# BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION

IN THE MATTER OF SOUTHWESTERN	)		
PUBLIC SERVICE COMPANY'S	)		
<b>APPLICATION REQUESTING: (1)</b>	)		
ISSUANCE OF A CERTIFICATE OF PUBLIC	)		
CONVENIENCE AND NECESSITY	)		
AUTHORIZING CONSTRUCTION AND	)		
<b>OPERATION OF A 345 KV TRANSMISSION</b>	)		
LINE AND ASSOCIATED FACILITIES IN	)	CASE NO. 16U	JT
EDDY AND LEA COUNTIES, NEW MEXICO;	)		-
(2) APPROVAL OF THE LOCATION OF THE	)		
345 KV TRANSMISSION LINE; (3)	)		
DETERMINATION OF RIGHT OF WAY	)		
WIDTH AND (4) AUTHORIZATION TO	)		
ACCRUE AN ALLOWANCE FOR FUNDS	)		
USED DURING CONSTRUCTION FOR THE	)		
TRANSMISSION LINE AND ASSOCIATED	)		
FACILITIES,	)		
	)		
SOUTHWESTERN PUBLIC SERVICE	)		
COMPANY,	)		
	)		
APPLICANT.	)		

# DIRECT TESTIMONY

of

# **JASON F. BRUNNER**

# on behalf of

SOUTHWESTERN PUBLIC SERVICE COMPANY

# TABLE OF CONTENTS

GLOSSARY OF ACRONYMS AND DEFINED TERMS	iii
LIST OF ATTACHMENTS	iv
I. WITNESS IDENTIFICATION AND QUALIFICATIONS	1
II. ASSIGNMENT AND DESCRIPTION OF PROJECT	4
III. CIRCUIT DESIGN AND CONSTRUCTION FOR THE PROPOSED TRANSMISSION LINE	7
IV. NEED FOR ROW WIDTH IN EXCESS OF 150 FEET	9
V. CONCLUSION	12
VERIFICATION	13

# **GLOSSARY OF ACRONYMS AND DEFINED TERMS**

Acronym/Defined Term	<u>Meaning</u>
Commission	New Mexico Public Regulation Commission
FERC	Federal Energy Regulatory Commission
kV	Kilovolt
NESC	National Electric Safety Code
Proposed Project	345 kV transmission line extending from SPS's Hobbs Generating Substation to its China Draw Substation, and associated facilities in Eddy and Lea Counties, New Mexico
PUA	Public Utility Act (NMSA 1978, § 62-3-1, et al.)
ROW	Right-of-Way
SPS	Southwestern Public Service Company, a New Mexico corporation
Xcel Energy	Xcel Energy Inc.

# LIST OF ATTACHMENTS

# Attachment

**Description** 

JFB-1 345 kV Transmission Structure Drawings

1 I. WITNESS IDENTIFICATION AND QUALIFICATIONS 2 **Q**. Please state your name and business address. My name is Jason F. Brunner and my business address is 970 South 29th Street 3 A. 4 West, Billings, Montana 59102. 5 **Q**. On whose behalf are you testifying? 6 A. I am filing testimony on behalf of Southwestern Public Service Company, a New 7 Mexico corporation ("SPS") and wholly-owned subsidiary of Xcel Energy Inc. 8 ("Xcel Energy"). Xcel Energy is a utility holding company that owns several 9 electric and natural gas utility operating companies, a regulated natural gas 10 pipeline company, and three electric transmission companies.<sup>1</sup> 11 **Q**. By whom are you employed and in what position? 12 A. I am employed by HDR Engineering, Inc. as a Senior Technical Transmission 13 Engineer.

<sup>&</sup>lt;sup>1</sup> Xcel Energy is the parent company of four utility operating companies: Northern States Power Company, a Minnesota corporation; Northern States Power Company, a Wisconsin corporation; Public Service Company of Colorado, a Colorado corporation; and SPS. Xcel Energy's natural gas pipeline company is WestGas Interstate, Inc. Through a subsidiary, Xcel Energy Transmission Holding Company, LLC, Xcel Energy also owns three transmission-only operating companies: Xcel Energy Southwest Transmission Company, LLC; Xcel Energy Transmission Development Company, LLC; and Xcel Energy West Transmission Company, LLC, all of which are either currently regulated by the Federal Energy Regulatory Commission ("FERC") or expected to be regulated by FERC.

#### 1 **Q**. Please briefly outline your responsibilities as a Senior Technical 2 **Transmission Engineer.** 3 A. I supervise the design and related activities that involve the construction and 4 maintenance of transmission lines in New Mexico, Texas, Washington, Colorado, 5 Idaho, North Dakota, South Dakota, Wisconsin, Minnesota, and Montana. 6 Q. Describe your educational background. 7 A. I received a Bachelor of Science degree in Electrical Engineering from Montana 8 State University in May 2000. 9 **Q**. Please describe your professional experience. 10 I began my employment with HDR Engineering, Inc. as a transmission design A. 11 engineer working on the design of new power lines operated at 345-kilovolt 12 ("kV") and below. In 2006, I became a Project Manager/Team Lead where I 13 supervise the design and coordinate construction-related activities for new 14 transmission and distribution lines. From 2000 to 2006, I worked on the design of 15 over 100 projects consisting of over 200 miles of transmission lines ranging from 16 69-kV to 345-kV. Since becoming a Project Manager/Team Lead, I have led 17 numerous transmission line projects where I have been responsible for 18 determining structure types, required right-of-way ("ROW") widths, design 19 criteria, etc. Since 2010, I have completed two projects, each approximately 40

1		miles in length, where I was the Project Manager and responsible for all aspects of
2		the project including routing the transmission line, ROW calculations and
3		acquisition, environmental and permitting, design of the transmission line, and
4		construction support. I also recently completed duties as the Senior Technical
5		Engineer and the Engineer of Record for the design and construction of the
6		41-mile Potash Junction to Roadrunner 345-kV SPS transmission line that was
7		designed in 2013 and 2014, and constructed and placed in service in 2015.
8	Q.	Do you hold any professional licenses?
9	A.	Yes, I am a registered professional engineer in the states of New Mexico, Texas,
10		Florida, Michigan, North Dakota, South Dakota, Minnesota, Wisconsin,
11		Washington, and Montana.
12	Q.	Have you filed testimony before any regulatory authorities?
13	A.	Yes. I filed testimony with the New Mexico Public Regulation Commission
14		("Commission") in Case No. 14-00114-UT, regarding SPS's application for a
15		certificate of convenience and necessity for the Potash Junction to Roadrunner
16		345-kV transmission line and associated substation facilities.

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ASSIGNMENT AND DESCRIPTION OF PROJECT

- 2 **Q**. What is the purpose of your testimony? 3 A. My testimony supports SPS's request for a Commission determination, in 4 accordance with Section 62-9-3.2 of the New Mexico Public Utility Act (NMSA 5 1978, § 62-3-1, et al. ("PUA")), that a minimum 150-foot ROW width will be 6 necessary to constuct, operate, and maintain the proposed 345-kV transmission 7 line that will extend from SPS's Hobbs Generating Substation to its China Draw 8 Substation, and associated facilities in Eddy and Lee Counties, New Mexico (i.e., 9 "Proposed Project"). Specifically, my testimony will: (1) provide a general 10 description of the Proposed Project; (2) describe the circuit design and 11 construction of the Proposed Project; and (3) discuss the statutory requirements 12 for approval of ROW widths in excess of 100-feet, and the need for a ROW of at 13 least 150-feet and up to 170-feet for the Proposed Project.
- 14 Q. Please briefly describe the Proposed Project.

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II.

A. The Proposed Project involves the construction and operation of a new 345-kV transmission line extending from SPS's existing Hobbs Generating Substation to its existing China Draw Substation with terminations at the proposed Kiowa Substation and the existing North Loving Substation. The proposed 345-kV transmission line is comprised of three segments: (1) extending from the Hobbs

1	Generating Substation, located 10 miles west of Hobbs, New Mexico, to the new
2	Kiowa Substation; (2) extending from the new Kiowa Substation to the North
3	Loving Substation, located 2 miles northeast of Loving, New Mexico; and (3)
4	extending from the North Loving Substation to the China Draw Substation,
5	located 25 miles southeast of Carlsbad, New Mexico.
6	At the existing Hobbs Generating Substation, a new 345-kV yard will be
7	added with two terminal breaker ring configuration, expandable to a breaker and
8	one-half configuration with termination points for a 560 MVA, 345/230 kV
9	autotransformer, and a 345-kV line.
10	At the proposed Kiowa Substation, a new 345-kV yard will be built with
11	four terminal breaker ring configuration, expandable to a breaker and one-half
12	with termination points for a 448 MVA, 345/115 kV autotransformer, a 50
13	MVAR reactor, and two 345-kV lines.
14	At the existing North Loving Substation, a new 345-kV yard will be added
15	with three terminal breaker ring configuration, expandable to a breaker and one-
16	half with termination points for a 448 MVA, 345/115 kV autotransformer, and
17	two 345-kV lines.
18	At the existing China Draw Substation, a new 345-kV yard will be added
19	with three terminal breaker ring configuration, expandable to a breaker and one-

- 1 half with termination points for a 448 MVA, 345/115 kV autotransformer, a 25
- 2 MVAR reactor, and a 345-kV line.

#### III. <u>CIRCUIT DESIGN AND CONSTRUCTION FOR THE PROPOSED</u> TRANSMISSION LINE

#### 3 Q. Please briefly describe the design of the circuit for the Proposed Project.

1

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A. The 345-kV transmission line will utilize self-supporting steel structures installed
on concrete foundations at corners and terminations of the transmission line. The
remaining tangent (in-line) structures will typically be direct buried H-frame steel
structures. If there are locations that require a narrower base to avoid existing oil
wells and terrain restrictions, single-pole steel structures on concrete foundations
may be installed.

10Typical structure configuration drawings are shown in Attachment JFB-1.11The conductors will typically be 27 feet apart on both single-pole structures and12H-frame structures. The conductors will be bundled 795 kcmil ACSS for the 345-13kV transmission line. The new shield wires will be a combination of 3/8 inch14extra high strength steel and optical ground wire.

15 Q. Please describe the tangent structures and how many will be installed.

A. The single-circuit tangent structures (both H-frame and, if necessary, single-pole
 structures) will utilize steel arms to support the transmission line conductors.
 These structures will typically be spaced approximately 850 to 1,000 feet apart
 and will be fabricated of self-weathering steel. The total line length of the 345-kV

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transmission line will be approximately 87 miles and approximately 440 steel
 tangent structures will be installed.

# 3 Q. Please describe the corner and termination structures and how many will be 4 installed.

5 A. The most common structures used at corners and terminations of the 345-kV 6 transmission line will be self-supporting steel 3-pole structures installed on 7 concrete foundations as shown in Attachment JFB-1. Approximately 65 of these 8 structures will be used along the route. Vertical, self-supporting single-pole steel 9 structures may be utilized in congested areas where reduced horizontal space is 10 available and near substations for phasing purposes. The steel structures will be 11 fabricated of self-weathering steel.

#### 12 Q. What is the construction timetable for the Proposed Project?

A. Preliminary transmission line design began in June 2015 and is ongoing. Material requests will be submitted, beginning about halfway through the design process (in mid to late 2016). All material should be available approximately 9 to 12 months after the material requests are initiated. Construction should take approximately 11 months to complete. The expected in-service date of the Proposed Project is June 2018.

1		IV. <u>NEED FOR ROW WIDTH IN EXCESS OF 150 FEET</u>
2	Q.	Has SPS determined the ROW width required for the proposed 345-kV
3		transmission line?
4	А.	Yes. The proposed 345-kV transmission line will require a minimum 150-foot
5		ROW width, 75 feet on either side of the centerline, and up to 170-feet for the
6		transmission line that will cross federal, state, and the majority of the private lands
7		along the proposed route.
8	Q.	What are the statutory requirements regarding ROW widths in relation to
9		the proposed 345-kV transmission line?
10	A.	Section 62-9-3.2(A) of the PUA requires utilities to obtain a Commission
11		determination that any proposed ROW width greater than 100 feet is necessary
12		before construction of any transmission line and associated facilities can
13		commence. Utilities are required to file an application that sets forth the facts
14		necessary to allow the Commission to make a determination that the requested
15		ROW width is necessary (see NMSA 1978, § 62-9-3.2(C)). Applicants are also
16		required to provide notice of the time and place of the hearing on the application
17		to all landowners and occupants of the property impacted by the requested ROW
18		(see NMSA 1978, § 62-9-3.2(D)).

9

# 1Q.Please explain why a minimum 150-foot ROW width is required for the2Proposed Project.

A minimum 150-feet ROW is required to comply with the requirements of Rules 3 A. 4 234 A-2, B-1, and G of the National Electric Safety Code ("NESC"). 5 Specifically, the NESC specifies minimum horizontal and vertical clearance requirements for overhead lines, which vary depending on the size of the 6 7 transmission line. For the Proposed Project, the ROW width must be sufficient 8 for the transmission line, which incorporates a basic phase spacing of 27 feet for 9 345 kV design. The horizontal displacement of the 795 kcmil ACSS bundled 10 conductors due to a six-pound per square foot wind loading on a 900-foot span, 11 along with the applicable safety clearances, will be contained within the 12 boundaries of this ROW easement. In some localized circumstances, additional 13 easement width above 150-feet may be needed for compliance with the North 14 American Electric Reliability Corporation and other engineering criteria, or to 15 accommodate a request from private landowner.

16 The proposed 150-foot ROW also allows for flexibility during design and 17 construction by allowing spans to be longer than 900 feet and phase spacing wider 18 than 27 feet as necessary without violating NESC requirements. Further, it is 19 customary in the utility industry to have a ROW that is slightly larger than the

calculated minimum under the NESC to account for construction tolerances and to
 provide for the general safety of the public. Finally, a minimum 150-foot ROW
 will be necessary to provide adequate access for maintenance of the transmission
 line.

# 5 Q. Are there any areas where a ROW width greater than 150-feet is required?

Yes. To accommodate the request of a private landowner concerning placement 6 A. 7 of transmission structures on their development property, additional ROW width 8 is required to allow for conductor blowout that would exceed the minimum design 9 clearance requirements of the Proposed Project. The landowner requested only 10 one transmission structure be installed on their property, which required the next 11 structure to be placed further away than the typical span length, thereby increasing 12 the conductor blowout. To accommodate the longer span length, a ROW width of 13 170 feet was obtained from the landowner to comply with Proposed Project 14 clearance requirements.

1		V. <u>CONCLUSION</u>
2	Q.	Was Attachment JFB-1 prepared by you or under your supervision?
3	A.	Yes.
4	Q.	Does this conclude your pre-filed testimony?
5	A.	Yes.

#### **VERIFICATION**

STATE OF MONTANA	)
	) ss.
COUNTY OF YELLOWSTONE	)

Jason F. Brunner, first being sworn on his oath, states:

I am the witness identified in the preceding testimony. I have read the testimony and the accompanying attachments and am familiar with their contents. Based upon my personal knowledge, the facts stated in the direct testimony are true. In addition, in my judgment and based upon my professional experience, the opinions and conclusions stated in the testimony are true, valid, and accurate.

JASON F. BRUNNER

SUBSCRIBED AND SWORN TO before me this \_5 day of May, 2016. CASSIDY PUTMAN NOTARY PUBLIC for the State of Montana Residing at Billings, Montana My Commission Expires August 26, 2017



#### Attachment JFB-1 Page 1 of 16



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Attachment JFB-1 Page 2 of 16



#### Attachment JFB-1 Page 3 of 16



#### Attachment JFB-1 Page 4 of 16



#### Attachment JFB-1 Page 5 of 16







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#### Attachment JFB-1 Page 8 of 16



#### Attachment JFB-1 Page 9 of 16



#### Attachment JFB-1 Page 10 of 16



#### Attachment JFB-1 Page 11 of 16



#### Attachment JFB-1 Page 12 of 16



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#### Attachment JFB-1 Page 13 of 16



Attachment JFB-1 Page 14 of 16





Attachment JFB-1 Page 16 of 16