	
Advanced Service Corp	Mr.	Tad Phillips	Exec VP
AK Steel	Mr.	Steve Etsler	
ALLIED Utility Services	Mr.	Roger Kliemisch	
American National Power	Mr.	Robert Kasle	
American National Power	Mr.	Steve Helmick	Director of Power Marketing
Bank of America/Merrill Lynch		Brian Beebe	
Bank of America/Merrill Lynch		Mark Egan	
Barclays Capital		Tim O'Hara	
Bear Energy LP		Sean O'Neal	
BOC Energy Services, Inc.		Larry Stalica	
BOC Energy Services, Inc.		Mike Messer	
Cargill Power & Gas Markets	Mr.	Bill Brands	
Cargill Power & Gas Markets	Mr.	Jason Cognetta	
Cargill Power Markets LLC		Daniel Jackson	
Celerity Energy Partners	Mr.	Dennis Quinn	President
Cinergy Power Marketing and Trading		Renee Marko	
Citigroup Energy	Mr.	Robert Strobel	VP
Colorado Energy Management	Mr.	Rodney Bellendir	
Conectiv Energy Supply, Inc.		Eric Stallinger	
ConEdison Solutions		Kevin Martinsen	
Consolidated Edison Energy		Maria Robinson	
Consolidated Edison Energy		Anthony Castellano	
Constellation Energy Commodities Group		Kyle Johnson	
Constellation Energy Commodities Group		Michael Adams	
Constellation Energy Commodities Group		Rohit Marwaha	
Constellation Energy Commodities Group	Mr.	Ronald Erdman	Power Marketing - Midwest Region Mi
Constellation Energy Commodities Group	Mr.	Vivek Chamria	
Constellation Energy Commodities Group	Mr.	Steven Morris	
Constellation Energy Commodities Group	Mr.	Mitch Poindexter	Vice President - Origination
Constellation Energy Commodities Group	Mr.	Ash Huessein	Director
Constellation Power Source	Mr.	Paul Rudewick	COO
Constellation Power Source, Inc.	Ms.	Josi Keyser	Director, Midwest Mid-Marketing
Constellation Energy Commodities Group		Joshua Perry	
Constellation Energy Commodities Group		Elizabeth Ren	
Constellation Energy Resource		Cynthia Fonner	
Coral Energy	Ms.	Becky Serri	
Coral Power LLC, Shell Trading	Mr.	Sam Moreton	Director
Credit Suisse Securities		Tom Lehrkinder	
Deutsche Bank		Donnie Vinson	
DLA Piper US LLP		Christopher Townsend	

Company Name	Mr/Ms	Full Name	Title
DLA Piper US LLP		Christopher Skey	
DLA Piper US LLP		Amanda Jones	
Dominion Clearinghouse		Ron Armstrong	
Dominion Energy Marketing, Inc.		Joe Racelis	
Dominion Energy Marketing, Inc.		Murray Howard	
DTE Energy Trading, Inc.		Kate Short	
DTE Energy Trading, Inc.		Joel Wood	
DTE Energy Trading	Mr.	Gary Alligood	Regional Marketing Director
DTE Energy Trading	Mr.	Richard Smeltz	
DTE Energy Trading	Mr.	Shawn Kestler	Regional Director -Midwest
Duke Energy	Ms.	Ellen Ruff	
Duke Energy	Mr.	Sean Trauschke	
Duke Energy	Mr.	David Black	Midwest Power Marketing
Duke Energy	Mr.	Milton Howard	
Duke Energy Americas, LLC		Sherry Brudner	
Dynegy Power Marketing, Inc.		Joseph Lakshmanan	
Dynegy Power Marketing, Inc.		Tom Noelle	
Dynegy, Inc.		Marisol Guerrero	
Dynegy Power Marketing, Inc.	Mr.	Mike Bradley	Senior Director - East Origination
Dynegy Power Marketing, Inc.	Mrs.	Denise Berolatti	Director -Origination
Edison Mission Marketing & Trading	Mr.	Paul Weiss	Regional Vice President
Edison Mission		Steve Gill	
Edison Mission Marketing & Trading, Inc.		Robert F. Viola	
Edison Mission Marketing & Trading, Inc.		Michael Chechelnitsky	
Element Markets		Erin Eckenrod	
Encore Energy Solutions		N/A	
EnergyUSA - TPC	Mr.	Brendan Donavan	Trader
EnerNOC, Inc.	Mr.	Matthew Plante	Utility Sales Manager
EnerNOC, Inc.	Ms.	Kristen Brief	Corp Development Manager
Fortis Energy Marketing	Mr.	Terrance Naulty	VP
Fortis		Lloyd Jackson	
Fortis		Jay Alexander	
Fortis		Kurt Regulski	
FPL Energy Power Marketing	Ms.	Nicole Wolf	
FPL Energy Power Marketing		Dave Camardese	
FPL Energy Power Marketing		Larry Boisvert	
FPL Energy Power Marketing		Christopher Kujawa	
Fulcrum Power Marketing LLC	Mr.	Jesson Bradshaw	Authorized Rep
GEN~SYS Energy	Mr.	Larry Thorson	VP, Sales and Marketing
Glenrock Associates LLC		Paul Patterson	
Goldman Sachs		Jeremy Wodakow	
Goldman Sachs		Michael Dawley	
Goldman Sachs	Mr.	Michael Lapides	
Hess Energy		Kevin Sheridan	
Hess Energy		Hemant Jain	
Indeck Energy Services	Mr.	Richard Robinson	
Indeck Energy Services	Mr.	Greg Wassilkowsky	Manager Business Development
Integrys		Jody Spaeth	
Integrys Energy Services, Inc		Matt Maley	
Invenergy LLC	Mr.	Mark Leaman	
Invenergy Thermal LLC	Mr.	Enio Ricci	Vice President, Business Development
Irving Oil		Lisa Savidant	
J. Aron and Company		Ethan M. Shoemaker	
J. Aron and Company		John Grossarth	
J. Aron & Co. (Goldman Sachs Group)	Mr.	Alnawaz Jiwa	Originator
JP Morgan	Mr.	Geoff Allen	
JP Morgan	Ms.	Laura Meilander	Power Marketing -MISO
JP Morgan	Ms.	Julia Hand	
JPMorgan		Rafia Merchant	
KEMA		Taff Tschamler	
Lehman Brothers Commodity Services Inc.		Geoffrey Gregory	
McDermott Will & Emery LLP		Gregory Lawrence	
Memarketers	Mr.	Mike Critchley	
Mirant	Mr.	Dan Phillips	Director, Business Development
Morgan Stanley Capital Group	Mr.	Simon Greenshields	Mgr Gas & Electric Trading
Morgan Stanley Commodities		Alex Tolstykh	
MWH Americas, Inc		Kathleen M King	
Native Energy		Ayesha Dinshaw	
North American Power Group Ltd.	Mr.	Michael J. Ruffatto	President
NRG Energy		Tom Krizmanich	
NRG Energy		Peter Collins	

Company Name	Mr/Ms	Full Name	Title
NRG Energy		Jake Greig	
NRG Power Marketing	Mr.	Thad Hill	Executive Vice President, Corporate Bu
Peabody Energy	Mr.	Jacob Williams	
PEPCO Energy Services		James Newton	
Positive Energy		Alex Laskey	
Power Ex		Tom Bechard	
Powerex		Paul McCuaig	
PPL Corporation		Anne Fiore	
PPL EnergyPlus, LLC	Mr.	Frank Hanner	Senior Power Marketer
Progress Energy Ventures, Inc	Mr.	Daniel Roeder	Supervisor Resource Planning
Sempra Energy	Mr.	John Miller	
Sempra Energy Trading Corp.	Mr.	Michael Phenix	
Sempra Energy Trading		Carter McFarland	
Sempra Energy Trading		J.P. St Germain	
Shell Trading		Bill Blake	
SKY Energy, Inc.		Brian Weninger	
SUEZ Energy Marketing NA	Mr.	David Fairley	Vice President - Origination
SUEZ Energy Marketing NA	Mr.	Steve Adams	
Summit Power Group	Mr.	Thomas Cameron	
TransAlta		Lance Henderson	
Transcanada Power		Bill Taylor	
TVA	Mr.	John Porter	
Vectren Power Supply	Mr.	Brad Lisembee	Manager, Wholesale Power Marketing
Vectren	Mr.	Ron Jochum	
Whiting Clean Energy	Mr.	Peter Disser	VP
DEVELOPERS:			
Advanced Power	Mr.	John Redding	
Burton Energy LLC		William Root	
Calpine Corporation		Tom Long	
Calpine	Mr.	Mark Daley	
Calpine	Mr.	Eric Gonzales	
Celerity Energy	Mr.	Dennis Quinn	
Erora Group	Mr.	Michael McInnis	Partner
General Electric	Mr.	Vijay Patel	
GenPower	Mr.	Bob Place	Chairman and Managing Director
GenPower	Mr.	John O'Leary	Vice Chairman and Managing Director
LS Power Development - Kendall Energy	Mr.	Jeffrey A. Corder	Director, Business Development
LS Power Development	Mr.	Bryan Rushing	Manager, Origination
LS Power Development	Mr.	Jason Pillai	Energy Trading
Magnolia Energy	Mr.	Mike Chapman	
New Covert Generating Co.	Mr.	Mike Foster	
NRG Power Marketing	Mr.	William Stone	Originator
Orion Energy	Mr.	Reid Buckley	
Primary Energy	Mr.	Graham Brown	VP Operations
Primary Energy	Mr.	David Eslinger	Project Manager
Pure Energy Resources	Mr.	Bill Siderewicz	
Tenaska Power Services	Mr.	Tom Boyd	Vice President
Tenaska Power Services	Mr.	Jeff James	Director, Business Development
Tenaska Power Services	Mr.	Greg Geisler	Vice President
Tenaska Power Services	Ms.	Sarah Lane	
Tenaska Power Services	Mr.	Greg Geisler	Vice President
Tenaska Power Services		Bob Ramaekers	
Tenaska Power Services		Kara Whitlock	
TFS Energy		Ben Pinchin	
Tondu Corp	Mr.	Joe Tondu	
TransCanada Power	Ms.	Cheryl Brink	
Wartsila	Mr.	Mikael Backman	
WPS - Energy Services Inc.		Matthew J. Maley	
RENEWABLE:			
3 Degrees		C Gaudet	
Acciona		J Koop	
American Capital Energy		Neil Chaney	
BP Alternative Energy		Matthew Sakurada	
BP Energy		Daniel Runyan	
Brookfield Power		Richard Bordeleau	
BV Energy		Hunsaker, Matthew	
Carbon Solutions Group		Scott Maloney	
Clear Wind		Mark Eilers	
Clear Wind		Heather Wayne	

Company Name	Mr/Ms	Full Name	Title
Clean Currents		Gary Skulnik	
Clear Sky Power		Jeff Reinhardt	
Community Energy		P. Copleman	
Community Energy		Meg Denney	
Clipper Wind		Kevin Rackstraw	
Competitive Power Ventures		Marcus Sass	
Conservation Services Group		Michelle Kinney	
Constellation Energy		Robert Cinncione	
DEGS		Milton Howard	
Eagle Energy		Geoff Gregory	
ECONnergy Energy Company		Robert Kane	
EcoEnergy			
enXco		Jon Miller	
Fortistar Methane		T Wetzel	
Geronimo Wind			
Global Wind harvest			
Green Energy		Tom Depaull	
Green Energy		Charlie Freibert	
Green Energy Mountain Company		Chris Saraceni	
Green Energy Mountain Company		Ron Prater	
Greenfield Solar		Neil Chaney	
Helios Energy		B Olson	
Horizon Wind		Greer, Thomas	
Horizon Wind		Alonso Gabriel	
Hull & Associates		S Giles	
Juhl Wind			
Juwi Solar		Martin	
Liberty Green Renewables		Larry Wott	
Luminant Energy		Randall Talley	
Maple Leaf		David Surette	
Melink		Jim Chapman	
Methane Power		Lewis Gay	
MMA		Jessica Rifkind	
Oak Leaf		Mike	
Orbit			
Orion Energy		K Kitchen	
Outland Energy		Dan Rustowicz	
Phase 3 Renewables		Norman C	
Prairie Power (Soyland)		Terry Killday	
Prairie Power (Soyland)		Dan Breden	
Prairie Power (Soyland)		Phil Breezeel	
Rapid Power Managment, LLC		James Dodson	
RA Energy Solutions		Bellish	
Recurrent Energy		Brian Lynch	
Recurrent Energy		RFP	
Renewable Choice Energy		Jay Pawlak	
Select Energy		Sean Boyles	
Solar Kits USA		J Witte	
Spectron Energy		Ryan Emery	
Sterling Planet, Inc.		Joseph T. Barclay	
Sterling Planet, Inc.		Sandi Johnson	
Sterling Planet		Alden Hathaway	
Stewardship Energy		Matt Kauffman	
Sun Farm Ventures, Inc.		Mark Warner	
SunCrest Energy		Vena McCracken	
SunEdison		Franny Yuhas	
SunPower		Ed Smeloff	
Vision Quest		Jason Edworthy	
White Oak (Invenergy)		R Wood	
Wind Capital Group			
Wind Current		Jim Maguire	
Wolverine		Pete Chase	

APPENDIX F

RFP MEGAWATT DAILY ADVERTISEMENT

REQUEST FOR PROPOSALS

ROCHESTER PUBLIC UTILITIES (ROCHESTER) is seeking proposals for up to 100 MWs of wind resources in the 2009 to 2011 timeframe. ROCHESTER will consider Purchased Power Agreements (PPA) and Asset Ownership to satisfy this requirement. Specific requirements for this Request for Proposals (RFP) are as follows:

- ROCHESTER is seeking up to 100 MWs of nameplate wind capacity
- PPA or Asset Ownership
- Wind resource delivery in the 2009 – 2011 timeframe
- Preference will be given to assets located in Minnesota or the Midwest ISO (MISO) footprint
- Proposals must be for a minimum block of 25 MWs
- Product is energy only and to include all environmental attributes

Burns & McDonnell will administer this RFP and potential bidders can obtain a copy of the RFP at ***www.RPUWindRFP.com***. Bids are due by November 14, 2008.

Burns & McDonnell

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we pledge, we deliver