

**BASIN ELECTRIC
POWER COOPERATIVE**

1717 EAST INTERSTATE AVENUE
BISMARCK, NORTH DAKOTA 58503
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VIA HAND DELIVERY

February 23, 2015

Mr. Darrell Nitschke, Executive Director
North Dakota Public Service Commission
600 East Boulevard Avenue, Dept. 408
Bismarck, ND 58505



Re: Pioneer Generation Station Phase III Project
Case No. PU-14-829

Dear Mr. Nitschke:

Enclosed please find five copies of the pre-filed testimonies of Josh Rossow, Becky Kern and Cris Miller in the above captioned matter.

If you have any questions, please feel free to contact me at cjacobson@bepc.com or (701) 557-5413.

Sincerely,

A handwritten signature in cursive script, appearing to read "Casey J. Jacobson".

Casey J. Jacobson
Sr. Staff Counsel

cjj/ds
enclosures

cc: Brian Schmidt, Smith, Bakke, Porsborg & Schweigert Attorneys at Law
Wade C. Mann, Office of Administrative Hearings

Before the Public Service Commission of
The State of North Dakota

In the Matter of the Application of
BASIN ELECTRIC POWER COOPERATIVE
For A Certificate of Site Compatibility for the
Pioneer Generation Station Phase III Project

Case No. PU-14-829

Pre-filed Testimony
of
Josh Rossow

1 Q. **Mr. Rossow, please give us your name, business address and your**
2 **occupation?**

3
4 A. My name is Josh Rossow. I am employed as a Project Manager for Basin Electric
5 Power Cooperative, 1717 East Interstate Avenue, Bismarck, North Dakota.

6
7 Q. **What is your employment history with Basin Electric?**

8
9 A. I have been employed with Basin Electric for over 8 years, holding the positions of
10 Performance Engineer, Environmental Coordinator and Project Manager. Prior to
11 working at Basin Electric, I was employed with LAS International as a mechanical
12 engineer.

13
14 Q. **Please state your educational background.**

15
16 A. I received a Bachelor of Science degree in Mechanical Engineering from South
17 Dakota School of Mines & Technology in 2004, and I have been a Registered
18 Professional Engineer in the State of North Dakota since 2011.

19
20 Q. **What have been your responsibilities in connection with the Pioneer**
21 **Generation Station Phase III Project?**

22
23 A. I am the Project Manager of the Pioneer Generation Station Phase III Project. This is
24 the third phase of development at the Pioneer Generation Station (PGS), which is
25 located 15 miles Northwest of Williston, ND.

26
27 As Project Manager, I am responsible for management and coordination of all
28 aspects of the Project including; technology selection, siting, permitting, finance,
29 engineering design, construction and start-up. Responsibilities also include
30 coordinating utility interconnects such as water, natural gas and transmission.

31
32 Q. **What is the purpose of your testimony in this proceeding?**

33

1 A. The purpose of my testimony is to provide a description of Basin Electric Power
2 Cooperative, a description of the proposed Project, and Basin Electric's position with
3 respect to the PSC Site Compatibility Policy Criteria, as presented initially in the
4 Application filed by Basin Electric.

5

6 Q. **Would you please describe Basin Electric?**

7

8 A. Basin Electric is a regional wholesale electric generation and transmission
9 cooperative organized under the laws of the State of North Dakota, and
10 headquartered in Bismarck, North Dakota. Basin Electric provides power to 138
11 member cooperatives serving more than 2.8 million consumers in nine states,
12 including North Dakota. Basin Electric has two Class A members that serve what we
13 refer to as the Williston Basin where the oil and gas development is occurring. The
14 Cooperatives are Central Power Electric Cooperative, headquartered in Minot, ND
15 and Upper Missouri G&T, headquartered in Sidney, MT.

16

17 Q. **You testified that this is the third Phase of development at the Pioneer
18 Generation Station. Can you please describe Phase I & II?**

19

20 A. PGS was designed and constructed in two phases. In Phase I, one 45 megawatt
21 simple cycle combustion turbine and associated balance of plant equipment, an
22 operations & maintenance building, natural gas and water interconnects and a 115
23 kilovolt transmission line were constructed. This combustion turbine was designated
24 PGS Unit 1. Phase I went commercial in September 2013. Phase II consisted of two
25 additional 45 megawatt simple cycle combustion turbines and associated balance of
26 plant equipment. These combustion turbines were designated PGS Unit 2 and PGS
27 Unit 3. PGS Unit 2 began commercial operation in February 2014, and Unit 3 was
28 commercial in March 2014.

29

30 Q. **Please describe the proposed Pioneer Generation Station Phase III Project?**

31

32 A. The PGS Phase III Project consists of the addition of twelve 9.22 MW nominal
33 megawatt gas reciprocating engines and auxiliaries with a total nominal electrical
34 output of 111 megawatts. The twelve engines will be designated as PGS Units 11

1 through 22. A 115 kilovolt switchyard will also be constructed to connect the engines
2 to the electrical grid.

3
4 **Q. Where is the proposed Project located?**

5
6 A. This facility is located approximately 15 miles northwest of Williston on the existing
7 Pioneer Generation Station site. The site is adjacent to ONEOK's Stateline Gas Plant
8 and Mountrail-Williams Electric Cooperative Stateline Substation located in Section
9 20, Township 155 North, Range 103 West in Williams County.

10
11 **Q. Where will Phase III be located relative to the existing units?**

12
13 A. Phase III will be located directly south of Phase I and II.

14
15 **Q. Please describe the design of the proposed Project Basin Electric intends to
16 construct.**

17
18 A. Each of the twelve generating units will be 9.22 megawatt reciprocating engines
19 manufactured by Wärtsilä and fueled by natural gas. The engines will be spark
20 ignition, turbo-charged four-stroke engines. Each engine has twenty cylinders
21 arranged in a "V" configuration. The engines operate at 720 revolutions per minute.
22 A building will be constructed to house the engines.

23
24 For the 12 engines there will be a total of two stacks; six engines would be vented to
25 each stack. The engines utilize lean burn combustion techniques to minimize NOx
26 emissions. Also, each engines has a Selective Catalytic Reduction (SCR) system for
27 further NOx control. The SCR uses urea for the reagent. Also included will be a
28 Catalytic Oxidation Reduction to minimize carbon monoxide (CO) emissions.
29 Following the SCR, the exhaust from six engines will be released to the atmosphere
30 through a common 170 foot tall stack.

31
32 Noise from the engines will be minimized by sound dampening liners on the interior of
33 the building and exhaust silencers.

1 Other major components of the design include:

- 2 • Two generator step-up transformers to increase the voltage from 13.8-kV to
- 3 115-kV for transmission
- 4 • A 115 kilovolt switchyard
- 5 • A 22,000 gallon urea storage tank
- 6 • Engine oil storage consisting of a 7,000 gallon new oil tank, 5,000 gallon
- 7 service oil tank and a 5,000 gallon waste oil tank
- 8 • A fire protection system which includes a water storage tank, electric fire
- 9 pump and diesel fire pump
- 10 • An 800 kilowatt emergency diesel generator to support the plant safety and
- 11 control features during a power interruption.

12
13 **Q. What is the gas supply for the Project?**

14
15 A. Natural gas is transported to PGS by an 8-inch pipeline owned and operated
16 by the WBI Energy Transmission. Natural gas is supplied to PGS by a WBI Energy
17 Transmission existing pipeline that originates at ONEOK's Stateline Gas Process
18 Plant which is located adjacent to PGS, east of County Road 5. WBI Energy
19 Transmission installed approximately 1800 feet of 8 inch line from the Gas Plant
20 lateral to the PGS site. This pipeline extension is able to accommodate Phase III with
21 only modifications to the meters. Basin Electric will be working with a gas broker to
22 purchase the natural gas needed for this Project.

23
24 **Q. Is there a backup fuel for the proposed Project if natural gas is unavailable?**

25
26 A. The engines could combust liquefied propane gas (LPG) as a backup fuel. The
27 Project incorporates the design to accommodate LPG tanks and supporting
28 interconnections. This infrastructure would not be installed later this year, when Basin
29 Electric moves to the Southwest Power Pool (SPP). If and when SPP operating
30 criteria require that PGS have a secondary fuel supply, the PPG system will be
31 installed. Depending on the criteria, a 20,000 gallon tank would be required for a
32 four-hour fuel supply.

33
34 **Q. Why was this location chosen for Phase III?**

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A. The existing Pioneer Generation Station site was selected because of the proximity to an existing natural gas pipeline and electrical transmission lines. Space was also available on the property, making it unnecessary to purchase more land. Further, the ability to use existing infrastructure made the expansion of the PGS the most economic site.

Q. Mr. Rossow, why were reciprocating engines chosen for Phase III instead of the simple cycle combustion turbines used in Phase I & II?

A. A generating unit is typically most efficient when it is operated at maximum capacity. Because the engines are roughly one-fifth the size of the combustion turbines, engines can be operated near maximum capacity and efficiency. Engines are then started and stopped as demand changes. Also, because of the large power demand in the area, unit reliability is extremely important. Multiple small units have an inherent redundancy compared to one larger unit. The fuel supply is the only single point of failure for the engines. Further, the combustion turbines currently operating at PGS use water for NOx control. Operating experience has shown that protecting the water lines from freezing in extremely cold weather is problematic. Reciprocating engines do not consume water and are protected from weather extremes by the building.

Q. Does the reciprocating engine technology currently exist within North Dakota?

A.

Q. What is the schedule of this project?

A. If all the necessary permits and approvals in place, Basin Electric intends to start construction in May of 2015. Construction will largely be complete by April 1st, 2016. Testing and commissioning will be performed from April 1st through June 1st, 2016. At that time the engines will be available for commercial operation.

Q. Can you describe the sequence of construction of the Project?

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A.

Q. **Can you describe the workforce needed to construct the Project?**

A.

Q. **Can you describe the method Basin Electric uses to select their contractors and how you insure that these contractors are committed to safety?**

A.

Q. **What is the estimated cost of the Project?**

A. The estimated cost of the Project is \$161.2 million.

Q. **What standards has Basin Electric adopted in designing this Project?**

A. All design, construction and operation shall comply with applicable codes and standards including, but not necessarily limited to, the following:

- State and local codes, laws, ordinances, rules and regulations
- American Society of Mechanical Engineers (ASME)
- American Society for Testing and Materials (ASTM)
- American National Standards Institute (ANSI)
- Institute of Electrical and Electronic Engineers (IEEE)
- The Instrumentation, Systems, and Automation Society (ISA)
- National Fire Protection Association (NFPA)
- National Electrical Code (NEC)
- Occupational Safety and Health Act of 1970 (OSHA)
- Uniform Building Code (UBC)

Q. **How much water will the Project consume and where does the supply come from?**

1 A. The engines do not consume water during operation. The primary water
2 consumption will be for employee potable uses. Other water consumption uses
3 include minimal cooling system water makeup and refilling the fire water tank in the
4 event of an emergency. Water is supplied to PGS from the Williams Rural Water
5 District distribution system.

6

7 Q. **Will the water consumption rate for Pioneer Generation Station Project impact**
8 **other customers of Williams Rural Water District?**

9

10 A. No. The Williams Rural Water District system is easily able to supply the minimal
11 water needed.

12

13 Q. **Is any new transmission needed for this Project?**

14

15 A. Yes, 2500 feet of transmission line will be built to interconnect to a Sheridan Electric
16 Cooperative 115 kilovolt transmission line. All 2500 feet of the transmission mile will
17 be located on the PGS property.

18

19 Q. **Are you aware of any actual or potential hazards to humans, animal life or the**
20 **environment posed by the Project?**

21

22 A. No

23

24 Q. **Are there any state/federal/county laws/rules that require Basin Electric to have**
25 **an Emergency Response Plan for this Project?**

26

27 A. No; however, Basin Electric has developed an Emergency Response Plan for all our
28 facilities, including the Pioneer Generation Station.

29

30 Q. **Does Basin Electric have an Emergency Response Plan in place for Pioneer**
31 **Generation Station Units I, II & III?**

32

33 A. Yes.

34

1 Q. **Please describe what the Emergency Response Plan entails.**

2

3 A. The plan is to address the protection of life, health, safety, environmental and
4 property during an emergency. The plan entails each emergency responder group
5 along with contact information. It also identifies the response procedure based on the
6 event. Basin Electric has established a comprehensive orientation, technical, safety,
7 emergency and on the job training for its employees.

8

9 Q. **What efforts has Basin Electric taken to make emergency responders aware of
10 this Project?**

11

12 A. On an annual basis, Basin Electric invites emergency responders, including first
13 responders and local fire departments to the Project site for a tour and meeting to
14 discuss how the facility operates and procedures should they respond to an
15 emergency at the Project. The meetings were held in April 2013 and December
16 2014.

17

18 Q. **I would now like to ask you a series of questions relating to the North Dakota
19 Public Service Commission's Site Policy Criteria.**

20

21 **What is Basin Electric's policy with respect to maximizing potential benefits
22 through location, process and design of its facilities?**

23

24 A. Basin Electric performs studies to identify facilities that are needed to ensure a
25 reliable transmission and generation system. The location and output of these
26 facilities is determined by planning experts to maximize the benefits of these projects.

27

28 Q. **What is Basin Electric's policy concerning the training and utilization of
29 available labor in North Dakota for the general and specialized skills required?**

30

31 A. Basin Electric has a long standing policy of recruiting and training workers from North
32 Dakota. We have developed a partnership with Bismarck State College to provide
33 the coursework for our apprenticeship programs in both our Transmission System
34 Maintenance Division and power plant maintenance areas. We also work with the

1 University of North Dakota, North Dakota State University, University of Mary,
2 Bismarck State College and North Dakota State College of Science to fill internships
3 and full time vocation/technical and professional positions. In addition, we recently
4 established a "Grow Your Own Program" through Bismarck State College in which
5 students who are enrolled in the power plant Technician Associate Degree program
6 may apply and be selected for opportunities to work at our power plants as interns.
7 Basin Electric hires up to five students at each of our power plants. As full-time
8 positions become available, the students who have completed these internships may
9 apply. If selected, Basin Electric will reimburse 50% of the cost of tuition and books
10 (15% upon hire, 15% after completing one year of employment and 20% after
11 completing two years of employment).

12
13 Basin Electric staff members also sit on Advisory Boards for various programs at
14 Bismarck State College.

15
16 It is also Basin Electric's practice to hire qualified North Dakota workers. Basin
17 Electric includes qualified North Dakota companies on its bidders lists for materials
18 and construction work. The actual labor force used on our construction projects is
19 hired by the contractors. The construction personnel are highly trained in this very
20 specialized area of construction; however, certain portions of the construction
21 sequence do not require specialized training. We anticipate that for these tasks, the
22 contractor will likely employ local people.

23
24 **Q. Will the Project make use of a primary energy source or raw material located**
25 **within the state?**

26
27 **A.** Yes, natural gas utilized by this project comes from WBI Energy Transmission
28 Pipeline Lateral. This pipeline transports processed oil field associated natural gas to
29 the Northern Border Pipeline to be transported to out of state markets. While we're
30 not certain where the natural gas comes from once in the pipeline, odds are a high
31 percentage of the gas does come from North Dakota.

32
33 **Q. Will the Project require any relocation of residents?**
34

1 A. No

2

3 Q. **What efforts has Basin Electric made to economize the costs of construction**
4 **and operation of this Project?**

5

6 A. Basin Electric has an obligation to its member cooperatives to construct facilities at
7 the least cost while maintaining reliability and safety. By selecting the existing PGS
8 site for this Project the cost of the necessary infrastructure and interconnections was
9 avoided minimizing the Project cost.

10

11 In addition when possible, all materials and services will be competitively bid by
12 qualified suppliers and Basin Electric will combine purchases with other projects to
13 take advantage of volume pricing.

14

15 Basin Electric will share operations and maintenance personnel from other Basin
16 Electric projects in the area including the Lonesome Creek Station located South of
17 Williston and the Culbertson Generation Station in Montana minimizing operational
18 cost.

19

20 Q. **How many full-time positions will be created by this Project?**

21

22 A. Six full time operation technicians will be assigned to operate the PGS Phase III
23 Project.

24

25 Q. **Has Basin Electric involved local government entities and citizens in the**
26 **planning process?**

27

28 A. Basin Electric initiates and maintains close contact with all pertinent federal, state,
29 and local agencies prior to construction of a facility. For this Project, we have met
30 with county commissions, zoning boards, and city organizations.

31

32 Q. **Would you please tell the Commission what type of commitment Basin Electric**
33 **has to North Dakota consumers regarding their electric power supply?**

34

1 A. Basin Electric is contractually committed to meet all of the additional power
2 requirements, above their allocation from Western Area Power Administration, for the
3 14 North Dakota rural electric cooperatives that are our members.

4

5 Q. **Will a portion of the energy produced by this Project be used in this state?**

6

7 A. Yes

8

9 Q. **What is Basin Electric's policy regarding labor relations?**

10

11 A. Basin Electric management has always maintained an equitable, fair, and
12 harmonious relationship with labor. Basin Electric uses both union and
13 non-union contractors.

14

15 Q. **What is Basin Electric's policy and what efforts has the Cooperative made in
16 the coordination of facilities?**

17

18 A. Basin Electric works closely with Western Area Power Administration, Montana
19 Dakota Utilities, and our member systems to share facilities and avoid duplication.
20 For the past five years, Basin Electric has been meeting with MDU, Western, and our
21 members on a monthly basis to discuss western North Dakota transmission and
22 generation issues.

23

24 Q. **What is Basin Electric's position on the monitoring of environmental impacts?**

25

26 A. Basin Electric's policy is that environmental impacts should be monitored and steps
27 taken to mitigate and alleviate those impacts which have adverse effects. Once a
28 power plant is commercial, a continuing program of maintenance begins. Basin
29 Electric will monitor and correct any problems for the life of these facilities.

30

31 Q. **Mr. Rossow, based on your knowledge of the Project, do you believe the
32 location, construction, and operation of the proposed Project produce minimal
33 adverse effects on the environment and upon the welfare of the citizens of
34 North Dakota?**

1

2 A. Yes

3

4 Q. **Is the proposed Project compatible with environmental preservation and the**
5 **efficient use of resources?**

6

7 A. Yes

8

9 Q. **Will the proposed Project minimize adverse human and environmental impacts**
10 **while ensuring continuing system reliability and integrity and ensuring that**
11 **energy needs are met and fulfilled in an orderly and timely fashion?**

12

13 A. Yes

14

15 Q. **Does this complete your direct testimony?**

16

17 A. Yes.

**Before the Public Service Commission of
The State of North Dakota**

**In the Matter of the Application of
BASIN ELECTRIC POWER COOPERATIVE
For a Certificate of Site Compatibility for the
Pioneer Generation Station Phase III Project**

Case No. PU-14-829

**Pre-filed Testimony
of
Cris Miller**

1 Q. **Please state your name, address and occupation.**

2

3 A. My name is Cris Miller. My business address is 1717 East Interstate Avenue,
4 Bismarck, North Dakota. I am employed by Basin Electric Power Cooperative as a
5 Senior Environmental Project Specialist. I am responsible for the preparation of
6 environmental studies and permit applications for various transmission and generation
7 projects Basin Electric is currently planning.

8

9 Q. **Would you please state your educational background and professional
10 experience?**

11

12 A. I earned a Bachelor of Science degree from the North Dakota State University, Fargo,
13 North Dakota in 1982 with a major in Civil Engineering. I have been employed with
14 Basin Electric since 1991. I am a Professional Engineer, Registered in the State of
15 North Dakota.

16

17 Q. **Mr. Miller, what have been your responsibilities in connection with the Pioneer
18 Generation Station Phase III Project?**

19

20 A. I am responsible for the overall coordination of the environmental analysis of this
21 project. This involves working with an interdisciplinary consultant team, contacting
22 and meeting with public officials, coordinating activities with other Basin Electric
23 departments and reviewing and coordinating the various reports that have been
24 submitted to the North Dakota Public Service Commission and other interested
25 agencies.

26

27 Q. **What is the purpose of your testimony in this proceeding?**

28

29 A. I will describe the practices used to demonstrate that with respect to environmental
30 considerations, the proposed site is in accordance with the North Dakota Energy
31 Conversion Facility Siting Act and the ND PSC rules.

32

33 Q. **Mr. Miller, would you please give the Commission a general description of the
34 land use of the proposed site?**

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A. PGS, which currently includes the three generating units and associated infrastructure is surrounded by a security fence and is approximately 7 acres in size. The entire 120 acre parcel that Basin Electric purchased is zoned industrial. The land use around the site area is predominately agricultural. The ONEOK Stateline gas processing plant is located adjacent to PGS in Township 155N, Range 103W, Section 21. These two facilities are separated by Williams County Road 5 which runs north and south between these two facilities. There are also scattered oil and gas pads surrounding PGS.

Q. Can you describe why historical background of the Permitting of the Pioneer Generating Station?

A. PGS Phase I was not required to undergo State Siting because the project fell below these permitting thresholds. PGS Phase II exceeded the 50 MW Siting threshold. Subsequently, the Phase II Project received a Certificate of Site Compatibility in Case No. PU-12-509 in March, 2013. The addition of PGS Phase III also exceeds the 50 MW Siting threshold and is the subject for this application.

Q. Was there a Federal Nexus for the Project that required compliance with the National Environmental Policy Act?

A. No

Q. So there will not be an environmental impact statement prepared for this Project?

A. No, however, most, if not all of the resource areas that would have been studied under the environmental impact statement process were evaluated in the preparation of this application, including impacts to plants, animals and the environment, cultural resources and air quality.

1 Q. **In addition to the siting permit from the PSC, what other permits are necessary**
2 **for Basin Electric to obtain for this Project? Please give the status of these**
3 **permits.**

4
5 A. The proposed Project will be required to obtain an Air Pollution Control Prevention of
6 Significant Deterioration Permit to Construct from the North Dakota Department of
7 Health. The Permit application was submitted to the Department in November of 2014
8 and is currently under review. The Permit to construct is expected to be issued early
9 in the second quarter 2015. Further, a Conditional Use Permit application was
10 submitted to Williams County in February 2015 and is still under their consideration.

11

12 Q. **Please describe what an “Exclusion criteria” means?**

13

14 A. The North Dakota Public Service Commission Rules at North Dakota Administrative
15 Code, Chapter 69-06-01 states, “Exclusion criteria means criteria that remove areas
16 from consideration for energy conversion facility sites and transmission facility routes.”

17

18 Q. **Does the Plant site contain any exclusion areas?**

19

20 A. No

21

22 Q. **Please describe what an “Avoidance criteria” means?**

23

24 A. The North Dakota Public Service Commission Rules at North Dakota Administrative
25 Code, Chapter 69-06-01 states, “Avoidance criteria means criteria that remove areas
26 from consideration for energy conversation facility sites and transmission facility
27 routes unless it is shown that under the circumstances there are no reasonable
28 alternatives.”

29

30 Q. **Does the Plant site contain any avoidance areas?**

31

32 A. No

33

1 Q. **Mr. Miller, did Basin Electric incorporate public input in the site selection**
2 **process of the Pioneer Generation Station Phase III Project?**

3
4 A. Yes. Basin Electric notified Federal and State Agencies through a Project mailing.
5 Agency responses were received from the U.S. Fish and Wildlife Service, ND
6 Department of Health, National Resource Conservation Service, Department of
7 Defense and the U.S. Army Corps of Engineers.

8
9 Q. **Mr. Miller, did any of these agencies express concerns that the Project had not**
10 **already addressed?**

11
12 A. All the Agency responses are listed in Appendix B of the Application. All responses
13 were addressed by the Project.

14
15 Q. **Mr. Miller, I am going to ask you a series of questions regarding the PSC Site**
16 **Selection Criteria.**

17
18 How does the proposed site demonstrate that significant adverse effects, if any, upon
19 agriculture will be kept to an acceptable minimum? Please address this issue in terms
20 of farmsteads, crop land, and interference with irrigation.

21
22 There are no farmsteads on the Project site. Basin Electric purchased approximately
23 120 acres of land that was crop land. The existing Pioneer Generating Station
24 occupies approximately seven acres. There is no irrigation within the 120 acre parcel.
25 Farmsteads are scattered throughout the proposed Project Area. The highest density
26 of residences and businesses are located in and around the City of Williston, which is
27 located southeast of the Project. Agriculture and livestock production dominate the
28 land use in the Project's vicinity. PGS is currently a developed industrial facility. The
29 existing PGS site incorporates approximately 7 acres of land, of which 100 percent
30 was originally classified as cropland. PGS Phase III will develop 8.2 acres for the
31 generation facility and 3.7 acres for the switchyard, for a total of 11.9 acres that will be
32 permanently disturbed. The remaining 101 acres of the property owned by Basin
33 Electric will remain in agricultural use.

34

1 A new road approach would be required on County Road 5, also referred to as 151st
2 Ave to accommodate the Project. Additionally, the an access to the electric switchyard
3 will be off of 56th St as shown on the General Arrangement drawing.
4

5 Q. **Mr. Miller, is there any anticipated impact on the surface drainage patterns or**
6 **ground water flow patterns on the Plant site?**

7
8 A. Precipitation that falls within the PGS Phase III Plant site and Switchyard will be
9 directed to the storm water retention pond. These waters will be released when they
10 meet the criteria of the Plants Storm Water Management Plan. The precipitation that
11 falls outside of the Plant site will follow the natural flow patterns that currently exist.
12 No impacts are anticipated to occur to either surface or groundwater flow patterns.
13

14 Q. **Do you anticipate any significant adverse effect on noise sensitive land uses**
15 **resulting from the location, construction, and maintenance of the proposed**
16 **Project?**

17
18 A. No significant adverse effect is anticipated; sensitive noise receptors within the area
19 include rural residents living in scattered locations on farmsteads, a local rural church
20 and former farmsteads that are currently used for farm storage. ONEOK's Stateline
21 gas processing facility is located to the east on adjacent property. There would be a
22 short term increase in noise during construction of the Project. The nearest
23 residences are located greater than one mile from the Project. A rural church is
24 located approximately ¾ of a mile north of the Project.
25

26 Q. **Were any studies done to assess the noise levels that can be expected from the**
27 **operation of the Project?**

28
29 A. An Operational Noise Assessment Study for PGS Phase II Project was performed by
30 Basin Electric's consultant Burns and McDonnell in August 2014. The Noise
31 Assessment Study was included as Appendix A of the Application. The maximum
32 noise level at an occupied residence due to the operation of the PGS with all three
33 units operating was determined to be L_{dn} of 41.6 dBA, which is lower than the EPA
34 guideline of 55 dBA The closest receptor that was incorporated within the original

1 noise modeling study, the August Monitoring Study and the predictive modeling for the
2 Phase III project is Sensitive receptor SR-1. SR-1 is the neighboring churchyard
3 located approximately 3/4 miles north of PGS. The as-found L_{dn} conditions was 48.4
4 db, which was an increase of 0.2 db from the predicted model for Phase II. For Phase
5 III Project, an additional Sound Assessment Study was undertaken by Burns and
6 McDonnell in September 2014. The predictive modeling indicates an L_{dn} of 49.4 db at
7 this location for the 12 reciprocating engines and the three existing combustion
8 turbines in operation. In conclusion, the predicted noise level of the operation of the
9 Project is significantly below the 55 db EPA noise guidelines.

10
11 **Q. Will the Project have any visual impacts to the adjacent areas?**

12
13 **A.** Visual resources surrounding the Project consist of broad expanses of cultivated
14 fields, rangeland, and grasslands. The landscape has been altered due to previous
15 development; oil and gas exploration and production infrastructure, a large gas
16 processing facility, roads, and utility lines are all present in the area. Because of the
17 gently rolling terrain in the immediate vicinity, the Project will be visible in the general
18 area; however, the overall character of the landscape would not be significantly
19 changed.

20
21 **Q. Do you anticipate any significant impacts on areas of extractive or storage
22 resources?**

23
24 **A.** No. While there is significant oil and gas activity in the area, it would not conflict with
25 the proposed Project.

26
27 **Q. Are there any impacts on wetlands, woodlands or wood areas?**

28
29 **A.** There are no wetlands, woodlands, and wooded areas on the Project site.

30
31 **Q. Does the construction, operation and maintenance of the Project require Basin
32 Electric to remove any trees or shrubs?**

33
34 **A.** No

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Q. **Will there be any impacts on radio and television reception, or other communication or electronically controlled devices by the operation, construction and maintenance of the proposed Project?**

A. No

Q. **Do you expect any significant adverse effect on human and animal health and safety or plant life?**

A. No.

Q. **Mr. Miller, will it be possible to locate the site so as not to violate any local or county zoning ordinance?**

A. Yes. Basin Electric secured zoning approvals for PGS Phase II and associated facilities from the Williams County Commission and Hebron Township in 2015 and for PGS Phase I in 2012. Hebron Township has been informed of the Phase III Project and we are awaiting approval from the Hebron Township Board. As a matter of transparency with the Commission, the Hebron Township Board brought concerns of the operation of the existing Stormwater Pond to Basin Electric's attention in December 2014. Basin Electric staff investigated the issue and have made commitments to address and correct once the pond and discharge facilities are ice free in the spring of this year. Further, in early January 2015, Basin Electric staff met with an adjacent landowner and Township Board members to discuss the operation of Pioneer Generation Station and specifically the Phase III component of the Project. A Conditional Use application has been submitted to Williams County and is currently under review and analysis and will be filed with the Commission when it is received.

Q. **Does the proposed Project encroach on any designated or registered state wild, scenic, or recreational rivers; game refuges; game management areas; forests; forest management lands; or grasslands?**

A. No.

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Q. **Does the proposed Project encroach on any areas of historical, archaeological or paleontological significance not designated as exclusion or avoidance areas?**

A. The Project is within an area that a previous Class III cultural resource survey was performed. No prehistoric and historic sites were identified during the Class III surveys. No paleontological resources have been identified within the Project boundaries.

Q. **Are there any geologically unstable areas within the Project Site?**

A. No

Q. **What is the extent of the Energy Conversion Facility boundary for PGS?**

A. PGS's Phase II current Energy Conversion boundary is limited to the extent of within the 7 acre fenced parcel. For this application we have an additional 8.3 acres within a perimeter fence. Further there is a 3.7 acre fenced 115-kV switchyard and an interconnecting access road off of 56th Street. In order to be thorough, Basin Electric is requesting that the entire 120-acre parcel owned by Basin Electric, which has been zoned Industrial from Williams County be identified as the Energy Conversion Facility for the Project subject to the provisions of ND PSC Chapter 69-06.

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

A. Yes.

Before the Public Service Commission of
The State of North Dakota

In the Matter of the Application of
BASIN ELECTRIC POWER COOPERATIVE
For a Certificate of Site Compatibility for the
Pioneer Generation Station Phase III Project

Case No. PU-12-509

Pre-filed Testimony
of
Becky Kern

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

3

4 A. My name is Becky Kern. My business address is 1717 East Interstate Avenue,
5 Bismarck, North Dakota. I am the Director of Utility Planning for Basin Electric Power
6 Cooperative. I oversee the development of the long term load forecasting for Basin
7 Electric and its members and the long term power supply planning activities which
8 includes the development of Basin Electric's Integrated Resource Plan.

9

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

11

12 A. I received a Bachelor of Science degree in Electrical Engineering from the North
13 Dakota State University in 2002. I have worked for Basin Electric for twelve years.

14

15 Q. **What have been your responsibilities in connection with the Pioneer**
16 **Generation Station Phase III Project?**

17

18 A. I was responsible for identifying the need for additional generation. Through our load
19 forecasting process and subsequent evaluation of our ability to meet our member
20 load obligation through the development of an Integrated Resource Plan, we were
21 able to identify that Basin Electric needed additional natural gas generation to help
22 meet the growing load obligations of our membership.

23

24 Q. **How do you conduct the Basin Electric load forecasts?**

25

26 A. The load forecasts are performed either every other year or every three years with
27 annual updates and are prepared in accordance to the Rural Utilities Services
28 general criteria. The Load Forecast represents a joint effort by the distribution
29 cooperatives, the G&T cooperatives, and Basin Electric. In order to assure all
30 segments of the cooperative's structure are involved, a Load Forecast Technical
31 Committee was established. This committee consists of representatives from the
32 distribution cooperatives, the G&T cooperatives and Basin Electric. The Load
33 Forecast, is prepared on a distribution cooperative basis. The criteria defines a Load
34 Forecast as a thorough study of a cooperative's electric loads and the factors that

1 affect those loads in order to determine as accurately and as practical the
2 cooperative's future requirements for energy and capacity. The basis for econometric
3 modeling is to identify factors in the economy that have historically affected electrical
4 consumption. This is accomplished by using regression analysis software that
5 establishes a mathematical relationship between the economic factors and power
6 usage. The mathematical relationship, which is in the form of algebraic equations,
7 represents the econometric model. Different models are developed for each member,
8 depending on the type of load they serve. Examples of these models include
9 residential, oil related, coal related, ethanol and biodiesel related forecasts. There are
10 certain instances that a mathematical equation cannot be developed to predict the
11 future and in these cases judgmental forecasts are created with the help of the
12 distribution cooperatives serving the loads because of their local knowledge and
13 expertise. These results of the Load Forecasts are then translated into a model that
14 represents the Basin Electric system on a delivery point basis. This allows the
15 planning of infrastructure improvements to be made where needed. The Load
16 Forecast is then monitored on a monthly basis to ensure that the forecast is
17 performing as expected. Also, due to the detailed information available from the large
18 commercial sector, individual projects can be monitored to ensure that they are
19 proceeding as planned. If the load deviates significantly from the forecast,
20 modifications can be made for future load forecasts.

21

22 **Q. Earlier you mentioned one of your duties is to prepare Basin Electric's**
23 **Integrated Resource Plan. Could you please describe that document.**

24

25 **A.** The Integrated Resource Plan is a review of Basin Electric's forecasted member load
26 obligations, current operating system and provides for the framework for future
27 expansion, including both supply-side and demand-side resource expansion. Basin
28 Electric reviews resources that are available in meeting the forecasted obligations
29 and utilizes both a capacity expansion model and a production cost model to
30 determine what mix of resources can most effectively meet our member obligations.
31 These resources as I have stated can be both supply-side and demand-side, the
32 supply-side resources are not limited to Basin Electric's self-build options. We issued
33 a Power Supply Request for Proposal in the summer of 2013 and sought power
34 supply alternatives that could be evaluated within our Integrated Resource Plan. This

1 plan will typically identify a five year action plan to meet the forecasted load growth of
2 our member systems, with a general sense of what additional power supply may be
3 needed beyond five years.

4
5 **Q. Can you describe the results of the 2014 load forecast?**

6
7 A. The 2014 Load Forecast was approved by the members' Board of Directors as well
8 as Basin Electric's Board of Directors in the spring of 2014. This forecast showed that
9 Basin Electric's entire membership was anticipated to grow almost 1,900 MW from
10 2014 through 2035.

11
12 **Q. Why and when was Phase III of the Pioneer Generation Station chosen?**

13
14 A. Basin Electric is forecasted to be short of generation capacity within our eastern
15 system starting in 2016. In July 2014, the Basin Electric Board of Directors made the
16 decision that the need would be best supplied by developing additional peaking
17 generation at the Pioneer Generation Station and the Lonesome Creek Station. In
18 doing so, Basin Electric will receive the generation capacity it requires to reliably
19 serve its member load obligations.

20
21 **Q. As part of your duties as Director of Utility Planning, are you familiar with the
22 dispatching of generation?**

23
24 A. In general yes; however, I am responsible for long term power supply planning, which
25 is beyond the next 12 -18 months. Short term power supply planning activities, for the
26 next 12 months, are performed by Basin Electric's Marketing & Asset Management
27 Department.

28
29 **Q. What will the process be for dispatching of this unit and the timeframe on that
30 dispatch?**

31
32 A. These units will be dispatched based on market conditions and local area reliability
33 needs to support the Bakken area. The plant will be notified that the units are needed
34 to operate and provided a time for when they need to be at a specified generation

1 level. These units are capable of being online and generating electricity within about
2 10 -15 minutes.

3

4 Q. **Ms. Kern, how does this Project affect the reliability of the electrical system in**
5 **this area of northwestern North Dakota and Eastern Montana?**

6

7 A. This Project, as well as the Culbertson Generation Station and Lonesome Creek
8 Station, will provide local generation in the event of transmission line outages or for
9 local area support if needed.

10

11 Q. **Besides the Project, what else is Basin Electric doing to meet electrical demand**
12 **throughout Basin Electric's footprint?**

13

14 A. Basin Electric is also developing Phase 3 of the Lonesome Creek Station to be in-
15 service in 2016. We have also entered into several power purchase agreements for
16 additional wind generation to be online in 2015 and 2016. These additional wind
17 power purchase agreements will bring Basin Electric's wind generation portfolio to
18 almost 1,400 MW when all completed. We have also entered into a number of power
19 purchase agreements to provide additional capacity and energy to meet our growing
20 obligations as we continue to monitor the load growth on our system as well as
21 evaluate the need for additional generation within our service territory in the next 3-7
22 years.

23

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

26

27 A. Yes

28

29 Q. **Will the Project benefit the area through which Basin Electric is proposing to**
30 **construct?**

31

32 A. Yes. The Project will provide a direct benefit for service into the area allowing reliable
33 service to area consumers as well as provide the needed capacity to meet Basin
34 Electric's entire membership obligations.

1

2 Q. **Are there any plans for expansion of this Project?**

3

4 A. There are no plans for expansion of this particular Project.

5

6 Q. **Does this conclude your direct testimony?**

7

8 A. Yes.