WEB SUPPORT SERVICES, LLC

Technical Report on Contract Path Issues

January 18, 2010

Prepared by R. Mark Clements on behalf of

Blanca Ranch Holdings, LLC and

Trinchera Ranch Holdings, LLC

RMC-2

I. PURPOSE OF THIS REPORT

Blanca Ranch Holdings, LLC and Trinchera Ranch Holdings, LLC (collectively, "***Trinchera***") engaged me, through my company Web Support Services, LLC ("***WSS***"), to conduct a contract path analysis regarding the export of potential generation from the San Luis Valley ("***SLV***") to loads along the Front Range. Specifically, Trinchera requested that I evaluate whether feasible ways exist to export power from the SLV to the Front Range under the transmission alternatives described in the Brubaker & Associates, Inc. ("***BAI***") Transmission Study Report[1] dated October 28, 2009 (the "***BAI Report***") and the Surrebuttal Testimony[2] of Mr. Dauphinais. Trinchera requested this Report in response to the rebuttal testimony of Mr. Gerry Stellern and Mr. Joseph Taylor, witnesses for Public Service Company of Colorado ("***PSCo***") in the CPCN Case. Contrary to the rebuttal testimony, I find that sufficient contract path capacity is available to transmit the generation from PSCo's existing and recently announced resources to its loads east of the Front Range, and that significant additional contract path capacity may also be obtained. Furthermore, a companion report submitted along with this report shows that it is economically feasible to obtain such contract path capacity.

II. SUMMARY OF RESULTS

Contract Path Availability. PSCo may require a contract path to export up to 380 MW of generation from the SLV to loads along the Front Range. PSCo could obtain up to 1,489.2 MW of contract path capacity available to satisfy this potential requirement under the BAI transmission alternatives. First, PSCo currently has 170 MW of contract path capacity along its Poncha Junction – Malta 115 kV line. Second, PSCo may purchase another 99 MW of transmission service currently available from Black Hills Energy ("***BHE***"). Third, the Western Area Power Administration ("***Western***") 230 kV line from Poncha to Midway will have 192 MW of unused capacity that PSCo could use for transmission service, if PSCo makes certain low cost uprates assumed by PSCo in its filed CPCN Application in this Docket (Exhibit TWG-1). Together, these sources of contract path total 461 MW, which is 81 MW more than PSCo's current potential requirements. However, the contract path available to PSCo would increase by another 443 MW if PSCo replaces the Aluminum Conductor Steel Reinforced ("***ACSR***") conductor on Western's 230 kV line with Aluminum Conductor Composite Reinforced ("***ACCR***") conductor and takes transmission service from Western, to provide a total available contract path of 904 MW. Finally, if a 230 kV line from SLV Substation to Poncha Substation is extended to Malta Substation (Extension TR1AE discussed in Mr. Dauphinais' Surrebuttal Testimony), then an additional contract path capacity of 585.2 MW is created, bringing the total contract path capacity available to PSCo to 1489.2 MW. PSCo could pursue all or a combination

[1] The BAI Report was submitted as Exhibit JRD-1 to the testimony of James R. Dauphinais on behalf of Trinchera in Docket Nos. 09-324A and 09-325A (the "***CPCN Case***").

[2] Submitted in the CPCN Case on January 18, 2010.

of the foregoing to meet its future contract path requirements. The contract path available to PSCo is itemized in Table 1.

Table 1

Sources of Transmission Capacity

1. PSCo's Poncha Junction – Malta 115 kV line	170 MW
2. Black Hills Energy transmission service	+ 99 MW
	269 MW
3. Western transmission service	+192 MW
	461 MW
4. Reconductor with 1272 ACCR Western's Poncha – Midway line and buy transmission service	+443 MW
	904 MW
5. Extend TR1A from Poncha to Malta (TR1AE)	+585.2 MW
Total contract path capacity:	**1,489.2 MW**

Contract Path Surplus. PSCo's range of required contract paths varies with the load levels and generation available at any given time. For the SLV, this range is currently zero to 380 MW. Compared to the available transmission capacity of 1,489.2 MW, the minimum surplus transmission capacity is 1,109.2 MW (1489.2 – 380 MW). This surplus capacity could be obtained for potential future resources—resources beyond the bids approved or authorized in the PUC's recent decision in PSCo's 2007 Resource Plan. Table 2 below compares the range of transmission capacities available to the range of contract paths required for relevant matches of generation and load.

Table 2

Comparing Ranges of Transmission and Contract Path Capacities

Transmission Capacity That is Available	Required Contract Path, Min. and Max.
170 – 1,489.2 MW	0 – 380 MW

III. Statement of Qualifications

My name is R. Mark Clements, and I own Web Support Services, LLC, an energy consulting firm and publishing company. The business address of Web Support Services is 2791 E. Caley Ave., Centennial, CO 80121. I have a Master of Science degree in Electrical Engineering, and Bachelor of Science degrees in both Biology and Mechanical Engineering. My current CV is attached as ***Exhibit A*** to this Report.

I worked for PSCo twice, once from July 1970 through February 1978, and again from July 1982 through September 1999. In between those periods I worked as a consultant at Stone & Webster Management Consultants. I worked for PSCo for 25 years, 18 of which I spent in Electric System Planning as a Planning Engineer, Senior Planning Engineer, Manager and then Team Lead, Transmission Reliability Assessment. From September 1994 until the formation of New Century Energies ("***NCE***") in approximately 1997, I was Manager, Electric System Planning for PSCo. After the merger that formed NCE, from 1997 through September 1999 my title was Team Lead, Transmission Reliability Assessment. For seven years, I primarily worked on generation expansion planning or production cost modeling using PROCOS and PROMOD, but after 1988 I primarily worked on transmission planning. During that time I performed several contract path analyses similar to the analysis made in this Report.

When I left PSCo in September of 1999, I joined the firm M2M DataCorp attempting to build "iSCADA," an internet based System Control and Data Acquisition system. After a prototype was developed, I became Manager of Utility sales for this firm. After this, I worked for ERG Consultants and most recently E3 Consulting. At ERG I primarily assisted the New Orleans City Council and its regulatory agency that had oversight of Entergy New Orleans. In that role I assisted with rate cases and attempts to form the SETrans RTO. At E3 Consulting, as Managing Director, I primarily assisted Generation and Transmission Cooperatives, Cooperative Finance Corporation, developers, and lenders by performing due diligence for loans for both generation and merchant transmission projects. Although I continue to provide consulting services for E3 on a contract basis, since October 1, 2009 I have also been performing consulting services through WSS.

I have supported litigation as an expert witness, submitting testimony before the Federal Energy Regulatory Commission on Enron's "Death Star" scheduling practice as implemented by Portland General Electric, and before the U.S. Court of Federal Claims in a dispute over ancillary service charges for load regulation and frequency control. I have provided written testimony before the International Trade Commission in an "economic dumping" charge involving saleable by-products of lignite. I have also submitted testimony in the areas of prudency, rates, utility RFP practices, and system operations before the utility regulatory commissions of Colorado, Kentucky, and Arizona. I have also advised the staff of the New Orleans City Council Utilities Regulatory Office on FERC policy, rates, RFPs, transmission expansion plans, and projected transmission rates under the SETrans RTO proposals.

IV. BACKGROUND

PSCo and Tri-State Generation and Transmission Association, Inc. ("***Tri-State***" or "***TSG&T***") have recommended a new transmission system and are seeking approval of their applications for a Certificate of Public Convenience and Necessity ("***CPCN***") for their proposed San Luis Valley – Calumet – Comanche Transmission Project ("***Proposed Project***"). The San Luis Valley to Calumet part of this transmission system will serve the loads in SLV and transmit power from PSCo's existing generation resources as well as potential future solar resources to PSCo's loads along the Front Range.

BAI is an energy, economics and regulatory consulting firm with headquarters in Chesterfield, Missouri. BAI, on behalf of Trinchera, has studied three alternative transmission systems that address serving the SLV loads and transmitting the current and future resources proposed for the SLV. Thus, these three transmission alternatives are primarily intended to serve as an alternative to the Proposed Project's San Luis Valley – Calumet double circuit 230 kV transmission line. In his Surrebuttal Testimony, Mr. Dauphinais also discusses possible expansion of these alternatives.

The contract path numbers I calculate are applicable to BAI's Alternatives TR1A, TR2A and TR3A, and to the extension TR1AE. In alternatives TR1A and TR2A, BAI proposes to construct a new 230 kV line between the San Luis Valley Substation and Western's Poncha Substation. TR1A directly connects these substations, while alternative TR2A sectionalizes the line at the Sargent Substation. Alternative TR3A is an unsegmented 230 kV line running from the San Luis Valley Substation to the West Canon Substation. TR1AE extends TR1A by continuing the 230 kV line beyond Poncha and up to Malta Substation.

V. METHODOLOGY

In preparing this Report, I used standard contract path calculation methodology consistent with the contract path analyses I made as a transmission planner for PSCo and NCE. The methodology used in this case is outlined below:

A. Define the MW capacity of PSCo's existing and announced resources in the SLV:
   1. Identify Western Electric Coordinating Council firm resources;
   2. Identify potential non-firm resources;
   3. Add these to get the total resources; and
   4. Quantify the MW capacity available when using solar storage.

B. Define the PSCo SLV retail loads and any relevant wheeling loads:
   1. Identify the SLV 2015 or later peak load (combined Tri-State and PSCo loads);
   2. Identify the PSCo SLV 2015 or later peak load; and
   3. Use the 2008 SLV hourly load pattern to:
      a. Create for each month in 2008, a typical weekday load pattern, by hour;

b. Scale this typical pattern to 2015 and identify the PSCo portion of the total SLV load;
c. Identify the minimum PSCo load; and
d. Identify loads for hours immediately before and after solar power could be used.

C. Identify categories of generation and PSCo load useful for contract path calculations.

D. Calculate the contract path capacity required for different matches of PSCo generation and load:
1. Create relevant matches of generation and loads;
2. Subtract relevant loads in SLV from the relevant generation levels; and
3. The difference found above is the required contract capacity out of the SLV.

E. Calculate sources of contract path capacity:
1. Clarify the capacity of PSCo's Poncha-Malta 115 kV line; and
2. Identify additional contract path capacity:
a. Assume PSCo takes transmission service from BHE on its 115 kV line from Poncha Junction to Midway;
b. Assume PSCo takes 192 MW of transmission service from Western over its existing or easily modified 230 kV line from Poncha to Midway; and
c. Assume PSCo pays for Network Upgrades to reconductor Western's 230 kV line from Poncha to Midway with ACCR conductor having a continuous rating of 885 MVA. Assume for contract path purposes, that PSCo takes transmission service for 635 MW over this line.
d. Assume PSCo constructs the TR1AE 230kV line from Poncha to Malta.

F. Evaluate the surplus or deficiency of potential transmission capacity.

VI. CONTRACT PATH CALCULATION

A. ***Determination of PSCo Generation in SLV.*** The numbers supporting the text in this section of this Report are found in Table A.1.

Existing Resources

Existing PSCo resources in the SLV total 42 MW, consisting of 34 MW[3] from two combustion turbine generators (CTGs) and 8 MW of photovoltaic generation (PV).

New Resources

[3] In PSCo Discovery Response 19-1 attached as ***Exhibit B***, PSCo clarified that the combined summer rating of the two combustion turbines is actually 26 MW.

The Colorado PUC has authorized PSCo to add up to 355 MW of new solar resources, and PSCo already has plans to add another 16 MW of photovoltaic solar generation in SLV.[4] These new solar resources consist of [redacted] MW of concentrating solar thermal with storage, and up to another [redacted] MW of photovoltaic solar bids approved by the Colorado PUC in *"...a Decision in Public Service's 2007 Resource Plan."* See Pages 2-3 of Highly Confidential Version of Rebuttal Testimony of Mr. Joseph C. Taylor, December 2, 2009 (the footnote at the end of the passage states: *"Decision No. C09-1257, Docket No.07A-447E"*). These resources are listed in Table A.1.

Total Resources

The total MW capacity of resources that are currently planned for the San Luis Valley is 413 MW. This is the sum of 42 MW of existing resources and 371 MW of announced resources, as shown in Table A.1.

Miscellaneous

Mr. Taylor states that approximately 370 MW of new generation could be developed in the San Luis Valley.[5] That amount is nearly identical to the 371 MW I calculate (355 + 16). Mr. Taylor's resource estimate is supplemented by his observation that the PSCo peak load estimate for an eight month shoulder period is 65 MW.[6] I analyzed this combination of relevant generation and load to find its required contract path; however, I also added the 42 MW of existing resources in the SLV to the 371 MW because these resources also require a contract path.

Firm Capacity Viewpoint

A Load Serving Entity (*"LSE"*) has firm loads and may also have loads that may be curtailed (non-firm loads). Reliability councils have established rules for planning purposes that firm load must be able to be served by the magnitude of firm capacity available. Additionally, all LSEs are required to have firm planning reserves in excess of the total coincident firm peak load. A generally-accepted rule of thumb in transmission planning is that planning reserves are approximately 15 percent of firm system peak load. If the firm peak load is 100 MW, then a utility will need approximately 115 MW of firm capacity. Any resource the LSE counts in its Planning Reserve Criteria must have firm transmission; using non-firm transmission would make that resource a non-firm resource.

Using PSCo's rules of firm capacity credits, its existing and announced resources have a **firm capacity** rating of [redacted] MW, a **non-firm capacity** rating of [redacted] MW, and a total capacity rating of

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4 Rebuttal Testimony of Mr. Joseph C. Taylor, December 2, 2009, page 2, line 20 and fn. 2.
5 Rebuttal Testimony of Mr. Joseph C. Taylor, December 2, 2009, page 3, line 11.
6 Rebuttal Testimony of Mr. Joseph C. Taylor, December 2, 2009, page 12, lines 12-14.

413 MW. PV resources have a firm rating of 60 to 70 percent (I used the average, 65 percent) of rated capacity, and concentrating solar power resources have a firm rating of 100 percent.[7]

B. San Luis Valley Loads in 2015 or Later. The numbers supporting the text in this section are found in Table A.2.

PSCo and Tri-State use 155 MW as an estimate of the combined PSCo and Tri-State loads in San Luis Valley for the year 2015, but they have revised the description of this load magnitude, stating that this load level may develop later than the year 2015. To obtain an estimate of the percentage of load served by PSCo, I relied on the following statement found on page 7 of Tri-State's *San Luis Valley High Voltage System Study Report"* prepared in June 1997 by Mr. Frank McElvain.

> *"The coincident peak demand of San Luis Valley Rural Electric Cooperative occurred on July 13, 1995 at 0930. Their load was 59 MW, at that time. Public Service Company of Colorado peak load in the San Luis Valley was estimated to be 76 MW, and it was assumed to coincide with the peak load of San Luis Valley Rural Electric Cooperative.*
>
> *Therefore, the total coincident peak load in the San Luis Valley was estimated to be 135 MW, on July 13, 1995 at 0930."*

Mr. Stellern's work papers included an Excel Spreadsheet containing the hourly total SLV loads for 2008 and 11 months of 2009.[8] I used this data to analyze PSCo's required contract path for resources out of the SLV. The data show that the 2008 total coincident peak load in SLV was 133 MW on July 14 at 1200 hours. Interestingly, 13 years after the 1995 loads Mr. McElvain investigated, the peak load in the SLV was almost entirely unchanged.

Mr. McElvain's data indicate that PSCo's peak load was 56 percent of the total SLV load. I used 55 percent as my estimate of PSCo's percentage of the total SLV load in 2015. This means that PSCo's peak load in 2015 in SLV would be modeled as 85 MW, and Tri-State's as 70 MW.

To calculate the contract path available to transport future PSCo resources in the SLV to PSCo's load east of the Front Range, I needed both the peak PSCo load and an estimate of PSCo's minimum loads—and the time these minimum loads occur. Obviously, PV solar generation isn't available at 4 AM, and further it is necessary to understand whether irrigation produces high loads in early morning periods in the SLV. (Mr. McElvain identifies the 1995 Tri-State peak as occurring at 0930 in July).

[7] Rebuttal Testimony and Exhibits of Joseph C. Taylor, December 2, 2009, page 5, lines 22-23, page 6, line 1.

[8] Rebuttal Testimony and Exhibits of Mr. Gerry Stellern, page 13, line 14.

Using Mr. Stellern's data for 2008, I made two daily load shapes for each month. I developed a "weekday" 24-hour pattern typical of Monday through Friday, and I made a "weekend" 24-hour pattern typical of Saturday and Sunday. Even the early morning hours during weekends have slightly lower loads than do weekdays. I did not detect any regular early-morning irrigation load pattern. The smallest PSCo load in 2015 was 30 MW, but there were four other months that had low loads between 31 and 33 MW.

To coordinate solar generation with low loads, I assumed that no solar generation would be available at or before 0600, and to be conservative, I assumed that full solar output could occur as early as 0700. To calculate the largest contract path, I noted that for all months the lowest 0700 load was 33 MW. Total generation of 413 MW was possible at 0700, so the maximum required contract path would be 380 MW (413-33 MW). And when solar was assumed to not be available, loads ranged from the minimum of 30 MW to 31 MW at 0600. I assumed that the value of the contract path requirement was zero at these times because combustion turbines could generate the lowest loads of 30 MW (and 31 MW at 0600) without using their full output of 34 MW at rated capacity.

A discovery request was made to PSCo to determine the amount of generation from solar storage that could be expected just before dawn. PSCo responded that typically stored energy would be used in higher value, earlier hours.[9]

Miscellaneous other loads included in the analysis:

Because Mr. Taylor furnished a computation of contract path, I also include in Table A.2 his estimate of PSCo's average peak load for the eight shoulder months of the year. This number was 65 MW.[10]

C. Identify Generation and Loads Useful for Contract Path Calculations

The numbers supporting the text in this section are found in Table A.3.

Generation Alternatives

I initially identified four generation categories, G1-G4, appropriate to include in the contract path calculation.

Firm Capacity: G1 is the generation from the CTGs, the firm portion of PV generation and the concentrated solar without relying on storage.

[9] See response of Mr. Kent Scholl in PSCo's Discovery Response 13-16, attached as ***Exhibit C***.

[10] Rebuttal Testimony and Exhibits of Joseph C. Taylor, December 2, 2009, page 12, lines 12 and 13.

Total Generation: Total generation includes non-firm resources in addition to firm resources. G2 is all of PSCo's existing and recently announced generation, 413 MW. There are [redacted] MW of non-firm PV generation included in this category.

Other Generation: G3 is Mr. Taylor's estimate of 370 MW of solar resources. G4 is the 34 MW of combustion turbine generation. I used this 34 MW to compare to the loads just before sunrise, when no solar generation was available.

Hourly and Peak Loads

The following were the obvious candidates for load analysis for PSCo in 2015:

D1: The PSCo 2015 peak load of 85 MW

D2: The load at 0600, the hour before solar generation could produce energy, 31 MW

D3: The load at 0700, the first hour for solar production, 33 MW

D4: Mr. Taylor's load estimate, an approximation of the average daily peak load approximately eight months per year, 65 MW

D5: The minimum PSCo SLV load is 30 MW.

D. Contract Path Requirement

Table A.3 provides a clear description of the generation and load selections made to calculate the required contract path capacity.

The five actual values of the contract path required to move PSCo's San Luis Valley resources to loads east of the Front Range are shown in Table A3. The resulting magnitude of the contract paths range from zero to 380 MW.

E. Calculate the Transmission Capacity Available to PSCo from All Lines

This part of the report is explained by Table A.4. This section of the report covers part E of the outline.

PSCO's Poncha Junction – Malta 115 kV Line

PSCo claims the thermal rating of its Poncha Junction - Malta 115 kV line would be 170 MW if minor cost uprates were made such as changing a jumper.[11] I analyzed this path and have confirmed that the 170 MW PSCo uses is correct. I traced the flows through this line to all loads

[11] Rebuttal Testimony and Exhibits of Joseph C. Taylor, December 2, 2009, page 12, lines 10-12, and the footnote of the same page.

and through the Malta and Dillon 230/115 kV autotransformers to verify that flows could get to PSCo's east system.

Transmission Service: Black Hills Energy

According to Mr. Joseph C. Taylor, BHE has 99 MW of capacity available through 2018.[12] PSCo can likely obtain transmission service over this path for the period after 2018 if PSCo makes a request for transmission service.

As a utility under FERC jurisdiction, BHE is required to construct transmission if the level of requested service cannot be transmitted with its existing system. This obligation is spelled out in the Black Hills Energy Open Access Transmission Tariff ("OATT") in Section 15, which is found in ***Exhibit D***. Therefore, PSCo has the ability to request such expansion for its use. Instead of an onerous obligation, this could be an opportunity to share the costs jointly with PSCo. For example, UtiliCorp, which was acquired by BHE, asked me, as Team Lead of Transmission Reliability Assessment for New Century Energies, to study the joint PSCo/UtiliCorp ownership of West Canon Substation to lower their costs.

With 99 MW of transmission service, PSCo would have 170 + 99 = 269 MW of transmission capacity out of San Luis Valley both before and after 2018. This is shown in Table A.4.

Transmission Service: Western Area Power Administration, Level 1 – 192 MVA

Western could provide PSCo transmission service at two capacity levels. The first level is to provide 192 MW of transmission service across Western's Poncha – Midway 230 kV line. Although this line has a rating of 239 MW, PSCo and Tri-State assume that this rating can be increased to 442 MW at a low cost.[13] However, Western's OASIS Total Transfer Capability is listed as 250 MW, of which Western has no Firm Available Transfer Capability[14]. Thus, assuming that Western's OASIS line rating of 250 MW is accurate, once the line is uprated, 192 MW of transmission service will be available (442 MW - 250 MW). Assuming that PSCo's description of the 442 MW uprate in TWG-1 is correct, PSCo could likely obtain transmission service from Western on this path precisely because if the costs to uprate the line capacity were low and these uprates have not been made, then no third party has yet requested such wheeling. Furthermore, if for some reason the line could not be uprated to a capacity of 442 MW, then the studies performed and described in Exhibit TWG-1 would have to be redone using the correct lower rating.

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[12] Rebuttal Testimony and Exhibits of Joseph C. Taylor, December 2, 2009, in Docket No. 09A-324E and Docket No. 09A-325E, page 11, line 12.

[13] See TWG-1 at 9.

[14] See attached ***Exhibit F***, which is a response to a Freedom of Information Act Request. Mr. Bob Easton of Western, on November 13, 2009, supplied this undated document entitled "Allocation of System Intact Transfer Capability by Transmission Element" which shows an"Accepted Line Rating" for "Curecanti – Poncha 230-kV" of "250 MVA".

A 192 MW increase in transmission service for PSCo would raise the total contract path from 269 MW to 461 MW. This is 81 MW more than the largest contract path required by the existing and recently announced potential resources in San Luis Valley.

Before addressing the second step increase in transmission I'd like to discuss a statement made by Mr. Taylor about his conclusions on Western's OASIS postings concerning the availability of transmission at Poncha.

CRCM appears to be the OASIS description of the Colorado River Storage Project transmission system. On Page 9 of his Rebuttal Testimony and Exhibits, dated December 2, 2009, Mr. Taylor states:

> *"First, CRCM posts no data with Poncha as the point of receipt or point of delivery, as there are no third party interconnections or generators interconnecting into Poncha. In other words as there is no ability today for a third party to request transmission service starting or ending at Poncha, CRCM is not required to post information on OASIS as it would on a path that can accept transmission service requests."*

FERC does not require a transmission provider to post paths that do not have commercial interest. Western did not post this path in the past, but this does not limit PSCo from making such a request. The new resources planned for the San Luis Valley are an example of a new commercial interest in additional transmission capacity from Poncha to the east, and a reason PSCo could make 1) a generator interconnection request, and 2) a Transmission Service Request ("TSR") to Western at Poncha. Thus, Mr. Taylor's testimony is incorrect.

Transmission Service: Western Area Power Administration, Level 2 – 635 MVA

PSCo could also obtain a second and higher level of transmission service. Western's Poncha – Midway 230 kV line uses a 1272 kcmil ACSR conductor.[15] 3M manufactures Aluminum Conductor Composite Reinforced (ACCR) conductor. The 1272 kcmil version of this conductor is lighter than the ACSR version. Because Western's existing towers from Poncha to Midway already support the heavier ACSR conductor, the towers will support the lighter weight of the 1272 ACCR conductor, if PSCo were to replace the conductors.

The continuous rating of this ACCR conductor is 885 MVA. Replacing the existing conductors with the ACCR conductors would create an increase in PSCo's contract path of 635 MW (885 MW – 250 MW). Adding 635 MW to 269 MW (170 MW on PSCo's Poncha Jct. – Malta 115

[15] E-mail from Doug Hanson, Western Area Power Administration, to Patricia Land, FOIA & Privacy Act Officer, Western Area Power Administration (Dec. 7, 2009, 12:35 PM) (on file with Trinchera Ranch), attached as ***Exhibit G***.

kV line plus 99 MW of transmission service from BHE) would create a total contract path capacity of 904 MW. This 904 MW of contract capacity provides an additional 524 MW (904-380 MW) of contract path capacity above that required to move all existing and newly announced projects in SLV during even minimum load periods.

ACCR conductor has many benefits that recommend its use in transmission planning. The conductor can be operated at a much higher temperature. When the conductor gets hot, it has less sag than an ACSR conductor, so that more amperes of current can be accommodated before the conductors sag to the allowed safety clearance. As a result, approximately twice as much current can be handled by an ACCR conductor relative to an ACSR conductor of the same circular diameter. For example, a 1272 Bittern ACSR conductor commonly is rated at about 480 MVA. A 1272 circular ACCR conductor has a continuous rating of 885 MVA. Replacing a 1272 ACSR conductor with ACCR conductor would therefore add 84 percent to the thermal rating of a transmission line. As remote renewable resources are selected by resource planners, transmission planners can use the higher ampacity of ACCR conductors by electing to reconductor existing transmission lines with ACCR conductor instead of designing, permitting, licensing and constructing new transmission lines. The current cost for ACCR conductor is approximately 4.5 to six times the cost of ASCR, but the avoided costs of building new transmission lines could make reconductoring with ACCR conductor a better choice.

Under the terms of Western's OATT, Western is required to construct additional capacity on transmission facilities it owns for valid Transmission Service Requests. See ***Exhibit E*** which contains this obligation found in Section 15 of Western's OATT. Western requires that Network Upgrades, if required, be funded by the interconnecting party or the party requesting transmission service. Western retains ownership of the Network Upgrades. The funds must be advanced as construction proceeds. However, Western provides transmission service credits that apply toward transmission service charges when such service begins.

Transmission Capacity – Extension TR1AE

The numbers supporting the text in this section are found in Table A.6.

If PSCo were to construct a 230 kV line from Poncha to Malta (as contemplated by TR1AE), PSCo would have additional contract path capacity of 585.2 MW, which, when added to PSCo's 170 MW of capacity on its 115 kV Poncha-Malta line, creates a contract path of 755.2 (for which no transmission service charges would apply). When combined with the transmission service PSCo could obtain from BHE and Western, total contract path capacity of 1,489.2 MW is obtainable.

In making this contract path calculation of 585.2 MW, I used PSCo's current line ratings for every line except for the Cabin Creek to Dillon 230 kV line, and I used 506 MW as an obtainable rating for the Cabin Creek 230 kV lines running east to Idaho Springs Substation and to Lookout Substation.[16]

F. SURPLUS OR DEFICIT CONTRACT PATH CAPACITY

The numbers supporting the text in this section are found in Table A.5.

Table A.5 shows the surplus or deficit contract path capacity for three levels of transmission rights: 269 MVA, 461 MVA, and 904 MVA. At 461 MVA, there is surplus transmission capacity of at least 81 MW over the highest estimate of the required contract path out of the San Luis Valley. At 904 MVA, this surplus is at least 524 MVA.

Importantly, this transmission capacity is not difficult to achieve. The 461 MW contract path is available now—according to the citations I previously provided from Mr. Joseph Taylor and from the studies described in Exhibit TWG-1. Mr. Taylor acknowledges 99 MW is available through 2018 in the case of Black Hills Energy, and TWG-1 states that for a low cost Western could uprate the Poncha –Midway 230 kV line capacity to 442 MW (and Mr. Taylor shows that Western figures the Total Transfer Capability of the line as 250 MW). Thus, all of PSCo's SLV resources could be transmitted through 2018 assuming the SLV-Poncha 230 kV line is constructed (BAI proposed alternative TR1A and TR2A). PSCo could be the first to post a TSR for the 192 MW on Western's line, and support for this suggestion comes from Mr. Taylor, who has stated that there is no way another party could use the Poncha 230 kV Substation as a point of receipt.[17]

Beyond 2018, PSCo and BHE could design upgrades to the Poncha Junction – Midway 115 kV lines to maintain PSCo's ability to sustain 99 MW of transmission service. But even if this were not accomplished, reconductoring Western's Poncha –Midway 230 kV and PSCo taking transmission service for 635 MW on that line would easily replace any portion of the 99 MW of transmission service, if any, that PSCo may not retain after 2018 on the BHE 115 kV lines.

Importantly, Section 402 of the American Recovery and Reinvestment Act ("ARRA") assigns a new role to Western. Western now has borrowing authority for up to $3.25 billion, and under its Transmission Infrastructure Program, Western is able to loan money to parties seeking to construct transmission projects that *increase access to renewable energy resources*. I am not

[16] PSCo's powerflow uses a rating of 478 MVA for Dillon to Cabin Creek 230 kV line. This is a rating PSCo used for 1272 kcmil conductors. However, I know from experience as a former system planner working for PSCo that this line has had a higher MVA rating for over ten years. I confirmed the line had 2-636 kcmil conductors from FERC Form 1. Using Form 1, I looked for a line with 2-636 conductors and found an example in the Daniels Park to Sulfur line. This rating was 735 MVA. Therefore I used this as the rating of the transmission line between Dillon and Cabin Creek.

[17] Rebuttal Testimony and Exhibits of Joseph C. Taylor, December 2, 2009, in Docket No. 09A-324E and Docket No. 09A-325E, page 9.

suggesting here that PSCo should apply for such a loan. I am pointing out that a policy decision to reconductor the Poncha – Midway 230 kV line with 1272 ACCR conductor would be harmonious with this new role assigned to Western. Clearly, upgrading the Poncha – Midway 230 kV line in response to a TSR or generator interconnection request by PSCo is consistent with Western's new role under Section 402 of ARRA.

Finally, building the TR1AE 230 kV Poncha-Malta line would create an additional 585.2 MW of contract path capacity, thus bringing the total available contract path capacity to 1,489.2 MW (585.2 + 904).

Conclusion

PSCo's minimum load in the year 2015 at 0700 hours is 33 MW. PSCo's total existing and newly announced generation resources total 413 MW. Subtracting the lowest load from the highest resource estimate produces the most conservative (largest) estimate of the required contract path out of the San Luis Valley, in this case 380 MW.

I have investigated the contract path issues for the path from San Luis Valley to PSCo's eastern (Front Range) system loads. PSCo's Poncha – Malta 115 kV line currently has 170MW of capacity. BHE has 99 MW of available transmission capability through 2018 on the lines between Poncha Junction Substation and Midway Substation. In addition, both BHE and Western are required by their OATT to provide transmission service to PSCo if requested, and this includes the requirement to upgrade their own facilities if necessary. Therefore, transmission capacity from BHE beyond 2018 is certainly attainable. Low cost improvements can add 192 MW of transmission capacity to Western's Poncha – Midway 230 kV line, and PSCo would likely be the first party to request transmission service using this capacity. With this additional 192 MW, a total of 461 MW of contract path capacity is available to PSCo, which is 81 MW more contract capacity than the largest estimate of 380 MW for the required transmission capacity out of SLV.

Beyond that, the re-conductoring of Western's 230 kV line from Poncha to Midway with 1272 ACCR conductor having a 885 MVA continuous rating would create a contract path of 904 MW, sufficient for all of PSCo's currently proposed San Luis Valley resources and an additional 524 MW of surplus contract capacity for potential future needs.

Furthermore, either as an alternative or in addition to this re-conductoring, the TR1AE extension from Poncha to Malta could increase the total contract path capacity by 585.2 MW.

The total potential contract path capacity to move potential renewable energy generation in the valley to PSCo's loads in the Front Range under the BAI Trinchera Ranch transmission alternatives is 1,489.2 MW.

Highly Confidential Tables A1 through A6
to RMC-2

R. Mark Clements

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Al_Eyenstein@sbcglobal.net
2791 E. Caley Avenue
Centennial, CO 80121

Professional Summary:

- Transmission and generation planning professional with years of experience providing transmission planning, generation expansion planning, production cost modeling, control area operations and design, and general consulting services to electric utilities, the steel industry, and fuel suppliers in the United States and internationally.
- Former member of the Board of Directors of the Western Regional Transmission Association who has participated in the formation attempts of several ISOs/RTOs and testified as an expert witness on resource RFPs, transmission prudency, scheduling, and ancillary service issues in both federal and state cases.

Transmission Experience Summary:

- Managed 25 Transmission and Generation Expansion Planners for Public Service Company of Colorado using Integrated Resources and Least Cost Planning for expanding the generation, bulk power, and load serving transmission systems.
- Served as past Secretary/Treasurer and Board Member for the Western Regional Transmission Association. Participated in Transmission Owner and Stakeholder Committees in the formation or attempts to form the following ISO/RTOs:
  - Colorado/Wyoming
  - MISO
  - IndeGO
  - SeTrans
- Participated as a member of the WECC Planning Coordinating Committee and the Regional Planning Policy Committee.
- Provided state regulatory filings and/or expert witness testimony cases related to: transmission line CPCNs, alleged RFP bidding irregularities, prudency hearings, and rate relief for a southern steel mill.
- Served as a Federal Claims Court expert witness for trial regarding excessive ancillary service charges for load regulation and frequency control for an arc furnace in Arizona.
- Submitted testimony that influenced Portland General Electric, to settle the case for improper receipt of congestion relief payments in the Death Star scheduling procedures in the California ISO.
- Consulted for Florida Power & Light in the federal anti-trust suit by 17 municipal cities against FP&L for failure to provide wheeling service to deny access to nuclear generation ownership.
- Studied benefits, synergies and worked on negotiating details of Merger and Acquisitions of utilities in Nevada, Kansas, and Colorado using PROMOD and transmission transfer path capacities—responsible for addressing post merger problems with executory contracts.
- Designed and negotiated changing control area metering to move M&A acquired loads and generation into buyer's control area to eliminate hourly schedules and save transmission contractual losses.
- Assisted a national wind developer in an interconnection request in Wyoming. Twice assisted IC prime movers with transmission siting for RFPs in Colorado.
- Supported American Transmission Company in selecting the best alternative 345 kV transmission project lowering congestion and Locational Marginal Prices by using a bus injection study with PSSE.
- As a senior engineer, performed powerflow and stability studies. Recently reviewed stability studies and powerflows in connection with CFC loan applications at the following Power Stations:
  - Anadarko
  - Turk
  - Plum Point
  - Weston 4
  - CR Smith
- Studied regulatory issues in ERCOT, CAISO, MISO, WECC and PJM, and five-year plan in ISO NE.
- Served as Independent Engineer for lenders for the merchant transmission projects, including: MATL, the Trans Bay Cable, the Sharyland DC tie to Mexico, and the sale of the Neptune RTS. Researched regulatory requirements for return of revenue requirements of the transmission facilities as well as reliability issues.
- Submitted comments to FERC on the Standard Market Design (SMD) NOPR as a consultant to the New Orleans Utilities Regulatory Office. Familiar with FERC transmission service and capital cost assignment policies for interested and non-interested jurisdictional entities. Worked on loan applications for interconnecting generators checking System Impact and Facilities Studies, transmission service agreements, and interconnection agreements.

Exhbitt A to
RMC-2

- Calculated MW and MWH losses for the transmission and distribution systems of Vectren and Public Service Company of Colorado.
- Managed a team of eight transmission planners to produce studies of RFP bids and the costs of Network Upgrades and Interconnection Facility costs. Exercised leadership by briefing each engineer on the study design for each bid alternative. Enforced ex parte rules to ensure absolute fairness and uniform treatment of bidders.
- Promoted to Manager of Utility Sales for an Internet-based SCADA system developer.
- Completed studies of the capital and O&M costs of the SWIP and Overland DC transmission systems.
- Miscellaneous: Chairman of WECC Ad Hoc Committee to raise the transfer limit of TOT 3 in Colorado. Chairman of committee to design a new outage records system for Public Service Company of Colorado. Wrote an APL program to calculate EMF field strengths at various distances from single and double circuit lines. First person to justify that a project (Lamar DC Tie) complied with the requirements of the WECC Regional Planning Policy Committee guidelines.

Generation Planning Experience Summary:

- Created NPV-based generation expansion plans for Montana Power, Montana Dakota Utilities, and Alberta Power.
- Load management studies for Public Service Company of Colorado, El Paso Electric, and the City of Colorado Springs.
- Created Loss of Load Probability studies for predecessor to Inland Power Pool and for WECC reliability investigation of Reserve Criteria.
- Developed PROMOD Studies of Powder River Coal quantities for the use at Oklahoma Gas and Electric and Public Service Company of Colorado.
- Wrote a FORTRAN program to perform bus bar and delivered costs for new generation facilities at Wyodak, Pawnee, Elk River, Creston, and La Junta.
- Created power supply forecasts ($/MWH and $/MW) for Florida Public Utilities for Amelia Island and Fernandina Beach for 15 years, taking into consideration the capital budgets and generation costs of Florida Power& Light and Jacksonville Electric Authority.
- Ran PROMOD studies of Air Quality Control alternatives for coal-fired stations.
- Conducted Econometric and weather-adjusted forecasting of peak loads, and forecasts of bus loads for 15 years.
- Completed market studies of generation costs in Michigan and Montana/Alberta using MarketPower and PROMOD.
- Wrote hourly production cost models using an HP41-C and using an IBM mainframe using APL.

Educational Background

- M.S. Electrical Engineering, University of Colorado, Denver
- B.S. Biology University of Colorado, Denver
- B.S. Mechanical Engineering, University of Arizona
- USAF, Air University correspondence school in Aircraft Maintenance, Level 5
- USAF Jet Fighter Aircraft Maintenance School, Honor Graduate

Professional History and Highest Position

- Public Service Company of Colorado, 1970-1978 and 1983-1999; Manager Electric System Planning
- Stone & Webster Management Consultants, Inc., 1978-1983; Consultant
- M2M DataCorp, 1999-2001; Manager of Utility Sales
- Energy and Resource Consulting Group, LLC, 2001-2004; Senior Consultant
- E3 Consulting, LLC, 2004-2009; Managing Director

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.	)	**Nineteenth Set of Discovery Requests From Trinchera Ranch**
Docket No. 09A-325E	)	**Dated December 29, 2009**

Discovery Request Trinchera Ranch19-1

Does the generation capacity shown on the Company's Loads and Resources Table Summer 2010-2020 (produced by the Company as Attachment TR13-20a) include the two 17 MW combustion turbine backup generators at Alamosa?

RESPONSE:

Please refer to Attachment TR13-13, Page 1 of 4. Alamosa Unit 1 has a maximum capability of 17 MW and Alamosa Unit 2 at 19 MW. For summer peak conditions as projected in the referenced Attachment TR13-20a, the units are rated at 12 MW and 14 MW, respectively. The "Installed Net Dependable Capacity" value of 3,838 MW in Attachment TR13-20a, includes a total of 26 MW (summer rating) for the two Alamosa combustion turbine generators (12 MW and 14 MW respectively).

Sponsor: Joseph Taylor/Jim Hill

Response Date: 01/06/10

Exhibit B
to RMC-2

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.	)	**Thirteenth Set of Discovery Requests From Trinchera Ranch**
Docket No. 09A-325E	)	**Dated November 20, 2009**

<u>Discovery Request Trinchera Ranch13-16</u>
Please describe the ability of the thermal solar generation with storage PSCo is pursuing in the San Luis Valley with respect to the MW capacity this type of resource could generate after the sun sets. Please clarify in particular what the generator's capacity is in the early (pre-morning) hours when loads may be low.

RESPONSE:

When generating steam solely from stored solar thermal energy, the type of solar facility being pursued should be capable of generating electricity at an approximate rate of 94% of its nameplate capacity. Whether the facility would ever generate in early-morning, low load hours depends on how much stored thermal energy is utilized during earlier hours; typically stored thermal energy would be utilized during higher value, earlier hours.

Sponsor: Kent Scholl **Response Date:** 12/03/09

Exhibit C
to RMC-2

BLACK HILLS POWER, INC., AS JOINT TARIFF ADMINISTRATOR FOR BLACK HILLS POWER, INC., BASIN ELECTRIC POWER COOPERATIVE AND POWDER RIVER ENERGY CORPORATION

JOINT OPEN ACCESS TRANSMISSION TARIFF

Exhibit D
to RMC-2

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the Transmission Provider due to the Transmission Customer's failure to Curtail or Interrupt. In addition, WAPA-RMR may impose Curtailments on Transmission Customers and impose penalties for failure to Curtail.

15 Service Availability

15.1 General Conditions:

The Transmission Provider will provide Firm and Non-Firm Point-To-Point Transmission Service over, on or across its Transmission System to any Transmission Customer that has met the requirements of Section 16.

15.2 Determination of Available Transfer Capability:

A description of the Transmission Provider's specific methodology for assessing available transfer capability posted on the Transmission Provider's OASIS (Section 4) is contained in Attachment C of the Tariff. In the event sufficient transfer capability may not exist to accommodate a service request, the Transmission Provider will respond by performing a System Impact Study.

15.3 Initiating Service in the Absence of an Executed Service Agreement:

If the Transmission Provider and the Transmission Customer requesting Firm or Non-Firm Point-To-Point Transmission Service cannot agree on all the terms and conditions of the Point-To-Point Service Agreement, the Transmission Provider shall file with the Commission, within thirty (30) days after the date the Transmission Customer provides written notification directing the Transmission Provider to file, an unexecuted Point-To-Point Service Agreement containing terms and conditions deemed appropriate by the Transmission Provider for such requested Transmission Service. The Transmission Provider shall commence providing

Transmission Service subject to the Transmission Customer agreeing to (i) compensate the Transmission Provider at whatever rate the Commission ultimately determines to be just and reasonable, and (ii) comply with the terms and conditions of the Tariff including posting appropriate security deposits in accordance with the terms of Section 17.3.

15.4 <u>Obligation to Provide Transmission Service that Requires Expansion or Modification of the Transmission System, Redispatch or Conditional Curtailment</u>:

(a) If the Transmission Provider determines that it cannot accommodate a Completed Application for Firm Point-To-Point Transmission Service because of insufficient capability on its Transmission System, the Transmission Provider will use due diligence to expand or modify its Transmission System to provide the requested Firm Transmission Service, consistent with its planning obligations in Attachment K, provided the Transmission Customer agrees to compensate the Transmission Provider for such costs pursuant to the terms of Section 27. The Transmission Provider will conform to Good Utility Practice and its planning obligations in Attachment K in determining the need for new facilities and in the design and construction of such facilities. The obligation applies only to those facilities that the Transmission Provider has the right to expand or modify.

(b) If the Transmission Provider determines that it cannot accommodate a Completed Application for Long-Term Firm Point-to-Point Transmission Service because of insufficient capability on its Transmission System, the Transmission Provider will use due diligence to provide redispatch from its own resources until (i) Network Upgrades are completed for the Transmission Customer, (ii) the Transmission Provider determines through a biennial reassessment that it can no longer reliably provide the redispatch, or (iii) the Transmission Customer terminates the service because of redispatch changes resulting from the reassessment. A Transmission Provider shall not unreasonably deny self-provided redispatch or redispatch arranged by the Transmission Customer from a third party resource.

(c) If the Transmission Provider determines that it cannot accommodate a Completed Application for Long-Term Firm Point-to-Point Transmission Service because of insufficient capability on its Transmission System, the Transmission Provider will offer the Firm Transmission Service with the condition that the Transmission Provider may curtail the service prior to the curtailment of other firm Transmission Service for a specified number of hours per year or during System Condition(s). If the Transmission Customer accepts the service, the Transmission Provider will use due diligence to provide the service until (i) Network Upgrades are completed for the Transmission Customer, (ii) the Transmission Provider determines through a biennial reassessment that it can no longer reliably provide such service, or (iii) the Transmission Customer terminates the service because the reassessment increased the number of hours per year of conditional curtailment or changed the System Conditions.

15.5 <u>Deferral of Service</u>:

The Transmission Provider may defer providing service until it completes construction of new transmission facilities or upgrades needed to provide Firm Point-To-Point Transmission Service whenever the Transmission Provider determines that providing the requested service would, without such new facilities or upgrades, impair or degrade reliability to any existing firm services.

15.6 <u>Other Transmission Service Schedules</u>:

Eligible Customers receiving transmission service under other agreements on file with the Commission may continue to receive transmission service under those agreements until such time as those agreements may be modified by the Commission.

15.7 <u>Real Power Losses</u>:

Real Power Losses are associated with all transmission service. The Transmission Provider is not obligated to provide Real Power Losses. The Transmission Customer is responsible for replacing losses associated with all transmission service as calculated by the Transmission Provider. The applicable Real Power Loss factors are established in Attachment M.

16 Transmission Customer Responsibilities

16.1 <u>Conditions Required of Transmission Customers</u>:

Point-To-Point Transmission Service shall be provided by the Transmission Provider only if the following conditions are satisfied by the Transmission Customer:

a. The Transmission Customer has pending a Completed Application for service;

b. The Transmission Customer meets the creditworthiness criteria set forth in Attachment L;

c. Prior to the time service under Part II of the Tariff commences, the Transmission Customer will have arrangements in place for any other transmission service necessary to effect the delivery from the generating source to the Transmission

UNITED STATES
DEPARTMENT OF ENERGY
WESTERN AREA POWER ADMINISTRATION
OPEN ACCESS TRANSMISSION SERVICE TARIFF

Exhibit E
to RMC-2

UNITED STATES
DEPARTMENT OF ENERGY
WESTERN AREA POWER ADMINISTRATION
OPEN ACCESS TRANSMISSION SERVICE TARIFF

The Transmission Provider also will discontinue or reduce service to the Transmission Customer to the extent that deliveries for transmission are discontinued or reduced at the Point(s) of Receipt. Where required, Curtailments or Interruptions will be made on a non-discriminatory basis to the transaction(s) that effectively relieve the constraint, however, Non-Firm Point-To-Point Transmission Service shall be subordinate to Firm Transmission Service. If multiple transactions require Curtailment or Interruption, to the extent practicable and consistent with Good Utility Practice, Curtailments or Interruptions will be made to transactions of the shortest term (e.g., hourly non-firm transactions will be Curtailed or Interrupted before daily non-firm transactions and daily non-firm transactions will be Curtailed or Interrupted before weekly non-firm transactions). Transmission service for Network Customers from resources other than designated Network Resources will have a higher priority than any Non-Firm Point-To-Point Transmission Service under the Tariff. Non-Firm Point-To-Point Transmission Service over secondary Point(s) of Receipt and Point(s) of Delivery will have a lower priority than any Non-Firm Point-To-Point Transmission Service under the Tariff. The Transmission Provider will provide advance notice of Curtailment or Interruption where such notice can be provided consistent with Good Utility Practice.

15 Service Availability

15.1 General Conditions: The Transmission Provider will provide Firm and Non-Firm Point-To-Point Transmission Service over, on or across its Transmission System to any Transmission Customer that has met the requirements of Section 16.

15.2 Determination of Available Transfer Capability: A description of the Transmission Provider's specific methodology for assessing available transfer capability posted on the Transmission Provider's OASIS (Section 4) is contained in Attachment C of the Tariff. In the event sufficient transfer capability may not exist to accommodate a service request, the Transmission Provider will respond by performing a System Impact Study.

15.3 Initiating Service in the Absence of an Executed Service Agreement: If the Transmission Provider and the Transmission Customer requesting Firm or Non-Firm Point-To-Point Transmission Service cannot agree on all the terms and conditions of the Point-To-Point Service Agreement, the Transmission Provider shall commence providing Transmission Service subject to the Transmission Customer agreeing to (i) compensate the Transmission Provider at the existing rate placed in effect pursuant to applicable Federal law and regulations, and (ii) comply with the terms and conditions of the Tariff including paying the appropriate security deposit and processing fees in accordance with the terms of Section 17.3. If the Transmission Customer cannot accept all of the terms and conditions of the offered Service Agreement, the Transmission Customer may request resolution of the unacceptable terms and conditions under Section 12, Dispute Resolution Procedures, of the Tariff. Any changes resulting from the Dispute Resolution Procedures will be effective upon the date of initial service.

15.4 Obligation to Provide Transmission Service that Requires Expansion or Modification of the Transmission System, Redispatch or Conditional Curtailment:

(a) If the Transmission Provider determines that it cannot accommodate a Completed Application for Firm Point-To-Point Transmission Service because of insufficient capability on its Transmission System, the Transmission Provider will use due diligence to expand or modify its Transmission System to provide the requested Firm Transmission Service, consistent with its planning obligations in Attachment P, provided the Transmission Customer agrees to compensate the Transmission Provider in advance for such costs pursuant to the terms of Section 27. The Transmission Provider will conform to Good Utility Practice and its planning obligations in Attachment P, in determining the need for new facilities and in the design and construction of such facilities. The obligation applies only to those facilities that the Transmission Provider has the right to expand or modify, and is contingent upon the availability to Transmission Provider of sufficient appropriations and/or authority, when needed, and the Transmission Customer's advanced funds.

(b) If the Transmission Provider determines that it cannot accommodate a Completed Application for Long-Term Firm Point-To-Point Transmission Service because of insufficient capability on its Transmission System, the Transmission Provider will use due diligence to provide redispatch from its own resources until (i) Network Upgrades are completed for the Transmission Customer, (ii) the Transmission Provider determines through a biennial reassessment that it can no longer reliably provide the redispatch, or (iii) the Transmission Customer terminates the service because of redispatch changes resulting from the reassessment. A Transmission Provider shall not unreasonably deny self-provided redispatch or redispatch arranged by the Transmission Customer from a third party resource.

(c) If the Transmission Provider determines that it cannot accommodate a Completed Application for Long-Term Firm Point-To-Point Transmission Service because of insufficient capability on its Transmission System, the Transmission Provider will offer the Firm Transmission Service with the condition that the Transmission Provider may curtail the service prior to the curtailment of other Firm Transmission Service for a specified number of hours per year or during System Condition(s). If the Transmission Customer accepts the service, the Transmission Provider will use due diligence to provide the service until (i) Network Upgrades are completed for the Transmission Customer, (ii) the Transmission Provider determines through a biennial reassessment that it can no longer reliably provide such service, or (iii) the Transmission Customer terminates the service because the reassessment increased the number of hours per year of conditional curtailment or changed System Conditions.

15.5 Deferral of Service: The Transmission Provider may defer providing service until it completes construction of new transmission facilities or upgrades needed to provide Firm Point-To-Point Transmission Service whenever the Transmission Provider determines that providing the requested service would, without such new facilities or upgrades, impair or degrade reliability to any existing firm services.

15.6 Other Transmission Service Schedules: Eligible Customers receiving transmission service under other agreements on file with the Commission may continue to receive transmission service under those agreements until such time as those agreements may be modified by the Commission.

15.7 Real Power Losses: Real Power Losses are associated with all transmission service. The Transmission Provider is not obligated to provide Real Power Losses. The Transmission Customer is responsible for replacing losses associated with all transmission service as calculated by the Transmission Provider. The applicable Real Power Loss factors are specified in the Service Agreements.

16 Transmission Customer Responsibilities

16.1 Conditions Required of Transmission Customers: Point-To-Point Transmission Service shall be provided by the Transmission Provider only if the following conditions are satisfied by the Transmission Customer:

(a) The Transmission Customer has pending a Completed Application for service;

(b) The Transmission Customer meets the creditworthiness criteria set forth in Section 11;

(c) The Transmission Customer will have arrangements in place for any other transmission service necessary to effect the delivery from the generating source to the Transmission Provider prior to the time service under Part II of the Tariff commences;

(d) The Transmission Customer agrees to pay for any facilities constructed and chargeable to such Transmission Customer under Part II of the Tariff, whether

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