BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

*** * * * ***

IN THE MATTER OF THE APPLICATION OF PUBLIC SERVICE COMPANY OF COLORADO FOR APPROVAL OF THE 600 MW RUSH CREEK WIND PROJECT PURSUANT TO RULE 3660(H), A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE RUSH CREEK WIND FARM, AND A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE 345 KV RUSH CREEK TO MISSILE SITE GENERATION TIE TRANSMISSION LINE AND ASSOCIATED FINDINGS OF NOISE AND MAGNETIC FIELD REASONABLENESS.	)	**PROCEEDING NO. 16A-0117E**

DIRECT TESTIMONY AND ATTACHMENTS OF BETTY L. MIRZAYI

ON

BEHALF OF

PUBLIC SERVICE COMPANY OF COLORADO

May 13, 2016

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

*** * * * ***

IN THE MATTER OF THE APPLICATION OF PUBLIC SERVICE COMPANY OF COLORADO FOR APPROVAL OF THE 600 MW RUSH CREEK WIND PROJECT PURSUANT TO RULE 3660(H), A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE RUSH CREEK WIND FARM, AND A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE 345 KV RUSH CREEK TO MISSILE SITE GENERATION TIE TRANSMISSION LINE AND ASSOCIATED FINDINGS OF NOISE AND MAGNETIC FIELD REASONABLENESS.	)	**PROCEEDING NO. 16A-0117E**

SUMMARY OF THE DIRECT TESTIMONY OF BETTY L. MIRZAYI

Ms. Betty Mirzayi is the Manager Transmission Planning West for Xcel Energy Services Inc. In that role she is responsible for the management of the transmission planning group for Public Service Company of Colorado. As the leader of this group she oversees the engineering group responsible for planning the transmission system and is responsible for the development of capital budget expenditures for the planning of identified and developed projects. She is also responsible for maintaining reliable transmission services that support the transmission business plan objectives.

Ms. Mirzayi supports the Company's request to the Colorado Public Utilities Commission ("Commission") for a Certificate of Public Convenience and Necessity

("CPCN") to construct and maintain a 345 kV electric generation intertie known as the Rush Creek Gen-Tie, which will consist of approximately 90 miles of new transmission and a new substation known as the Rush Creek Switching Station. She explains that interconnecting and delivering the rated output of Rush Creek I and II to Public Service's transmission system is feasible, as shown in the Feasibility Study her team conducted for the Rush Creek Gen-Tie. She goes on to explain that a 345 kV Gen-Tie is reasonable from a long-term transmission planning perspective and is consistent with Colorado public policy. A minimum transmission system necessary to serve the proposed Project would include a 230 kV transmission line. The Company developed 230 kV construction estimates and is in the process of conducting a Feasibility Study for a 230 kV gen-tie alternative. However, the evaluation concludes that a 345 kV gen-tie is a superior option based on system planning, public policy, and cost-effectiveness considerations in the long run. Finally, Ms. Mirzayi presents the estimated construction timeline associated with the Rush Creek Gen-Tie and provides a brief describe the Federal Energy Regulatory Commission's ("FERC") Large Generator Interconnection Process ("LGIP").

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

*** * * * ***

IN THE MATTER OF THE APPLICATION OF PUBLIC SERVICE COMPANY OF COLORADO FOR APPROVAL OF THE 600 MW RUSH CREEK WIND PROJECT PURSUANT TO RULE 3660(H), A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE RUSH CREEK WIND FARM, AND A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE 345 KV RUSH CREEK TO MISSILE SITE GENERATION TIE TRANSMISSION LINE AND ASSOCIATED FINDINGS OF NOISE AND MAGNETIC FIELD REASONABLENESS.	**)**	**PROCEEDING NO. 16A-0117E**

DIRECT TESTIMONY AND ATTACHMENTS OF BETTY L. MIRZAYI

INDEX

SECTION **PAGE**

LIST OF ATTACHMENTS

Attachment	Content
Attachment BLM-1	Map of Colorado Transmission Network
Attachment BLM-2	One Line Diagram of the Missile Site – Rush Creek Project
Attachment BLM-3	One Line Diagram of the Rush Creek Switching Station
Attachment BLM-4	Rush Creek Wind Project Feasibility Study

GLOSSARY OF ACRONYMS AND DEFINED TERMS

Acronym/Defined Term	Meaning
ACSR	Aluminum Conductor Steel Reinforced
CPCN	Certificate of Public Convenience and Necessity
ERP	Electric Resource Plan
ERZ	Electric Resource Zone
ERIS	Energy Resource Interconnection Service
FERC	Federal Energy Regulatory Commission
IPP	Independent Power Producer
ISD	In Service Date
kW	Kilowatt
LGIA	Large Generator Interconnection Agreement
LGIP	Large Generator Interconnection Procedure
MW	Megawatt
NRIS	Network Resource Interconnection Service
O&M	Operations and Maintenance
OATT	Open Access Transmission Tariff
Public Service or Company	Public Service Company of Colorado
SB-100	Senate Bill 07-100
TPW	Transmission Planning West
Xcel Energy	Xcel Energy Inc.
XES	Xcel Energy Services Inc.

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

*** * * * ***

IN THE MATTER OF THE APPLICATION OF PUBLIC SERVICE COMPANY OF COLORADO FOR APPROVAL OF THE 600 MW RUSH CREEK WIND PROJECT PURSUANT TO RULE 3660(H), A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE RUSH CREEK WIND FARM, AND A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE 345 KV RUSH CREEK TO MISSILE SITE GENERATION TIE TRANSMISSION LINE AND ASSOCIATED FINDINGS OF NOISE AND MAGNETIC FIELD REASONABLENESS.	**PROCEEDING NO. 16A-0117E**

DIRECT TESTIMONY AND ATTACHMENTS OF BETTY L. MIRZAYI

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Betty L. Mirzayi. My business address is 1800 Larimer, Suite 600, Denver, Colorado 80202.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT POSITION?

A. I am employed by Xcel Energy Services Inc. ("XES"). XES is a wholly-owned subsidiary of Xcel Energy Inc. ("Xcel Energy"), and provides an array of support services to Public Service Company of Colorado ("Public Service" or "Company") and the other utility operating company subsidiaries of Xcel

Energy on a coordinated basis. My title is Manager of Transmission Planning West for XES.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THE PROCEEDING?

A. I am testifying on behalf of Public Service.

Q. PLEASE SUMMARIZE YOUR RESPONSIBILITIES AND QUALIFICATIONS.

A. I am responsible for the management of the transmission planning group, which provides planning services for Public Service. I oversee the engineering group responsible for planning the transmission system and I am responsible for the development of capital budget expenditures for the planning of identified and developed projects. I am responsible for maintaining reliable transmission services that support the transmission business plan objectives. A statement of my qualifications, duties, and responsibilities is included after the conclusion of my testimony.

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. The purpose of my testimony is to support the Company's request in its Application for a Certificate of Public Convenience and Necessity ("CPCN") to construct, own and operate approximately 90 miles of 345 kV electric transmission connecting the Rush Creek I and II wind generation facilities to Public Service's Missile Site Substation, located in Arapahoe County. For the purposes of my testimony, I will refer to the 345 kV transmission generation intertie as the "Rush Creek Gen-Tie" or the "Gen-Tie". I provide a detailed

description of the Gen-Tie and explain how the Gen-Tie fits in with the Company's overall transmission plans. I present the transmission study Public Service completed to evaluate the feasibility of interconnecting and delivering the rated output of the Rush Creek I and II facilities to the Public Service transmission system. The study results show that interconnecting and delivering the 600 MW rated output of Rush Creek I and II is feasible. I explain the potential impacts of these wind generation facilities on the Public Service transmission system and why a 345 kV line is recommended from a transmission planning perspective.

I then provide the estimated timeline for developing and constructing the Gen-Tie. Finally, I describe the Federal Energy Regulatory Commission's ("FERC") Large Generator Interconnection Procedures ("LGIP") as outlined in Public Service's Open Access Transmission Tariff ("OATT").

Q. ARE YOU SPONSORING ANY ATTACHMENTS?

A. Yes. Attachment BLM-1 is a map of the Colorado transmission network and provides perspective of the Gen-Tie Project in relation to Public Service's overall bulk power transmission system. Attachment BLM-2 is a drawing, or "one-line", of the Rush Creek Wind Project in compliance with Rule 3102(b)(VII). Attachment BLM-3 is a one line diagram of the Rush Creek Switching Station. Finally, Attachment BLM-4 is the Feasibility Study for interconnecting the Rush Creek Wind Project.

II. OVERVIEW OF THE PROPOSED RUSH CREEK GEN-TIE FACILITIES

Q. PLEASE DESCRIBE THE RUSH CREEK GEN-TIE.

A. As depicted in BLM-2, the Rush Creek Gen-Tie consists of a radial, single-circuit 345 kV transmission line that provides an interconnection for the Rush Creek I and II wind generation facilities into the Company's existing transmission system at the Missile Site Substation. At Rush Creek I, the Company will construct a transmission switching station, known as the Rush Creek Switching Station. The Rush Creek Switching Station will be located approximately 50 miles southeast of Public Service's Missile Site Substation, and approximately 40 miles west of the Rush Creek II wind generation facility.

Q. WHAT TRANSMISSION FACILITIES WILL BE CONSTRUCTED BETWEEN MISSILE SITE AND RUSH CREEK I AND II?

A. Generally speaking, the Rush Creek Gen-Tie consists of four major components:

- Missile Site Substation: The existing Missile Site Substation is already designed to accommodate a new interconnection, but will be modified to accept a new 345 kV transmission line. This will consist of adding a new substation bay and two circuit breakers to the 345 kV switchyard.

- Missile Site – Rush Creek Switching Station: Between the Company's existing Missile Site and its proposed Rush Creek Switching Station, the Company will construct approximately 50 miles of single-circuit 345 kV transmission line using two-conductor bundled, 1272 Kcmil, Aluminum Conductor Steel Reinforced ("ACSR") "Bittern" conductor.

- Rush Creek Switching Station: At Rush Creek I, the Company will construct a new 345 kV transmission switching station known as the Rush Creek Switching Station. As reflected in Attachment BLM-3, the Rush Creek Switching Station will be configured with a three-breaker ring to accommodate transmission terminations for: (1) a 345 kV line to the Missile Site Substation, (2) a 345 kV line to Rush Creek II, and (3)

the transmission feed to the collection substation at the Rush Creek I wind generation facility.

- Rush Creek Switching Station – Rush Creek II: The Company will also construct approximately 40 miles of two-conductor bundled, 1272 Kcmil, ACSR single-circuit 345 kV transmission line between the Rush Creek Switching Station and the Rush Creek II wind generation facility.

In his Direct Testimony, Public Service witness Mr. Brad D. Cozad explains the costs and engineering design of the Gen-Tie, as well as mitigation of noise and magnetic fields.

III. TRANSMISSION PLANNING CONSIDERATIONS

Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

A. In this section, I explain why a 345 kV line is in the public interest, how it comports with good utility transmission planning objectives, and complies with Colorado public policy to construct new transmission to identified Energy Resource Zones to enable the interconnection of new beneficial energy resources. I also present and explain the Feasibility Study the Transmission Planning West department conducted.

Q. WHAT IS YOUR ROLE AS TRANSMISSION PLANNING MANAGER?

A. As manager of Transmission Planning West, my responsibilities include managing multiple aspects of the Company's transmission business. In my role, I oversee and conduct the various studies required under FERC's LGIPI am also responsible for managing other studies as needed.

Q. WHAT INTERCONNECTION VOLTAGE DID THE COMPANY STUDY?

A. In evaluating how Rush Creek I and II should be interconnected onto the Public Service system, my team performed a 345 kV Generation Interconnection Feasibility Study at the request of the Energy Supply Department which is included as Attachment BLM-4[1]. We also assessed a 230 kV alternative to establish the capital cost estimate needed to deliver the Rush Creek wind as well as for the CPCN alternative evaluation. The 230 kV

[1] The 345 kV Feasibility Study is also publicly available through the Company's OASIS website at http://www.rmao.com/wtpp/Final_Studies/GI-2016-3_FeasibilityStudyReport_Final.pdf.

capital cost estimate was provided to the Company's Energy Supply Department for the purpose of economic evaluation as part of their least cost construction evaluation. We are currently performing a formal interconnection Feasibility Study for the 230 kV alternative under the LGIP.[2] The discussion on least cost is included in the testimony of Company witness Mr. Riley Hill and Mr. James Hill.

Q. GENERALLY SPEAKING, WHAT ARE THE KEY OBJECTIVES A TRANSMISSION PLAN SHOULD SEEK TO ACHIEVE?

A. The ultimate objective of a transmission plan is to develop a transmission strategy that balances the short-term, mid-term, and long-term supply needs of retail and wholesale customers, while ensuring cost-effective and reliable electric energy supply. Given the significant expense, time, and physical space utility transmission infrastructure projects require, it is not always most efficient or economical in the long-term to build "just enough" to accommodate the immediate needs a certain project may provide. Rather, when considering a large transmission project, it is important to evaluate and balance the potential future benefits that a project might deliver against the potential costs.

[2] Once complete, the 230 kV feasibility study will be publicly available through the Company's OASIS website at http://www.rmao.com/wtpp/PSCO_Transmission_Studies.html. The queue position is GI-2016-6.

Q. DID THE COMPANY CONSIDER ANY ALTERNATIVES CONSISTENT WITH RULE 3102(b)(VII)?

A. Yes. Commission Rule 3102(b)(VIII) provides that an application for a CPCN shall include "[a]s applicable, information on alternatives studied, costs for those alternatives, and criteria used to rank or eliminate alternatives." Consistent with this rule, the Company considered constructing the proposed Rush Creek Gen-Tie at 230 kV instead of 345 kV. The Company also evaluated the possibility of interconnecting the Rush Creek wind generation to existing transmission gen-ties located close to the Rush Creek Project area, but we determined that interconnecting to these facilities is not a reasonable option at this time either due to cost constraints or physical constraints.

Q. HAS THE COMPANY DEVELOPED A COST ESTIMATE FOR THE RUSH CREEK GEN-TIE?

A. Yes. Mr. Brad Cozad provides the capital construction cost estimates for both the 345 kV and 230 kV.

Q. WHY IS THE COMPANY PROPOSING TO CONSTRUCT THE RUSH CREEK GEN-TIE AT A 345 KV VOLTAGE LEVEL FROM A TRANSMISSION PLANNING PERSPECTIVE?

A. First, the initial interconnection request we received was at 345 kV. Consistent with the FERC LGIP, we studied the line at the 345 kV voltage level.

After we prepared the required LGIP study, which focused on the feasibility of interconnection and developing construction costs, we did further analysis and concluded that public policy and practicality considerations weigh in favor of constructing a 345 kV line. Under the planned configuration, the thermal rating of the 345 kV line will be approximately 1,600 MW, which is 1,000 MW higher than the 600 MW rated output of the Rush Creek Wind Project.

Q. COULD THE 230 KV ALTERNATIVE MEET THE CAPACITY REQUIREMENTS OF THE RUSH CREEK WIND PROJECT?

A. Yes, the 230 kV alternative I discuss later in my testimony could accommodate the interconnection of Rush Creek I and II. However, I do not recommend a 230 kV alternative.

Q. PLEASE EXPLAIN THE SIGNIFICANCE OF THE LGIP REQUEST FOR THE GEN-TIE.

A. Public Service has the role of the Transmission Provider under FERC open access transmission rules and the OATT. Among other things, the OATT rules require the Company (as a transmission provider) to respond to transmission customer requests to interconnect to the Public Service transmission. Consistent with FERC requirement, the Company's Energy Supply group is the transmission customer requesting interconnection and thus is the Interconnection Customer. In their first interconnection request, Public Service's Energy Supply group specified the primary Point of

Interconnection ("POI") to be at the 345 kV bus at the existing Missile Site Substation. Therefore, consistent with the LGIP rules and the OATT, my team conducted the requisite initial study to evaluate the feasibility of a 345 kV Gen-Tie. The second interconnection request identified the POI at the 230 kV bus of the Missile Site Substation.

Q. PLEASE SUMMARIZE THE RESULTS OF THE 345 KV FEASIBILITY STUDY.

A. The Feasibility Study, which is required by FERC's LGIP rules, indicates it is feasible to interconnect the proposed Rush Creek Wind Project at the Company's existing Missile Site Substation at 345 kV. As I discuss later in my testimony, the study also shows that in order to deliver the full 600 MW output as a Network Resource, our planned network upgrades of the Pawnee-Daniels Park project must be completed. Without such upgrades, Rush Creek I and II output could be delivered as an "Energy Resource" only. I describe the differences between Network Resource Interconnection Resource ("NRIS") and Energy Resource Interconnection Resource ("ERIS") later in my testimony.

Q. DOES THE RUSH CREEK 345 KV FEASIBILITY STUDY INDICATE THAT THE INTERCONNECTION CAN BE COMPLETED BY AUGUST 2018?

A. Yes, the Company confirms that the Rush Creek Gen-Tie can be in service by August 2018.

Q. WHAT IS THE ANTICIPATED CONSTRUCTION TIMELINE FOR THE RUSH CREEK GEN-TIE?

A. The Company has initiated design for the 345 kV Rush Creek Gen-Tie. Procurement of long lead time equipment will begin in June 2016 and delivery starting in April 2017. Actual construction is scheduled to start in May 2017 and end in June 2018. We anticipate commissioning activities will run through July 2018. The Gen-Tie is scheduled to be fully commissioned and operational in August 2018.

Q. PLEASE ELABORATE ON HOW THE ECONOMICS JUSTIFY A 345 KV GEN-TIE.

A. A 345 kV Gen-Tie experiences lower power losses and provides a better net capacity factor for the Project's wind generation, making it more cost-effective for our customers over the long term than a transmission line at 230 kV voltage. This is explained in more detail in the testimony of Public Service witness Mr. James Hill.

Q. HOW DOES THE GEN-TIE AT 345 KV VOLTAGE FURTHER COLORADO PUBLIC POLICY?

A. Although the actual amount of injection that could be added to a 345 kV Gen-Tie will depend on the results of project-specific future system interconnection studies, the higher level of capacity will provide significant flexibility to interconnect additional generation resources along the Gen-Tie or on an extension of the line within a wind rich area. More specifically, a 345 kV Gen-

Tie supports the policy intent of Senate Bill 07-100 ("SB-100") by building transmission into what has been identified as Energy Resource Zone ("ERZ") 2. SB-100 requires rate-regulated Colorado electric utilities to designate ERZs, which are defined by the statute as "a geographic area in which transmission constraints hinder the delivery of electricity to Colorado consumers, the development of new electric generation facilities to serve Colorado consumers, or both."

Based on experience, market understanding, and requests received to date, we are confident there will be future demand to interconnect to our system in eastern Colorado. Since 2011, the Company has received eight generator interconnection requests at Missile Site Substation, not counting the requests currently in progress for the Rush Creek Wind Project. Of those eight requests, four have signed Large Generator Interconnection Agreements ("LGIA"). The remaining four have withdrawn from the interconnection process following study results. One unofficial inquiry has been made regarding the availability of the new Rush Creek Gen-Tie. Constructing the Gen-Tie at 345 kV will provide us with flexibility to accommodate such future development.

The 345 kV Gen-Tie will serve this purpose by allowing an additional 1,000 MW of thermal capacity beyond that needed for the Project to serve future electric generation facilities.

Q. WHAT PRACTICAL CONSIDERATIONS FAVOR 345 kV VOLTAGE OVER 230 kV?

A. The projected lifespan of the Rush Creek Wind Project is approximately 25 years, while the projected lifespan of the Gen-Tie is approximately 70 years. Our transmission needs will inevitably evolve over the next 70 years. A 345 kV line fits within the Company's longer-term transmission goals of providing opportunities for expansion of the Gen-Tie to connect with other areas of the transmission network as part of the interconnected transmission grid system.

A 345 kV line is also favored from a siting and land rights perspective because it will provide more optimal use of right of ways, and will reduce future costs and potential impairments from needing to upgrade or add transmission facilities in the future, which lessens the future burden on landowners, local officials and other stakeholders and is therefore in the public interest.

Q. IS THE RUSH CREEK GEN-TIE CONSISTENT WITH THE COMPANY'S MOST RECENTLY FILED RULE 3206(D) ANNUAL TRANSMISSION REPORT AND RULE 3627 TEN-YEAR TRANSMISSION REPORT?

A. Yes. The Rush Creek Gen-Tie is consistent with the Company's 2016 Rule 3206 transmission report, filed on May 2, 2016 in Proceeding No. 16M-0093E. The Rule 3206 report is filed annually to inform the Commission regarding planned transmission projects in order to determine which projects will require a CPCN. Though the Company had not identified the Rush Creek

Gen-Tie when it submitted its last Rule 3627 report, the 345 kV Rush Creek Wind Project is consistent with the Company's long-term transmission planning objectives. The Company's Rule 3627 plans state that the Pawnee – Daniels Park project is meant to accommodate additional generation injection. The proposed Rush Creek I and II directly meet that objective.

IV. PAWNEE-DANIELS PARK

Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

A. In this section, I explain the need for the Pawnee-Daniels Park 345 kV transmission project and how the Company will treat the energy generated by the Rush Creek Wind Project between the time Rush Creek goes into service and the Pawnee-Daniels network upgrades are completed.

Q. WHY IS THE PAWNEE – DANIELS PARK PROJECT NEEDED?

A. As I discussed earlier in my testimony, the 345 kV Feasibility Study showed that in order to deliver the full 600 MW output of the proposed generation as a Network Resource, network upgrades would be needed. As indicated in Attachment BLM-4, when the 600 MW of generation from Rush Creek I and II is added to the existing system, the studies indicate a potential for unacceptable transmission element loading to occur. Similar conditions were evaluated during the course of studies related to SB 07-100, and plans were developed for the Pawnee – Daniels Park project. The Pawnee – Daniels Park project was found to be an effective solution to the capacity constraints due to the additional generation in the area. Since the Pawnee – Daniels Park project is an established transmission plan, and the Company has already received a CPCN for that project,[3] the Feasibility Study identified that project to provide the network upgrades needed to accommodate the Rush Creek I and II generation as a Network Resource.

[3] Decision No. C15-0316, Proceeding No. 14A-0287E.

Q. HOW DOES THE LGIP DEFINE ENERGY RESOURCE INTERCONNECTION SERVICE AND NETWORK INTERCONNECTION SERVICE?

A. According to the LGIP in the Public Service OATT, Energy Resource Interconnection Service refers to:

> [A]n Interconnection Service that allows the Interconnection Customer to connect its Generating Facility to the Transmission Provider's Transmission System to be eligible to deliver the Generating Facility's electric output using the existing firm or non-firm capacity of the Transmission Provider's Transmission System on an as available basis. Energy Resource Interconnection Service in and of itself does not convey transmission service.

In pertinent part, the LGIP defines Network Resource Interconnection Service as:

> An Interconnection Service that allows the Interconnection Customer to integrate its Large Generating Facility with the Transmission Provider's Transmission System … in a manner comparable to that in which the Transmission Provider integrates its generating facilities to serve native load customers … Network Resource Interconnection Service in and of itself does not convey transmission service.

Q. CAN YOU BRIEFLY DESCRIBE THE PAWNEE – DANIELS PARK PROJECT?

A. Yes. The Pawnee-Daniels Park project consists of 115 miles of new 345 kV transmission between the Pawnee Generating Station near Brush, Colorado and the Daniels Park Substation near Castle Pines, Colorado. The Project also includes a new Harvest Mile Substation and a new 345 kV circuit from Smoky Hill to Daniels Park. The project is necessary to alleviate existing

constraints and will ensure the Company can reliably transmit the full 600 MW of generation from the Rush Creek Wind Project.

Q. WHAT IS THE EXPECTED IN SERVICE DATE FOR THE PAWNEE – DANIELS PARK TRANSMISSION LINE?

A. In the Commission's decision approving the CPCN for the Pawnee – Daniels Park Project, the Commission ruled that construction could not begin until May 1, 2020. Under that ruling, Public Service estimates the in-service date would be in 2022. On April 29, 2016, the Company filed a petition with the Commission, requesting that the in-service date for the Pawnee to Daniels Park Project be modified to allow for an in service date of October 30, 2019.[4] That petition is currently pending before the Commission. If the Commission approves the Company's petition in the Pawnee-Daniels Park project proceeding, that would benefit the in service date of fall 2018 for the Rush Creek Wind Project.

[4] Proceeding 16V-0314E: Verified Petition for Variance of Commission Decision for Accelerated Construction Schedule (Commission Decision Nos. R14-1405 and C15-0316, issued in Proceeding No. 14A-0287E).

Q. WHAT TYPE OF INTERCONNECTION SERVICE WOULD BE AVAILABLE TO THE RUSH CREEK WIND PROJECT?

A. Initially, our 345 kV Feasibility Study demonstrates that the total output of the Rush Creek Wind Project could be interconnected as an Energy Resource. However, the plan is for the Rush Creek Wind Project to eventually become a Network Resource as the necessary network upgrades are completed.

Q. IF THE PAWNEE DANIELS PARK PROJECT PETITION IS GRANTED, HOW WOULD THE GAP BETWEEN THE FALL OF 2018 IN SERVICE DATE FOR THE GEN-TIE AND THE OCTOBER 2019 IN SERVICE DATE FOR PAWNEE-DANIELS IMPACT OPERATION OF THE PROPOSED RUSH CREEK WIND PROJECT?

A. It is my understanding that even though the Rush Creek Gen-Tie will be in service in August 2018, the Rush Creek I and II generation sites will not go into full commercial operation until October 2018. That means that the facility will not operate at full output until October 2018. The first step the Company has taken to shorten the gap was to file the petition to modify the in-service date of the Pawnee – Daniels Park project. In preparation for an earlier in-service date, the Company has also evaluated how the construction of the Pawnee-Daniels Park project might be staged to provide the most system benefits. The Company has planned for the Harvest Mile Substation portion of the Pawnee-Daniels Park project to be completed by the end of 2018. Once the Harvest Mile Substation is complete, the Company would effectively

be able to treat more of the Rush Creek Wind Project like a Network Resource. This will provide a significant amount of operational flexibility. As discussed more fully in Mr. Welch's testimony, Public Service may use existing available capacity to deliver the output of the Rush Creek Wind Project to the Company's load until the Pawnee-Daniels Park project is complete.

V. OVERVIEW OF FERC LARGE GENERATOR INTERCONNECTION PROCESS

Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

A. In this section of my testimony, I explain FERC's LGIP and where the Project is in that process.

Q. PLEASE EXPLAIN THE FERC LGIP INTERCONNECTION PROCESS.

A. In July 2003, by Order No. 2003, FERC issued standard interconnection procedures and a standard generator interconnection agreement that apply to all generators larger than 20 MW.[5] The LGIP requires public utilities that offer transmission services to also offer non-discriminatory, standardized interconnection service to promote open access transmission service and facilitate the development of new electric infrastructure.

Under the LGIP, a Transmission Provider typically performs three successive studies: a Feasibility Study, System Impact Study, and Facilities Study. The LGIP requires the transmission owner treat an interconnection request submitted by the transmission owner or an affiliate the same as an interconnection request submitted by an independent entity– even if the transmission customer is the same company as the transmission provider.

Q. WHAT STAGE IN THE LARGE GENERATOR INTERCONNECTION PROCESS IS THE COMPANY'S INTERCONNECTION REQUEST?

A. On February 12, 2016 XES's Transmission Access function, as representative for Public Service's Energy Supply group, submitted its

Interconnection Request at the 345 kV Missile Site Substation to Public Service Company's Transmission Provider function.[6] Public Service has completed a feasibility study for the 345 kV Gen-Tie, which is attached as BLM-4. Public Service is conducting a Feasibility Study for the 230 kV alternative.

Q. DESCRIBE THE STUDIES THAT FOLLOW THE FEASIBILITY STUDY.

A. Following the Feasibility study, the LGIP process includes a System Impact Study, a Facilities Study, then execution of a Large Generator Interconnection Agreement. The System Impact Study evaluates the impact of the proposed interconnection on the reliability of the transmission system. The System Impact Study request for the Rush Creek Wind Project was submitted on May 6, 2016. Once a System Impact Agreement is signed, the Company will complete a System Impact Study within the 90-day period set forth in our OATT. The Facilities Study specifies and estimates the cost of equipment, engineering, procurement and construction work needed to electrically connect the Interconnection Facility to the Transmission System. Once completed, we will post the System Impact Study and Facilities Study to our OASIS website.

[5] Available at http://www.ferc.gov/industries/electric/indus-act/gi/stnd-gen.asp
[6] A record of the request is publicly available in the queue on the Company's OASIS website at http://www.rmao.com/wtpp/PSCO_Studies.html.

VI. CONCLUSION

Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS.

A. In summary, I recommend the Commission approve the Company's request for a CPCN to construct an approximately 90-mile 345 kV transmission line to interconnect the Rush Creek Wind Project with the grid at the Company's Missile Site Substation.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

Statement of Qualifications

Betty L. Mirzayi

Betty L. Mirzayi is the Manager of Transmission Planning West for Xcel Energy Services. In this position, Betty has responsibility for overseeing the engineering group responsible for planning the transmission system and is also responsible for the development of Transmission budgets, regulatory compliance and portions of the operations and maintenance ("O&M") of Public Service's transmission system.

Betty joined Xcel Energy in 1998. From early 2011 through the end of 2014, Betty was the manager of Strategic Transmission Development. In that role, she worked on transmission projects involving participation with other utilities including project scoping and joint agreements, and was also involved in stakeholder outreach. In January 2008, Betty began work in the Transmission Business Area as a project manager. Prior to that time and through December 2007, Betty worked in the Distribution Capacity Planning department. In this position, Betty's responsibilities included developing load forecasts and working as part of a larger team to develop capital budgets for projects and to monitor implementation and adherence to these budgets. From 1995 to 1998, Betty was employed by Merrick Company in their Power Systems department. Between 1985 and 1990, Betty was employed by Public Service in the Electric Distribution Engineering, Planning and Special Studies departments.

Betty graduated from the University of Colorado at Denver in 1980 with a Bachelor of Arts degree in German. In 1984, Betty received a Bachelor of Science in Electrical Engineering from the University of Colorado at Denver.