

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO**

IN THE MATTER OF THE APPLICATION OF)
TRI-STATE GENERATION AND TRANSMISSION)
ASSOCIATION, INC. FOR A CERTIFICATE OF)
PUBLIC CONVENIENCE AND NECESSITY FOR) DOCKET NO. _____
THE SAN LUIS VALLEY-CALUMET-COMANCHE)
TRANSMISSION PROJECT.)

DIRECT TESTIMONY AND EXHIBIT OF JOEL K. BLADOW

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
I. Introduction and Qualifications	1
II. Purpose of Testimony	2
III. Tri-State's Transmission Resources and Reliability Obligations In The Project Area	4
IV. Project Purpose and Need	7
V. Allocation of Responsibilities Between Tri-State and Public Service Company for the Design, Construction, Operation And Maintenance of the Project	16
VI. Electromagnetic Fields and Noise	18
VII. Project Timing and Project Costs	19

1 **I. INTRODUCTION AND QUALIFICATIONS**

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

3 A: My name is Joel K. Bladow. My business address is 1100 West 116th Avenue,
4 Westminster, Colorado 80234.

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

6 A: I am employed by Tri-State Generation and Transmission Association, Inc. ("Tri-
7 State") as Senior Vice President, Transmission.

8 **Q: ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS DOCKET?**

9 A: I am testifying on behalf of Tri-State, however I understand that my testimony
10 may also be used in support of Public Service Company of Colorado's ("Public
11 Service") companion CPCN application for this joint project.

12 **Q: HAVE YOU PREPARED A STATEMENT OF YOUR EXPERIENCE AND**
13 **QUALIFICATIONS?**

14 A: Yes. A statement of my experience and qualifications is attached to my
15 testimony as **Exhibit No. JKB-1**.

16 **Q: PLEASE DESCRIBE BRIEFLY YOUR BACKGROUND AND EXPERIENCE IN**
17 **THE ELECTRIC UTILITY INDUSTRY.**

18 A: I have over 25 years of experience in the electric utility industry. In my present
19 position I am responsible for the planning, operations, maintenance, engineering,
20 and construction activities associated with Tri-State's transmission system. Prior
21 to joining Tri-State, I worked for the Western Area Power Administration in
22 various executive, managerial, and technical positions. I have both
23 undergraduate and graduate degrees in electrical engineering from North Dakota

1 State University and am a registered professional engineer in the state of
2 Colorado.

3 **II. PURPOSE OF TESTIMONY**

4 **Q: WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?**

5 A: Tri-State seeks to participate in a joint transmission line project with Public
6 Service to construct the San Luis Valley – Calumet – Comanche Transmission
7 Project (the "Project"). The Project consists of four major components: (1) a new
8 double-circuit 230 kV transmission line between the existing San Luis Valley
9 Substation and a new Calumet Substation; (2) a new double-circuit 345 kV
10 transmission line between the Calumet Substation and the Comanche
11 Substation; (3) a new Calumet Substation; and (4) a new single-circuit 230 kV
12 transmission line between the Calumet Substation and the Walsenburg
13 Substation. My testimony will address the purpose and need for the Project; the
14 allocation of responsibilities between Tri-State and Public Service concerning the
15 initial construction and ongoing maintenance and operation of the Project after it
16 is completed; how the Project will be integrated into the existing transmission
17 system; and why Tri-State and Public Service are seeking specific
18 reasonableness findings regarding the projected electromagnetic field (EMF) and
19 noise emissions from the Project.

20 **Q. ARE TRI-STATE AND PUBLIC SERVICE APPLYING JOINTLY FOR A CPCN**
21 **FOR THE PROJECT?**

22 A. No. Public Service and Tri-State agreed that they would coordinate and
23 simultaneously file their requests for separate CPCNs for their respective

1 participation in all of the segments comprising the overall Project. While Public
2 Service and Tri-State are not filing a joint CPCN application, the companies do
3 anticipate that the Commission will consider consolidating the two applications in
4 the event an evidentiary hearing is deemed necessary.

5 **Q. WHAT OTHER TRI-STATE WITNESSES HAVE FILED DIRECT TESTIMONY**
6 **IN SUPPORT OF THE APPLICATION?**

7 A. In addition to my testimony, Tri-State will sponsor the testimony of the following
8 witnesses in this Application: Stephen Mundorff, Senior Manager of Transmission
9 Engineering, will describe the engineering, design and construction of the
10 Project, including the structures and conductors to be used as well as the right-
11 of-way widths; Andrew Leoni, Senior Manager, Power System Planning, will
12 describe the system studies that have been performed and the system
13 alternatives that have been evaluated in developing the Project; Mark Murray,
14 Permitting and Land Rights Manager, will describe the siting, permitting and land
15 rights acquisition activities associated with the Project; and Robert Pearson,
16 consulting engineer, will address issues related to electromagnetic field ("EMF")
17 exposure and audible noise produced by the transmission lines associated with
18 the Project.

19 **Q. DOES TRI-STATE ENDORSE THE TESTIMONY OF THE PUBLIC SERVICE**
20 **WITNESSES IN THE COMPANY'S COMPANION CPCN FILING FOR THE**
21 **PROJECT?**

22 A. Yes. As I have described above, while Tri-State and Public Service are not
23 making a joint CPCN filing, each company endorses and incorporates by

reference the testimony of the witnesses presented by the other company in support of the Project.

III. TRI-STATE'S TRANSMISSION RESOURCES AND RELIABILITY

OBLIGATIONS IN THE PROJECT AREA

Q: PLEASE DESCRIBE TRI-STATE'S EXISTING TRANSMISSION RESOURCES.

A: Tri-State presently owns, operates, and maintains an extensive transmission system with facilities located in four states: Colorado, New Mexico, Wyoming, and Nebraska. This transmission network includes over 5,300 miles of transmission lines with operating voltages up to 345 kV, 203 substations and switchyards, and over 475 communications sites. In addition, Tri-State owns and operates the David A. Hamil DC Tie at Stegall, Nebraska, which provides a means to transfer electric power between the eastern and western segments of the nation's electric power grid. Tri-State's total transmission system investment is approximately \$559,000,000.00.

Q: PLEASE DESCRIBE THE "PROJECT AREA."

A: The Project Area is the geographic area encompassing the certificated service territory of two of Tri-State's Members, the San Luis Valley Rural Electric Cooperative ("SLVREC"), and the San Isabel Electric Association ("SIEA"). The Project Area includes all or portions of the following south-central Colorado counties that are served by SLVREC and SIEA: Alamosa, Costilla, Huerfano, and Pueblo.

Q: WHAT ARE TRI-STATE'S RELIABILITY OBLIGATIONS?

1 A: Tri-State is obligated to efficiently provide cost-based economical and reliable
2 wholesale power to its forty-four Members, the distribution cooperatives and
3 public power districts that in turn provide retail electric service to their end-use
4 consumers. This obligation is set forth in Tri-State's Board policies and in its
5 Wholesale Electric Service Contracts with its Members. In addition, Tri-State is
6 required to comply with numerous federal transmission reliability standards.

7 **Q: PLEASE DESCRIBE THESE FEDERAL RELIABILITY STANDARDS.**

8 A: The Energy Policy Act of 2005 ("EPAct") amended the Federal Power Act
9 ("FPA") to create mandatory electric reliability standards for the U.S. bulk power
10 system. In compliance with these federal laws, the Federal Energy Regulatory
11 Commission ("FERC") certified the North American Electric Reliability
12 Corporation ("NERC") as the electric reliability organization responsible for
13 developing and enforcing the mandatory reliability standards authorized by the
14 EPAct.

15 **Q. HAS THE FERC ADOPTED FEDERAL RELIABILITY STANDARDS?**

16 A. Yes. In March, 2007, the FERC approved 83 reliability standards proposed by
17 NERC. These reliability standards became effective on June 18, 2007. On June
18 8, 2007, FERC approved eight regional reliability standards for the Western
19 Electricity Coordinating Council ("WECC"). In addition, on July 1, 2009, eight
20 Critical Infrastructure Protection ("CIP") standards become enforceable. These
21 regional reliability standards, together with the 83 national reliability standards,
22 and the CIP standards provide a comprehensive electric reliability framework for
23 the Western Interconnection in which Tri-State operates. These reliability

standards address issues such as bulk system planning, operations, and maintenance.

Q: WHAT HAPPENS IF TRI-STATE, AS A TRANSMISSION SYSTEM OWNER AND OPERATOR, FAILS TO COMPLY WITH THESE RELIABILITY STANDARDS?

A: The FPA authorizes NERC and FERC to impose substantial penalties for violation of an approved reliability standard. The WECC is responsible for auditing and reviewing the performance of the utilities in the Western Interconnection and has the authority to recommend to NERC fines of up to \$1 million per day for serious violations that could impact the integrity of the bulk power system.

Q. WILL THE COMPLETION OF THE PROJECT ASSIST TRI-STATE IN ITS EFFORTS TO COMPLY WITH THE FEDERAL RELIABILITY STANDARDS?

A. Yes. The Project will enhance Tri-State's capabilities to provide reliable service to its Colorado Members in the Project Area, to New Mexico Members Springer Electric Cooperative ("SEC") and Southwestern Electric Cooperative ("SWECC"), and to Network Service Customer Public Service Company of New Mexico ("PNM") by establishing another path for transmission service in the event of an outage of one of the existing paths. The Project will create a looped transmission system into the San Luis Valley and a redundant transmission path between the Pueblo and Walsenburg areas, which will significantly improve reliability and Tri-State's ability to comply with the federal standards.

Q. DOES TRI-STATE COOPERATE WITH OTHER UTILITIES IN THE PLANNING AND OPERATION OF ITS EXISTING TRANSMISSION RESOURCES?

A: Yes. Tri-State cooperates on a regular basis with other electric utilities in both the planning for and operation of transmission facilities in Colorado and the Rocky Mountain region to ensure that Tri-State can efficiently deliver power to its 44 Members. Tri-State coordinates its planning with other transmission providers and stakeholders at the regional and subregional levels of the Western Interconnection through its active participation in the Colorado Coordinated Planning Group, the Southwest Area Transmission Planning Group, WestConnect, membership in the Western Electricity Coordinating Council, and participation in the WECC Transmission Expansion Planning Policy Committee and its Technical Advisory Subcommittee. Utilities that Tri-State regularly cooperates with in transmission system planning and operations include the Western Area Power Administration, Public Service, Aquila/Black Hills Energy, Public Service Company of New Mexico, Nebraska Public Power District, and Rocky Mountain Power.

IV. PROJECT PURPOSE AND NEED

Q. WHAT IS THE PURPOSE OF THE PROJECT THAT IS PROPOSED IN THIS APPLICATION?

A. The Project addresses Tri-State's need for better reliability in the Project Area, and it also facilitates the transmission of renewable generation from the San Luis Valley and Walsenburg areas. From Tri-State's perspective, the primary purpose of the San Luis Valley – Calumet transmission line portion of the Project is to

1 improve the reliability of the electric system in the San Luis Valley for both Public
2 Service's customers and Tri-State's Members and their end-use customers.

3 The Calumet – Comanche and Calumet – Walsenburg transmission lines will
4 help serve the additional planned loads for Member SIEA and eliminate an
5 existing remedial action scheme (an automatic protection system that takes
6 effect under certain abnormal system conditions) that trips the Walsenburg-
7 Gladstone 230 kV line for an n-1 condition loss of the Comanche-Walsenburg
8 230 kV line. Additional benefits of the Project include the strengthening of the
9 transmission system in Southern Colorado, which will benefit Tri-State's
10 Members SEC and SWEC and Network Service Customer PNM in Northeast
11 New Mexico, as well as the added transmission capacity for renewable
12 generation out of the San Luis Valley and Walsenburg areas. Tri-State's
13 Colorado and New Mexico Members are subject to a renewable portfolio
14 standard that will reach 10%, and the Project will enhance Tri-State's ability to
15 incorporate those resources into its generation portfolio.

16 **Q: WHY AREN'T THE EXISTING TRANSMISSION FACILITIES ADEQUATE TO**
17 **PROVIDE RELIABLE ELECTRICAL SERVICE TO TRI-STATE'S MEMBERS IN**
18 **THE PROJECT AREA?**

19 **A:** The transmission facilities serving Tri-State's Members in the San Luis Valley
20 portion of the Project Area (SLVREC) have reached their capacity due to growth
21 in residential and irrigation electric loads. As a result, the transmission system in
22 the Project Area is exposed to voltage collapse at times of higher loads in the
23 San Luis Valley. At these times of higher loads, the radial, single-source nature

1 of the existing transmission system does not provide the reliability benefits of
2 looped service.

3 If the 230 kV Poncha-San Luis Valley line is unavailable, Public Service's 115 kV
4 Poncha-Sargent-San Luis Valley line is not capable of reliably serving load above
5 65 MW. Therefore, Tri-State Member load must be removed from Public
6 Service's 115 kV transmission line. If the load shedding operation fails, then
7 there is a risk that large groups of Public Service customers, in addition to Tri-
8 State customers, will be out of power for an extended period of time. The
9 transmission facilities serving the Walsenburg area (SIEA) as well as the
10 northeastern New Mexico area (SEC, SWEC, PNM) are also constrained by a
11 single contingency outage of Tri-State's existing 230 kV Comanche-Walsenburg
12 transmission line. The addition of the Calumet-Comanche and Calumet-
13 Walsenburg transmission lines included in the proposed Project would improve
14 the reliability for these areas by preventing loss of customer load in northeastern
15 New Mexico as a result of an outage on the existing 230 kV Comanche-
16 Walsenburg line. Both of these existing reliability issues and the originally
17 planned Tri-State projects to resolve them are discussed in more detail in the
18 testimony of Tri-State witness Andrew Leoni.

19 **Q: WHAT WAS TRI-STATE'S INITIAL PLAN TO SERVE THIS AREA AS SET**
20 **FORTH IN ITS 2008 RULE 3206 FILING?**

21 **A:** Tri-State initially proposed a project that it referred to as the San Luis Valley
22 Electric System Improvement Project ("SLVESIP") to improve system reliability
23 for its Members. As originally planned, the SLVESIP consisted of a new single

1 circuit 230 kV transmission line between the Walsenburg Substation and the San
2 Luis Valley Substation. The single-circuit line would have eliminated the
3 contingency loading on the Public Service 115 kV Poncha-Sargent-San Luis
4 Valley line and the voltage collapse conditions. Tri-State's 2008 Rule 3206 filing
5 also included a new transmission line from the Pueblo area to Walsenburg in
6 order to address reliability problems associated with the previously mentioned
7 outage scenario on the existing 230 kV Comanche-Walsenburg line and
8 forecasted increasing loads on the SIEA system. This portion of the Project was
9 included in Tri-State's 2008 Rule 3206 filing and identified as the Boone-
10 Comanche-Stem Beach-Walsenburg 230 kV Line.

11 **Q. WHY IS TRI-STATE SEEKING APPROVAL FOR A DIFFERENT PROJECT?**

12 A. The transmission planning personnel at Tri-State and Public Service have
13 conducted numerous planning studies to identify joint opportunities to expand the
14 transmission systems of both companies in Colorado. This approach has a
15 proven track record of saving costs to consumers while minimizing environmental
16 and local land use issues. Tri-State is aware of the legislative initiatives to
17 promote increased electric generation from renewable resources, and the further
18 initiatives to facilitate the transmission of the renewable generation resources to
19 load centers. Since Tri-State needs to improve service reliability in this region,
20 Tri-State and Public Service saw an opportunity to develop a joint project to meet
21 the objectives of both companies and to take advantage of certain economies of
22 scale to benefit ratepayers and consumers. The Project that is the subject of this
23 Application is the result of these joint efforts by Tri-State and Public Service.

1 **Q. PLEASE DESCRIBE THE PROJECT.**

2 A. The Project consists of four primary components: (1) a new double circuit 230 kV
3 transmission line from the San Luis Valley Substation to a new Calumet
4 Substation; (2) a new double circuit 345 kV transmission line from the Calumet
5 Substation to the Comanche Substation; (3) a new Calumet Substation; and (4) a
6 new single circuit 230 kV transmission line from the Calumet Substation to the
7 Walsenburg Substation. Tri-State witness Stephen Mundorff provides a more
8 detailed description of the design features of the Project, as well as the exact
9 types of conductors and structures that will be used, in his testimony.

10 **Q. HOW ARE THE RESPONSIBILITIES FOR DEVELOPING THE PROJECT**
11 **DIVIDED BETWEEN TRI-STATE AND PUBLIC SERVICE?**

12 A. I will describe the allocation of responsibilities in more detail below however, in
13 general, Tri-State will have primary responsibility for designing, siting, permitting,
14 and building the San Luis Valley to Calumet and Calumet to Walsenburg portions
15 of the Project, and Public Service will have primary responsibility for designing,
16 acquiring land rights, and building the Calumet to Comanche portion of the
17 Project. The project responsibilities are shown in greater detail in the Term
18 Sheet, which is attached to the Application as Exhibit B.

19 **Q. HOW DOES THE PROJECT AS PROPOSED IN THIS APPLICATION DIFFER**
20 **FROM TRI-STATE'S ORIGINAL PROJECTS?**

21 A. There are substantial differences between Tri-State's original projects and the
22 Project proposed in the Application. First, the Project will be jointly developed,
23 owned and operated by Tri-State and Public Service. Second, the Project is a

1 different configuration given the needs of Public Service. Tri-State's original
2 projects included a single circuit 230 kV line from the San Luis Valley Substation
3 to the Walsenburg Substation and a single circuit 230 kV Boone-Comanche-
4 Stem Beach-Walsenburg line. The joint Project includes the new substation at
5 Calumet, a new 345 kV double circuit segment from Calumet to Comanche, a
6 new 230 kV double circuit segment from San Luis Valley to Calumet, and a new
7 230 kV single circuit segment from Calumet to Walsenburg.

8 **Q. DID TRI-STATE CONSIDER A NEW GENERATION SOURCE IN THE SAN**
9 **LUIS VALLEY AS A SOLUTION TO THE RELIABILITY PROBLEM?**

10 A. A dispatchable source of generation in the San Luis Valley would reduce the
11 need for a new transmission line. However, the options for new generation are
12 limited and expensive, and Tri-State's analysis shows that the least-expensive
13 generation option would still be approximately twice as expensive as the
14 proposed addition of a new transmission line.

15 **Q. WHY DID TRI-STATE AND PUBLIC SERVICE SELECT 230 KV AS THE**
16 **APPROPRIATE VOLTAGE FOR THE SAN LUIS VALLEY – CALUMET**
17 **PORTION OF THE PROJECT?**

18 A. Tri-State's analysis showed that a 115 kV line would not be adequate to mitigate
19 the voltage collapse situation given the fact that the single contingency loss
20 scenario is the loss of the 230 kV line from the Poncha Substation. Although Tri-
21 State initially proposed a single circuit 230 kV line, with Public Service's
22 participation the double circuit 230 kV line has been proposed to meet future
23 resource additions. As discussed in greater detail in the testimony of Tri-State

1 witness Andrew Leoni, and in the direct testimony of Public Service witness
2 Thomas Green and the system study report attached to Mr. Green's testimony
3 (see Exhibit No. TWG-1), Tri-State and Public Service rejected the idea of a
4 higher voltage line because the generation transfer capability out of the San Luis
5 Valley is not limited by voltage choice. Full utilization of the proposed Project's
6 capability will require additional bulk system improvements to increase export
7 capacity and the same would be true for a higher voltage line (i.e., 345 kV).
8 Based on the technical requirements identified by the detailed studies, the
9 additional costs of a 345 kV line are not justified. There are also additional
10 operational issues introduced by operating a 345 kV transmission line.

11 **Q. WHY WOULDN'T A 345 kV LINE FACILITATE THE EXPORT OF ADDITIONAL**
12 **GENERATION FROM THE SAN LUIS VALLEY?**

13 A. There are inherent limitations in the regional transmission system preventing the
14 export of additional generation out of the San Luis Valley to the Front Range.
15 These limitations are not necessarily directly related to the voltage level of the
16 San Luis Valley – Calumet transmission line. Instead, these limitations are
17 related to other elements of the transmission system along the Front Range and
18 beyond. The additional transmission capacity that would theoretically be
19 available by the use of a 345 kV line or even the proposed double-circuit 230 kV
20 line is not in fact available without the construction of significant new
21 transmission elements. Tri-State witness Andrew Leoni and Public Service

witness Thomas Green discuss these limitations in more detail in their testimonies and the joint study report (Exhibit No. TWG-1).

Q. WHAT WOULD THE ADDITIONAL COST BE TO BUILD THE SAN LUIS VALLEY – CALUMET SEGMENT AS A DOUBLE CIRCUIT 345 kV LINE?

A. The additional costs to build and operate the San Luis Valley – Calumet transmission line as a double circuit 345 kV line instead of the double circuit 230 kV line proposed is estimated to be \$54 million (see Study Report Exhibit No. TWG-1). This also does not include the additional costs for other transmission system upgrades that would be required to fully utilize the transfer capability of the 345 kV lines without overloading other system elements.

Q. WHAT ARE THE ADDITIONAL OPERATIONAL ISSUES THAT COULD BE INTRODUCED BY OPERATING THE SAN LUIS VALLEY – CALUMET SEGMENT AT 345 kV?

A. As the voltage level of transmission lines is increased, there are new electrical issues presented in cases where there are long transmission lines and relatively low electrical loads and low generation, as is the case with the San Luis Valley – Calumet line. These issues include potential voltage control challenges under both system normal and contingency conditions.

Q. WHAT OTHER STUDIES HAS TRI-STATE COMPLETED TO SUPPORT ITS CONCLUSION THAT THE PROPOSED PROJECT WILL ALLEVIATE THE RELIABILITY PROBLEMS IN THE PROJECT AREA?

A. As Tri-State witness Andrew Leoni discusses in his testimony, Tri-State submitted to the Rural Utilities Service an evaluation of the alternatives it initially

1 considered as a condition precedent to receiving funding for the SLVESIP. The
2 study indicated that the most cost-effective alternative was to connect the San
3 Luis Valley Substation to the Walsenburg Substation. The "Macro Corridor Study
4 and Alternative Evaluation" report is attached to the testimony of Tri-State
5 witness Mark Murray (Exhibit No. MJM-2). The double-circuit 230 kV San Luis
6 Valley-Calumet and the additional 230 kV Calumet-Walsenburg segments
7 replace the need for the 230 kV San Luis Valley-Walsenburg line.
8 For the remainder of the Project area, Tri-State's "Boone-Comanche-Stem
9 Beach-Walsenburg 230 kV Line Report" concluded a new 230 kV Boone-
10 Comanche-Stem Beach-Walsenburg line would eliminate the need for the
11 remedial action scheme and improve reliability in the area. The Project
12 segments between Comanche, Calumet, and Walsenburg fulfill the same
13 reliability function as Tri-State's original Boone-Comanche-Stem Beach-
14 Walsenburg project.

15 **Q. HAVE ANY OTHER STUDIES BEEN COMPLETED TO SUPPORT THE**
16 **PROPOSED PROJECT?**

17 A. Yes. Tri-State witness Andrew Leoni and Public Service witness Thomas Green
18 will describe the studies that have been completed with respect to transmission
19 system improvements in Southern Colorado in general and specifically as they
20 relate to the Project. Their testimonies will describe the system studies that have
21 been performed and why the Project is the best alternative to meet the needs of
22 both Public Service and Tri-State.

Q. HOW WILL THE PROJECT BENEFIT TRI-STATE'S MEMBERS IN THE PROJECT AREA?

A. The Project will directly improve the reliability of service to SLVREC, where the system loads are most at risk. It will also improve service to Tri-State's Network Service Customer PNM and Tri-State Members SIEA, SEC, and SWEC by creating additional transmission capacity for forecasted load growth, a new path for future generation resources, and redundant service that will eliminate the existing remedial action scheme that trips the 230 kV Walsenburg – Gladstone transmission line upon the loss of the existing 230 kV Comanche – Walsenburg line.

V. ALLOCATION OF OWNERSHIP, OPERATIONS AND MAINTENANCE OBLIGATIONS BETWEEN TRI-STATE AND PUBLIC SERVICE

A. WHAT ARE THE TERMS OF THE AGREEMENT BETWEEN TRI-STATE AND PUBLIC SERVICE REGARDING THE OWNERSHIP, OPERATION, AND MAINTENANCE OF THE PROJECT?

Q. Tri-State and Public Service have agreed to a Term Sheet (see Application, Exhibit B) which describes in detail the allocation of ownership, costs, capacity rights, and maintenance and replacement obligations between the two utilities with respect to the Project. In general, the allocation of ownership and costs is based on the relative benefits of the overall Project to Tri-State and Public Service. Under the agreement, Public Service will have 60% of the capacity rights in the new San Luis Valley to Calumet line, and Tri-State will have 40% of the capacity rights. Therefore, Public Service will pay 60% of the costs and have

1 60% ownership of this segment while Tri-State will pay 40% of the costs and
2 have 40% of the ownership. However, because Tri-State has done considerable
3 siting and environmental work it will take the lead in developing the San Luis
4 Valley to Calumet segment of the overall Project, Tri-State will be responsible for
5 the design and engineering work; it will supervise construction; it will take the
6 lead in acquiring permits and land rights as well as siting the line; and it will
7 ultimately operate and maintain this segment. Public Service and Tri-State will
8 have the same 60/40 capacity split in the Calumet to Comanche portion of the
9 Project; however, Public Service will take the lead with respect to engineering
10 and design, land rights, and ongoing maintenance costs. Tri-State will have an
11 80% share of the capacity in the Calumet to Walsenberg segment of the Project
12 while Public Service will have 20%. With this larger share, Tri-State will
13 accordingly be principally responsible for the design and engineering,
14 construction, and maintenance of this segment of the Project.

15 **Q. IS IT POSSIBLE THAT TRI-STATE'S AND PUBLIC SERVICE'S RESPECTIVE**
16 **SHARES OF AND RESPONSIBILITIES IN THE PROJECT SEGMENTS WILL**
17 **CHANGE?**

18 A. Tri-State and Public Service will enter into a definitive participation agreement for
19 the Project following the conclusion of the CPCN proceedings. While the
20 companies do not presently anticipate any specific changes to their respective
21 ownership and capacity shares or their responsibilities for each segment, some
22 changes are possible as the Project is defined in greater detail. These changes
23 will be reflected in the final participation agreement. Tri-State and Public Service

request that the Commission's CPCN allow such changes as may be identified during the development of the Project.

Q. IS THIS MODEL OF SHARED OWNERSHIP AND RESPONSIBILITY UNIQUE TO THIS PROJECT?

A. Tri-State and Public Service jointly own the 230 kV line that runs from the Poncha Substation to the San Luis Valley Substation in addition to numerous other facilities in the state of Colorado. The model proposed in this Application has been successfully implemented before and Tri-State believes this cost-sharing arrangement is in the best interests of its Members.

VI. ELECTROMAGNETIC FIELDS AND NOISE

Q. HOW HAS TRI-STATE ADDRESSED THE PROJECTED ELECTROMAGNETIC FIELD (EMF) AND NOISE IMPACTS OF THE PROPOSED PROJECT?

A. Tri-State witness Robert Pearson describes the prudent avoidance steps Tri-State will take to minimize the impacts of projected EMF and noise associated with the San Luis Valley - Calumet and Calumet – Walsenburg segments of the Project. Tri-State is also endorsing Public Service witness Danny Pearson, who describes the prudent avoidance steps to minimize the impacts of projected EMF and noise associated with the Calumet – Comanche segment of the Project.

Q. PLEASE EXPLAIN WHY TRI-STATE IS REQUESTING THE COMMISSION TO MAKE SPECIFIC FINDINGS OF REASONABLENESS WITH RESPECT TO EMF AND NOISE.

A. Colorado law (C.R.S. §25-12-103 (12)) authorizes the Commission to determine, in the course of reviewing utility CPCN applications for electric transmission

1 facilities, whether projected noise levels for the facilities are reasonable. The
2 Commission may determine the permissible noise levels for such facilities
3 notwithstanding the maximum permissible noise levels established elsewhere in
4 the noise abatement law. Tri-State and Public Service are both requesting that
5 the Commission make specific findings that the projected noise levels for all
6 segments of the Project are reasonable.

7 With respect to the projected levels of EMF, Tri-State has complied with the
8 Commission's rules by using prudent avoidance techniques to limit EMF
9 exposure. To avoid future public nuisance claims that this Project should not
10 have been constructed or operated as assumed in this Application due to EMF
11 exposures, Tri-State requests that the Commission make specific findings
12 establishing a reasonableness level of 150 mG for EMF exposure for all
13 segments of the Project in the grant of the CPCN consistent with past
14 Commission rulings in Docket No. 05A-072E and Docket No. 07A-156E. Such a
15 determination of reasonableness by the Commission is required to avoid civil
16 claims under the reasoning of the Colorado Supreme Court in *Public Service*
17 *Company of Colorado v. Van Wyk*, 27 P.3d 377 (Colo. 2001). If the Commission
18 finds that the requested 150 mG EMF level is reasonable, Tri-State should be
19 shielded from such claims so long as Tri-State constructs and operates the
20 Project in the manner proposed in this Application.

21 **VII. PROJECT TIMING AND ESTIMATED COSTS**

22 **Q. WHAT IS THE PROPOSED TIMELINE FOR THE PROJECT?**

1 A. The proposed in-service date for the project is May 31, 2013. This proposed
2 timeline is explained in greater detail in the testimony of Tri-State witness
3 Stephen Mundorff.

4 **Q. WHAT IS THE ESTIMATED COST FOR THE PROJECT?**

5 A. The estimated total cost of the project is \$180,000,000. Tri-State's share of the
6 total project costs is estimated at \$75,000,000. These cost estimates are
7 discussed in greater detail in the testimony of Mr. Mundorff.

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

9 A. Yes.

Exhibit JKB-1

Statement of Qualifications

Joel Bladow

Joel Bladow has over 27 years of experience in the electric utility industry in a variety of roles with increasing responsibility. In his present position as the Senior Vice President for Transmission for Tri-State, he is responsible for all Transmission functional areas including policy development, Planning, Maintenance, Operations, Contracts, and the Engineering/Construction program. Joel represents Tri-State on a number of industry groups including the Western Electricity Coordinating Council, The Transmission Owners and Operators Forum, and the NRECA Transmission Policy Task Force.

Prior to joining Tri-State, Joel spent 23 years with the Western Area Power Administration (Western), the last fourteen as a member of the agencies' executive management team. His most recent position was as the Rocky Mountain Regional Manager where he was responsible for all program areas including; Operations, Maintenance, Power Marketing, Construction, as well as the administrative support areas. The Region's infrastructure includes over 5,200 miles of high voltage transmission lines, 108 high voltage substations, a DC tie at Sidney Nebraska, and a system control center which includes the responsibility as a NERC certified Balancing Authority for a large portion of Wyoming and Colorado.

Prior to moving into management, Joel was involved in a number of different technical and policy related areas. These include substation engineering, various system study activities, protective relaying, and the development of agency policies. His direct experience covers power systems ranging from 115-kV sub-transmission facilities to 345- and 500-kV bulk power systems. Joel has published a number of technical papers in various publications including the Institute of Electrical and Electronic Engineer's Power Apparatus and Systems, the Edison Electric Institute, and CIGRE. His education includes both BSEE (1981) and MSEE (1982) degrees with emphasis in power systems from North Dakota State University. Joel is a registered professional engineer in Colorado.