

**BEFORE THE
ARKANSAS PUBLIC SERVICE COMMISSION**

**IN THE MATTER OF THE APPLICATION OF)
SOUTHWESTERN ELECTRIC POWER COMPANY)
FOR A CERTIFICATE OF ENVIRONMENTAL)
COMPATIBILITY AND PUBLIC NEED FOR THE)
CONSTRUCTION, OWNERSHIP, OPERATION)
AND MAINTENANCE OF THE PROPOSED 345 KV)
TRANSMISSION LINE BETWEEN THE SHIPE)
ROAD STATION AND THE PROPOSED KINGS)
RIVER STATION AND ASSOCIATED FACILITIES)
TO BE LOCATED IN BENTON, CARROLL AND/OR)
MADISON AND WASHINGTON COUNTIES,)
ARKANSAS)**

DOCKET NO: 13-041-U

DIRECT TESTIMONY

OF

**LANNY NICKELL
VICE PRESIDENT, ENGINEERING
SOUTHWEST POWER POOL, INC.**

**ON BEHALF OF
SOUTHWEST POWER POOL, INC.**

JUNE 28, 2013

Southwest Power Pool, Inc.
Direct Testimony of Lanny Nickell
Docket No. 13-041-U
June 28, 2013

1 **I. INTRODUCTION**

2 **Q. PLEASE STATE YOUR NAME AND YOUR BUSINESS ADDRESS.**

3 **A.** My name is Lanny Nickell. My business address is 201 Worthen Drive, Little Rock,
4 Arkansas 72223.

5 **Q. BY WHOM AND IN WHAT CAPACITY ARE YOU EMPLOYED?**

6 **A.** I am employed by Southwest Power Pool, Inc. (“SPP”) as Vice President, Engineering.

7 **Q. WHAT ARE YOUR DUTIES AND RESPONSIBILITIES IN YOUR CURRENT**
8 **POSITION?**

9 **A.** I am directly responsible for providing strategic and tactical leadership to SPP’s
10 Engineering department necessary to ensure successful completion of goals and essential
11 functions assigned to that group, including the development of transmission expansion
12 plans that ensure reliable and efficient usage of a regional transmission grid covering all
13 or parts of eight states. I also oversee the coordination, tracking, and monitoring of
14 approved transmission expansion projects, the performance of technical studies necessary
15 to process requests for interconnection of generation resources and requests for long-term
16 transmission service, and the provision of engineering support as necessary for members,
17 customers, and regulators.

18 **Q. PLEASE SUMMARIZE YOUR EDUCATIONAL AND PROFESSIONAL**
19 **BACKGROUND.**

Southwest Power Pool, Inc.
Direct Testimony of Lanny Nickell
Docket No. 13-041-U
June 28, 2013

1 **A.** I earned a Bachelor’s Degree in Electrical Engineering from the University of Tulsa.
2 Prior to being named Vice President, Engineering, I served as SPP’s Vice President,
3 Operations and, before that, in various management and engineering roles within the
4 Operations Department. Prior to joining SPP in 1997, I served in various engineering
5 roles with the Public Service Company of Oklahoma and Central and South West
6 Services. I have served on numerous SPP and North American Electric Reliability
7 Corporation (“NERC”) committees working to develop and implement both regional and
8 national transmission operations, planning, and market development policies.

9 **Q. PLEASE GIVE A BRIEF SUMMARY OF SPP’S ORGANIZATION AND**
10 **OPERATIONS.**

11 **A.** SPP is a Federal Energy Regulatory Commission approved Regional Transmission
12 Organization (“RTO”). SPP is registered with NERC as an Interchange Authority,
13 Planning Authority, Reliability Coordinator, Reserve Sharing Group, Transmission
14 Planner, and Transmission Service Provider and must comply with all NERC Reliability
15 Standards applicable to these functions. SPP is an Arkansas non-profit corporation with
16 its principal place of business in Little Rock, Arkansas. It currently has 72 members in
17 nine states and serves more than 6 million households in a 370,000 square-mile area.
18 SPP’s members include 14 investor-owned utilities, 11 municipal systems, 13 generation
19 and transmission cooperatives, 4 state agencies, 11 independent power producers, 10
20 power marketers and 9 independent transmission companies. SPP, in its role as an RTO,
21 currently administers transmission service over 48,930 miles of transmission lines

Southwest Power Pool, Inc.
Direct Testimony of Lanny Nickell
Docket No. 13-041-U
June 28, 2013

1 covering portions of Arkansas, Kansas, Louisiana, Missouri, Nebraska, New Mexico,
2 Oklahoma, and Texas.

3 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

4 **A.** The purpose of my testimony is to provide information to the Commission on the
5 proposed Shipe Road to Kings River 345 kV transmission line and Kings River
6 substation (the “Project”), as proposed by Southwestern Electric Power Company
7 (“SWEPCO”) in its Application filed on April 3, 2013 in this proceeding.

8 **Q. HOW IS YOUR TESTIMONY ORGANIZED?**

9 **A.** Following this introductory Section I, my testimony is divided into the following
10 sections:

11 II. Ozark Transmission Study and 2007 SPP Transmission Expansion Plan

12 III. There is a Continued Need for the Project

13 IV. Further Interconnection of the Project

14 V. Conclusion

15 **II. OZARK TRANSMISSION STUDY AND 2007 SPP TRANSMISSION**
16 **EXPANSION PLAN**

17 **Q. SPP ISSUED THE NOTIFICATION TO CONSTRUCT (“NTC”) FOR THE**
18 **PROJECT. HOW WAS THE NEED FOR THE PROJECT DETERMINED?**

Southwest Power Pool, Inc.
Direct Testimony of Lanny Nickell
Docket No. 13-041-U
June 28, 2013

1 **A.** SPP, as an RTO and Planning Authority, is responsible for preparing long-range plans to
2 provide a road map for future transmission reinforcements in its region. SPP issues
3 NTCs for approved transmission expansion projects that require a financial commitment
4 in the near future. SPP performs near-term and long-term transmission assessments in
5 the development of its long range transmission expansion plans. Two such assessments
6 were performed that demonstrated a need for the Project: (1) the Ozark Transmission
7 Study and (2) the 2007 SPP Transmission Expansion Plan (“STEP”) for 2008-2017
8 (“2007 STEP”). The first of these studies, the Ozark Transmission Study, was a
9 collaborative transmission assessment for the SPP area in Northwest Arkansas and
10 surrounding areas. The proposed transmission expansion plan resulting from the Ozark
11 Transmission Study was intended to serve as a road map for future transmission
12 development in the Northwest Arkansas area.

13 The second study was the 2007 STEP. Prior to the Integrated Transmission Planning
14 (“ITP”) process, SPP conducted an annual reliability assessment of the transmission
15 system and reported the results and proposed transmission projects in the STEP. The
16 contingency analysis performed in the 2007 STEP assessment identified that the Beaver-
17 Eureka 161 kV and East Rogers-Avoca 161 kV lines overloaded for the contingency of
18 the Flint Creek-Brookline 345 kV line. Since the Shipe Road-Kings River 345 kV line
19 (also known as Centerton-Osage Creek 345 kV line) corrected the identified issues,
20 provided a new strong source of power to the Osage Creek area and also fit into the long
21 range plan proposed in the Ozark Transmission Study, SPP recommended constructing
22 this project in the 2007 STEP. The SPP Board of Directors (“SPP Board”) approved the

Southwest Power Pool, Inc.
Direct Testimony of Lanny Nickell
Docket No. 13-041-U
June 28, 2013

1 2007 STEP on January 29, 2008 and SPP issued an NTC with an expected in-service date
2 of 2016.

3 **Q. CAN YOU EXPAND UPON WHY AND HOW THE OZARK STUDY WAS**
4 **CONDUCTED?**

5 **A.** SPP members identified a need to conduct, in collaboration with neighboring utilities, a
6 long-range study to address the rapid growth in the area in and around Northwest
7 Arkansas. To accomplish this, a study was conducted that included SPP members in the
8 Northwest Arkansas area and utilities outside of the SPP footprint that serve the area. On
9 January 24, 2006, representatives from Arkansas Electric Cooperative Corporation
10 (“AECC”), American Electric Power, Associated Electric Cooperative Inc., City Utilities
11 of Springfield, Missouri, The Empire District Electric Company, Entergy Services, Inc.,
12 Grand River Dam Authority, Southwestern Power Administration, and SPP met to begin
13 developing the scope for the Ozark Transmission Study. Once the scope was determined,
14 SPP created models and performed planning analyses to determine the extent of
15 reliability needs in the area. Stakeholders then suggested possible solutions. SPP
16 evaluated the effectiveness of the suggested solutions and provided results back to the
17 stakeholders. The study was completed in June 2007.

18 **Q. WHAT DID THE RESULTS OF THE OZARK STUDY SHOW?**

19 **A.** The Ozark Transmission Study determined that there was the potential for numerous
20 voltage violations and overloaded lines in the future, and that a strong extra-high voltage

1 (“EHV”) source was needed across Northern Arkansas and Southern Missouri. The
2 Project was one of several recommended to mitigate these reliability issues.

3 **Q. WHAT ACTION DID SPP TAKE AS A RESULT OF THE OZARK**
4 **TRANSMISSION STUDY?**

5 **A.** After completing the Ozark Transmission Study, SPP used the results to inform its 2007
6 STEP planning effort. SPP performed reliability assessments with updated models and
7 load forecasts for the area in the 2007 STEP. The 2007 STEP identified the need for the
8 Project in 2016 and an NTC was issued February 13, 2008.

9 **Q. THE NTC WAS ISSUED FOLLOWING THE 2007 STEP. CAN YOU EXPLAIN**
10 **THE RELATIONSHIP BETWEEN THE OZARK STUDY AND THE 2007 STEP?**

11 **A.** The Ozark Transmission Study assessed the long-range needs for the area, including
12 needs outside of the SPP region, and identified a set of transmission upgrades to address
13 those needs. The 2007 STEP used updated models and load forecasts to determine
14 system needs within the SPP region and identified when projects would need to be in-
15 service to meet those needs.

16 **Q. COULD YOU EXPLAIN WHAT THE STEP IS?**

17 **A.** The STEP is produced annually and provides a comprehensive listing of all planned
18 transmission projects in SPP. The STEP includes: 1) upgrades required to satisfy
19 requests from transmission service; 2) upgrades required to satisfy requests for generator

1 interconnection; 3) upgrades resulting from SPP planning assessments; and 4) upgrades
2 that are sponsored by an SPP member.

3 **Q. HOW WERE THE ASSUMPTIONS FOR THE 2007 STEP DEVELOPED?**

4 **A.** The scope for the 2007 STEP reliability assessment was developed in conjunction with
5 the Transmission Working Group (“TWG”) and approved by the TWG. At the time of
6 the 2007 STEP, the TWG consisted of 16 representatives from SPP members. TWG
7 meetings are open to the public and attended by many stakeholders. The 2007 STEP
8 report outlines the process used to determine needs and vet solutions with stakeholders.
9 The 2007 STEP and related documents are available on the SPP website at:
10 <http://www.spp.org/section.asp?group=1155&pageID=27>.

11 **Q. PLEASE ELABORATE ON STAKEHOLDER INVOLVEMENT DURING THE**
12 **2007 STEP PROCESS.**

13 **A.** The reliability assessment scope for the 2007 STEP was developed with and approved by
14 the TWG. On May 15, 2007, preliminary results from the reliability contingency
15 analyses were provided at the SPP Spring Planning Summit and solutions were requested
16 from stakeholders. Also, at this Spring Planning Summit, the results from the Ozark
17 Study were presented. SPP incorporated comments from stakeholders and worked with
18 SPP members to determine solutions. At the Fall Planning Summit on August 15, 2007,
19 SPP presented 230 kV and above results and requested feedback from stakeholders. On
20 November 7, 2007, the results of the 2007 STEP were presented to the TWG. On
21 January 15, 2008, the Markets and Operations Policy Committee (“MOPC”), a committee

Southwest Power Pool, Inc.
Direct Testimony of Lanny Nickell
Docket No. 13-041-U
June 28, 2013

1 comprised of one representative from each SPP member, endorsed the 2007 STEP and
2 recommended that it be approved by the SPP Board. On January 29, 2008, the SPP
3 Board approved the 2007 STEP. All of these SPP meetings were open to the public and
4 many involved significant discussion about study results and recommended projects.

5 **Q. WHAT DID THE 2007 STEP SHOW WITH RESPECT TO THE PROJECT AND**
6 **FOR THE NORTHWEST ARKANSAS AREA?**

7 **A.** The NTC for the Project is based upon the approved 2007 STEP. The 2007 STEP
8 showed that the Project is needed to address future overloads on the existing Beaver-
9 Eureka 161 kV and East Rogers-Avooca 161 kV lines for an outage of Flint Creek-
10 Brookline 345 kV line.

11 **Q. PLEASE EXPLAIN THE APPROVAL PROCESS FOR THE 2007 STEP AND**
12 **THE ISSUANCE OF THE NTC.**

13 **A.** As noted above, the TWG, MOPC and SPP Board endorsed or approved the 2007 STEP,
14 as appropriate. SPP Board approval is the action that directs SPP staff to issue NTCs.
15 Following SPP Board approval on January 29, 2008, NTCs for approved projects were
16 issued in February 2008.

17 **Q. IF SWEPKO HAD NOT COMMITTED TO CONSTRUCT THE PROJECT,**
18 **WOULD THAT MEAN THAT THE PROJECT WOULD NOT MOVE**
19 **FORWARD?**

1 **A.** No. Once an NTC is issued to the incumbent utility, if the utility declines or is unable to
2 construct the proposed facility, SPP would solicit another utility to construct such
3 upgrades and would issue a subsequent NTC.

4 **III. THERE IS A CONTINUED NEED FOR THE PROJECT**

5 **Q. IS IT YOUR OPINION THAT THERE IS STILL A NEED FOR THIS PROJECT?**

6 **A.** Yes.

7 **Q. WHY?**

8 **A.** In addition to the reliability need demonstrated in the 2007 STEP and the Ozark
9 Transmission Study, I believe the Project is still needed for four reasons.

10 First, these studies resulted in the formation of a long-range plan for transmission
11 expansion in Northwest Arkansas and surrounding areas necessary to meet expected
12 future reliability needs. The planning assumptions used in these studies to anticipate
13 those future reliability needs were reasonable then and I have seen no evidence to expect
14 a material deviation in those assumptions now that would obviate the need for the project.
15 Furthermore, subsequent planning efforts by SPP have assumed the construction of the
16 Project and I believe that removal of it could potentially undermine the value and
17 effectiveness of subsequently approved projects.

18 Second, SPP has experienced excessive loading known as congestion, as far back as
19 2001, on transmission facilities in the Northwest Arkansas area that this project and the

1 other projects planned for Northwest Arkansas would have mitigated. SPP has typically
2 relied upon redispatch of more expensive generation resources to mitigate this
3 congestion. As consumer demand continues to grow in the area, it will become more
4 difficult and more costly to reliably mitigate this congestion through generation
5 redispatch.

6 Third, SPP's recent transmission service evaluations have demonstrated that the Project is
7 needed to relieve overloaded facilities resulting from transmission service requests
8 submitted in SPP's long-term transmission service process. Without the Project, the
9 prospective transmission service customers will be forced to provide an effective
10 mitigation plan or forego the requested transmission service.

11 Fourth, SPP recently performed an evaluation of the need for this project using
12 engineering analysis tools and a model containing a more up-to-date representation of the
13 future transmission system. Although not a comprehensive restudy, the results of this
14 evaluation confirm my belief that this project is still needed for reliability reasons.

15 **Q. YOU REFERRED TO THE PERFORMANCE OF A PROJECT NEED**
16 **EVALUATION USING A MODEL CONTAINING A MORE UP-TO-DATE**
17 **REPRESENTATION OF THE FUTURE TRANSMISSION SYSTEM. WHAT**
18 **WAS THE NATURE OF THE MODEL USED IN THIS REASSESSMENT?**

19 **A.** For the evaluation, SPP used a transmission system model created in mid-2012 to
20 represent expected summer peak system conditions for 2018. This model was one of a
21 series of models used by SPP in the development of its Integrated Transmission Planning

1 Near-Term Assessment (“ITPNT”) that was approved by the SPP Board on January 29,
2 2013. At the time the evaluation was performed, this was the most current series of
3 models that had undergone the requisite SPP stakeholder review for purposes of
4 utilization within SPP’s ITP processes. SPP used a 2018 model because, in this most
5 recent series of models, it represented the year closest to the year the project is expected
6 to be in service. This model included forecasted summer peak demands for all load-
7 serving transmission substations as provided by SPP member and neighboring utilities,
8 transmission and generation facilities expected to be operational in 2018, including those
9 not in service today but for which SPP has issued NTCs, and generation dispatch
10 necessary to meet the forecasted consumer demand and known wholesale power
11 transactions.

12 **Q. HOW WAS THIS EVALUATION PERFORMED?**

13 **A.** First, the Shipe Road – Kings River 345 kV line was removed from the aforementioned
14 2018 summer peak model. Then, a series of four analyses were performed – described as
15 follows: 1) an “N-1” contingency analysis was performed, in which single transmission
16 elements were removed from service one at a time while monitoring the resulting effects
17 on remaining facilities during each contingency; 2) an “N-2” contingency analysis was
18 performed, in which certain pairs of transmission elements were removed from service
19 simultaneously with the resulting effects on remaining facilities monitored during each
20 event; 3) a “G-1, N-1” analysis was performed, in which a generation source and a
21 transmission element were removed from service simultaneously with the resulting

1 effects on remaining facilities monitored during each event; and 4) a Low-Hydro
2 situation was modeled in which dispatch from hydro-generation resources was reduced
3 and an N-1 contingency analysis performed under those modeled dispatch conditions.
4 The first three described are standard analyses performed by Transmission Planners and
5 Planning Authorities to comply with NERC's Transmission Planning ("TPL") reliability
6 standards. The Low-Hydro analysis was performed to simulate the analysis performed in
7 the Ozark Transmission Study with updated assumptions and in recognition that drought
8 and low-hydro conditions have become more prevalent in recent years.

9 **Q. WHAT IS THE NATURE OF THE RELIABILITY ISSUES THAT THIS KIND OF**
10 **EVALUATION IS EXPECTED TO IDENTIFY AND WHAT IS THE**
11 **SIGNIFICANCE OF THESE RELIABILITY ISSUES?**

12 **A.** There are two basic types of reliability issues that this kind of evaluation is expected to
13 identify: (i) overloads and (ii) voltage violations. In this kind of evaluation, an overload
14 occurs when the studied power flow on a transmission facility exceeds its rated operating
15 limit. In actual transmission operations, when power flows on transmission facilities
16 exceed safe operating levels, relays and protective devices will operate so that those
17 facilities are isolated to avoid equipment damage. This will typically cause a power
18 outage to customers in the area when the overloaded facility is disconnected from a
19 power source. In simple terms, when facilities in an affected area do not have connection
20 to adequate power supplies, a partial or complete loss of service to the affected area can
21 result.

Southwest Power Pool, Inc.
Direct Testimony of Lanny Nickell
Docket No. 13-041-U
June 28, 2013

1 In this kind of evaluation, a voltage violation occurs when the measured voltage at an
2 electrical bus is outside a reliable operating range based on the rated operating voltage of
3 that facility. For planning purposes, SPP Criteria requires that voltage limits be set at
4 plus 5% (1.05 p.u.) to minus 10% (.90 p.u.) of the applicable rating of a load-serving bus.
5 In actual operations, when the voltage is too low or too high to safely operate the
6 connected equipment, relays and protective devices will operate so that the equipment is
7 isolated to prevent damage. By the operation of these devices, the low voltage area is
8 isolated from its power source which causes a partial or complete loss of service to
9 customers in the area. Thermal overloads or low voltages can cause partial or complete
10 loss of service to affected areas and need to be avoided to limit damage to utility and/or
11 customer facilities.

12 **Q. CAN YOU SUMMARIZE THE RESULTS OF THIS EVALUATION AND**
13 **EXPLAIN WHY THEY DEMONSTRATE THE PROJECT IS STILL NEEDED?**

14 **A.** This evaluation showed that the Shipe Road-Kings River 345 kV line will significantly
15 reduce, by more than half, high post-contingency (N-1) loadings on the Avoca-East
16 Rogers 161 kV and the Beaver Dam-Eureka Springs 161 kV lines that could otherwise
17 exist in 2018 summer peak conditions. It also showed that the Project will relieve
18 numerous overloads and low voltages that could otherwise exist during an event
19 involving a simultaneous outage of two transmission elements (N-2). Some of these
20 overloads are significant enough that even if only one of the paired contingencies
21 occurred, SPP would have to be prepared to perform proactive load shedding to protect

1 against uncontrolled loss of load that could result from the remaining subsequent
2 contingency. The evaluation further showed that the Project relieves two overloaded
3 transmission facilities during an outage of another transmission facility and a generation
4 facility (N-1, G-1). Finally, the evaluation showed that during Low-Hydro conditions,
5 numerous first contingency overload and low voltage conditions would be relieved by the
6 Project. These results demonstrate that the Project provides considerable reliability
7 improvements and benefits under a number of studied scenarios and allows SPP to
8 comply with mandatory NERC TPL reliability standards. The results of the evaluation
9 are shown in more detail in Attachment 1.

10 **Q. DO THE RESULTS OF YOUR EVALUATION, WHICH WAS BASED ON A 2018**
11 **SUMMER PEAK MODEL, INDICATE THAT THE PROJECT SHOULD BE**
12 **DELAYED FROM 2016 TO 2018 OR LATER?**

13 **A.** No. Although the evaluation was performed with a 2018 model, the results indicate that
14 the reliability benefits derived from construction of the Project are of such significance
15 that I would not recommend any delay. Delay would only cause electric consumers in
16 Northwest Arkansas and surrounding areas to be exposed to higher probability of loss of
17 service and could result in non-compliance with NERC reliability standards.
18 Furthermore, with an average lead time of 4 years to construct a project of this nature, it
19 needs to begin in the very near future to meet expected reliability needs, whether those
20 reliability needs are expected in 2016 or 2018.

1 **IV. FURTHER INTERCONNECTION OF THE PROJECT**

2 **Q. ARE YOU AWARE THAT THE PROJECT AS PROPOSED WILL REQUIRE**
3 **ADDITIONAL FACILITIES TO INTERCONNECT THE KINGS RIVER**
4 **SUBSTATION?**

5 **A.** Yes. The Project was originally envisioned as a 345 kV line originating at an existing
6 345 KV substation near Centerton, Arkansas (now known as Shipe Road) and
7 terminating in the existing 161 kV Osage Creek substation with installation of a 345/161
8 KV autotransformer therein. As explained by Mr. Hassink in his Direct Testimony, the
9 Project has been slightly altered, with SPP’s approval, to terminate the line from Shipe
10 Road in a new substation, called Kings River, due to space limitations in the Osage Creek
11 substation. The new Kings River substation is proposed to be located in close proximity
12 to the Osage Creek substation. Two 161 kV lines owned by Entergy Arkansas, Inc.
13 (“EAI”) terminate in the Osage Creek substation and an interconnection is planned
14 between EAI and SWEPCO to integrate the Project.

15 **Q. IS IT REASONABLE TO EXPECT THAT THIS INTERCONNECTION WILL BE**
16 **CONSTRUCTED IN TIME TO ENSURE THE PROJECT’S RELIABILITY**
17 **BENEFITS CAN BE DELIVERED AS NEEDED?**

18 **A.** Yes. EAI participated in the collaborative effort to develop and complete the Ozark
19 Transmission Study and should be well aware of the reliability benefits the Project is
20 expected to bring to the area. AECC, SWEPCO, and SPP have been closely coordinating
21 with EAI over the last couple of months to complete engineering studies needed to

Southwest Power Pool, Inc.
Direct Testimony of Lanny Nickell
Docket No. 13-041-U
June 28, 2013

1 evaluate the technical requirements of the interconnection. Most importantly, EAI has
2 provided AECC a letter committing to use its best efforts to complete the interconnection
3 by June 2016, subject to approval by the Arkansas Public Service Commission.

4 **V. CONCLUSION**

5 **Q. IS IT YOUR OPINION THAT THE PROJECT IS NEEDED TO SUPPORT THE**
6 **RELIABILITY OF THE TRANSMISSION SYSTEM?**

7 **A.** Yes.

8 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

9 **A.** Yes.

AFFIDAVIT

STATE OF ARKANSAS)

COUNTY OF PULASKI)

I, **Lanny Nickell**, being duly sworn according to law, state under oath that the matters set forth in my Prepared Direct Testimony in this docket are true and correct to the best of my knowledge, information and belief.


Lanny Nickell

Subscribed and sworn to before me, a Notary Public, on this 28th day of June, 2013.


Notary Public

My Commission Expires: 04-01-2018


SEAL



Southwest Power Pool, Inc.
Direct Testimony of Lanny Nickell
Docket No. 13-041-U
June 28, 2013

CERTIFICATE OF SERVICE

I, Erin E. Cullum, attorney for Southwest Power Pool, Inc., do hereby certify that I have, on this 28th day of June, 2013, duly served a true and correct copy of the above and foregoing pleading upon all parties of record by electronic mail.



Erin E. Cullum

Southwest Power Pool, Inc.
Direct Testimony of Lanny Nickell
Docket No. 13-041-U
June 28, 2013

ATTACHMENT 1

Southwest Power Pool, Inc.
 Direct Testimony of Lanny Nickell
 Docket No. 13-041-U
 June 28, 2013

Highly Loaded and Overloaded Facilities Mitigated by the Shipe Road-Kings River 345 kV Project

Loading ¹	Monitored Element	Contingency Element	Scenario
153%	Harrison South AECC-Harrison-West 161kV	Grandview-Table Rock 161kV and Beaver-Eureka Springs161kV	N-2
122%	Basin Spring-Harrison West 161kV	Grandview-Table Rock 161kV and Beaver-Eureka Springs161kV	N-2
122%	Basin Spring- Green Forest South 161kV	Grandview-Table Rock 161kV and Beaver-Eureka Springs 161kV	N-2
122%	Avoca-East Rogers 161kV	Neosho SPA-Washburn 161kV ²	Low Hydro
118%	Beaver-Eureka Springs 161kV	Grandview-Table Rock 161kV and Beaver-Eureka Springs161kV	N-2
118%	Beaver-Eureka Springs 161kV	Flint Creek-Brookline 345kV and Blackberry-Jasper 345kV	N-2
115%	Green Forest-Green Forest South 161kV	Grandview-Table Rock 161kV and Beaver-Eureka Springs161kV	N-2
115%	Avoca-East Rogers 161kV	Grandview-Table Rock 161kV and Beaver-Eureka Springs161kV	N-2
115%	Avoca-East Rogers 161kV	Flint Creek-Brookline 345kV and Blackberry-Jasper 345kV	N-2
109%	Avoca-East Rogers 161kV	Flint Creek-Brookline 345kV and Neosho SPA-Washburn 161kV	N-2
108%	Brookline Transformer No. 1 345/69kV	Brookline Transformer No. 2 345/69kV	Low Hydro
108%	Brookline Transformer No. 2 345/69kV	Brookline Transformer No. 1 345/69kV	Low Hydro
105%	Morgan –Stockton 161kV	Jasper-Morgan 345kV	Low Hydro
105%	Afton-Cleora Tap 69kV	Afton-Pensacola 161kV	Low Hydro
105%	Avoca-East Rogers 161kV	Neosho SPA-Washburn 161kV and Beaver Unit 1	G-1 and N-1
105%	Harrison East-Summit 161kV	Grandview-Table Rock 161kV and Beaver-Eureka Springs161kV	N-2
104%	Washburn 161/69kV Transformer	Beaver-Eureka Springs161kV and Springfield JTEC Unit 2	G-1 and N-1

¹ All loadings are post-contingency values observed on the Monitored Element and are given in percent of the applicable rating of the Monitored Element. **These are expected loadings if the Project is not in service.**

² Avoca-East Rogers 161kV over loads for several contingencies in the Low Hydro scenario, but the highest over load occurs for the outage of Neosho SPA-Washburn 161kV.

Southwest Power Pool, Inc.

Direct Testimony of Lanny Nickell

Docket No. 13-041-U

June 28, 2013

104%	Bowers Mill-Reeds 69kV	Flint Creek-Brookline 345kV and Blackberry-Jasper 345kV	N-2
96%	Avoca-East Rogers 161kV	Washburn 161kV-Neosho 161kV	N-1
92%	Avoca-East Rogers 161kV	Flint Creek-Brookline 345kV	N-1
92%	Beaver-Eureka Springs 161kV	Flint Creek-Brookline 345kV	N-1

Voltage Violations Mitigated by the Shipe Road-Kings River 345 kV Project

Voltage³	Monitored Bus	Contingency Element	Scenario
.77 p.u.	Eureka Springs 161 kV	Grandview-Table Rock 161kV and Beaver-Eureka Springs161kV	N-2
.77 p.u.	Grandview 161kV	Grandview-Table Rock 161kV and Beaver-Eureka Springs161kV	N-2
.77 p.u.	Osage Creek 161kV	Grandview-Table Rock 161kV and Beaver-Eureka Springs161kV	N-2
.78 p.u.	Berryville 161kV	Grandview-Table Rock 161kV and Beaver-Eureka Springs161kV	N-2
.81 p.u.	Green Forest 161kV	Grandview-Table Rock 161kV and Beaver-Eureka Springs161kV	N-2
.82 p.u.	Basin Spring 161kV	Grandview-Table Rock 161kV and Beaver-Eureka Springs 161kV	N-2
.87 p.u.	Harrison West 161kV	Grandview-Table Rock 161kV and Beaver-Eureka Springs161kV	N-2
.88 p.u.	Avoca 161 kV	Avoca-East Rogers 161kV	Low Hydro
.89 p.u.	Harrison South AECC 161kV	Grandview-Table Rock 161kV and Beaver-Eureka Springs161kV	N-2

³ All voltages are post-contingency values observed on the Monitored Bus and are given in Per Unit. **These are expected voltages if the Project is not in service.**