



Before the Public Service Commission of
The State of North Dakota

In the Matter of the Application of
BASIN ELECTRIC POWER COOPERATIVE
For a Waiver of Procedures and Time Schedules
and a Consolidated Certificate of Corridor Compatibility
and Route Permit for the
North Killdeer Loop Phase I 345-kV Transmission Project

Case No. PU-14-813

Pre-filed Testimony
of
Matthew Stoltz

1 Q. **Mr. Stoltz, would you please state your name, business address and your**
2 **occupation?**

3
4 A. My name is Matthew Stoltz. I am employed as the Manger of Transmission Services.
5 My business address is 1717 East Interstate Avenue, Bismarck, North Dakota.
6

7 Q. **Would you please state your educational background?**

8
9 A. I earned an Associate of Applied Science degree from Bismarck Junior College in
10 1981. I received a Bachelor of Science degree in Electrical Engineering from North
11 Dakota State University in 1985.
12

13 Q. **Mr. Stoltz, what is your employment history and work experience?**

14
15 A. I worked for the Western Area Power Administration, subsequently referred to as
16 Western from 1986 to 1999 and performed project management and transmission
17 studies functions. Prior to Western, I was employed by Ultieg Engineers from 1985 to
18 1986 performing distribution system studies and construction inspection.
19

20 I was hired by Basin Electric Power Cooperative in 1999 as an Electrical Engineer in
21 the Transmission Planning Division. In 2004, I was promoted to Manager of
22 Transmission Services. My current responsibility is to prepare transmission studies
23 required to support generation interconnections and requests for transmission
24 service. I also supervise network load delivery studies that determine transmission
25 system additions required to accommodate projected load growth.
26

27 Q. **What have been your responsibilities in connection with the North Killdeer**
28 **Loop Phase I 345 kV Transmission Project?**

29
30 A. I was responsible for the transmission studies which determined the need for the
31 Project.
32

33 Q. **Can you briefly describe the Integrated System and the Southwest Power Pool?**
34

1 A. Presently, the Integrated System, subsequently referred to as IS, of the Western,
2 Basin Electric, and Heartland Consumers Power District is the backbone of the high-
3 voltage transmission grid in the upper Great Plains region of eastern Montana, North
4 Dakota and South Dakota.

5
6 The IS facilities consists of 9,466 miles of interconnected high-voltage transmission
7 lines of which 1,573 miles of line are owned by Basin Electric. These facilities deliver
8 power from federal hydroelectric plants and other generation facilities owned by the
9 IS participants.

10
11 This jointly developed transmission system evolved from the 1962 Joint Transmission
12 System Agreement, subsequently referred to as the JTS, with the Bureau of
13 Reclamation, Basin Electric and 103 cooperative and municipal preference customers
14 in the region. This Agreement enabled Basin Electric to lease capacity on the federal
15 transmission system and deliver output from its first power plant to our members
16 throughout the region. Under the JTS Agreement, the parties planned, constructed
17 and operated transmission facilities needed to serve the customers of the region on
18 an integrated single-system basis. In 1977, the U.S. Congress transferred the power
19 marketing functions of the Bureau of Reclamation to Western, and Western assumed
20 the responsibility for the operation of the JTS.

21
22 In response to the Federal Energy Regulatory Commission, subsequently referred to
23 as FERC, open-access transmission orders 888 and 889, which set forth billing
24 methodologies inconsistent with the JTS methodology, the JTS agreements were
25 terminated. The IS agreement between Western, Basin Electric, and Heartland
26 replaced the JTS agreements and provides open-access transmission service to
27 customers in the region.

28
29 In October of 2015 the IS facilities will be transferred into the Southwest Power Pool
30 (SPP) Regional Transmission Organization. In North America, SPP is one of nine
31 Independent System Operators/Regional Transmission Organizations (ISOs/RTOs)
32 and one of eight NERC Regional Entities. SPP is mandated by FERC to ensure
33 reliable supplies of power, adequate transmission infrastructure, and competitive
34 wholesale prices of electricity.

1
2 ISOs/RTOs are the "air traffic controllers" of the electric power grid. ISOs/RTOs do
3 not own the power grid; they independently operate the grid minute-by-minute to
4 ensure that power gets to customers and to eliminate power shortages. SPP is
5 based in Little Rock, Arkansas, and has more than 570 employees.

6
7 SPP provides the following functions:

- 8
- 9 • Reliability Coordination: SPP monitors power flow throughout our footprint and
10 coordinates regional response in emergency situations or blackouts.
 - 11 • Tariff Administration: SPP provides "one-stop shopping" for use of the region's
12 transmission lines and independently administers an Open Access
13 Transmission Tariff with consistent rates and terms.
 - 14 • Regional Scheduling: SPP ensures that the amount of power sent is
15 coordinated and matched with power received.
 - 16 • Transmission Expansion Planning: SPP's planning processes seek to identify
17 system limitations, develop transmission upgrade plans, and track project
18 progress to ensure timely completion of system reinforcements.
 - 19 • Market Operations: The Integrated Marketplace replaced the Energy
20 Imbalance Service Market on March 1, 2014. More than 100 market
21 participants have registered for the Integrated Marketplace, which adds day-
22 ahead, real-time balancing, and transmission congestion rights markets to the
23 legacy wholesale real-time market. The Integrated Marketplace is expected to
24 yield up to \$100 million in annual net benefits to its participants.
 - 25 • Compliance: The SPP Regional Entity enforces compliance with federal and
26 regional reliability standards for users, owners, and operators of the region's
27 bulk power grid.
- 28

29 Q. **How is the IS planned and operated today?**

30
31 A. Although the transmission facilities are currently owned by the individual IS members,
32 the entire IS is planned and operated on an integrated basis through the coordinated
33 efforts of all the participants. Western is the IS tariff administrator and transmission
34 system operator.

1
2 The IS follows a prescribed planning process. The planning process meets the FERC
3 890 rules and the North American Electric Reliability Corporation, subsequently
4 referred to as NERC, reliability standards. The purpose is to satisfy the compliance
5 requirements of FERC Order 890 and NERC planning standards. The purpose of
6 FERC Order 890 is to create an open and transparent process that allows
7 stakeholder input. Ensuring adequate transmission system performance is
8 accomplished by evaluating both the near term and long term transmission conditions
9 and identifying system additions needed in the IS to meet network load serving
10 needs.

11
12 **Q. How is the SPP system planned and operated?**

13
14 The SPP planning process and operation have to meet the same FERC Order 890
15 rules and NERC planning standards as the IS presently does. Therefore, the
16 processes are similar. However, the SPP planning process is more formalized. It is
17 called the Integrated Transmission Planning process (ITP). ITP is an iterative three-
18 year process that includes 20-Year, 10-Year, and Near-Term Assessments. The
19 process seeks to target a reasonable balance between long-term transmission
20 investment and congestion costs to customers. The ITP will work in concert with
21 SPP's existing sub-regional planning stakeholder process, and will continue in parallel
22 with the NERC TPL Reliability Standards compliance process. ITP plans are reviewed
23 by the Markets and Operations Policy Committee and approved by the SPP Board of
24 Directors allow staff to issue Notification to Construct (NTC) letters for approved
25 projects needed within the four-year financial commitment horizon. An Authorization
26 to Plan (ATP) will be issued for projects needed beyond the four-year financial
27 horizon. Once an NTC or ATP is issued, the project will be reviewed annually to
28 ensure the continued need for the project and the required in-service date.

29
30 **Q. What factors does the SPP examine in determining eligibility in the SPP?**

31
32 **A.** There are multiple factors influencing the need for transmission investment in SPP.
33 The most important goal is to maintain system reliability and operating criteria and
34 while meeting customer demand. Also, it is important to identify and replace obsolete

1 or physically weak facilities. Often the interconnection of new generation requires
2 upgraded transmission facilities. Relief of transmission congestion is another reason
3 that transmission facilities are added.

4
5 **Q. Will the proposed Project be a part of the SPP?**

6
7 **A.** Our plan is to submit the proposed Project to SPP for cost allocation in the near
8 future. The Project is a networked transmission addition required to meet customer
9 demand. It will be operated as part of the SPP. A facility can be eligible for SPP
10 inclusion if it is operated in a networked configuration that allows service to be sold to
11 any customer of the SPP.

12
13 **Q. Earlier you mentioned that you were responsible for the transmission studies**
14 **which determined the need for the Project. How do you conduct these**
15 **transmission studies?**

16
17 **A.** Transmission studies are conducted with the use of power system simulation
18 software. With this simulation software, we model the electrical characteristics of the
19 existing transmission system. The program then calculates the voltages and power
20 flows on the transmission lines and substations, allowing us to analyze whether or not
21 the system is adequate for the loads indicated in the study.

22
23 One of the most important parts of conducting transmission studies is being able to
24 analyze the future electrical loads on the transmission system. This is required
25 because it can take up to six years to design, permit and construct a major
26 transmission line. Once the electrical loads have been projected by Basin Electric
27 Utility Planning Group and placed into the computer model, various outages of the
28 existing transmission system are then simulated. These outages tell us if the existing
29 transmission system is capable of handling the projected load growth in the area. If
30 the transmission outages indicate inadequate transmission into an area, we place into
31 the model various transmission lines or substations in order to determine the best
32 alternative to solve this deficiency.

33

1 Q. **Are there any standards that you must meet in the design of the transmission**
2 **system?**

3
4 Yes. The transmission system must be designed so it meets criteria set by NERC.
5 Specifically these NERC standards are listed by NERC as Transmission Planning
6 Standards 1 through 4 and are often referred to as "TPL" standards. FERC has
7 identified NERC as the federal reliability authority for electrical utilities in the United
8 States. NERC criteria states that transmission owners should not have unplanned
9 service interruptions into an area if there is an outage of one network transmission
10 facility. This criteria enables transmission owners to maintain reliable service in an
11 area if a storm or other weather event should happen to take one line out of service,
12 or if maintenance on a transmission line is required.

13
14 Q. **Mr. Stoltz, Basin Electric has applied for a Waiver of Procedures based on**
15 **certain conditions which require expedited construction of the Patent Gate-**
16 **Kummer Ridge 345 kV Transmission Line. How did you determine this need**
17 **existed?**

18
19 A. Basin Electric conducts transmission studies with neighboring utilities such as
20 Montana-Dakota Utilities Co., subsequently referred to as MDU, and Western to
21 review the adequacy of the existing transmission system. This is done through the
22 FERC 890 study process.

23
24 Basin Electric and its members, Western & MDU transmission planners have been
25 cooperatively monitoring the area of northwestern North Dakota for a number of
26 years. Our studies indicated that load growth would impact system voltage and
27 transmission line loadings without improvements.

28
29 In 2011, Basin Electric's Utility Planning Division provided Basin Electric and Western
30 transmission planners new load data for this area. Based on this information, Basin
31 Electric and Western transmission planners determined a dedicated study effort of
32 the area was required. Updated load forecasts were provided to the Transmission
33 Planning Department in 2012 and the study process was repeated.

34

1 Q. **Has Basin Electric conducted any studies to determine the need for this**
2 **Project?**

3
4 A. Yes. The 2013 Update to the 2012 Bakken Long Range Transmission Study
5 prepared by the Transmission Services Department at Basin Electric on behalf of the
6 IS. This study included the 2013 Basin Electric, Western, and MDU load forecasts. It
7 was coordinated with other regional transmission owners and the stakeholder group
8 via the IS planning process.

9
10 Q. **What are the results of the study?**

11
12 A. The 2013 update was performed because the 2013 load forecast showed a major
13 increase in the amount of McKenzie Electric Cooperative load growth compared to
14 the 2012 load forecast. By 2018, McKenzie Electric Cooperative load is expected to
15 increase to 400MW which is a 200MW increase beyond the previous forecast. The
16 result of this study determined a new 345 kV line was required through the eastern
17 side of the McKenzie Electric service territory from a location near Killdeer to a
18 location near Alexander. Also additional network deliveries were required on this line
19 as well. This Project would interconnect with the AVS-Neset 345 kV line under
20 development. Subsequently, the 2014 load forecast was added to the transmission
21 model and confirmed the need for the proposed Project.

22
23 Q. **Why are the Patent Gate and Kummer Ridge Substations needed?**

24
25 A. Both of these facilities are needed to deliver power from the high voltage, high
26 capacity backbone 345 kV system to the McKenzie Electric electrical distribution
27 system.

28
29 Q. **Mr. Stoltz, how does this Project affect the reliability of the transmission**
30 **system in this area of northwestern North Dakota?**

31
32 A. By the year 2018, the Bakken area load is expected to approach 2100MW. The
33 transmission analysis indicates the transmission system will not be able to
34 accommodate this level of load growth. The proposed Project will meet the needs of

1 the McKenzie County area for the foreseeable future and will increase the Bakken
2 area load serving limit to approximately 2100MW. Based on the 2013 load forecast,
3 the 2100MW load limit should provide adequate capacity through the year 2018 at
4 which time improvements may be needed north of Lake Sakakawea.

5
6 **Q. Has Basin Electric reviewed the need for the Project in light of decreasing oil
7 prices and a slow down of drilling?**

8
9 A. The drilling slowdown has mainly occurred on the edges of the Bakken area.
10 McKenzie County is in the center of the Bakken area. The latest data I have
11 reviewed indicates the number of drill rigs in the McKenzie Electric service territory is
12 remaining constant and thus, the need for the proposed Project still exists.

13
14 **Q. If the proposed Project does not get built as proposed, what would happen to
15 the electrical transmission system in northwestern North Dakota?**

16
17 A. The existing transmission capacity will curtail future load growth unless the proposed
18 Project is constructed.

19
20 **Q. Does the proposed location, construction and operation of the Project ensure
21 continued system reliability and integrity?**

22
23 A. Yes. The proposed transmission line will increase transmission system capacity
24 while meeting NERC criteria. The Bakken area load serving limit will rise to 2100MW
25 to accommodate forecasted load growth.

26
27 **Q. Does the proposed Project ensure that the energy needs of the area will be
28 fulfilled in an orderly and timely fashion?**

29
30 A. Yes

31
32 **Q. Will this transmission line benefit the area through which Basin Electric is
33 proposing to construct?**

34

1 A. Yes. This transmission line will provide a direct benefit for service into the area
2 allowing reliable service to all area consumers.

3

4 Q. **Are there any plans for expansion of this line?**

5

6 A. Not at this time for this particular Project, but additional 345 kV transmission may be
7 needed in northwestern North Dakota in the future.

8

9 Q. **Is it possible to build larger generation facilities to meet the electrical demand
10 instead of building the proposed Project?**

11

12 A. Basin Electric has several generation projects in service or under construction in
13 western North Dakota and eastern Montana. The electrical load is scattered across
14 the entire Bakken area. Transmission is required to move the power from the
15 generation to the load delivery substations. The scale of the required transmission to
16 support a generation only solution would be similar to the proposed Project.

17

18 Q. **Does this conclude your testimony?**

19

20 A. Yes.

21