

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

Docket No. 09A-324E

IN THE MATTER OF THE APPLICATION OF TRI-STATE GENERATION AND TRANSMISSION ASSOCIATION, INC. (A) FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE SAN LUIS VALLEY-CALUMET-COMANCHE TRANSMISSION PROJECT, (B) FOR SPECIFIC FINDINGS WITH RESPECT TO EMF AND NOISE, AND (C) FOR APPROVALS OF OWNERSHIP INTEREST TRANSFER AS NEEDED WHEN PROJECT IS COMPLETED.

AND

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IN THE MATTER OF THE APPLICATION OF PUBLIC SERVICE COMPANY OF COLORADO (A) FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE SAN LUIS VALLEY-CALUMET-COMANCHE TRANSMISSION PROJECT, (B) FOR SPECIFIC FINDINGS WITH RESPECT TO EMF AND NOISE, AND (C) FOR APPROVAL OF OWNERSHIP INTEREST TRANSFER AS NEEDED WHEN PROJECT IS COMPLETED.

**REBUTTAL TESTIMONY AND EXHIBITS OF ANDREW R. LEONI**

**TABLE OF CONTENTS**

<b><u>SECTION</u></b>	<b><u>PAGE</u></b>
I. PURPOSE OF TESTIMONY	1
II. PROJECT PURPOSE AND NEED	2
III. GENERATION RESOURCES – LEVELS, DELIVERABILITY EXPANDABILITY	8
IV. THE TRINCHERA RANCH ALTERNATIVES AND THE RELIABILITY ISSUE IN THE SAN LUIS VALLEY	10
V. RELATIONSHIP OF PROPOSED PROJECT TO TRI-STATE'S ORIGINAL 230 KV SAN LUIS VALLEY LOOP PROJECT	21
VI. TRANSMISSION ALTERNATIVES TO SUPPORT NEW RENEWABLE RESOURCES IN THE SAN LUIS VALLEY AND CALUMET AREAS	27
VII. RESPONSE TO PUC STAFF'S RECOMMENDATIONS	28

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

A: My name is Andrew R. Leoni. My business address is 1100 West 116th Avenue, Westminster, Colorado 80234.

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

A: I am employed by Tri-State Generation and Transmission Association, Inc. ("Tri-State") as Senior Manager, Power System Planning.

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

A: I am testifying on behalf of Tri-State, however, I understand that my testimony may also be used in support of Public Service Company of Colorado's ("Public Service") companion CPCN application for the San Luis Valley–Calumet–Comanche Project (the "Project").

**Q: DID YOU PREVIOUSLY PREPARE AND SUBMIT DIRECT TESTIMONY AND EXHIBITS IN THIS PROCEEDING?**

A: Yes.

#### **I. PURPOSE OF TESTIMONY**

**Q: WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?**

A: The purpose of my rebuttal testimony is to respond to the Answer Testimonies of Trinchera Ranch witness Mr. James Dauphinais and Colorado Public Utilities Commission ("CPUC") Staff witness Mr. Inez Dominguez.

**Q: WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY REGARDING MR. DAUPHINAIS?**

A: My rebuttal testimony demonstrates that the alternatives proposed by Trinchera Ranch do not meet the purpose and need of the Project as defined by Tri-State and Public Service in their respective CPCN applications. I will

1 explain how Mr. Dauphinais has partially re-defined the Project need identified  
2 by Tri-State and Public Service (collectively the "Companies") and proposes  
3 concepts that meet his re-defined need. Mr. Dauphinais' alternatives,  
4 however, do not provide the same performance as the proposed Project , fail  
5 to consider substantial additional costs that would be needed to provide similar  
6 performance, and overall do not meet the purpose and need of the Project  
7 proposed by Tri-State and Public Service.

8 **Q: WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY REGARDING**  
9 **MR. DOMINGUEZ?**

10 A: My rebuttal testimony reviews the Companies' prior consideration of the 345  
11 kV San Luis Valley-Calumet option proposed by Mr. Dominguez and explains  
12 why that alternative was not chosen. In addition, I point out that Tri-State  
13 witness Dr. Robert L. Pearson has determined that the San Luis Valley-  
14 Calumet portion of the proposed Project meets appropriate EMF and noise  
15 levels, therefore, Mr. Dominguez' proposed options do not provide a sufficient  
16 benefit in that regard.

17 **II. PROJECT PURPOSE AND NEED**

18 **Q: WHAT IS THE PURPOSE OF THE SAN LUIS VALLEY-CALUMET-**  
19 **COMANCHE TRANSMISSION PROJECT?**

20 A: As discussed in my Direct Testimony and that of Tri-State witness Joel  
21 Bladow, the Project serves two main purposes: to improve the reliability of the  
22 electric service in south-central Colorado, and to accommodate new electric  
23 generation resources by relieving transmission constraints in the region.

1 **Q: PLEASE FURTHER DESCRIBE THE NEED TO “IMPROVE THE**  
2 **RELIABILITY OF THE ELECTRIC SERVICE IN SOUTH-CENTRAL**  
3 **COLORADO.”**

4 A: There are two reliability issues that need to be addressed in south-central  
5 Colorado:

6 (1) There is a potential for voltage collapse in the San Luis Valley in the  
7 event there is an outage of the existing Poncha-San Luis Valley 230  
8 kV line and the electric load in the San Luis Valley exceeds 65  
9 megawatts (MW); and

10 (2) There is also a potential for overloading of the Stem Beach-  
11 Walsenburg 115 kV line in the event of an outage of the Comanche-  
12 Walsenburg 230 kV line.

13 Either of these occurrences could cause Tri-State’s distribution cooperative  
14 members to be unable to serve their end-use customers.

15 **Q: HOW ARE THESE ISSUES CURRENTLY ADDRESSED?**

16 A: The voltage collapse problem in the San Luis Valley is currently addressed by  
17 tripping off Tri-State member load with an Under Voltage Load Shedding  
18 (“UVLS”) system. The Stem Beach - Walsenburg overload is addressed by a  
19 Remedial Action Scheme (“RAS”) that opens Tri-State’s Walsenburg -  
20 Gladstone 230 kV line, which results in loss of Tri-State load in northeastern  
21 New Mexico. Tri-State does not consider dropping load to be an acceptable  
22 solution, and it has proposed the Project to reduce the need for such  
23 measures in the future.

1 **Q: PLEASE FURTHER DESCRIBE THE NEED TO “ACCOMMODATE NEW**  
2 **RESOURCES BY RELIEVING TRANSMISSION CONSTRAINTS IN THE**  
3 **REGION”.**

4 A: As Mr. Green stated in his Direct Testimony on page 2, the Project “is needed  
5 both for regional reliability and for accommodating potential resources in  
6 Energy Resource Zones (“ERZs” or “Zones”) 4 and 5<sup>1</sup> consistent with Senate  
7 Bill (“SB07-100”). On page 6, Mr. Green states, “Studies have demonstrated  
8 that the transmission capacity in Zones 4 and 5 is constrained. This Project  
9 creates new high-voltage transmission that will allow energy from Zones 4 and  
10 5 to be delivered to customers along the Front Range and throughout  
11 Colorado.”

12 **Q: ARE THE RELIABILITY AND TRANSMISSION CONSTRAINT ISSUES YOU**  
13 **DESCRIBE IMPORTANT TO BOTH TRI-STATE AND PSCO?**

14 A: Yes. The fact that both Companies have similar needs with regard to  
15 improved reliability and relieving transmission constraints in this part of the  
16 state is one of the main reasons why the Companies are proposing to  
17 construct this joint project rather than the separate projects originally under  
18 consideration.

19 **Q. HAVE YOU REVIEWED THE ANSWER TESTIMONY OF TRINCHERA**  
20 **RANCH WITNESS JAMES R. DAUPHINAIS?**

21 A. Yes.

22 **Q: DOES MR. DAUPHINAIS PROPOSE A DIFFERENT NEED THAN THAT**  
23 **WHICH HAS BEEN IDENTIFIED BY THE COMPANIES?**

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<sup>1</sup> See Direct Testimony of Joseph Taylor for a description of each Zone.

1 A: Yes. Mr. Dauphinais states the purpose of his study was to examine  
2 alternatives to the proposed Project's San Luis Valley-Calumet portion that: "(i)  
3 address the reliability issues in the San Luis Valley area and northern New  
4 Mexico and (ii) provide sufficient additional transmission capability to support  
5 the level of new generation additions that Public Service is currently proposing  
6 to potentially commit to in the San Luis Valley and Calumet/Walsenburg  
7 areas." (Dauphinais Answer Testimony, Exhibit JRD-1 at 2.)

8 **Q: HOW IS MR. DAUPHINAIS' STATEMENT OF NEED DIFFERENT FROM**  
9 **THAT OF THE COMPANIES?**

10 A: Mr. Dauphinais' statement of need with regard to reliability is relatively broad  
11 and, therefore, appears to be consistent with the Companies' statement of  
12 need regarding reliability (although there is disagreement between the  
13 Companies' and Mr. Dauphinais on requirements to resolve this reliability  
14 need). Mr. Dauphinais' statement of need with regard to additional  
15 transmission capability, however, is substantially different than the Companies'  
16 statement of this aspect of the Project.

17 Mr. Dauphinais redefines this latter aspect of Project need and limits it to only  
18 "the level of new generation additions that Public Service is currently  
19 proposing to commit to in the San Luis Valley and Calumet/Walsenburg  
20 areas." This redefined statement of need completely ignores one of the  
21 primary purposes of the proposed joint Project, that is, to provide sufficient  
22 generation capacity to relieve transmission constraints from the ERZs located  
23 in this part of southern Colorado and provide the transmission capacity and

flexibility for Tri-State and Public Service, as well as possibly others, to export such resources from the San Luis Valley to their respective load centers.

**Q: IN WHAT PARTICULAR WAYS DO THE COMPANIES' AND TRINCHERA RANCH'S RESPECTIVE STATEMENTS OF NEED DIFFER WITH RESPECT TO ACCOMMODATING NEW RESOURCES?**

A: On page 7 of his testimony, Mr. Dauphinais states, "There are two main issues that the Companies are proposing to address with the Proposed Project.

These are a voltage collapse reliability issue in the San Luis Valley, which is the primary concern of Tri-State, and the accommodation of potential new renewable resource commitments in the San Luis Valley and Calumet area, which is the primary concern of Public Service." Although Mr. Dauphinais recognizes that Tri-State and Public Service have different priorities, he parses these priorities so that reliability is solely an issue for Tri-State and accommodation of new resource is solely an issue for Public Service tied to its current resource plan.

**Q: WHY IS THIS A PROBLEM?**

A: By parsing and separately analyzing the Project objectives Mr. Dauphinais completely ignores the benefits of pursuing a joint project and reaches conclusions that fail to accomplish the Project's purpose and need.

**Q: WHAT TRANSMISSION ALTERNATIVES DOES MR. DAUPHINAIS PROPOSE TO MEET THE REDEFINED NEED?**

A: In Table 1 of Exhibit JRD-1, Mr. Dauphinais identifies eight separate alternatives to the Project. These eight alternatives can be reduced to two types for discussion. (It is important to note that all of the Trinchera Ranch

alternatives include the assumption that the Companies will construct a double-circuit 345 kV transmission line between the Calumet and Comanche substations and add a second 230 kV transmission line to Tri-State's Walsenburg substation.) The first type is the "Do Nothing" alternatives, TR4 and TR4AR, in which no new transmission is constructed and limited amounts of additional generation are added in the San Luis Valley. These alternatives do not meet the basic needs addressed by the Project. Neither of these alternatives are reasonable options as explained by Public Service witness Thomas Green and Gerry Stellern in their rebuttal testimonies. The remaining six alternatives propose building a new single-circuit 230 kV transmission line from the San Luis Valley substation to either Western Area Power Administration's ("WAPA") Poncha substation (TR1, TR1A, TR2, TR2A) or Black Hills Energy's Canon West substation (TR3 and TR3A). Public Service intends to add a 230/115 kV autotransformer and approximately one mile of 230 kV single circuit transmission line between Public Service's Poncha Junction and WAPA's Poncha substations. Therefore, the Trinchera Ranch alternatives TR1, TR2, and TR3 can be eliminated from discussion since they do not include the Public Service's Poncha Junction to Poncha 230 kV connection. The three remaining alternatives are TR1A, which includes a new single circuit 230 kV transmission line from WAPA's Poncha substation to San Luis Valley substation; TR2A, which includes a new Poncha – Sargent - San Luis Valley 230 kV line and a new autotransformer at Public Service's Sargent substation; and TR3A, which is a new 230 kV line from Black Hills Energy's



1 Canon West substation to the San Luis Valley substation. I will focus on these  
2 three remaining alternatives in the remainder of my rebuttal testimony.

3 **III. GENERATION RESOURCES - LEVELS, DELIVERABILITY, EXPANDABILITY**

4 **Q: DO MR. DAUPHINAIS' PROPOSED TRANSMISSION ALTERNATIVES**  
5 **MEET THE COMPANIES' NEED FOR ACCOMMODATING POTENTIAL**  
6 **RESOURCES IN ENERGY RESOURCE ZONES 4 AND 5 ?**

7 **A:** No. As explained in more detail by Tri-State witness Jim Spiers, Mr.  
8 Dauphinais' transmission alternatives do not provide the flexibility that Tri-  
9 State requires to accommodate potential future resources located in ERZs 4  
10 and 5. Furthermore, Mr. Dauphinais' alternatives are inconsistent with recent  
11 changes in Colorado public policy concerning the development of new  
12 transmission to facilitate renewable energy resources and greenhouse gas  
13 reduction goals in Colorado. Public Service witnesses Joseph Taylor, Gerry  
14 Stellern, and Thomas Green explain from that Company's perspective why the  
15 Trinchera Ranch alternatives do not meet the need of providing adequate  
16 transmission capacity for Zones 4 and 5 from the standpoint of reasonable  
17 injection levels, schedule, and deliverability. They demonstrate that the  
18 Trinchera Ranch alternatives are inadequate and do not provide for  
19 expansion.

20 **Q: IS THE ABILITY TO ACCOMMODATE NEW RESOURCES A PART OF TRI-**  
21 **STATE'S PURPOSE AND NEED FOR THE PROJECT?**

22 **A:** Yes. As Mr. Bladow stated in his Direct Testimony (p. 8), the Project will also  
23 enable Tri-State to incorporate new generation resources into its generation  
24 portfolio. Tri-State has recently committed to purchase the output of one of the

1 largest photo-voltaic (PV) solar projects in the United States (Cimmaron I in  
2 New Mexico) and a wind power project in the Burlington, Colorado area. As a  
3 result, Tri-State has no present plans for new resources that would be served  
4 by the Project. Tri-State is, however, continuing to evaluate its resource  
5 needs and it is possible that Tri-State may seek to acquire future renewable  
6 energy resources located in areas that would be served by the Project. The  
7 Project will provide Tri-State flexibility to meet its "not-for-profit" mission to  
8 provide cost-based resources to its Member owners as well as options for  
9 other transmission customers.

10 **Q: COMPARED TO THE PROPOSED PROJECT, DO THE TRINCHERA**  
11 **RANCH ALTERNATIVES ALLOW HIGHER OR LOWER INJECTION**  
12 **LEVELS THAN THE PROJECT?**

13 A: Lower. The Trinchera Ranch alternatives are developed to meet a limited need  
14 defined by Public Service's 2007 resource plan and related resource  
15 acquisition plans. This is not consistent with the objectives of the Project.

16 **Q: COMPARED TO THE PROPOSED PROJECT, DO THE TRINCHERA**  
17 **ALTERNATIVES APPEAR TO COST LESS OR MORE THAN THE**  
18 **PROJECT?**

19 A: As discussed above and in the rebuttal testimony of Public Service's  
20 witnesses, the Trinchera Ranch alternatives do not meet the basic objectives  
21 of the Project or provide greater system performance. Furthermore, Mr.  
22 Dauphinais' alternatives fail to include costs that would be required to yield the  
23 same system performance as the proposed Project. Therefore, even though

1 his alternatives may be presented as initially costing less, his alternatives do  
2 not lend themselves to a true "apples-to-apples" comparison.

3 **Q: WOULD THE TRINCHERA RANCH ALTERNATIVES TR1A, TR2A, OR**  
4 **TR3A, ALLOW TRI-STATE TO SERVE TRI-STATE NETWORK LOAD WITH**  
5 **TRI-STATE NETWORK RESOURCES VIA TRI-STATE OWNED**  
6 **TRANSMISSION BEYOND THE SAN LUIS VALLEY?**

7 A: No. Tri-State does not own transmission facilities originating from the Poncha  
8 Substation. Under the Trinchera Ranch alternatives, if Tri-State developed a  
9 resource in the San Luis Valley, Tri-State would have to arrange and pay for  
10 transmission service.

11 **IV. THE TRINCHERA RANCH ALTERNATIVES AND**  
12 **THE RELIABILITY ISSUE IN THE SAN LUIS VALLEY**

13 **Q: DO TRI-STATE, PUBLIC SERVICE, PUC STAFF, AND TRINCHERA**  
14 **RANCH AGREE THERE IS A RELIABILITY ISSUE BETWEEN THE**  
15 **PUEBLO AREA AND NORTHEASTERN NEW MEXICO?**

16 A: Yes. It appears that these parties have considered and agree that there is  
17 presently a reliability issue in this area. Furthermore, it appears that these  
18 parties agree that a new transmission line connecting the Comanche  
19 Substation and the Walsenburg Substation will allow for the removal of the  
20 existing Remedial Action Scheme ("RAS") that currently trips the 230 kV  
21 Walsenburg-Gladstone line upon the loss of the 230 kV Comanche-  
22 Walsenburg line.

1 **Q: DO TRI-STATE, PUBLIC SERVICE, PUC STAFF, AND TRINCHERA**  
2 **RANCH AGREE THERE IS A RELIABILITY ISSUE IN THE SAN LUIS**  
3 **VALLEY?**

4 A: Yes. It appears that these parties have considered and agree that there is a  
5 potential for voltage collapse to occur in the San Luis Valley upon loss of the  
6 230 kV San Luis Valley–Poncha transmission line when the load in the San  
7 Luis Valley is greater than approximately 65 MW.

8 **Q: HAS VOLTAGE COLLAPSE OCCURRED IN THE SAN LUIS VALLEY?**

9 A: Decaying voltage conditions consistent with voltage collapse have occurred in  
10 the past; however with either manual load shedding or UVLS system  
11 implemented by Tri-State, the possibility of collapse was reduced at the  
12 expense of customers losing electrical service. For example, on July 17, 1998  
13 a system disturbance occurred that resulted in the loss of the San Luis Valley–  
14 Poncha 230 kV line, which resulted in the manual shedding of load due to low  
15 voltage. (See **Exhibit No. ARL-2.**) Another example occurred on June 5,  
16 2002 when the San Luis Valley–Poncha 230 kV line tripped and decaying  
17 voltage resulted in shedding approximately 25 MW of Tri-State Member San  
18 Luis Valley Rural Electric Cooperative (SLVREC) load. (See **Exhibit No. ARL-**  
19 **3.**) Another occurrence on May 7, 2003 resulted in the loss of over 20 MW of  
20 load due to the UVLS operation. (See **Exhibit No. ARL-4.**)

21 **Q: SINCE IDENTIFYING THE RELIABILITY ISSUE, HAVE TRI-STATE AND**  
22 **PUBLIC SERVICE TAKEN STEPS TO REDUCE THE PROBABILITY OF**  
23 **VOLTAGE COLLAPSE IN THE SAN LUIS VALLEY?**

1 A: Yes. Besides facilitating general demand side management and energy  
2 conservation programs as discussed by Tri-State rebuttal witness James  
3 Spiers, the Companies have:

- 4 [redacted] temporarily operated Public Service's Alamosa turbines to minimize the  
5 possibility of voltage collapse;
- 6 [redacted] replaced the single phase 230/115 kV transformers at San Luis Valley  
7 substation with two three phase units with voltage regulating capability  
8 (equipment known as "under" or "on" load tap changers (LTC)) so failure of  
9 one transformer would not create a voltage collapse condition;
- 10 [redacted] installed capacitor banks at locations such as Alamosa Terminal; and
- 11 [redacted] conducted long term studies to examine whether this issue can be best  
12 mitigated with generation or additional transmission.

13 As these different intermediate steps and alternatives were being  
14 implemented, developed, discussed or considered, Tri-State and Public  
15 Service continued to seek joint participation opportunities. Tri-State continued  
16 to seek input through open forums such as the Colorado Coordinated  
17 Planning Group (CCPG), area base case coordination, and stakeholder  
18 discussions to refine and evaluate the San Luis Valley 230 kV Loop Project  
19 (the "SLV 230 kV Loop Project"), which is discussed in more detail later in my  
20 testimony. As discussed by Public Service witness Thomas Green,  
21 stakeholders were provided opportunities in several forums in the last few  
22 years to offer other options to address the San Luis Valley reliability and  
23 renewable export issues.

1 **Q: WHY DOES ONLY TRI-STATE HAVE A UVLS SYSTEM IN THE SAN LUIS**  
2 **VALLEY AREA?**

3 A: Of the two transmission lines serving the San Luis Valley, Tri-State only has  
4 capacity, or "rights," on the 230 kV line between WAPA's Poncha substation  
5 and the San Luis Valley substation. Public Service exclusively owns the 115  
6 kV line; therefore, when the 230 kV line is unavailable and the 115 kV line is  
7 not able to support the total load in the San Luis Valley region, removal of Tri-  
8 State's load is warranted so Public Service loads are not impacted.

9 **Q: IS THE PROBABILITY OF VOLTAGE COLLAPSE INCREASING?**

10 A: Yes. The probability of voltage collapse has increased over time. For  
11 example, Tri-State's original 1997 San Luis Valley High Voltage Study Report  
12 (see TSGT 000015 included in Exhibit JRD-1) which utilizes load data from  
13 1995 stated that, "The region's total load presently exceeds 65 MW  
14 approximately 15 percent of the time, over the course of a year."  
15 Subsequently, Tri-State's 2004 PV Study Report (see TSGT 000792 included  
16 in Exhibit JRD-1) concluded that, "the San Luis Valley loads are estimated  
17 today to be above 65 MW approximately 20% of the time." Likewise, Tri-  
18 State's 2008 Alternative Evaluation and Macro Corridor Study (see page 1-3 of  
19 Exhibit MJM-2 from direct testimony of Mark Murray) stated that, "the peak  
20 electric loads exceeded 120 MW and the loads exceeded 65 MW over 2,000  
21 hours during the year," approximately 23% of the time.

22 **Q: MR. DAUPHINAIS, HOWEVER, POINTS TO THE COMPANIES' DATA**  
23 **THAT TRI-STATE'S ENERGY NEEDS IN THE AREA HAVE REMAINED**  
24 **STEADY SINCE 1994. WHAT IS HE REFERRING TO?**

1 A. The quote relied upon by Mr. Dauphinais on page 3-1 of the 2008 AE/MCS  
2 used the term "energy requirements" to describe what is necessary to serve  
3 the summer peak load, which is typically referred to as a demand requirement,  
4 rather than an energy requirement. Given that the peak loads in the summer  
5 are heavily dependent on irrigation and, therefore, have fluctuated with the  
6 seasonal weather and need for irrigation over the years, it is not possible to  
7 state that the peak summer demand has "remained steady." Furthermore, Mr.  
8 Dauphinais' observation does not account for the overall load requirements or  
9 growth in the San Luis Valley over the course of the year, including the off-  
10 peak months.

11 **Q: HAS THE LOAD GROWN HISTORICALLY OVER THE TIME PERIOD**  
12 **MENTIONED BY MR. DAUPHINAIS?**

13 A. Yes. The increase in electricity requirements in the San Luis Valley is  
14 illustrated well by contrasting the hourly load chart from 1995 (page TSGT  
15 000023 included with Exhibit JRD-6) to that for 2007 on page 3-2 of the 2008  
16 AE/MCS (Included with Exhibit MJM-2 from Mark Murray). The chart from  
17 1995 shows times where loads exceeding 65 MW (over 15% of the year as  
18 previously stated) occurred in the spring and summer, mainly due to irrigation.  
19 The chart from 2007 shows that the same concern of exceeding 65 MW  
20 (approximately 23% of the year as previously stated) still exists in the spring  
21 and summer, in addition to times in the winter. This growth is also shown with  
22 the load-duration curves from 1995 (page TSGT 000022 included with Exhibit  
23 JRD-6) and from 2007 on page 1-3 of the 2008 AE/MCS (Included with Exhibit  
24 MJM-2 from Mark Murray).

1   **Q:    ARE THE LOADS FORECASTED TO CONTINUE GROWING?**

2   A.    Tri-State's load forecast group expects growth to continue for the base  
3        electricity usage, mainly in residential and small commercial types of loads.  
4        This means that while the peak load has historically fluctuated, mainly due to  
5        irrigation requirements, there are generally more customers in the San Luis  
6        Valley which is expected to continue to raise the electrical load requirements  
7        and increase the number of hours where the load exceeds 65 MW. As a  
8        result, situations giving rise to the risk of voltage collapse are occurring more  
9        often.

10   **Q:    DOES THIS GROWTH IN HOURS EXCEEDING 65 MW AFFECT TRI-**  
11       **STATE'S OPERATIONS BEYOND BEING EXPOSED TO VOLTAGE**  
12       **COLLAPSE?**

13   A.    Yes. This currently restricts any maintenance operations to times where loads  
14        are low enough to allow for the 230 kV line to be taken out of service. As the  
15        load continues to grow, this will further reduce the times that are available for  
16        this maintenance activity.

17   **Q:    IS THE CURRENT SITUATION A VIOLATION OF MANDATORY**  
18       **RELIABILITY STANDARDS?**

19   A:    No, there are no current mandatory NERC or WECC reliability standards that  
20        are violated by the current situation; however, future revisions may result in a  
21        potential violation.

22   **Q:    IF THAT IS THE CASE, WHY DOES TRI-STATE BELIEVE THE**  
23       **RELIABILITY SITUATION NEEDS TO BE ADDRESSED?**



1 A: In Tri-State's view, the risk of voltage collapse and the elimination of the  
2 undervoltage load shedding system for a single element transmission outage  
3 of the 230 kV San Luis Valley-Poncha line justify Tri-State's participation in  
4 the San Luis Valley-Calumet portion of the Project. Tri-State believes that this  
5 issue, combined with quality of service, prudent utility practice, mitigating the  
6 risk of system malfunction, historical and forecasted increase of loads over  
7 time, maintenance considerations, and the possibility of future upgrades or  
8 replacement of aging existing transmission lines, all support the decision to  
9 address the existing reliability concern at this time even though there is  
10 presently no violation of a reliability standard. Tri-State and its Board of  
11 Directors have decided that this issue is best addressed by completion of the  
12 proposed Project.

13 **Q: WOULD YOU SAY THIS IS CONSISTENT WITH GOOD UTILITY PRACTICE**  
14 **AS DEFINED BY FERC?**

15 A: Yes. Good Utility Practice, as defined by FERC, qualitatively describes  
16 minimal standards. Individual utilities can choose to perform to a higher  
17 standard.

18 **Q: FROM A RELIABILITY STANDPOINT, DO YOU BELIEVE THAT ANY OF**  
19 **THE TRINCHERA RANCH ALTERNATIVES (TR1A, TR2A, TR3A) WOULD**  
20 **PERFORM AS WELL AS THE PROPOSED PROJECT?**

21 A: No. Besides not meeting the need of the Project to provide transmission  
22 capacity to facilitate development and delivery of a reasonable level of new  
23 resources from the San Luis Valley, the Trinchera Ranch alternatives would  
24 not perform as well as the proposed Project from a reliability standpoint.

1 **Q: COMPARED TO THE PROPOSED PROJECT, WOULD THE TRINCHERA**  
2 **RANCH ALTERNATIVES TR1A, TR2A, OR TR3A, HAVE REMOVED THE**  
3 **NEED FOR THE SAN LUIS VALLEY UVLS SYSTEM FOR N-1 (NERC**  
4 **CATEGORY B) CONTINGENCIES?**

5 A: As with all of the Companies' alternatives including the Benchmark scenario,  
6 from a deterministic standpoint, the addition of a new single-circuit 230 kV line  
7 to the San Luis Valley substation would remove the need for the UVLS system  
8 for an outage of one 230 kV line.

9 **Q: COMPARED TO THE PROPOSED PROJECT, WOULD THE TRINCHERA**  
10 **RANCH ALTERNATIVES TR1A, TR2A, OR TR3A, HAVE ELIMINATED THE**  
11 **NEED FOR THE SAN LUIS VALLEY UVLS SYSTEM FOR N-2, N-1-1 AND**  
12 **OTHER CREDIBLE NERC CATEGORY C CONTINGENCIES?**

13 A: No. All of the Trinchera Ranch alternatives, as demonstrated by line lengths  
14 and Mr. Dauphinais' deposition answers, are based on a new single-circuit  
15 230 kV line being constructed from San Luis Valley to points to the north via  
16 the corridor occupied by existing lines. As such, if both of the 230 kV lines in  
17 his proposal were out of service for a simultaneous forced outage of two  
18 elements, known as a N-2 or a planned/forced outage of one element (N-1)  
19 and subsequent additional outage (N-1-1), from a deterministic standpoint, the  
20 San Luis Valley would be subject to voltage collapse if the load exceeded 65  
21 MW. This is in contrast to the Companies' more robust double-circuit Project,  
22 which would run west to east from the San Luis Valley area to the Walsenburg  
23 area and which would not subject the San Luis Valley to voltage collapse  
24 when two 230 kV lines were out of service. Therefore, the UVLS system and

1 the associated testing and maintenance requirements of that system as well  
2 as the possibility of a malfunction of that system is eliminated, meeting Public  
3 Service's and Tri-State's need for improved reliability.

4 **Q: MR. DAUPHINAIS CLAIMS THAT THE UVLS SYSTEM WOULD BE**  
5 **REQUIRED FOR THE COMPANIES' PROJECT AND ALL OF THE**  
6 **TRINCHERA ALTERNATIVES DURING MAINTENANCE ACTIVITIES. DO**  
7 **YOU AGREE?**

8 A: No.

9 **Q: WOULD BOTH CIRCUITS OF THE NEW SAN LUIS VALLEY – CALUMET**  
10 **DOUBLE CIRCUIT 230 KV TRANSMISSION LINE HAVE TO BE**  
11 **DEENERGIZED DURING MAINTENANCE?**

12 A: Not necessarily. In the interest of safety and according to Tri-State operations,  
13 maintenance would be planned during lower load times so that both circuits  
14 could be de-energized when voltage collapse risk was not a concern. If that  
15 was not a possibility due to load growth or maintenance was "forced", i.e.  
16 unplanned maintenance, then, according to Tri-State maintenance personnel,  
17 Tri-State line crews would work with one side of the double circuit energized.

18 **Q: WOULD THE UVLS SYSTEM HAVE TO BE RETAINED FOR**  
19 **MAINTENANCE INTERVALS IF THE TRINCHERA RANCH SINGLE**  
20 **CIRCUIT 230 KV LINE ALTERNATIVES WERE CONSTRUCTED RATHER**  
21 **THAN THE PROJECT?**

22 A: Yes. As with the Project, maintenance could be planned during lower load  
23 times; however, the Trinchera Ranch alternatives would not present the same  
24 flexibility as the Project and the UVLS system and its inherent disadvantages

1 would be required for forced maintenance or when the electric load in the San  
2 Luis Valley was above the voltage collapse threshold.

3 **Q: COMPARED TO THE PROPOSED PROJECT, WOULD THE TRINCHERA**  
4 **RANCH TRANSMISSION ALTERNATIVES PROVIDE LOOPED**  
5 **TRANSMISSION SERVICE TO THE SAN LUIS VALLEY WITH TWO**  
6 **DISTINCT SOURCES OF POWER IN TWO WIDELY SEPARATE**  
7 **CORRIDORS?**

8 A: No. The Trinchera Ranch transmission alternatives do not provide a separate,  
9 redundant source of power to the San Luis Valley as would be provided by the  
10 proposed Project. As stated above, all of the Trinchera Ranch alternatives are  
11 predicated upon constructing a new single-circuit 230 kV line from the San  
12 Luis Valley to the north within a corridor that is currently occupied by three  
13 existing lines (230 kV, 115 kV, and 69 kV). As described by Public Service  
14 witness Rick Thompson, the 115 kV and 230 kV lines cross at least twice and  
15 the 230 kV and 69 kV lines share the same set of structures for a few miles on  
16 Poncha Pass. This is in contrast to the proposed Project's double-circuit 230  
17 kV line from the San Luis Valley area to the Calumet/Walsenburg area which  
18 will provide two relatively distinct power sources (eastern Colorado/Front  
19 Range and Colorado's western slope) in two widely separated corridors.

20 **Q: COMPARED TO THE PROPOSED PROJECT, WOULD THE TRINCHERA**  
21 **RANCH ALTERNATIVES TR1A, TR2A, OR TR3A, PROVIDE LOOPED**  
22 **TRANSMISSION SERVICE TO THE WALSENBURG SUBSTATION WITH**  
23 **TWO DISTINCT SOURCES OF POWER IN TWO WIDELY SEPARATE**  
24 **CORRIDORS?**

1 A: No. Within the Trinchera Ranch alternatives is an assumption that the  
2 companies will construct the Comanche–Calumet-Walsenburg portion of the  
3 proposed Project. Although the corridor between Walsenburg and Comanche  
4 is relatively wide compared to the Poncha–San Luis Valley corridor and the  
5 Comanche power plant is a manned station, the Walsenburg station would  
6 continue to be effectively served by a single source with the Trinchera Ranch  
7 alternatives. On the other hand, the proposed Project would provide a second  
8 source to the Calumet substation and the exposure to the Walsenburg  
9 substation limited to only a few miles.

10 **Q: MR. DAUPHINAIS CLAIMS THE TRINCHERA RANCH TRANSMISSION**  
11 **ALTERNATIVES CONSTITUTE LOOPED SERVICE TO THE SAN LUIS**  
12 **VALLEY. DO YOU AGREE?**

13 A: No. In my opinion, looped service, in this context and as the name implies,  
14 requires continuity of service for the loss, including the total loss of substations  
15 or all transmission lines in a corridor, of one source of power. Mr. Dauphinais'  
16 alternatives do not meet this definition of "looped service" since all three  
17 options pass through the Poncha–San Luis Valley corridor. In addition, TR1A  
18 and TR2A are fed from one source – Poncha substation. By comparison, the  
19 Project provides loop service since it connects the eastern Colorado/Front  
20 Range system with the western slope. The companies' Project is robust from  
21 this standpoint since the San Luis Valley–Calumet portion provides the  
22 missing link and completes a loop between the San Luis Valley and  
23 Walsenburg areas.

1 With the Project, if the Poncha substation or all lines to San Luis Valley from  
2 the Poncha area are lost, then San Luis Valley would still be served from  
3 Calumet. If the Calumet substation or all lines from Calumet to San Luis  
4 Valley substation are lost, then San Luis Valley would still be served from  
5 Poncha. Similarly, Calumet/Walsenburg area is strengthened by the San Luis  
6 Valley–Calumet segment during loss of the Comanche source and/or all  
7 transmission lines between Comanche and Calumet.

8 With the Trinchera Ranch alternatives, the San Luis Valley area is not served  
9 during the loss of the Poncha substation and/or all lines in the Poncha–San  
10 Luis Valley corridor. Similarly, the Calumet/Walsenburg area is stranded by  
11 the loss of the Comanche source and/or all of the lines between Comanche  
12 and Calumet.

13 **V. RELATIONSHIP OF PROPOSED PROJECT TO TRI-STATE'S ORIGINAL**

14 **230 KV SAN LUIS VALLEY LOOP PROJECT**

15 **Q: IN SECTION III. OF HIS ANSWER TESTIMONY, MR. DAUPHINAIS**  
16 **CRITICIZES THE CONCLUSIONS DEVELOPED IN THE 2004 PV STUDY**  
17 **AND 2008 AE/MCS AND CLAIMS THAT TRI-STATE SHOULD HAVE**  
18 **SELECTED A DIFFERENT PROJECT THAN A SINGLE-CIRCUIT 230 KV**  
19 **LINE BETWEEN THE SAN LUIS VALLEY AND WALSENBURG**  
20 **SUBSTATIONS. HOW DO YOU RESPOND TO THIS ARGUMENT?**

21 **A:** Mr. Dauphinais' criticism is related to an historical project, which is not the  
22 subject of this docket. Mr. Dauphinais compares an historical project's needs  
23 and alternative ranking and proposes other alternatives in an attempt to  
24 discredit the proposed Project's Benchmark Scenario.

1 **Q: WHAT IS THE HISTORICAL PROJECT?**

2 A: Mr. Dauphinais' argument relates to Tri-State's original San Luis Valley 230 kV  
3 Loop Project ("SLV 230 kV Loop Project"). That project would have connected  
4 the San Luis Valley and Walsenburg Substations and was first presented to  
5 the PUC in Tri-State's 2003 Rule 18 filing (CPCN Required per Commission  
6 Decision C03-0707). PUC Staff's Mr. Dominguez filed testimony supporting  
7 and recognizing the validity of the project in Public Service's resource Docket  
8 07A-447E. (See Answer Testimony of PUC Staff Witness Inez Dominguez, at  
9 6, in Docket 07A-447E.)

10 **Q. DOES TRINCHERA RANCH SPECIFICALLY REFER TO TRI-STATE'S**  
11 **PREVIOUS SAN LUIS VALLEY 230 KV LOOP TRANSMISSION PROJECT?**

12 A. No. However, Trinchera Ranch refers to a single-circuit 230 kV project  
13 between San Luis Valley and Walsenburg substations, which essentially  
14 describes Tri-State's original SLV 230 kV Loop Project.

15 **Q. WHAT WAS THE PURPOSE OF THE SLV 230 KV LOOP PROJECT?**

16 A. As I stated in my Direct Testimony and as described in the 2008 AE/MCS, the  
17 purpose of the SLV 230 kV Loop Project was to improve system reliability in  
18 the San Luis Valley and help prevent voltage collapse under peak loads. In  
19 addition, the SLV 230 kV Loop project would have improved transmission  
20 support to the surrounding region and transmission capacity for renewable  
21 energy development in the San Luis Valley.

22 **Q: DID MANY OF THESE PREVIOUSLY DISCUSSED RELIABILITY**  
23 **CONSIDERATIONS APPLY TO TRI-STATE'S ORIGINAL SINGLE CIRCUIT**  
24 **SLV 230 KV LOOP PROJECT?**

1 A: Yes.

2 **Q: WERE OTHER ALTERNATIVES CONSIDERED PREVIOUSLY THAT DID**  
3 **NOT INCLUDE NEW TRANSMISSION LINES?**

4 A: Yes. Tri-State analyzed a number of transmission alternatives, in addition to  
5 the "No Action" alternative, and the possibility of adding generation resources.

6 **Q: DOES MR. DAUPHINAIS ALSO PRESENT ALTERNATIVES TO ADDRESS**  
7 **THE VOLTAGE COLLAPSE ISSUE WITHOUT ADDING TRANSMISSION**  
8 **LINES?**

9 A: Yes. One option Mr. Dauphinais presents is a "Do Nothing" alternative,  
10 rejected for the reasons previously stated in relation to the proposed Project,  
11 and similarly rejected in Tri-State's original project. The other alternative Mr.  
12 Dauphinais presents is to add 150 MW of unspecified generation. This option  
13 does not meet the needs of the current joint San Luis Valley – Calumet -  
14 Comanche Project. Similarly, generation additions were considered and  
15 rejected as a preferred alternative to Tri-State's original 230 kV Loop project.  
16 Neither option meets the needs of Tri-State and Public Service in the manner  
17 accomplished by the Project.

18 **Q: HOW DID TRI-STATE PREVIOUSLY CONSIDER USING GENERATION TO**  
19 **MITIGATE THE RELIABILITY ISSUE IN THE SAN LUIS VALLEY?**

20 A: In the 2008 AE/MCS (attached as Exhibit MJM-2 from witness Mark Murray),  
21 five different gas turbine generation alternatives, described as "emergency  
22 backup generation", were evaluated. The capacity of the units, derated for the  
23 San Luis Valley's altitude, ranged from 88 to 124 MW. The report concluded



1 the additional generation capacity for the San Luis Valley was not an effective  
2 or economic remedy to the reliability issues.

3 **Q: YOU MENTION THAT THE STUDY MAINLY EVALUATED COMBUSTION**  
4 **TURBINE TYPES OF GENERATION, THE LARGEST BEING 124 MW. MR.**  
5 **DAUPHINAIS SUGGESTS THAT AN UNDEFINED 150 MW**  
6 **CONCENTRATED SOLAR POWER RESOURCE WITH STORAGE WOULD**  
7 **REASONABLY MITIGATE THE VOLTAGE COLLAPSE ISSUE IN THE SAN**  
8 **LUIS VALLEY WITHOUT ANY NEW TRANSMISSION LINES. DO YOU**  
9 **AGREE?**

10 **A:** No. Building upon the analysis of gas turbine generation alternatives ranging  
11 from 88-124 MW analyzed in the 2008 AE/MCS, I do not believe Tri-State can  
12 justify installing a 150 MW concentrated solar power plant with storage rather  
13 than the Project as a reasonable solution to the existing reliability problem. In  
14 addition, such an approach would not meet the transmission constraint relief  
15 and generation export needs satisfied by the Companies' proposed Project.  
16 While I defer to Public Service regarding its plans to install such a plant in the  
17 San Luis Valley and the details of its operational characteristics, based on  
18 information available at this time, Tri-State has multiple concerns with using  
19 this approach to resolve the reliability problem.

20 It is Tri-State's understanding that such a plant, if installed in the near term as  
21 part of Public Service's current resource plan, would be owned and operated  
22 by Public Service; therefore, there is no guarantee that the plant would be  
23 available to meet Tri-State's reliability need when required. Additionally, a  
24 solar thermal with storage plant would be unavailable for a significant number

1 of hours in the year, including many hours at night when the sun is not shining  
2 and storage is unavailable. Given that there are times when loads in the San  
3 Luis Valley never drop below 65 MW over a twenty-four hour period (see page  
4 3-2 in Exhibit MJM-2 from direct testimony of Mark Murray), and with the  
5 number of such load hours expected to continue to grow, the general  
6 operational characteristics of the type of generation plant suggested by Mr.  
7 Dauphinais do not yield an appropriate generation solution to the reliability  
8 problem.

9 **Q: IN CONSIDERING TRANSMISSION ALTERNATIVES TO THE RELIABILITY**  
10 **PROBLEM, WHY DOES MR. DAUPHINAIS BELIEVE TRI-STATE'S SLV 230**  
11 **KV LOOP PROJECT BETWEEN SAN LUIS VALLEY AND WALSENBURG**  
12 **WAS NOT JUSTIFIED?**

13 A: Mr. Dauphinais uses initial cost as his only means of ranking the alternatives  
14 and defers to the Commission for any other objective or subjective criteria.  
15 This differs from Tri-State's analysis and previously stated additional reasons  
16 for selecting the original Tri-State San Luis Valley 230 kV Loop Project.

17 **Q: WHY DID TRI-STATE SELECT THE ORIGINAL SAN LUIS VALLEY –**  
18 **WALSENBURG 230 KV PROJECT?**

19 A: The original Tri-State single-circuit 230 kV Loop Project was selected for a  
20 number of reasons. The SLV 230 kV Loop Project would have eliminated the  
21 risk of voltage collapse for loads up to approximately 206 MW during single  
22 contingencies (N-1 or NERC Category B); provided looped transmission  
23 service, which would have been accomplished by providing two relatively  
24 distinct power sources via transmission lines in widely separated corridors;

1 provided a second source to the Walsenburg Substation, improving the  
2 performance and load serving capability of the San Isabel Electric Association  
3 system but not eliminating the need for the RAS; and allowed renewable  
4 resource export to Tri-State load via Tri-State owned transmission capacity.

5 **VI. TRANSMISSION ALTERNATIVES TO SUPPORT NEW RENEWABLE**  
6 **RESOURCES IN THE SAN LUIS VALLEY AND CALUMET AREAS**

7 **Q: IN SECTION IV. OF MR. DAUPHINAIS' ANSWER TESTIMONY, HE**  
8 **EXPLAINS WHY HE DISAGREES WITH THE COMPANIES' DEFAULT**  
9 **SCENARIO ASSUMPTION FOR THE BENCHMARK USED IN THE TWG-1**  
10 **STUDY REPORT. HE DOES NOT AGREE THAT A TRANSMISSION LINE**  
11 **FROM SAN LUIS VALLEY – WALSENBURG SHOULD HAVE BEEN**  
12 **INCLUDED IN THE BENCHMARK STUDY. COULD YOU EXPLAIN WHY**  
13 **THE COMPANIES' ASSUMPTION IS VALID?**

14 **A:** Yes. As I stated above and in my direct testimony, Tri-State was already  
15 planning to pursue the SLV 230 kV Loop Project as the preferred alternative to  
16 provide the San Luis Valley with looped transmission service, facilitate future  
17 renewable energy project development and reinforce the Walsenburg  
18 substation. Tri-State had notified the Colorado PUC in its 2003 Rule 18 (now  
19 Rule 3206) filing. Tri-State also began to include the San Luis Valley–  
20 Walsenburg 230 kV line in system models for transmission planning for model-  
21 years that corresponded to that project's in-service date. In addition, the line  
22 was included in the CCPG's SB07-100 studies and Long-Range (10-year)  
23 studies.

1 As stated in study report TWG-1 on page 15 regarding alternatives to the  
2 Benchmark case, "Each of the alternatives expanded on the basic premise of  
3 establishing a high-voltage transmission path between the San Luis Valley,  
4 Walsenburg, and Comanche Substations."

5 **Q: FROM A COMMON SENSE STANDPOINT AND ASSUMING TRI-STATE**  
6 **DID NOT HAVE PROJECTS UNDER DEVELOPMENT, WHAT WOULD BE**  
7 **A REASONABLE BENCHMARK SCENARIO TO FACILITATE THE**  
8 **INJECTION AND DELIVERY OF NEW GENERATION RESOURCES IN**  
9 **ZONES 4 AND 5, ADDRESS THE RELIABILITY ISSUE IN THE SAN LUIS**  
10 **VALLEY AND REMOVE THE RAS IN THE EVENT OF A COMANCHE –**  
11 **WALSENBURG OUTAGE?**

12 **A:** As described by Mr. Green and shown in his Figures, a common sense  
13 approach to meeting the need described above would require either two  
14 transmission segments (San Luis Valley – Calumet and Calumet - Comanche)  
15 or three transmission segments (San Luis Valley – Poncha, Poncha –  
16 Comanche, and Calumet –Comanche). Since the "two segment" option would  
17 involve seventy fewer miles of transmission, it would form the basis of a  
18 reasonable benchmark as used by the Companies.

19 **Q: MR. DAUPHINAIS SUGGESTS THAT THESE COMBINED NEEDS OF THE**  
20 **COMPANIES COULD BE BEST SERVED BY SEPARATING THE NEEDS IN**  
21 **ENERGY RESOURCE ZONE 4 AND ENERGY RESOURCE ZONE 5 AND**  
22 **THEIR RESPECTIVE RELIABILITY NEEDS. DO YOU AGREE?**

23 **A:** No. As discussed above, with the combined reliability needs and present and  
24 potential future generation resource development by both Companies in the

1 two areas, there are inherent benefits to the continuous transmission path  
2 created by developing the project from the San Luis Valley to the Walsenburg  
3 area and then on to the Front Range power system.

4 **Q: ON PAGE 28 OF HIS TESTIMONY, MR. DAUPHINAIS ALSO STATES**  
5 **THAT A KEY QUESTION IN THIS PROCEEDING IS WHETHER TRI-STATE**  
6 **DEMONSTRATED A RELIABILITY NEED FOR A NEW 230 KV**  
7 **TRANSMISSION LINE FROM SAN LUIS VALLEY TO THE**  
8 **CALUMET/WALSENBURG AREA. DO YOU AGREE?**

9 **A:** No, I do not agree that is a key question in this proceeding. Tri-State continues  
10 to believe that its original San Luis 230 kV Loop Project would have been the  
11 most effective way to meet its reliability need at the time, reinforce the area  
12 transmission system, and provide for additional transmission capacity to  
13 support potential renewable energy development. However, given the needs  
14 of Public Service leading to its participation in the proposed joint project, the  
15 original SLV 230 kV Loop Project is no longer appropriate and, as such, is not  
16 the project applied for in this joint CPCN proceeding. The proposed Project is  
17 different from that considered initially, and Mr. Dauphinais disregards the  
18 previously mentioned basic premise of the proposed Project which is to create  
19 a high voltage path to serve Energy Resource Zones 4 and 5 while solving the  
20 respective reliability issues in each area.

21 **VII. RESPONSE TO PUC STAFF'S RECOMMENDATIONS**

22 **Q: PUC STAFF WITNESS MR. DOMINGUEZ PROPOSES THAT THE SAN**  
23 **LUIS VALLEY - CALUMET PORTION OF THE PROJECT BE BUILT AND**  
24 **OR OPERATED AT 345 KV INSTEAD OF 230 KV BASED ON**

1       **PERFORMANCE, LOSSES, EMF AND NOISE. DID THE COMPANIES**  
2       **EVALUATE 345 KV OPTIONS BETWEEN THE SAN LUIS VALLEY AND**  
3       **CALUMET SUBSTATIONS?**

4    A:    Yes. As described in my direct testimony as well as that of Public Service  
5       witness Thomas Green, Alternative 5 included a double-circuit 345 kV line  
6       between San Luis Valley and Calumet. Alternative 1, the Proposed Project,  
7       and Alternative 5 were determined to be the only two alternatives that met  
8       both Tri-State's and Public Service's requirements for the Project.

9    **Q:    WHY WAS ALTERNATIVE 1 SELECTED RATHER THAN ALTERNATIVE**  
10       **5?**

11   A:    As stated in my Direct Testimony and summarized in the TWG-1 Study  
12       Report, the proposed Project is the Preferred Alternative since it cost  
13       effectively:

- 14       1.     corrects the reliability issues in the San Luis Valley;
- 15       2.     eliminates the Comanche-Walsenburg 230 kV remedial action scheme;
- 16       3.     complies with Colorado SB07-100;
- 17       4.     accommodates large amounts of generation resource injection well in  
18           excess of current requirements, without causing interference on existing  
19           electric systems, except as described in Exhibit TWG-1; and
- 20       5.     facilitates future upgrades in the area to allow additional resources if  
21           needed.

22       Alternative 5, on the other hand, cannot be justified from Tri-State's and Public  
23       Service's perspective for the following reasons:

- 1           1.     A 345 kV line does not significantly increase the resource injection
- 2                     capability for the region;
- 3           2.     A 345 kV line would require significant additional funds, thereby limiting
- 4                     the companies' ability to support other transmission projects in
- 5                     Colorado;
- 6                     and
- 7           3.     A 345 kV line would require additional right-of- way.

8     **Q:   DOES THE PROPOSED PROJECT MEET APPROPRIATE EMF AND**  
9     **NOISE LEVELS?**

10    A:   Yes. According to the Direct Testimony of Tri-State witness Dr. Robert L.  
11           Pearson, "the transmission line designs proposed by Tri-State and Public  
12           Service for these two Project segments are reasonable. The EMF and audible  
13           noise effects from the transmission lines on nearby houses fully comply with  
14           the rules and guidelines set out in 4 CCR § 723-3102(c &d). The transmission  
15           line designs employ a number of the mitigation steps and techniques  
16           suggested in the rules. In addition, the modeling performed for these  
17           segments used a model required in these regulations that indicates that the  
18           line design will create noise and EMF levels that are less than other line  
19           designs approved by the CPUC in prior cases and by public utility  
20           commissions in other states."

21    **Q:   MR. DOMINGUEZ ALSO CLAIMS THAT THERE WILL BE MEANINGFUL**  
22           **SAVINGS ASSOCIATED WITH REDUCED LOSSES IF THE SAN LUIS**  
23           **VALLEY – CALUMET SEGMENT IS CONSTRUCTED AT 345 KV. DO YOU**  
24           **AGREE WITH THIS?**

1 A. No. While Tri-State has not performed any specific analysis of the losses  
2 associated with constructing this segment at 345 kV, we do have some  
3 fundamental concerns regarding the assumptions that Mr. Dominguez relies  
4 upon for his conclusions regarding losses. This issue is discussed in further  
5 detail in the rebuttal testimony of Public Service witness Tom Green

6 **Q: IF THE SAN LUIS VALLEY – CALUMET SEGMENT OF THE PROJECT**  
7 **WAS BUILT AND/OR OPERATED AT 345 KV, WOULD THE COST SPLIT**  
8 **BE DIFFERENT BETWEEN TRI-STATE AND PSCO?**

9 A: Most likely. Tri-State's participation and cost sharing in the Project is based  
10 on the benefits that it seeks from the Project. If this segment of the Project is  
11 constructed as proposed by Mr. Dominguez, it is likely that Tri-State would  
12 have to re-evaluate its level of participation in what would then be a more  
13 expensive project. At this time, Tri-State does not believe the possible  
14 benefits described by Mr. Dominguez warrant the additional costs associated  
15 with constructing this segment at 345 kV. As a result, Tri-State's cost sharing  
16 in the more expensive project proposed by Mr. Dominguez would be less  
17 thereby shifting more of that cost to Public Service and its customers.

18 **Q: DOES THAT CONCLUDE YOUR TESTIMONY?**

19 A: Yes.