IN THE MATTER OF THE APPLICATION OF PUBLIC SERVICE COMPANY OF COLORADO FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE SAN LUIS VALLEY – CALUMET – COMANCHE TRANSMISSION PROJECT

REBUTTAL TESTIMONY AND EXHIBITS OF

THOMAS W. GREEN

December 2, 2009

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

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 APPROVAL OF OWNERSHIP INTEREST TRANSFER AS NEEDED WHEN PROJECT IS COMPLETED	)	**Docket No. 09A-324E**
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 TO CALUMET TO 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	)	**Docket No. 09A-325E**

REBUTTAL TESTIMONY AND EXHIBITS OF THOMAS GREEN

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Thomas Green. My business address is 550 15th Street, Denver, Colorado 80202.

Q. DID YOU FILE DIRECT TESTIMONY IN THIS DOCKET?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my rebuttal testimony is to respond to the Answer Testimony, Exhibits of Mr. James Dauphinais and the Answer Testimony of Mr. Inez

Dominguez.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY IN RESPONSE TO MR. DAUPHINAIS?

A. My rebuttal primarily addresses why the transmission alternatives presented by Mr. Dauphinais do not meet the purpose and need of the Project. These alternatives were presented as Exhibit JRD-1, which is a Transmission Study Report titled "Alternatives to the San Luis Valley-Calumet Portion of the San Luis Valley-Calumet-Comanche Transmission Project," prepared by Brubaker & Associates, Inc. (Brubaker Report).

Q. WHAT IS YOUR UNDERSTANDING OF THE PURPOSE OF MR. DAUPHINAIS' ANSWER TESTIMONY?

A. Page 3 of Mr. Dauphinais' testimony states that the purpose of his testimony is to address whether the Companies have demonstrated the need for the San Luis Valley to Calumet 230 kV double-circuit transmission line portion of the Proposed Project. On page 4, he states that the Companies need is to address reliability in the San Luis Valley and accommodate proposed renewable resource commitments in the San Luis Valley and Calumet areas.

Q. IS THAT THE PURPOSE AND NEED FOR THE PROPOSED PROJECT?

A. Mr. Dauphinais' stated need for the Project is inaccurate. I agree that one of the needs for the Project is to address reliability concerns in the region. However, I disagree with the second stated need to "accommodate proposed renewable resource commitments in the San Luis Valley…" As I stated on page 2 in my Direct Testimony, the Project is needed both for regional

reliability and for accommodating potential resources in Energy Resource Zones ("ERZs" or "Zones") 4 and 5 consistent with Senate Bill ("SB07-100"). On page 9 of Mr. Stellern's direct testimony, he describes the Project as being consistent with our long-term planning goals and meeting SB07-100 requirements by accommodating potential resource development in ERZs 4 and 5.

Q. HOW IS THAT DIFFERENT FROM THE NEED AS STATED BY MR. DAUPHINAIS?

A. The difference is in the magnitude of proposed resource commitments versus potential resource development. Mr. Dauphinais limited his studies by trying to develop alternatives that could only meet the current Public Service Company of Colorado ("Public Service" or "Company") resource plan, with little or no allowance for future resource development.

Q. ON PAGE 9 OF YOUR DIRECT TESTIMONY, ONE OF THE OBJECTIVES USED IN THE SYSTEM STUDIES WAS TO ACCOMMODATE A "REASONABLE" AMOUNT OF BENEFICIAL GENERATION RESOURCES CAPABLE OF MEETING OR EXCEEDING RESOURCE NEEDS. HOW DO YOU DETERMINE A "REASONABLE" AMOUNT OF RESOURCES FOR PERFORMING TRANSMISSION STUDIES?

A. Several factors were considered coming up with a reasonable level. These include the Senate Bill 07-091 (SB07-91) Report from the Governor's Energy Office. Another was the input received from stakeholders during SB07-100, FERC Order 890, and CCPG Stakeholder and Transmission Planning

meetings. We also considered how the Company might acquire resources in its present and future resource planning processes.

Q. WHAT DOES THE SB07-91 REPORT SAY?

A. Pursuant to SB07-91, the Task Force on Renewable Resource Generation Development Areas published a report entitled, "Connecting Colorado's Renewable Resources to the Markets." The report is part of the work of Governor Bill Ritter's "New Energy Economy" and is designed to assist in the implementation of the goals in Governor Ritter's Climate Action Plan. The report identifies the San Luis Valley as a solar generation development area (GDA) that could accommodate 26 gigawatts (GW) of capacity. A GW is the same as 1000 megawatts (MW). The report goes on to say that even if the 26 GW is "screened" to account for agriculture, sensitive habitat, distance from existing transmission, and high land cost, approximately 5,500 MW of solar energy capacity could be developed in the San Luis Valley.

Q. WHAT INPUT DID YOU RECEIVE FROM STAKEHOLDERS?

A. Largely based on FERC Order 890, the Company has held numerous open meetings in the last few years. In my experience, at most if not every meeting, stakeholders provided comments indicating a strong desire to develop renewable energy resources, and encouraged the Company to plan transmission to accommodate those resources. The stakeholder comments have been consistent with what we are required to do through SB07-100.

Q. HOW DO YOU INCORPORATE THOSE TRANSMISSION PLANNING ACTIVITIES WITH THE COMPANY'S RESOURCE PLAN?

A. During the transmission planning process, we consulted with Mr. Joseph Taylor, Manager of Transmission Access at Public Service. Mr. Taylor also filed Direct Testimony in this docket. His Direct Testimony is consistent with what he communicated to us during the study process, which was that in the next five years the Company anticipated acquiring up to 600 MW of resources using concentrating solar generation. Mr. Taylor has also indicated his opinion that there was a very high likelihood that the Company would seek additional solar-powered resources in future resource plans. On page 6 of Mr. Taylor's direct testimony, he mentions that 1,809 MW of solar generation interconnection requests have been made under the Large Generator Interconnection Process to Public Service for interconnections in ERZs 4 and 5.

Q. MR. DAUPHINAIS STATES THAT THE COMPANIES HAVE NOT DEMONSTRATED THE NEED FOR NEARLY THREE TIMES AS MUCH TRANSMISSION CAPABILITY AS WHAT WAS PUBLICLY IDENTIFIED IN ITS 2009 ALL-SOURCE SOLICITATION PROCESS. DO YOU AGREE?

A. No. The All-Source Solicitation mentioned a maximum of approximately 600 MW of new concentrated solar power generation in southern Colorado. However, for the reasons I've already stated, our goal has been to consider transmission that would accommodate future resources as well as those presently planned. Mr. Dauphinais admits on page 37 (lines 11 – 24) of his deposition (Exhibit KTH-1) that "there is certainly potential for a thousand or 2000 megawatts of concentrated solar generation in the San Luis Valley."

Q. MR. DAUPHINAIS CONCLUDES IN HIS TESTIMONY AND IN THE BRUBAKER REPORT THAT THE NEED TO ADDRESS RELIABILITY AND ACCOMMODATE PROPOSED RENEWABLE RESOURCE COMMITMENTS IN THE SAN LUIS VALLEY CAN BE ADEQUATELY MET BY SUBSTITUTING ANY ONE OF A NUMBER OF SIGNIFICANTLY LOWER COST ALTERNATIVES FOR THE SAN LUIS VALLEY TO CALUMET TRANSMISSION LINE PORTION OF THE COMPANIES' PROPOSED PROJECT. DO YOU AGREE WITH THAT CONCLUSION?

A. No. None of the alternatives presented in the Brubaker Report meet the purpose and need of the project as described by Public Service and Tri-State. Because his alternatives do not meet the purpose and need, they are not viable alternatives, and cannot be compared to the proposed Project on a similar basis. In the Deposition of Mr. Dauphinais, on pages 202 (line 17) - 203 (line 7) of Exhibit KTH-1, he indicates that alternatives that do not meet the need would be skimmed off, and that what is actually needed to be accomplished is the first factor to be examined. Therefore, by his own criteria, his alternatives are not adequate since they do not meet the Companies' needs.

Q. MR. DAUPHINAIS ASSERTS THAT THE COMPANIES HAVE NOT SHOWN THAT THE PROPOSED PROJECT IS THE LEAST COST ALTERNATIVE TO PROVIDE ADEQUATE NEW TRANSMISSION CAPABILITY. DO YOU AGREE?

A. I do not agree with the assertion that the costs of the alternatives set forth in the Brubaker Report are lower than the Companies' Project. Although, at face value, the alternatives presented by Mr. Dauphinais appear to be lower cost than our proposed Project, none of the alternatives is able to meet the purpose and need for the Project. Because they do not meet the purpose and need for the project, they cannot be reasonably compared or characterized as viable alternatives to the proposed project.

Q. WHY DON'T THE ALTERNATIVES MEET THE PURPOSE AND NEED FOR THE PROJECT?

A. As I stated previously, Public Service's primary purpose for proposing the project is to accommodate potential resources in ERZs 4 and 5. The Brubaker Report tries to address *committed* resources, but none of the alternatives presented in the Brubaker Report will actually accommodate the *potential* levels of generation studied, or the resources approved by the Commission for that matter.

Q. IF YOU ONLY CONSIDERED ACCOMMODATING "PROPOSED RENEWABLE RESOURCE *COMMITMENTS*" IN THE SAN LUIS VALLEY, WOULD THE ALTERNATIVES PRESENTED IN THE BRUBAKER REPORT MEET THAT OBJECTIVE?

A. No. The alternatives presented in the Brubaker Report would not accommodate the corresponding levels of generation that are listed in Table 1 of Exhibit JRD-1. Although there appear to be eight alternatives in Table 1, they can be reduced to two types of alternatives for discussion purposes.

The first type can be referred to as the “Do Nothing” alternative. These are alternatives TR4 and TR4AR. The second type of alternative can be lumped into a category referred to as the “Build North” alternatives. Each of the Build North alternatives include building a new 230 kV line from the San Luis Valley Substation that would terminate at either the Poncha 230 kV Substation, or the Canon West 230 kV Substation. Because Public Service intends to construct the Poncha 230/115 kV transformer, only the alternatives that include that project need be considered. So, the Build North alternatives include TR1A, TR2A, and TR3A.

Q. WHAT ARE THE ISSUES WITH THE “DO NOTHING” ALTERNATIVES?

A. For Alternative TR4, the Brubaker Report claims that 250 MW of generation can be added at San Luis Valley. This is much less than the Company’s plan to implement around 350 MW of solar generation in the San Luis Valley. Therefore, it is not a viable alternative. For alternative TR4AR, Mr. Dauphinais indicates that 525 MW can be added at San Luis Valley if there is a Remedial Action Scheme (RAS) in place that would trip generation for loss of the San Luis Valley – Poncha 230 kV line. Although this may be considered an acceptable corrective action under in NERC Standards, Public Service does not plan its transmission system to allow tripping generation for loss of a single element. This is addressed in greater detail in the Rebuttal Testimony of Gerry Stellern.

Q. WHAT ARE THE ISSUES WITH THE “BUILD NORTH” ALTERNATIVES?

A. There are many issues with the Build North alternatives, including siting, constructability, timing, and failure to meet expected generation over the next several years. However, the main issue with the Build North alternatives from a transmission planning perspective is that they fail to terminate at a point on the transmission system where Public Service can take full delivery of the resources at San Luis Valley. Public Service does not have either transmission ownership or firm transmission service rights to get the suggested level of resources to its native load customers. The lack of Available Transfer Capacity ("ATC") and transmission rights is discussed in more detail in the Rebuttal Testimonies of Joe Taylor and Gerry Stellern.

Q. DID THE ALTERNATIVES PRESENTED IN THE BRUBAKER REPORT CONSIDER THE AVAILABILITY OF FIRM TRANSMISSION SERVICE RIGHTS FROM EITHER PONCHA OR CANON WEST SUBSTATIONS TO THE PUBLIC SERVICE TRANSMISSION SYSTEM?

A. The ATC that Public Service could use on the systems emanating from Poncha and Canon West was not addressed. It appears that the alternatives only evaluated the "flowability" or physical ability for the system to accommodate new generation in the San Luis Valley. When asked at his deposition why he did not determine whether there available transfer capacity from Poncha or Canon West to the Front Range area, he stated that this "was beyond the scope of [his] study and was beyond the scope of the companies' study." Exhibit KTH-1, p. 94, l. 22 – p. 95, l. 4. However, neither Public Service nor Tri-State have transmission or adequate firm transmission service

rights to accommodate the generation on the system emanating from Poncha or Canon West. Therefore, Mr. Dauphinais' proposed alternatives are incomplete without a path to transmit the power from Poncha to the Front Range.

Q. WHAT WOULD BE REQUIRED TO MAKE THE ALTERNATIVES VIABLE?

A. In order to be considered comparable to the proposed Project, Mr. Dauphinais' alternatives would need to be modified to incorporate the construction of additional Company-owned transmission capacity from the San Luis Valley to a point of receipt that can reliably accommodate the proposed generation additions. This is why all of the alternatives in the TWG-1 Study Report a termination at Comanche Substation. At the Comanche Substation, Public Service has two 345 kV lines and two 230 kV lines available to deliver power to its customers. To develop comparable alternatives, the "Build North" alternatives would have to terminate at Comanche, rather than at Poncha or Canon West. If the alternatives were modified in that manner, it would add at least 70 miles of transmission to the alternatives presented in the Brubaker Report. The issue is illustrated in the following figures. Note that the mileages from San Luis Valley to Poncha to Comanche were based on the lengths of existing transmission lines in those corridors.

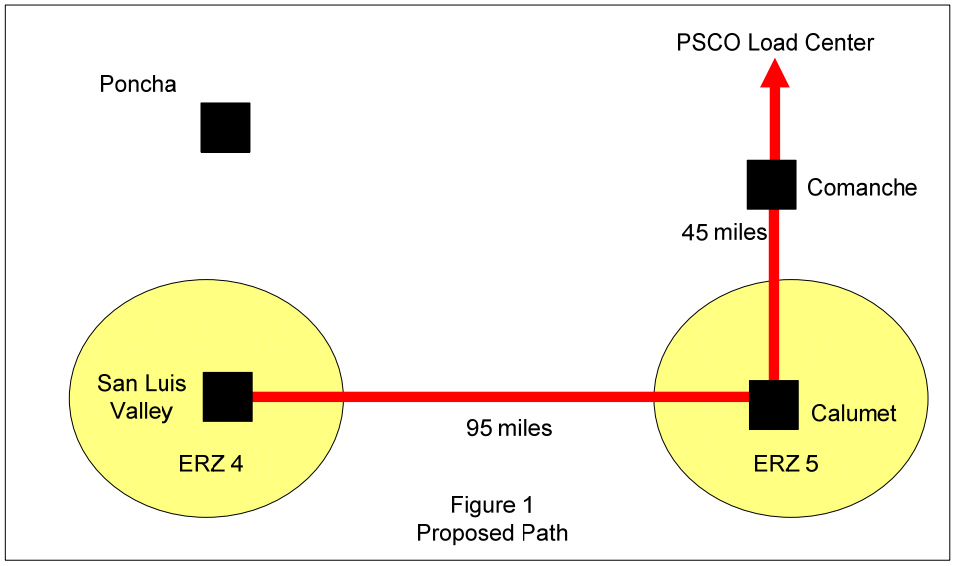

Figure 1
Proposed Path

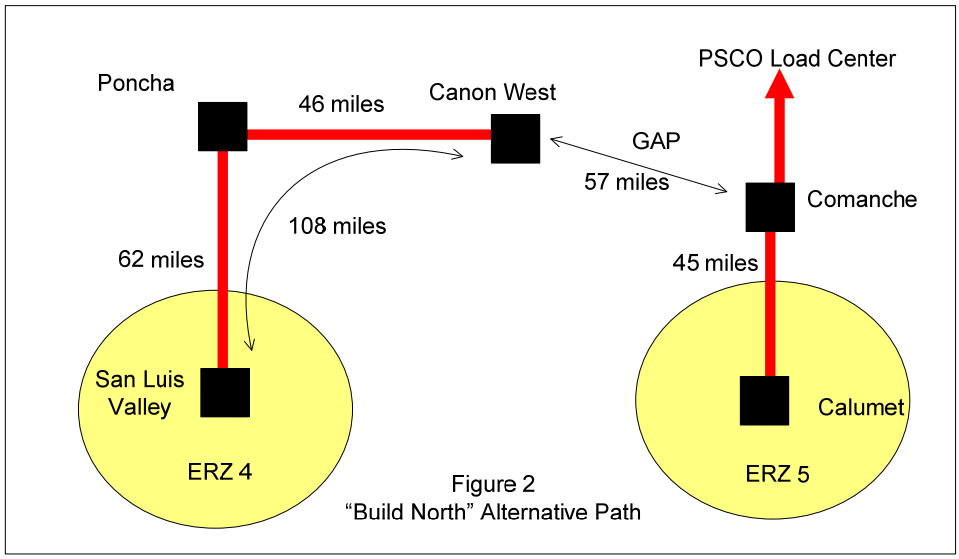

Figure 2
"Build North" Alternative Path

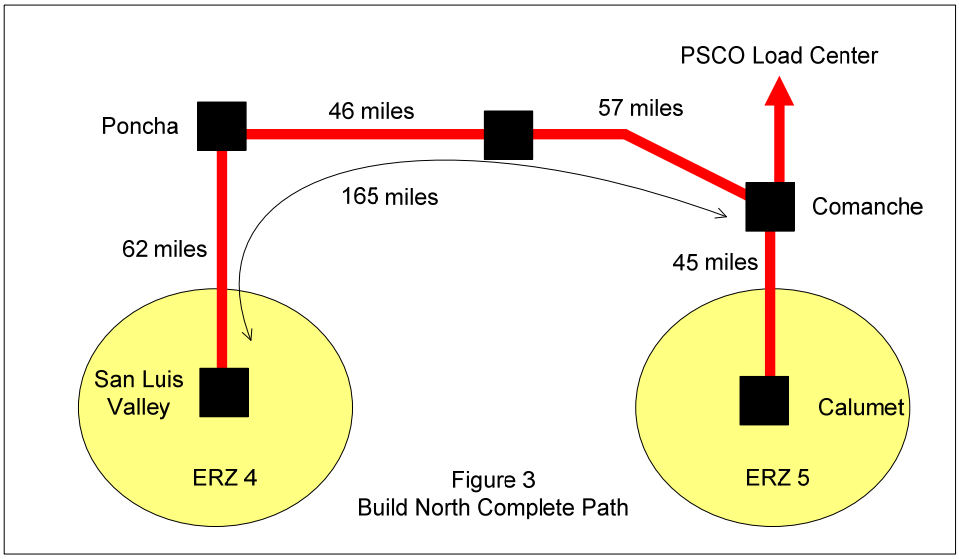

Figure 3
Build North Complete Path

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Figure 1 shows the basic path for the proposed Project. The transmission path from San Luis Valley to Calumet is approximately 95 miles.

Figure 2 shows the "Build North" approach. The figure shows that if transmission were built from San Luis Valley to Canon West, there would be a gap of at least 57 miles. If transmission were only built to Poncha, the gap would be at least 103 miles.

Figure 3 shows that in order for a Build North alternative to get to Comanche, it would result in 70 miles more transmission than the Companies' proposed Project.

Q. FOR MR. DAUPHINAIS' ALTERNATIVES, COULD THE COMPANIES ACQUIRE TRANSMISSION SERVICE INSTEAD OF BUILDING NEW TRANSMISSION BETWEEN PONCHA OR CANON WEST TO COMANCHE?

A. My understanding is that there is little, if any firm transfer capacity or ATC that could be acquired on the existing lines from Poncha to Comanche. This issue is addressed in more detail in the Rebuttal Testimony of Mr. Taylor. Even if the capacity was available, it does not make sense to have two 230 kV lines and a 115 kV line up to Poncha or Canon West, and only a single 230 kV and 115 kV line from that point on. It appears that the levels of generation in Mr. Dauphinais' alternatives are limited by the transmission system between Poncha and the Front Range that is not owned by Public Service or Tri-State. It is not prudent planning to plan new transmission that stops short of getting to Public Service's customers.

Q. WHY DIDN'T YOU STUDY ANY SYSTEM ALTERNATIVES SIMILAR TO WHAT IS SHOWN IN FIGURE 3?

A. First, as I have stated in my direct testimony, Tri-State already had plans to build a transmission line from San Luis Valley to Walsenburg. Second, as shown in Figure 3, such an alternative would result in approximately 70 more miles of transmission. Although no cost analysis has been performed, adding 70 miles of transmission would result in significantly higher costs than our proposed Project. Also, such an alternative is much more susceptible to reliability issues since the new transmission is likely to be placed in close proximity to existing lines.

Q. DO PUBLIC SERVICE AND TRI-STATE NEED TO SEEK FIRM TRANSMISSION SERVICE ON THE LINES EAST OF PONCHA FOR THE PROPOSED PROJECT?

A. No. Although with the proposed Project there is the potential for inadvertent power to flow on paths that do not belong to Public Service or Tri-State, this is not necessarily unacceptable, but is an inherent characteristic of an interconnected transmission network. If studies indicated that the Project caused unacceptable conditions on transmission systems of other entities, it would have to be addressed. However, studies indicate that the Project does not adversely impact the systems of any neighboring entities. Public Service and Tri-State perform studies in a joint, open process, and are committed to working with neighboring utilities to ensure a reliable transmission system is developed without adverse impact to other parties. The Rebuttal Testimonies

of Mr. Stellern and Mr. Taylor discuss how much contract path the Company will have with the Proposed Project.

Q. DO THE ALTERNATIVES PRESENTED IN THE BRUBAKER REPORT ADDRESS ANY POTENTIAL FOR FUTURE GENERATION AND TRANSMISSION EXPANDABILITY?

A. The alternatives presented in the Brubaker Report do not allow for any expansion to allow for additional generation in the Valley in the future. Mr. Dauphinais indicates on page 2 of his Answer Testimony that his alternatives "allow a significant amount of other possible future generation additional in the San Luis Valley and Walsenburg areas…." However, since there is insufficient transfer capacity east of Poncha, the alternatives presented by Mr. Dauphinais do not support the generation proposed in the Public Service resource plan, let alone any additional generation in the future. Even if the alternatives could allow for the 500 or so MW of generation as stated in the testimony and Brubaker Report, no evidence was presented to show that the alternatives could be expanded to allow any additional generation in the future. On page 155 (line 5 – 15, Exhibit KTH-1) of Mr. Dauphinais' Deposition, he states the Trinchera Ranch objective of "building the northern line first rather than the west to east line." This statement implies that a San Luis Valley to Calumet line could be required in the future to provide capacity for additional generation, but Trinchera Ranch would prefer to keep a line off of their property for as long as possible.

Q. HOW DOES THE PROPOSED PROJECT ADDRESS ANY POTENTIAL FOR FUTURE GENERATION AND TRANSMISSION EXPANDABILITY?

A. The Proposed Project allows a minimum of 750 MW of generation to be installed at San Luis Valley. Therefore, the generation could be doubled beyond what is being proposed in the Public Service resource plan without any new transmission. Also, our studies indicate that if the San Luis Valley 230/115 kV transformers were replaced, the San Luis Valley generation could be increased to approximately 1000 MW, with up to 150 MW at Calumet. As plans for more generation at Calumet materialize, we can address other limitations, such as the Walsenburg transformer. Once the proposed Project is implemented, there is more flexibility for future expansion. For example, with the Project in service, existing lines north of San Luis Valley could be taken out of service and be upgraded or uprated to allow additional generation in the San Luis Valley. Our consideration of how the proposed Project could be further developed in the future is addressed on pages 19-20 of my Direct Testimony.

Q. IN YOUR DIRECT TESTIMONY YOU INDICATE THAT ANOTHER STEP TO INCREASE GENERATION WOULD BE TO IMPLEMENT OPERATING PROCEDURES INCLUDING OPENING LINES AND CURTAILING GENERATION. DO YOU HAVE ADDITIONAL COMMENTS ABOUT THOSE OPTIONS?

A. Operating procedures can be used as a short term solution for instances when transmission upgrades are delayed. Those options might be

considered for a temporary option, if generation is developed in advance of necessary transmission. However, I would not advocate dropping generation as a long-term solution.

Q. ON PAGE 28 OF MR. DAUPHINAIS' ANSWER TESTIMONY, HE EXPLAINS WHY HE DISAGREES WITH THE COMPANIES' DEFAULT SCENARIO ASSUMPTION FOR THE BENCHMARK USED IN THE TWG-1 STUDY REPORT. HE DOES NOT AGREE THAT A TRANSMISSION LINE FROM SAN LUIS VALLEY – WALSENBURG SHOULD HAVE BEEN INCLUDED IN THE BENCHMARK STUDY. COULD YOU EXPLAIN WHY THE ASSUMPTION IS VALID?

A. Yes. As stated in my Direct Testimony, Tri-State was already planning for this project. In April 2003, Tri-State notified the Colorado PUC of their intent to build the San Luis Valley – Walsenburg 230 kV line through their filing pursuant to Commission Rule 18 (now Rule 3206). Tri-State also began to include the San Luis Valley – Walsenburg 230 kV line in system models for transmission planning for model-years that corresponded to that project's in-service date. We included the line in studies performed through the Colorado Coordinated Planning Group, including SB07-100 studies and Long-Range (10-year) studies. There were no transmission participants or stakeholders that objected to the assumption to include that line in any of the models. Other lines are included in studies that have not received a CPCN, but are agreed to by the study participants. In studies it is not uncommon to model lines that have not been through complete regulatory approval.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY IN RESPONSE TO MR. DOMINGUEZ?

A. The purpose of my rebuttal with respect to the answer testimony of Mr. Dominguez is to address two of the issues raised. I first address Mr. Dominguez' concern that Public Service and Tri-State did not perform stability studies. The second is to address what appears to be the primary point of Mr. Dominguez' Answer Testimony, which is to advocate for building the San Luis Valley – Calumet portion of the Project at 345 kV instead of 230 kV.

Q. DO YOU AGREE THAT THE COMPANY SHOULD PERFORM STABILITY STUDIES?

A. Yes, I agree that performing stability studies would be beneficial for a project like this. We did not include transient stability analysis in the studies presented in TWG-1. However, at the behest of Mr. Dominguez, we have recently obtained analyses that indicate the proposed project will achieve acceptable transient stability performance.

Q. WHAT ARE THE RECENT ANALYSES?

A. First, we found that a disturbance was modeled in the WECC 2009 Annual Study Program. The disturbance was run from a 2018-19 Heavy Winter base case, and modeled a fault at San Luis Valley 230 kV bus and subsequent loss of both of the San Luis Valley – Calumet 230 kV lines. The disturbance documentation from the draft report is included as Exhibit No. TWG-2.

Q. DO YOU HAVE ANY OTHER ANALYSES?

A. Yes. We have also had a consultant perform some transient stability analyses to verify the performance of the proposed project.

Q. WHAT WERE THE RESULTS OF THOSE STUDIES?

A. The results indicate that the proposed Project does not have any transient stability issues. All disturbances modeled with the proposed Project were stable and well damped. The stability studies indicate that we have designed a robust transmission system that will withstand a variety of viable disturbances. The study report is included to my Rebuttal Testimony as Exhibit No. TWG-3.

Q. WERE ANY STABILITY STUDIES PERFORMED FOR THE ALTERNATIVES PRESENTED IN THE BRUBAKER REPORT?

A. The consultant did some cursory analyses of alternative TR1A. The Executive Summary of Exhibit No. TWG-3, states that the TR1A configuration option that was also studied is stable for normally cleared three-phase system disturbances. However, for some disturbances near Poncha with delayed clearing, there are criteria violations and poorly damped oscillations. While these issues could be addressed by some reinforcements, this was not pursued.

Q. MR. DOMINGUEZ STATES THREE REASONS WHY THE 230 KV PORTION OF THE PROJECT SHOULD BE BUILT AT 345 KV. THE FIRST IS TO PROVIDE FUTURE FLEXIBILITY. COULD BUILDING THE PROJECT AT 345 KV PROVIDE FUTURE FLEXIBILITY?

A. Mr. Dominguez' reasoning is that there will be a point in the future where the capability of a 345 kV line could be realized. However, he does not present any valid studies indicating when that additional capacity would be used, or what additional upgrades would be required to get any additional capacity. Our studies evaluated constructing and operating the San Luis Valley – Calumet portion at 345 kV (Alternative 5), and there was no significant increase in transfer capacity. This was because the transfer capacity is limited by several other regions of the transmission system. Table 11 of Exhibit No. TWG-1 shows that, for both 230 kV and 345 kV designs, at generation levels of 1400 MW to 1600 MW contingency issues begin to appear west of Poncha, Colorado Springs, and south Denver. These issues would need to be mitigated prior to realizing any additional transfer capacity that 345 kV might provide. Public Service does construct projects that are capable of operating at higher voltage where it is apparent that operating at 345 kV will result in instant tangible increases in capabilities. However, our studies do not provide the evidence that it is worth the additional expenditure for this project.

Q. DO YOU AGREE THAT WITH MR. DOMINGUEZ' COMMENT THAT THIS PROJECT PRESENTS AN OPPORTUNITY TO APPLY THE "LESSONS LEARNED" FROM THE SAME MISTAKES OF THE COMANCHE-DANIELS PARK 345KV PROJECT (DOCKET NO. 05A-072E) AND THE PAWNEE-SMOKY HILL PROJECT (DOCKET NO. 07A-421E)?

A. No. The Commission granted CPCNs for both projects based on Company recommendations. In both instances, the Company presented reasonable projects with prudent design parameters. The Commission granted CPCNs for both projects, without any conditions related to the conductor parameters referred to by Mr. Dominguez.

Q. MR. DOMINGUEZ' ANSWER TESTIMONY REFERENCES A 2041 CASE. HOW WAS THE 2041 HEAVY SUMMER CASE USED BY THE COLORADO LONG RANGE TRANSMISSION PLANNING GROUP OF CCPG?

A. The answer testimony of Mr. Dominguez seems to imply that the Long Range Work Group of CCPG participated in the development of his 2041 case and studies. In fact, CCPG did not have any participation in the base case, or studies prepared by Mr. Dominguez. Several members indicated an interest in participating in such an endeavor, but the offer was not accepted by Mr. Dominguez. The 2041 case that Mr. Dominguez references is just one of hundreds of potential future scenarios. The studies performed by Mr. Dominguez have not been through any joint review or open process, as is common with other CCPG transmission studies.

Q. DO YOU HAVE ANY CONCERNS WITH MR. DOMINGUEZ' CALCULATIONS FOR COST SAVINGS BASED ON SYSTEM LOSSES?

A. Yes. Mr. Dominguez uses a very simplistic analysis that seems to indicate that a 345 kV line will result in millions of dollars a year in cost savings. While I do agree that a 345 kV transmission line will have lower losses than a 230 kV transmission line, I do not agree with the assumptions used in the

analysis, and believe that any actual savings would be significantly lower. I have not personally performed any cost analysis, but there do appear to be some obvious problems with Mr. Dominguez's calculations. In general, my concerns are as follows:

1. The loss difference was based on the difference in the total losses of two powerflow (balancing) areas under maximum peak loading conditions. The difference in the two cases is 7.4 MW. What should be used is the losses associated with only the San Luis Valley – Calumet transmission lines. Based on pages 1 and 2 of Exhibit No. IGD-6, the loss difference between the 345 kV alternative and the 230 kV alternative is 4.8 MW.
2. Mr. Dominguez calculation assumes a capacity factor of 41.67% (10/24 hrs). A more realistic blended CSP/PV capacity factor would be more on the order of 30-35%.
3. The 7.4 MW loss difference is in Mr. Dominguez' calculation is based on the assumption that 1800 MW of new generation is added to the system: 800 MW at San Luis Valley and 1000 MW at Calumet. Based on the current resource plan, Public Service intends to install approximately 350 MW of generation in the ERZ 4 (San Luis Valley) and approximately 200 MW in ERZ 5. Therefore, for the first few years at least, loss calculations should be based on installing approximately 350 MW in the San Luis Valley, instead of 800.

4. $180/MW-hr is probably too high of a cost for a combination of PV and CSP in the San Luis Valley.
5. I do not agree that there should be a 16% adder based on a "reserve requirement".

Q. WOULD PRE-BUILDING THE SAN LUIS-CALUMET LINE AT 345KV HELP THE PERMITTING PROCESS AS ARGUED BY MR. DOMINGUEZ?

A. Pre-building the line at 345 kV at this point would delay the project. This is addressed in the rebuttal testimony of Mr. Thompson.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.