Direct Testimony and Schedules
Gregory L. Ford

Before the North Dakota Public Service Commission
State of North Dakota

In the Matter of the Application of Northern States Power Company
for an Advance Determination of Prudence for Three Natural Gas Combustion
Turbine Generators

Case No. PU-13-_____
Exhibit___(GLF-1)

Description and Schedule of
Proposed CT Generating Units

April 26, 2013

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Schedules

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND TITLE.

A. My name is Gregory L. Ford. I am Director of Engineering, Design, and Document Services in the Energy Supply Engineering and Construction Department.

Q. PLEASE SUMMARIZE YOUR QUALIFICATIONS AND EXPERIENCE.

A. I have worked in consulting and engineering management roles within the electric power industry for 39 years. Since joining Xcel Energy in 2004, I have managed the Energy Supply Engineering and Design Departments for all Xcel Energy jurisdictions, as well as the bidding and negotiation of major equipment supply and installation contracts. My resume is provided as Exhibit___(GLF-1), Schedule 1.

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

A. I discuss the design, operation and maintenance, and construction costs and schedules for the Company's proposed addition of three 215 MW natural gas-fired, simple-cycle, combustion turbine (CT) generators to its system at its Black Dog location in Burnsville, Minnesota, and a new generating plant to be located near the Red River Valley by Hankinson, North Dakota.

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. First, I describe the new Unit 6 that we propose to construct at our current Black Dog plant site, and summarize its integration into the NSP system. Then, I discuss our selection of the Hankinson, North Dakota location for our proposed Red River Valley plant that will house Red River Valley Units 1

and 2, as well as how we will integrate the Red River Valley units into the NSP System. I conclude my testimony with a discussion of the construction costs and schedules for the three CT generating units.

II. DESCRIPTION OF BLACK DOG UNIT 6

Q. PLEASE DESCRIBE THE COMPANY'S BLACK DOG GENERATING PLANT.

A. The Black Dog plant is currently a coal- and natural gas-fired generating station with four operating units. Units 1 and 2 were installed in the 1950s, and before being repowered with a natural gas combined-cycle facility in summer 2002, fired on coal. With the repowering, Unit 1 was retired and replaced with new Unit 5. Combined Units 2 and 5 increased output from the two original units by more than 100 MW.

Black Dog Units 3 and 4, which currently utilize coal as the primary fuel, were put into service in 1955 and 1960. Operating data indicates a declining availability as the units continue to age. Their limited availability, and the costs associated with continuing to run the units reliably while meeting applicable environmental requirements, has led to our decision to retire the units by 2015. Upon their retirement, there will be no coal-fired generation at the Black Dog plant.

Q. PLEASE EXPLAIN THE COMPANY'S PROPOSAL TO LOCATE A CT GENERATOR AT THE BLACK DOG PLANT.

A. Key considerations in adding any new generating unit to the system is its ability to integrate into the transmission system and access the necessary fuel. The Company is proposing to add a 215 MW natural gas-fired, simple-cycle,

CT as Unit 6 to the Black Dog plant, which will be a very cost-effective use of this plant facility upon retirement of Units 3 and 4. Constructing new Black Dog Unit 6 at this existing plant location will take advantage of the existing 115 kV transmission substation, existing natural gas infrastructure, and will be consistent with the current use of this property.

In terms of transmission, while minor modifications to the existing 115 kV switchyard will be required to connect it to the transmission system, no upgrades of the 115 kV transmission system are required. However, because Unit 6 will increase the plant's natural gas need, we will conduct a competitive process for supply to the plant. It may be necessary to replace the existing pipeline serving the plant with a new higher pressure natural gas line, which we have factored into our plans and proposal.

Q. PLEASE DESCRIBE THE DESIGN, OPERATIONS AND MAINTENANCE OF UNIT 6.

A. We will operate Black Dog Unit 6 as a peaking generator, with an anticipated annual capacity factor of four to ten percent. We expect annual availability will be greater than 95 percent, and that its service life will exceed 35 years. Unit 6 will be operated and maintained by the staff that will be retained for Units 2 and 5, the only other units that will remain after Units 3 and 4 are retired. No additional staff are planned to accommodate the new unit.

III. DESCRIPTION OF RED RIVER UNITS 1 AND 2

Q. PLEASE DESCRIBE THE COMPANY'S PROPOSAL TO LOCATE TWO CT GENERATORS AT A NEW PLANT NEAR THE RED RIVER VALLEY.

A. We believe having cost-effective geographic diversity in our generation

resources provides benefits to our customers. Choosing a location near the Red River Valley will place generation closer to our Fargo load center, and will moderate our reliance on the high voltage transmission system to deliver power to this part of our integrated system. Initially, we evaluated locating the plant near Fargo, North Dakota. However, we determined that the costs to connect a Fargo plant site to a natural gas pipeline, as well as the costs to interconnect with the transmission in the area, would not be cost-effective.

As a result, we investigated locating the plant in an area that provides easy access to the transmission system and a nearby major natural gas pipeline – and identified an area south of Fargo, in the general vicinity of Hankinson, North Dakota. The proximity to necessary infrastructure provided by the Hankinson location made this a cost-effective location that will provide the geographic diversity and other benefits to our system that I discussed above.

Q. HOW WILL THE NEW RED RIVER VALLEY PLANT INTERCONNECT WITH THE TRANSMISSION SYSTEM?

A. The Red River Valley plant would connect to the transmission network via a double circuit 230 kV line to either an expanded Otter Tail Power Hankinson 230 kV substation, or a new 230 kV substation constructed at another location. We have conducted a preliminary generation interconnection study to identify likely transmission upgrades needed for the interconnection. The study identified two potential system upgrades that may be required to support interconnection: 1) completion of the Big Stone-Brookings County 345 kV transmission line; and 2) rebuilding Otter Tail Power's existing Hankinson-Wahpeton 230 kV line.

The Red River Valley plant would not be directly responsible for any of the Big Stone-Brookings line cost, since it is part of the MISO Multi-Value Portfolio of regional transmission improvements. The Hankinson-Wahpeton rebuild, however, would be necessary to support interconnection of Red River Valley Unit 2, so the plant would be responsible for its cost.

Q. PLEASE DESCRIBE THE RED RIVER VALLEY PLANT'S FUEL SUPPLY

A. The plant site area is near the Alliance interstate natural gas pipeline. Multiple parties utilize this line to transport gas, and have indicated a willingness and ability to provide sufficient natural gas service for the Red River Valley plant. We anticipate securing the necessary natural gas supply through a competitive process. Additionally, if a future need develops, the layout of the Red River Valley plant will allow for addition of distillate oil storage and handling for backup purposes.

Q. PLEASE DESCRIBE THE DESIGN, OPERATIONS AND MAINTENANCE OF RED RIVER VALLEY UNITS 1 AND 2.

A. The layout of the plant would allow for two simple-cycle CTs to be installed, as well as for the conversion of the two units to a combined-cycle configuration in the future. It is anticipated that the tallest structure within the plant will be the stacks, at approximately 65 feet. The combustion turbines and building are all expected to be less than 40 feet in height. The facility will include the necessary infrastructure to accommodate a full time operating and maintenance staff, primarily for day shift operation. Consistent with Black Dog Unit 6, the unit(s) will be operated as peaking generators with an anticipated annual capacity factor of four to ten percent. Annual availability will be greater than 95 percent, and the service life of the unit(s) is

anticipated to be in excess of 35 years.

IV. CONSTRUCTION COST AND SCHEDULES

Q. WHAT ARE THE COSTS FOR THE THREE CT GENERATORS?

A. The cost of the generators is non-public, and is provided in Section V.D. of our ADP Application. Black Dog Unit 6 is the least cost unit because it will be located at an existing site and will be able to use existing facilities for housing and interconnection to the transmission system. Because Red River Valley Unit 1 will be at a greenfield site requiring all new infrastructure, its cost is approximately 38 percent greater than the cost for Black Dog Unit 6. Red River Valley Unit 2 will be able to enjoy some cost-efficiencies as a result of being able to use some of the infrastructure put into place for Unit 1, and is therefore 24 percent greater than the cost of Black Dog Unit 6.

Q. WHAT IS THE PROPOSED SCHEDULE FOR CONSTRUCTION OF THE THREE CT GENERATORS?

A. Assuming that all necessary regulatory approvals are received, Black Dog Unit 6 would be constructed first because it is the least-cost unit. Construction of Black Dog Unit 6 would begin in mid-2015 and end in late-2016 to be ready for service in 2017. This would require accelerating the retirement of Black Dog Unit 4 to September 2014.

If approved to meet the Company's need for another 350 MW in the 2018 to 2019 time period, construction of the plant site and Red River Unit 1 facilities would start in mid-2016, and be completed in late-2017 for an early-2018 in-service date. Construction of Red River Unit 2 facilities would begin in mid-

2017 for completion in late-2018, with service beginning in early-2019. Company Witness Ms. Laura McCarten discusses the regulatory review process in her Direct Testimony.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

Gregory L. Ford

Statement of Qualifications

I am the Director of Engineering & Design Services in the Engineering & Construction Department. I have worked in the consulting and owners engineering management role within the electric power industry for 39 years. The experience has been with Gilbert/Commonwealth Engineering, Inc. in Jackson, MI for 11 years; HDR Engineering, Inc. in Minneapolis, MN for 13 years; and NRG Energy, Inc. in Minneapolis, MN for 7 years prior to joining Xcel Energy in 2004. Project experience has ranged from initial development through acceptance testing on both new and retrofitted projects and has included significant involvement in permitting activities. Technologies have included boilers (stoker, fluid bed, gas, oil, municipal solid waste, and pulverized coal); steam turbines (10 to 1200 MW); combustion turbines (4 to 240 MW) in both simple and combined cycle configurations; low and high head hydro; district heating and cooling; control systems; ash handling and disposal; coal handling; cooling water systems; environmental retrofits including fabric filters, precipitators, SCRs, low NOx burners, and fuel switching to PRB coal; and overall Balance of Plant systems and equipment.

I was the Power and Energy, as well as Environmental Section Manager for the

Minneapolis office while at HDR Engineering and was the Executive Director of Engineering while at NRG Energy. NRG management responsibilities included bidding and negotiating major contracts for new and retrofitted projects domestically and internationally with construction budgets up to $1.0 billion.

While at Xcel Energy, I have been responsible for managing the bidding and negotiation of the major equipment supply and furnish and installation contracts for the Comanche 3 project near Pueblo, Colorado; the project development of the Fort St. Vrain Units 5 and 6 project near Platteville, Colorado; and the Clean Air Clean Jobs projects that include Cherokee Synchronous Condenser, Cherokee Units 5, 6, and 7 Combined Cycle, Pawnee AQCS, and Hayden Units 1 and 2 SCR projects. I have also been responsible for the management and administration of the Engineering and Design Departments within Engineering & Construction for all jurisdictions of Xcel Energy.

I am a registered Professional Engineer in Michigan and Minnesota. I am also a member of ASME. I have a BSME degree from Colorado State University.

STATE OF NORTH DAKOTA
BEFORE THE
NORTH DAKOTA PUBLIC SERVICE COMMISSION

IN THE MATTER OF THE APPLICATION OF
NORTHERN STATES POWER COMPANY
FOR AN ADVANCE DETERMINATION OF
PRUDENCE FOR THREE NATURAL GAS
COMBUSTION TURBINE GENERATORS

CASE NO. PU-13-_____

VERIFICATION

STATE OF MINNESOTA)
) ss.
COUNTY OF HENNEPIN)

Gregory L. Ford, being first duly sworn on oath, deposes and says that he is Director, Engineering, Design, and Document Services for Xcel Energy Services Inc. on behalf of Applicant Northern States Power Company, in the above captioned matter, that the testimony and schedules submitted in the above captioned matter under his name were prepared under his direction, that he knows the contents thereof, and that the same is true and correct to the best of his knowledge and belief.

Gregory L. Ford

Gregory L. Ford

Subscribed and sworn to before me this 24 day of April, 2013.

Notary Public
My Commission Expires: 1-31-15

CYNTHIA D. HARRINGTON
NOTARY PUBLIC
MINNESOTA
My Commission Expires Jan. 31, 2015