2011.03.24 13:30:16 Kansas Corporation Commission /S/ Susan K. Duffy

#### **BEFORE THE** STATE CORPORATION COMMISSION **OF THE STATE OF KANSAS**

**STATE CORPORATION COMMISSION** 

Before Commissioners:

Thomas E. Wright, Chairman Ward Loyd

MAR 2 4 2011 Suran La

In the Matter of the Application of ITC Great ) Plains, LLC for a Siting Permit for the ) Construction of a Double-Circuit 345-kV ) Transmission Line in Ford, Clark, Kiowa and ) Barber, Kansas.

Docket No. 11-ITCE-644-MIS

#### **PETITION TO INTERVENE**

)

COMES NOW, the Southwest Power Pool, Inc. ("SPP") and pursuant to K.S.A. 77-521,

petitions the State Corporation Commission of the State of Kansas ("the Commission") for an order

granting SPP intervention in the above-captioned matter. In support of its Petition, SPP states the following:

- 1. On March 14, 2011, ITC Great Plains, LLC ("ITC") submitted its Application for a Siting Permit for the Construction of a Double-Circuit 345-kV Transmission Line in Ford, Clark, Kiowa, and Barber Counties, Kansas ("Application for Siting Permit"), requesting the right to construct a double-circuit 345 kV transmission line from the Spearville Substation south to a new substation in Clark County, Kansas, and continuing east to a new substation in Barber County near Medicine Lodge, Kansas (the "Project").
- 2. ITC received a certificate of convenience and necessity from the Commission in Docket No. 08-ITCE-936-COC, authorizing it to site, construct, own, operate and maintain the Project for which siting authority is sought in this docket.

- 3. SPP, as a FERC-approved Regional Transmission Organization ("RTO") and a regional Reliability Council, is responsible for taking all reasonable steps, including planning and general oversight duties, necessary to maintain and enhance the reliability of the electric transmission network operated by its member companies in Kansas and adjacent states.
- 4. The Project is one of six Priority Projects approved by the SPP Board of Directors in April 2010. The Priority Projects were identified and selected as regional planning projects needed to reduce grid congestion, improve the Generation Interconnection and Aggregate Study processes, and to better integrate SPP's east and west regions of the footprint.
- 5. SPP was responsible for conducting the studies related to the Priority Projects, which include the Project. Accordingly, SPP intends to file testimony based on the studies demonstrating the need for and the benefit of the Project.
- 6. Because such testimony will establish the need for and benefits of the Project, SPP respectfully requests permission to file its testimony promptly, which is attached hereto as Exhibit A, and ahead of any procedural schedule, so that other parties may consider such testimony when responding to ITC's Application for Siting Permit.
- SPP's interests would, thus, be substantially affected by the outcome of this proceeding, and the interests of justice and the orderly and prompt conduct of the proceedings will not be impaired by allowing intervention.
- 8. Accordingly, SPP has an essential interest in the outcome of this proceeding which cannot be adequately represented by any other party.

WHEREFORE, SPP respectfully requests the Commission grant its Petition to Intervene in this matter.

Respectfully submitted,

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and

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Attorneys for Southwest Power Pool, Inc. Petitioner

### VERIFICATION K.S.A. 53-601

STATE OF KANSAS ) SS: ) COUNTY OF SHAWNEE )

I verify under penalty of perjury that the foregoing is true and correct.

Robint

John R. Wine, Jr.

Executed on March 24, 2011.

#### **CERTIFICATE OF SERVICE**

I hereby certify that a true and correct copy of the above Petition to Intervene was placed in the United States mail, postage pre-paid, this 24th day of March, 2011, to the following:

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# EXHIBIT A

DIRECT TESTIMONY OF KATHERINE PREWITT DIRECTOR, PLANNING SOUTHWEST POWER POOL, INC.

# BEFORE THE STATE CORPORATION COMMISSION OF THE STATE OF KANSAS

Before Commissioners:	Thomas E. Wright, Chairman Ward Loyd				
In the Matter of the Application of ITC Gr Plains, LLC for a Siting Permit for Construction of a Double-Circuit 345- Transmission Line in Ford, Clark, Kiowa a Barber, Kansas.	the ) kV ) Docket No. 11-ITCE-644-MIS				

### DIRECT TESTIMONY

OF

# KATHERINE PREWITT DIRECTOR, PLANNING SOUTHWEST POWER POOL, INC.

# ON BEHALF OF SOUTHWEST POWER POOL, INC.

MARCH 24, 2011

#### 1 I. INTRODUCTION AND OVERVIEW

- 2 Q. Please state your name and business address.
- A. My name is Katherine Prewitt. My business address is 415 N. McKinley, Suite 140,
  Little Rock, AR 72205.

### 5 Q. By whom and in what capacity are you employed?

6 A. I am employed by Southwest Power Pool, Inc. ("SPP") as Director, Planning.

# 7 Q. What are your duties and responsibilities in your current position?

8 Α. I am responsible for the engineering activities related to continued development of the 9 SPP transmission plans and related functions, including conception, research and 10 development, SPP approval, Federal Energy Regulatory Commission ("FERC") and state 11 regulatory proceedings, maintenance and operational policy decisions related to 12 engineering planning processes and services. I also have responsibility for the design, 13 management, development, implementation and monitoring of planning and operations 14 engineering activities to support reliable and economic transmission expansion plans to 15 serve future needs in an economically efficient and effective manner. I direct a portion of 16 SPP's contractual responsibilities as a service provided to non-members. In addition, I 17 manage and track all activities related to expansion planning in the SPP Regional 18 Transmission Organization ("RTO") and coordinate with others as necessary to 19 implement and administer regional planning analyses and project tracking/reporting. I 20 provide engineering support as necessary for members, regulators and other departments, 21 as well as coordinate with other departments to ensure regulatory compliance. These 22 responsibilities also require that I interact with other external parties not otherwise 23 identified in the list above.

# 24 Q. Please summarize your educational and professional background.

A. I earned a Bachelor's Degree in Chemical Engineering from the University of Texas,
Austin. Prior to being named Director, Planning of SPP, I served as manager of the SPP

Independent Transmission Organization ("ITO"), a contract service provided by SPP to
 what is now known as Louisville Gas & Electric Company/Kentucky Utilities Company.
 I formerly was employed with Entergy Services, Inc. in various engineering positions.

4 Q. Please give a brief summary of SPP's organization and operations.

5 SPP is a FERC-approved RTO. It is an Arkansas non-profit corporation with its principal A. place of business in Little Rock, Arkansas. SPP currently has 62 members in nine states 6 7 and serves more than 6 million households in a 370,000 square-mile area. SPP's 8 members include 14 investor-owned utilities, 9 municipal systems, 12 generation and 9 transmission cooperatives, 4 state agencies, 7 independent power producers, 10 power 10 marketers and 6 independent transmission companies. SPP, in its role as an RTO, 11 currently administers transmission service over 48,930 miles of transmission lines 12 covering portions of Arkansas, Kansas, Louisiana, Missouri, Nebraska, New Mexico, 13 Oklahoma, and Texas. These services include reliability coordination, tariff 14 administration, regional scheduling, transmission expansion planning, market operations, 15 compliance, and training.

16 SPP has a unique culture for an RTO, being member-driven and comprised of a large 17 number of stakeholder-populated committees, working groups and task forces who 18 develop, through achievement of consensus, policies to be implemented by SPP. These 19 stakeholder meetings are open to the public, and agendas and materials are posted on the 20 SPP website. In the SPP RTO, members have both the right and obligation to provide 21 policy positions to the SPP Board of Directors ("SPP Board") and its Members 22 Committee for consideration and approval. On all SPP committees other than the 23 Oversight Committee, the SPP members hold the majority of the voting strength.

Included in these stakeholder groups is the SPP Regional State Committee ("RSC"), comprised of state regulators across the SPP footprint, and the Cost Allocation Working Group ("CAWG"), which is made up of staff members of the state regulatory authorities. The RSC plays more than just an advisory role in the policies and responsibilities of SPP; the RSC actively engages on a broad range of issues where SPP has ceded authority,

including transmission cost allocation, capacity adequacy, allocation of transmission
 rights, and market evolution issues.

### 3 Q. What is the purpose of your testimony?

A. The purpose of my testimony is to provide information related to the development of the
proposed project that is the subject of the Application filed in the above-styled docket by
ITC Great Plains, LLC ("ITC") on March 14, 2011 ("Application"), and to detail the
benefits provided by the Priority Projects to the SPP footprint as a whole and to Kansas
specifically. The proposed project, referred to in ITC's Application as the "V Plan", is
now referred to as part of the Priority Projects.<sup>1</sup>

#### 10 Q. How is your testimony organized?

A. I will begin with a background on the project that is the subject of ITC's Application in
this proceeding. I will then provide a description of the evolution in SPP's transmission
planning processes that resulted in this project becoming part of SPP's Priority Projects.
Finally, I will detail the benefits, both quantitative and qualitative, provided by the
Priority Projects to the SPP footprint and to the State of Kansas.

# 16 BACKGROUND

# 17 Q In the Application, this project is referred to as the "V Plan". What is that, and how 18 did it come about?

<sup>&</sup>lt;sup>1</sup> In Docket No. 11-PWTE-600-MIS, Prairie Wind refers to the proposed Priority Projects' double circuit 345 kV transmission lines in Kansas as the "Y Plan." As a point of clarification, it is important to note that for purposes of the proposed lines in Kansas, all projects in the V Plan are in the Y Plan. The Y Plan includes a line from Woodward EHV in Oklahoma which interconnects with the V Plan in Kansas, making these proposed lines resemble a "Y" when viewed on a map, and hence the name, the Y Plan. For purposes of the proposed lines for which Prairie Wind is seeking siting authority in Docket No. 11-PWTE-600-MIS and for which ITC is seeking siting authority in this Docket, the designation of Y Plan or V Plan has no real significance, as they are both parts of the same overall plan. On page 5 of the SPP Priority Projects Phase II Final Report ("Priority Project Final Report"), there is a map which shows the originally proposed lines in which the "V" and "Y" portions should be evident. Priority Project Final Report may be accessed at the following The link: http://www.spp.org/publications/Priority%20Projects%20Phase%20II%20Final%20Report%20-%204-27-10.pdf.

1 A. The Spearville - Wichita and down to Woodward line segments were a part of the 2 original X plan reviewed by SPP starting in 2005. This project was studied in the EHV 3 Overlay studies in 2006 and 2007 and was later incorporated into the V plan. In 2008 4 and 2009, during the development of the Balanced Portfolio, the V plan which included these line segments, was reviewed as part of the development of the Balanced Portfolio 5 and other portions of the V plan were approved as a part of the Balanced Portfolio. In 6 7 2009 the Priority Projects analysis studied the remaining V plan segments. With the 8 approval of these line segments in the Priority Projects in 2010, the last section of both 9 the V and X plans was approved.

# 10 Q. How did this project evolve from being part of the "X" or "V" Plan to a Priority 11 Project?

A. Historically, SPP's planning processes focused on meeting reliability needs, economic
 planning and addressing the needs resulting from the Transmission Service Request and
 Generation Interconnection Request processes. Over time, SPP members and staff alike
 became frustrated in managing the complexity and the required, but limited, transmission
 expansion which occurred as a part of the many different planning processes.

# 17 Q. What resulted from the acknowledgement of this frustration with the planning 18 processes?

A. On December 9, 2008, the SPP Board charged SPP's President to propose, at the January
27, 2009 SPP Board meeting, a process to address specific deficiencies in SPP's
transmission planning processes and, more specifically, how the SPP Transmission
Expansion Plan ("STEP"), the Balanced Portfolio for Economic Upgrades, the Extra
High Voltage ("EHV") Overlay studies, the Aggregate Study Process, and SPP's
Generation Interconnection Queue interrelate with each other.

#### 25 Q. What occurred as a result of that direction?

A Upon the recommendation of senior SPP staff, a group called the Synergistic Planning
 Project Team ("SPPT") was formed. The SPPT was comprised of two state

commissioners, one Transmission Owner representative, one marketer, one Transmission 1 2 User representative, one member of the financial investment community, one senior SPP 3 staff member, and an industry consultant. The SPPT was created to search for opportunities to improve SPP's transmission planning processes and cost allocation 4 5 approaches, as well as to address gaps and conflicts in all of SPP's transmission planning 6 processes; to develop a holistic approach to planning that optimizes individual processes; 7 and to position SPP to respond to national energy priorities. The SPPT was charged with 8 reviewing all strategic issues concerning transmission service, generator interconnection, 9 EHV inter-regional transmission, and wind integration.

### 10 Q. How did the SPPT function?

A. The SPPT met multiple times, discussing the issues and stakeholder comments, concerns and recommendations. The SPPT hosted an open technical conference on March 31, 2009 for presentation of the work in progress to seek stakeholder comment and feedback prior to finalizing its recommendations. The SPPT concluded its initial effort and updated the Markets and Operations Policy Committee ("MOPC") and reported to the SPP Board and RSC at the April 2009 meetings.

# 17 Q. Did the SPPT reach any conclusions and provide any recommendations?

- A. Yes. The SPPT issued a report dated April 23, 2009, in which the SPPT provides seven
   recommendations, three of which are significant to the Application at issue in this
   proceeding.<sup>2</sup> SPPT recommendations 1, 2, and 6, are set forth below.
- 21Recommendation #1: SPP should adopt new planning principles to22establish its new vision for an Integrated Planning Process (IPP).
- Recommendation #2: SPP should implement the IPP, as described in this
  report, to facilitate the creation of a robust, flexible, and cost-effective
  transmission network in the SPP footprint.

<sup>&</sup>lt;sup>2</sup> This SPPT report can be accessed on the SPP website at the following link: http://www.spp.org/publications/SPPT%20Report%20Version%20v6-1.pdf.

1	Recommendation #6: As an interim measure, SPP should evaluate and
2	recommend to the RSC a list of Priority Projects within six months for
3	approval by the BOD. In parallel with this task, the RSC should either
4	select an existing cost allocation methodology or the new "highway-
5	byway" cost allocation methodology for approved Priority Projects.

# 6 7

Q.

# In SPPT recommendation #6, was SPP given further direction related to the development of these Priority Projects?

A. Yes. SPP was charged with identifying, evaluating, and recommending Priority Projects
that will improve the SPP transmission system and benefit the region. The SPPT directed
that consideration should be given to projects identified in the Cluster Studies for
Grouped Generation Interconnection Requests ("GIQ"), as well as projects that routinely
show up as needed in the Aggregate Study Process or projects that address known
congestion. These projects were needed to integrate SPP's west and east transmission
systems. The SPPT also set specific timelines for accomplishing this recommendation.

# 15 .Q. How did SPP begin the process of compiling a list of projects for consideration as 16 Priority Projects?

A. In the Spring of 2009, SPP began to compile a list of projects to be considered as Priority
 Projects. Internally, SPP assessed which projects appeared repeatedly in the Aggregate
 Study and Generation Interconnection processes, and projects that were not approved in
 the Balanced Portfolio but were identified as needed to relieve congestion in the SPP
 footprint. In addition to projects identified by SPP, a request was sent to stakeholders on
 May 29, 2009 for any projects they would like to have considered for the Priority Projects
 process. Stakeholder responses to this request far exceeded SPP's expectations.

# Q. Did SPP have a process for narrowing down or reducing this list to an appropriate size for further evaluation?

A. Yes. With a large number of proposed projects for evaluation, SPP developed a
 screening process to reduce the number of projects needing analysis to a more

1	manageable number. Projects included in the Priority Projects list needed to be cost-
2	effective, demonstrate a regional need, and improve the robustness of the existing
3	regional system. To ensure projects met these conditions, SPP developed a scoring
4	methodology to screen the projects. The scoring processes assigned a point value from 1
5	to 5 for each project that provided benefit in a particular category. In an effort to follow
6	the directives set forth by the SPPT in its report and recommendations, the following
7	categories were considered: congestion relief, transmission service request ("TSR")
8	impact, generation interconnection impact, economic benefit, and west-east transfer.
9	Each project's points were added across all categories to calculate a total project score,
10	based on the following:

- The congestion relief value was calculated by multiplying the average hourly shadow price by the total number of intervals breached or binding for an affected flowgate.
- The TSR impact value was calculated by taking reservation transfer distribution factors ("TDFs") and multiplying by the megawatts requested to obtain a total megawatt impact ("MWI") value. MWI values for each reservation in the last five Aggregate Studies were then added together to determine the TSR Impact.
  - The Generation Interconnection impact value was calculated as the sum of all positive incremental flow impacts on such upgrades.
    - The economic benefit attributed to each project was a benefit to cost ratio as identified in recent economic studies.
  - Each project received a value based on the kV level of the proposed solution that improved power transfers between SPP's west and east regions.

Criteria	5 points	4 points	3 points	2 points	1 point
Congestion Relief (C)	\$170K -	\$99K - \$50K	\$49K - \$20K	\$19 - \$8K	\$7K -
	\$100K				\$0K
<b>TESTIMORE POLICE</b>	300 - 100	99 - 50	49 – 19	18 - 10	9-0
Chiepatric -	1600 - 1300	1299 - 1000	999 - 700	699 - 400	399 – 0
Economic Bonef(()) = ==	Above 1.2	1.19 - 0.9	0.89 - 0.65	0.64 - 0.4	0.39 - 0
West-base French Carry	765kV	500kV	345kV	230kV	Under
					230kV

- 1 After using the above methodology, SPP proposed a list of the top twenty projects to 2 stakeholders, who recommended that some of the projects be combined and some 3 eliminated. The result was a list of ten projects to be considered and rigorously analyzed.
- 4 Q. How did SPP get from the top twenty projects to the final set of Priority Projects
  5 approved by the SPP Board?
- SPP staff and consultants performed engineering analyses to assess a number of metrics, 6 A. 7 including Adjusted Production Costs ("APC"), system losses, impacts to reliability 8 projects, local and environmental impacts, and deliverability of capacity and energy to 9 These metrics were developed as a result of SPP stakeholder input and load. 10 consideration and direction by the following SPP working groups: Transmission Working 11 Group ("TWG"), Economic Studies Working Group ("ESWG"), CAWG, MOPC, and 12 Strategic Planning Committee ("SPC"), as well as the SPP Board. One of the major 13 aspects of the Priority Projects study process was the analysis of two future scenarios 14 where either 7 GW or 11 GW of the SPP region's energy needs would be served by 15 wind.<sup>3</sup> The final list of Priority Projects that was presented to and approved by the SPP 16 Board included the following six projects:
- Spearville—Comanche—Medicine Lodge—Wichita (345 kV double circuit)<sup>4</sup>
   Comanche—Woodward District EHV (345 kV double circuit)
   Hitchland—Woodward District EHV (345 kV double circuit)
- 20 4. Valiant—NW Texarkana (345 kV)
- 21 5. Nebraska City—Maryville—Sibley (345 kV)
- 22 6. Riverside—Tulsa Reactor (138 kV).

# 23 Q. How were the Priority Project study assumptions determined?

http://www.spp.org/publications/Priority%20Projects%20Phase%20II%20Final%20Report%20-%204-27-10.pdf.

<sup>&</sup>lt;sup>3</sup> Detailed information relating to the study metrics may be found in the Priority Projects Final Report which may be accessed at the following link:

<sup>&</sup>lt;sup>4</sup> On November 22, 2010, SPP issued Notification to Construct SPP-NTC-20120 directing that this line be rerouted to Woodward District EHV to Medicine Lodge. SPP staff's recommendation to approve rerouting for the Woodward to Comanche transmission line to Woodward to Medicine Lodge was approved by the SPP Board at its October 26, 2010 meeting.

1 A. Assumptions used in the Priority Projects modeling and analyses were vetted through the 2 SPP stakeholder process. The assumptions regarding wind levels and placement, fuel 3 prices, emissions data, and other economic assumptions were developed by the ESWG. 4 The Benefit Analysis Techniques Task Force ("BATTF") developed the Benefit Analysis 5 for Priority Projects report.<sup>5</sup> This report, which was reviewed and approved by the ESWG, outlined the calculation methods used to measure the benefits of the Priority 6 For the analysis, PROMOD<sup>6</sup> software was used to model 8,760 hours 7 Projects. 8 representing a full year of system-wide commitment and dispatch of resources. Detailed 9 information relating to the study assumptions may be found in the Priority Project Final 10 Report.

# Q. Please describe the stakeholder review process related to the data that was relied upon in the Priority Projects analysis.

- A. Data used in the Priority Projects analysis went through an extensive data review process. The ESWG determined that certain data fields would be reviewed and updated by stakeholders, while other data fields would use only publically available data. The publically available data included any generation cost data, as well as heat rate information. By using only publically available data, the ESWG attempted to ensure that first tier entities<sup>7</sup> were treated the same as SPP members in the model and also to limit the amount of proprietary information contained in the model.
- SPP members reviewed the following types of data: maximum capacity, unit type, commission date, retirement date, bus, minimum capacity, maintenance required hours, forced outage rate, forced outage duration, minimum downtime, minimum run time, must run status, ramp rates, and demand data. The members also reviewed the data to ensure all units were being accounted for and were being modeled in the correct zone.

<sup>&</sup>lt;sup>5</sup> The Benefit Analysis for Priority Projects report, dated July 24, 2009, may be accessed via the SPP website at the following link:

http://www.spp.org/publications/BATTF%20Report%20Draft%20080409%20final\_with%20CO2%20additions%20\_\_\_\_0df.

<sup>&</sup>lt;sup>6</sup> PROMOD is a security constrained economic dispatch tool.

<sup>&</sup>lt;sup>7</sup> First tier entities are those entities whose transmission systems are not part of the SPP footprint but are directly interconnected to the SPP transmission system.

# 1 Q. Were SPP stakeholders given more than one opportunity to review the data?

2 A. Yes, the data review process included two iterations. After the initial PROMOD analysis, 3 the stakeholders were provided the model inputs, as well as load and generation output data. At that time they were able to update the inputs to correct any errors which caused 4 5 their units to dispatch unrealistically. Once these corrections were applied to the model, SPP staff ran a second PROMOD analysis to produce new dispatch results and to provide 6 7 members with an opportunity to review how their changes impacted unit dispatch. 8 Members were again able to suggest changes to the model for the second iteration. Once 9 the PROMOD analysis for the second iteration was complete, SPP staff provided this 10 data to stakeholders for approval. All SPP Transmission Owners indicated their approval 11 on the input and output data by January 14, 2010.

# Q. Can you elaborate on the involvement of the SPP stakeholders in the review of the proposed projects and sequence of events leading to the SPP Board's approval of the Priority Projects and the issuance of Notifications to Construct ("NTCs")?

A. Yes. There was extensive SPP stakeholder involvement at all stages of the Priority
 Projects process, beginning with the creation of the SPPT in 2009 and the issuance of the
 SPPT report in April 2009 that initiated the development of the Priority Projects, through
 the approval of the SPP Board on April 27, 2010.

19 In September 2009, SPP staff issued a draft Phase I Report on the Priority Projects which 20 included an analysis of ten projects selected by the MOPC from a list of stakeholder-21 recommended projects. This Phase I Report was discussed at a technical conference on 22 September 29, 2009. In October 2009, the Phase I Report was updated and discussed by 23 the MOPC and SPC. With the SPC's concurrence, SPP staff recommended four projects 24 for approval by the SPP Board. The SPP Board approved for further analysis with 25 oversight by the SPC the four projects recommended by staff and added two additional 26 projects.

1 In February 2010, SPP staff issued a draft Phase II Report with two project groups. These two groups were comprised of the same projects, however, Group 1 included 2 3 projects with 765 kV and Group 2 provided an alternative double circuit 345 kV 4 construction for the projects. Following the SPP Board's approval, SPP held a 5 stakeholder technical conference on February 10, 2010 and conducted further project analysis based on the feedback received. In April 2010, SPP staff issued a draft Phase II, 6 7 Revision 1 Report which included new and updated analysis, recommending that the SPP 8 Board approve the projects, based on the Group 2 scenario (double circuit 345 kV lines 9 instead of 765 kV lines).

At its April 13-14, 2010 meeting, the MOPC endorsed SPP staff's recommendation to construct the six Group 2 Priority Projects identified in my previous response and also endorsed the issuance of NTCs following a favorable ruling from FERC on the Highway/Byway cost allocation methodology. On April 27, 2010, the SPP Board approved the Group 2 Priority Projects and the issuance of NTCs following a favorable ruling from FERC on the Highway/Byway cost allocation methodology.

SPP's Highway/Byway cost allocation methodology was unanimously approved by
FERC on June 17, 2010. On June 23, 2010, the SPP Board approved the issuance of
NTCs for the six Group 2 Priority Projects. Those NTCs were issued on June 30, 2010.

# Q. Why was the double circuit 345 kV transmission line from the Spearville to Clark County and from Clark County to Medicine Lodge, which is the subject of the Application in this docket, selected as a Priority Project?

A. The double circuit 345 kV transmission line from Spearville to Clark County and from Clark County to Medicine Lodge was one of the original projects SPP assessed as part of the initial assessment of well over one-hundred potential projects. This project was proposed by both SPP staff and stakeholders. Once the initial project screening was completed, this project remained as a potential project in the list of twenty that was presented to stakeholders. Following through the remainder of the Priority Projects analysis and SPP stakeholder process, this particular project continued to be one that

showed promise of helping the portfolio of projects meet the original goals as prescribed
 by the SPPT.

### **3 BENEFITS OF PRIORITY PROJECTS**

# 4 Q. Can you explain how it was determined that the Priority Projects accomplish the 5 SPPT objective of relieving congestion?

6 Α. The impact of congestion reduction is primarily captured through APC modeling. 7 Another indicator of reduced congestion is the levelization of Locational Marginal Prices 8 ("LMPs") across the footprint. As a robust transmission system is constructed and 9 congestion reduced, the differential between the minimum and maximum LMP is 10 reduced, resulting in lower energy costs to consumers across the footprint. Congestion 11 prices for loads from multiple major cities within the SPP footprint will be positively 12 impacted by the Priority Projects. Improving the transmission system will reduce 13 congestion, allowing these load pockets to be served more cost-efficiently.

#### 14 Q. How are the Aggregate Study and Generation Interconnection Queues improved?

- 15 A. The SPPT's criteria for Priority Projects included projects that repeatedly appear in the 16 Aggregate Study process as a known and needed upgrade to deliver transmission service 17 for multiple parties. The Priority Projects approved will create additional transfer 18 capability across the SPP footprint and will also relieve congestion on lower-voltage 19 facilities for local delivery of energy, allowing additional transmission service requests to be granted. The Priority Projects will improve the Generation Interconnection process by 20 21 enabling the addition of more new generation to the grid, including additional wind and 22 facilitating the addition of other types of generation.
- 23

#### Q. How are West to East transfers improved by the Priority Projects?

A. Analysis was conducted to measure enhancements to the interface between the SPP
 footprint's western and eastern regions as a result of the Priority Projects. This analysis
 evaluated the support provided by the projects to power transfers originating in the

1	western part of SPP and terminating in the eastern part. The analysis used an approach
2	that geographically divided the SPP footprint into ten sections, and then performed First
3	Contingency Incremental Transfer Capability calculations to determine the transfer
4	capability with and without Priority Projects. These calculations showed that the Priority
5	Projects increase the ability to transfer power in an eastward direction by connecting the
6	western and eastern areas. This detailed analysis indicates that the greatest rewards will
7	be gained in the future, as more of the underlying limitations are mitigated.

# 8 Q. In your opinion, does the accomplishment of these objectives provide benefit across 9 the SPP footprint, including benefits to Kansas?

10 A. Yes. The accomplishment of these objectives provides both quantitative and qualitative
11 benefits across the SPP footprint, including Kansas.

# Q. What were the economic results, otherwise referred to as quantitative benefits, of the Priority Projects study?

A. Quantitative benefits were developed with the guidance and expertise of stakeholders,
consultants and staff assistance. A multi-faceted and detailed analysis was performed for
three model years and extrapolated to derive the quantified benefits, including APC,
impact on losses (capacity), reliability, deferral and advancement of STEP projects, gas
price impact, and an APC adjustment due to revenues from wind plants.

# <u>APC:</u> Adjusted Production Cost is a measure of the impact on production cost savings by Locational Marginal Price ("LMP"), accounting for purchases and sales of economic energy interchange.

Impact on losses – Capacity: Capacity savings associated with a loss change are
 determined by looking at the selected hourly model to find the change in losses
 associated with a transmission upgrade. The BATTF established standard capacity prices
 to capture capacity savings. Calculations were based on a Combustion Turbine
 replacement, currently priced at \$750 per kW installed (based on the expected cost to
 install various types of machines used by BATTF members).

1 <u>Reliability Impact:</u> Reliability impacts are calculated by assessing which previously 2 identified reliability projects would be eliminated, deferred, or advanced with the 3 inclusion of the Priority Projects.

Wind Revenue Impacts: Conventional thermal generation is modeled explicitly based on
 ownership or designation for each unit. This explicitly modeled generation is then
 factored into APC calculations through each resource's cost to produce energy, as well as
 determining whether a zone has excess energy each hour (revenues from sales) or lacks
 sufficient generation to serve its load (costs from purchases).

9 APC calculations do not directly consider the revenues paid to wind resources, as they do 10 other resources, because of the manner in which engineering tools monitor wind 11 interactions. The process models wind so that variations in hourly wind output can be 12 considered, and the resulting impacts of wind generation on revenues from sales and 13 costs from purchases are later added to obtain a corrected overall measure of these 14 components.

15 <u>Gas Price Impacts:</u> SPP contracted with KEMA to estimate the impact of Priority 16 Projects on overall natural gas consumption. The effect of greater access to wind 17 suggests the reduced utilization of gas, which lead to a reduction in gas prices. This was 18 estimated by KEMA as a quantitative benefit for Priority Projects.

19 The Priority Project Final Report describes the value metrics related to both of the wind 20 levels I mentioned earlier; however, according to the CAWG member survey, the 7 GW 21 wind level is not enough for each member to meet its existing renewable 22 mandates/targets, so supplemental analysis was performed considering approximately 23 11.3 GW of wind. The financial analysis is provided in three timeframes including the 24 first ten years, the second ten years, and the last twenty years based on the projects' scope 25 and lifetime. The charts below detail this analysis for both the 7 GW and 11 GW futures.

					7 GW				
Study Group	APC	Reliability	Losses	Wind Revenue Impact	Gas Price Impact	Total Benefit (Years 1-40)	Total Cost (Years 1-40)	Net Benefit (B - C)	B/C
Group 1	\$1,309,997,915	\$13,318,645	\$67,763,548	\$209,902,141	\$708,295,867	\$2,309,278,116	\$2,316,856,640	(\$7,578,523)	1.00
Group 2	\$1,301,191,318	\$20,813,781	\$70,570,431	\$230,924,482	\$718,066,058	\$2,341,566,071	\$2,082,298,794	\$259,267,277	1.12

		11 GW								
	Study Group	APC	Reliability	Losses	Wind Revenue Impact	Gas Price Impact	Total Benefit (Years 1-40)	Total Cost (Years 1-40)	Net Benefit (B - C)	B/C
	Group 1	\$1,979,862,546	\$13,318,645	\$67,763,548	\$2,005,193,986	\$1,006,676,089	\$5,072,814,813	\$2,316,856,640	\$2,755,958,174	2.19
2	Group 2	\$2,053,031,037	\$20,813,781	\$70,570,431	\$2,202,758,931	\$1,043,516,243	\$5,390,690,423	\$2,082,298,794	\$3,308,391,629	2.59

1

# Q. Considering the factors you just mentioned, can you explain the APC benefits for the entire SPP region?

- A. The APC benefit for the approved portfolio of Priority Projects, based on the 7 GW wind
  level analysis, is just over \$1.3 billion (2010 dollars) for the forty-year life of the projects.
  In addition to that \$1.3 billion is about \$210 million in the wind revenue impact. This
  additional \$210 million is a part of the APC which was simply calculated separately.
  This combined benefit value is over \$1.5 billion.
- Based on the 11 GW level analysis, the APC benefit is just over \$2 billion with an
  additional wind revenue benefit of \$2.2 billion. The combined benefit value is over \$4.4
  billion.

# 13 Q. Did SPP assess the qualitative benefits of the Priority Projects?

14 The Priority Projects quantitative A. Yes, qualitative benefits were also analyzed. 15 assessment focused on APC savings and impact on losses, reliability projects, and the 16 impact from wind revenue. These metrics do not capture the value of transmission as 17 enabling assets that facilitate markets and help maintain reliability. Some of the strategic 18 and other qualitative benefits of EHV transmission which are difficult to quantify 19 include: (i) enabling future markets; (ii) storm hardening; (iii) improving operating 20 practices/maintenance schedules; (iv) lowering reliability margins; (v) improving dynamic performance and grid stability during extreme events; and (vi) societal 21 22 economic benefits.

1 The ESWG discussed many of these metrics and generally agreed that the above benefits, 2 though difficult to quantify at present, have the potential to provide significant value for 3 the SPP region. It is anticipated that further development of these metrics for the 4 Integrated Transmission Plan will result in quantifiable benefits resulting from a robust 5 transmission system.

The Brattle Group was retained to determine the qualitative benefits of additional 6 7 "economic output" the region could realize as a result of additional jobs related to manufacturing, installing, and operating both the Priority Projects and the additional 8 resources that would be enabled by those projects.<sup>8</sup> The Brattle Group, in order to meet 9 10 their specific needs, performed an assessment of qualitative individual project benefits by considering where each project is planned to be constructed, utilizing the Job and 11 Economic Development Impact model ("JEDI")<sup>9</sup> as well as the Minnesota Impact 12 13 Analysis for Planning ("IMPLAN") models. These models are classic input-output 14 models commonly used by economists, state and federal governments, and state economic development departments to estimate potential economic impacts of projects. 15 The benefits calculated by The Brattle Group were considered to be "gualitative" in 16 17 nature because they were not calculated based on the results of SPP staff's production 18 cost or power flow studies.

19 Both IMPLAN and JEDI quantify economic impacts in three categories: (i) number of 20 jobs created in the region (in full-time-equivalent years of employment or "FTE-years"); 21 (ii) the resulting personal income earned by employees in the region (i.e., "earnings"); 22 and (iii) the economic activity generated in the region (i.e., increased "economic output" 23 as measured in total sales and resale revenues of businesses in SPP member states). 24 Income refers to the compensation for workers in all of the directly, indirectly, or induced 25 affected industry categories as supported by the stimulated increased output of goods and 26 services. Jobs and income "directly" related to this project include jobs which are 27 necessary to build and operate the facilities and resulting income. "Indirect" jobs are

<sup>&</sup>lt;sup>8</sup>The Brattle Group's report is included in the Priority Project Final Report, available at:

http://www.spp.org/publications/Priority%20Projects%20Phase%20II%20Final%20Report%20-%204-27-10.pdf. <sup>9</sup> JEDI was developed and is maintained by the National Renewable Energy Laboratory.

those which are needed upstream in the process to manufacture the supplies and materials
 needed for the project. The "induced" jobs are those that arise due to an increase in
 income in the region which results in a need for additional services in the region.

4

# Q. What benefits did The Brattle Group identify for the State of Kansas?

5 A. The Brattle Group performed its analysis at the individual project level, however, it 6 analyzed the entire line planned from Spearville to Comanche to Medicine Lodge to 7 Wichita, and the two portions of that line under consideration in this docket were not 8 analyzed separately from the analysis of the entire project. However, even though the 9 numbers include the portion of the line from Spearville to Comanche, the benefit for the 10 remaining portion of that line which is the subject of ITC's Application should be 11 evident.

The Brattle Group studied the economic output and employment effects in Kansas resulting from this project. They estimated the total earnings in Kansas for this project to be \$106,000,000. They also identified the employment effects in Kansas as follows: direct is 1,208 FTE-years; indirect is 339 FTE-years; induced is 513 FTE-years; and the total is 2,062 FTE-years. These values are the same for the analysis at both the low and high wind levels.

18The economic output values in Kansas were calculated as follows: direct is19\$153,000,000; indirect is \$54,000,000; induced is \$66,000,000; and the total is20\$273,000,000. The increased tax impact is expected to be \$10,080,000 to the State of21Kansas. The \$106,000,000 in total earnings is included in the \$273,000,000 total. All of22these are 2010 dollar values.

The Brattle Group also studied the economic output and employment effects in Kansas resulting from the new wind construction and operation. For the lower wind level the estimated total earnings in Kansas for the construction of new wind is \$115,000,000 for the construction phase and \$92,000,000 over the next twenty years for operation of the wind generation facilities. Additionally, the economic output values in Kansas for the

lower wind level were calculated as follows: direct is \$25,000,000; indirect is
 \$243,000,000; induced is \$78,000,000; and the total is \$346,000,000. The estimated
 values for the operation of these wind facilities is as follows; direct is \$38,000,000;
 indirect is \$157,000,000; induced is \$65,000,000; and the total is \$260,000,000. The
 \$115,000,000 and \$92,000,000 in total earnings are included in the total economic impact
 numbers.

- 7 In addition, The Brattle Group studied the economic output and employment effects in 8 Kansas resulting from the new wind construction and operation at the higher wind level. 9 For this higher wind level the estimated total earnings in Kansas for the construction of 10 new wind is \$436,000,000 for the construction phase and \$361,000,000 over the next 11 twenty years for operation of the wind generation facilities. The economic output values 12 in Kansas for the higher wind level were calculated as follows: direct is \$93,000,000; 13 indirect is \$926,000,000; induced is \$296,000,000; and the total is \$1,315,000,000. The 14 estimated values for the operation of these wind facilities is as follows; direct is 15 \$154,000,000; indirect is \$600,000,000; induced is \$252,000,000; and the total is \$1,006,000,000. The \$436,000,000 and \$361,000,000 in total earnings are included in 16 17 the total economic impact numbers.
- 18 In an effort to ensure a conservative estimate of the values used to determine what 19 projects should be built, SPP only included 25% of the wind construction and operation 20 income and economic impact in the benefits.

# Q. What would benefit be for the transmission line from Spearville to Clark County and from Clark County to Medicine Lodge?

A. As the Priority Projects were analyzed as a portfolio of projects, SPP staff has continued
to follow the SPP Board's direction to determine the amount of the total quantitative
benefits that are attributable to the portfolio rather than any single project in its analysis.
Accordingly, the benefits were not broken down to a project by project level. However,
the Priority Projects benefits for each state were determined.

1 The combined quantitative and qualitative benefits for Kansas were separately calculated 2 for both the 7 GW and 11 GW wind futures. The 7 GW wind future analysis demonstrated a projected benefit to Kansas in the approximate amount of \$254,511,291<sup>10</sup> 3 and a projected benefit of approximately \$3,703,566,000 for the entire SPP Region. As I 4 5 mentioned in my previous response, in an effort to ensure a conservative estimate of the 6 values used to determine what projects should be built, SPP only included 25% of the 7 wind construction and operation income and economic impact in its analyses. When that 8 25% of the economic benefit from the construction and operation of new wind resources 9 in Kansas is added, the projected benefits for Kansas increase to approximately 10 \$395,931,291.

11 The 11 GW wind future analysis demonstrated a projected benefit to Kansas in the 12 approximate amount of \$1,763,177,741<sup>11</sup> and a projected benefit of approximately 13 \$6,752,690,000. When 25% of the economic benefit from the construction and operation 14 of new wind resources in Kansas which are enabled by the Priority Projects transmission 15 projects is added, the projected benefits for Kansas increase to approximately 16 \$2,343,427,740.

#### 17 Q. Are there other future benefits of the Priority Projects?

A. Traditional resource planning tools do not capture the entire value of enabling assets such
 as EHV transmission. They are limited due to factors such as the use of normalized,
 typical, and synchronized load profiles; standardized profiles for key variables such as
 HVDC ties or intermittent resources such as wind plants; optimized generation
 maintenance schedules; and no planned or forced outages of transmission facilities.

While APC savings are determined based on a set of assumptions, they can be considered conservative projections of the value of a transmission system. Man-made and natural events drastically affect grid topology and resource availability. For instance, extreme cold weather in early 2010 set peak demand for some SPP members and neighboring

<sup>&</sup>lt;sup>10</sup> Value includes: APC, economic benefit from transmission construction, and tax benefits to the State of Kansas.

<sup>&</sup>lt;sup>11</sup> Value includes: APC, economic benefit from transmission construction, and tax benefits to the State of Kansas.

1 systems, which typically occurs during the summer months. This weather event also 2 affected the availability and performance of seventeen thermal units in SPP due to 3 equipment problems or fuel supply disruptions. Although these unusual and extreme 4 events happen with regularity, they are difficult to predict. The value of enabling 5 infrastructure such as a robust EHV network, which provides competitive options in resource procurement and delivery during unusual and extreme events, can be very high. 6 7 As we transition to value-based planning concepts with long horizons, the option to 8 address unusual and extreme events will provide tremendous benefits above the 9 minimum capacity/capability based on historical standards and markets.

10 The value of a robust EHV transmission network that facilitates competition provides 11 significant benefits over the long-term as market participants reposition themselves to 12 capitalize on new opportunities that arise as a result of enabling infrastructure. The long 13 lead-time for EHV transmission assets is a challenge and barrier which impedes 14 optimizing resource planning decisions which are not available due to constraints. It is 15 paramount to capture the value of a robust and flexible EHV transmission network that 16 enables markets in terms of unusual and extreme events, as well as competitive markets 17 and future resource options.

# Q. Before concluding your testimony, can you summarize the benefits of the Priority Projects, and in particular the benefits of the line which is the subject of this proceeding?

A. The Priority Projects process included complex analyses to determine the quantitative
 and qualitative benefits of the Priority Projects for the entire SPP Region and for Kansas
 specifically. The benefits of the Priority Projects were analyzed by portfolio and not by
 each specific project. However, although the benefit analysis is not limited to the line
 under consideration in ITC's Application, the benefits of the Priority Projects for Kansas
 are apparent under either the 7 GW future or the 11 GW future.

In addition, there is value in the greater utilization of renewable resources and value from greater resource source diversity. We aren't able to quantify these benefits today, but

- they do exist and the Priority Projects are akin to the interstate highway system providing
   local and national benefits for reasons other than the cost of the projects. The line which
   ITC is seeking authority to construct is an integral part of the Priority Projects and as I
   have testified to above, will bring benefits to the State of Kansas.
- 5 Q. Does this conclude your testimony?
- 6 A. Yes.

#### **AFFIDAVIT**

# STATE OF ARKANSAS ) COUNTY OF PULASKI )

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

**Katherine Prewitt** 

Subscribed and sworn to before me, a Notary Public, on this 24 day of March , 2011.

Michelle Danis Notary Public

My Commission Expires: 04.01.2018

SEAL

MICHELLE HARRIS Notary Public-Arkansas	NAME OF TAXABLE PARTY.
Pulaski County My Commission Expires 04-01-2018 Commission # 12365480	CONTRACTOR DATE