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Direct Testimony and Schedule
Steven W. Wishart

Before the North Dakota Public Service Commission
State of North Dakota

In the Matter of the Application of
Northern States Power Company, a Minnesota Corporation
for Advance Determination of Prudence for a
200 MW Prairie Rose Wind Generation Project and
Power Purchase Agreement with Geronimo Wind Energy, LLC

Case No. PU-12-059
Exhibit___(SWW-1)

Strategist Modeling

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Schedules

I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND OCCUPATION.

A. My name is Steven W. Wishart. I am Director of Resource Planning and Bidding for Xcel Energy Services Inc., which provides support for all of Xcel Energy Inc.'s utility operating companies.

Q. PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.

A. I have worked for Xcel Energy since 2005 in the areas of demand-side management and resource planning. In my current role, I am responsible for the direction and oversight of Resource Planning for the Northern States Power Company system, which includes Northern States Power Company – Minnesota ("Xcel Energy" or the "Company"). My responsibilities include maintaining our resource planning model, Strategist, conducting economic evaluations of resource additions to our system, and conducting bid processes for new resource acquisitions. My resume is provided as Exhibit___(SWW-1), Schedule 1.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. I present the modeling results that support the reasonableness of the Power Purchase Agreement ("PPA") with Prairie Rose Wind, LLC ("Prairie Rose"). In doing so, I will provide an overview of the Strategist resource planning model used to conduct the evaluations. I will also discuss the results of the strategist model as provided in our Petition for an Advance Determination of Prudence ("ADP") of the Prairie Rose project.

II. STRATEGIST RESOURCE PLANNING MODEL

Q. WHAT IS STRATEGIST?

A. Strategist is a resource planning model that determines the optimal portfolio of resources to serve forecasted load growth. The model includes four modules:

1) The Load module contains the Company's load forecast and modifies it for forecasted DSM impacts.
2) The Generation module stores the generation characteristics for all of the Company's thermal, hydro, and wind units, in addition to the energy profiles for all PPAs. The generation module simulates security-constrained dispatch to meet energy demand, and keeps track of generation, fuel burn, operating costs, and emissions for each unit.
3) The Capital Expenditure and Recovery module is where all capital projects are modeled. Capital costs and escalation rates are used as inputs and the model calculates the revenue requirements for each project taking into account book depreciation, tax deprecation, insurance, property taxes, the cost of debt, and the Company's targeted return on equity.
4) The Proview module is the engine of Strategist's resource planning capability. Proview tests thousands of different resource combinations to identify the mix of new resources that will result in the lowest cost to ratepayers.

Q. HOW DOES THE STRATEGIST MODEL WORK?

A. Strategist simulates the operation of our system over a 40-year planning horizon, taking into account our demand and energy forecast, required reserve margin, new resources we are committed to adding, and planned retirements.

The model proceeds one year at a time, simulating the hourly system dispatch, and tracking generation, system costs, and emissions. When Strategist reaches a year in which peak demand plus required reserve margin exceeds available resources, the Proview module will add various combinations of generic resources to meet the required reserves and track total system costs for each combination. At the end of the model run, Strategist identifies the least cost expansion plan as well as any sub-optimal plans evaluated during the simulation. Total system costs for each plan are summarized as the present value of revenue requirement ("PVRR").

For the Prairie Rose analysis Strategist was first run with the project "hard coded" into the models expansion plan. Next the Prairie Rose project was removed from the model and simulation re-run. Comparison of the two model runs reveals the incremental costs or savings from the project and also identifies what type of energy resources the project is likely to displace.

Q. IS STRATEGIST A WIDELY-USED MODELING TOOL IN THE UTILITY INDUSTRY?

A. Yes. According to Ventyx (a subsidiary of ABB and developer of Strategist), they have 42 clients running the Strategist model including utilities, consultants, and state public utility commissions.

Q. IN YOUR OPINION WHY ARE THE RESULTS OF STRATEGIST RELIABLE FOR PLANNING PURPOSES?

A. Strategist has been used for several years by utilities, consultants, and state public utility commissions to evaluate a variety of long-term resource planning issues. The software's longevity and market penetration are the result of the confidence end users have in its capabilities. The software includes significant

detail on system load and generation characteristics as well as detailed modeling capability for capital projects. Model results can be analyzed down to unit level performance for each month over the 40-year time horizon. This level of granularity allows the user to build a model that closely mimics the actual system and allows for robust quality checks on the model output.

Q. ARE YOU AWARE OF WHETHER ANY UTILITY REGULATORY COMMISSIONS HAVE RELIED UPON THE RESULTS OF STRATEGIST AS A PART OF APPROVING THE COMPANY'S RESOURCE PROCUREMENTS IN THE PAST?

A. Yes. The Company has used Strategist analysis in support of resource procurement in Texas, New Mexico, Colorado, Wisconsin, Minnesota, and North Dakota. The Minnesota and Wisconsin Commission Staffs have their own Strategist licenses and conducts their own analysis when reviewing applications for new resources. The Colorado Commission retained an independent evaluator who ran Strategist to verify the results of our Company's bid evaluation. In addition, Ventyx estimates that utility commissions in ten other states have also used Strategist in resource procurement decisions.

III. STRATEGIST RESULTS SUPPORTING THE REASONABLENESS OF THE PRAIRIE ROSE PPA

Q. DID THE COMPANY UTILIZE STRATEGIST TO DETERMINE THE TOTAL PVRR WITH AND WITHOUT THE PRAIRIE ROSE PPA?

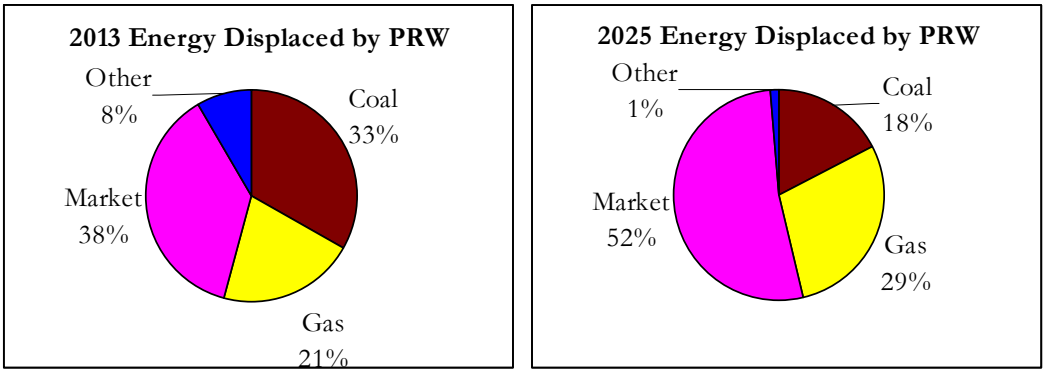
A. Yes. Our original analysis estimated that the project was approximately breakeven with a net PVRR impact of $5 million. If one were to remove the capacity credit assumption, the PVRR impact would increase to $23 million.

Given that the total net present value ("NPV") of the PPA is $280 million, the additional $18 million in PVRR impact represents only 6 percent of the relative contract value. For reasons discussed by Company witness Mr. Kurtis Haeger, even with the net PVRR impacts, the Prairie Rose PPA continues to be a reasonable resource procurement, which provides benefits to customers.

Q. DID THE COMPANY USE STRATEGIST TO DETERMINE WHAT IMPACT THE PRAIRIE ROSE PPA WOULD HAVE ON THE COMPANY'S FUEL SUPPLY MIX?

A. Yes. We used Strategist to estimate which resources Prairie Rose is likely to displace in the system dispatch and how our fuel supply mix will change. Strategist found that throughout the 20-year PPA term, Prairie Rose primarily displaces volatile market energy in addition to smaller amounts of coal and gas. Model results also indicated the PPA will displace small amounts of energy from our woody biomass and refuse derived fuel projects.

Figure 1: Energy Displaced by the Prairie Rose PPA



The displacement of market energy and fossil-fueled generation by the Prairie Rose PPA provides benefits by protecting customers from potential fluctuations in fuel costs.

Q. WHAT ABOUT THE IMPACT OF CURRENTLY LOWER NATURAL GAS PRICES?

A. Although current prices for market energy and natural gas are relatively low, the following figure illustrates that historically the price of these energy resources has been extremely volatile and that the proposed PPA will provide greater price certainty in the future. From this perspective, the Prairie Rose PPA can be thought of as a low-cost hedge for customers against uncertainty in the natural gas and wholesale power markets.

Figure 2: Natural Gas and Market Prices vs. PRW

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Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

Steven W. Wishart Jr.

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EXPERIENCE

Xcel Energy, Minneapolis MN, Denver CO 5/12-Current
Director – Resource Planning & Bidding

Xcel Energy, Minneapolis MN, Denver CO 4/06-05/12
Manager / Sr. Analyst / Analyst – Strategic Analytics

Responsibilities:

- Oversee economic evaluation of large power supply projects for Xcel Energy.
- Prepare analysis for senior leadership that reports on expected value and value at risk for new generation assets, power purchases, conservation programs, wholesale sales, and other projects.
- Maintain complex model of the three Xcel Energy power systems for use in, project evaluation, rate forecasting, and policy analysis.
- Manage a group of quantitative analysts that evaluate various supply and demand side alternatives for all three Xcel Energy service territories.
- Serve as quantitative expert for resource planning and purchased power related dockets.

Major Projects:

- Colorado Clean Air Clean Jobs Act – Retire/repower 900MW of existing coal units in PSCo service territory for compliance with regional NOx legislation.
- 2010 Minnesota Resource Plan – 10 year projection of new resource acquisitions, retirements, renewable energy standard compliance, and enhanced conservation programs.
- Jones Station Repowering – Convert existing 240MW gas steam unit to 650MW combined cycle in SPS service territory.
- 2009 PSCo All-Source Solicitation – Modeling/evaluation of bids totaling 20,000MW. Including Gas, wind, solar PV, solar thermal with storage, compressed air storage, pumped hydro, wind/battery combo, and solar augmented combined cycle.
- Manitoba Hydro CON – Economic valuation of 10yr $1.6B purchase from MH.
- Nuclear Uprate Projects – Economic evaluation and expert witness for Prairie Island and Monticello nuclear uprate proceeding in NSP service territory.
- CO2 Regulation - Forecasted rate impacts of American Clean Energy and Security Act (ACES) on the Xcel Energy operating companies.
- Other - Bottom up redesign of Xcel's long-range planning models, focusing on consistency across jurisdictional operating companies and integration of best practices including Monte-Carlo simulation for risk evaluation. Represented Xcel Energy at MISO board of directors/stakeholder meetings on the topic of wind integration. Long range rate forecasts for management and stakeholders. Financial and economic analysis for Excelsior IGCC project. Analysis of long term power purchase from Manitoba Hydro. EEI regulatory accounting seminar.

Software:

- Strategist, Matlab, Prosym, Excel, Access.

Xcel Energy, Minneapolis MN
Demand Side Management (DSM) Technical Analyst 2/05-4/06

Responsibilities:

- Managed cost/benefit analysis of NSP's $45 million annual conservation and load management activities, including forecasting of financial incentives, and strategic planning.

Projects:

- Evaluation and contract negotiations of DSM bids in Colorado service territory.
- Conservation rulemaking in New Mexico, including design of financial incentive mechanism.
- Cost benefit analysis of NSP's three-year conservation and load management strategic plan.

Software:

- Strategist, DSManager, Matlab, Excel.

The Solar Store, Tucson AZ 10/98-8/00
Accountant

- AR/AP, payroll, inventory management, sales, solar energy system design & installation.
- Member of Concerned Arizonans for Renewable Energy (CARE) lobbied in support of solar tax credits in Arizona.

EDUCATION

PhD (all but dissertation) **Applied Economics, University of Minnesota, 3.7GPA** 8/02-1/05

Course Work:

- Emphasis - environmental and natural resource economics. Other course work - Financial economics, econometrics, dynamic programming, production economics, non-parametric frontier analysis, managerial economics, international trade, macro- and microeconomics.

Software:

- SAS, Matlab, Gauss, Stata, Mathematica.

MS Economics, University of Arizona, 3.8GPA 8/00-5/02

Course Work:

- Environmental economics, environmental law, econometrics, linear and quadratic programming, production economics, consumer economics.

Software:

- SAS, Stata, LimDep, Gams, Lindo, Gauss.

BS Finance, University of Arizona 8/92-12/96

Course Work:

- Financial markets and instruments, corporate finance, accounting, statistics, economics, marketing, Russian, French.