TOT2A TRM STUDY FOR YEAR 2006

I. STUDY OBJECTIVES AND RESULTS

The purpose of the study is identify the need for Transmission Reliability Margin (TRM) on the TOT 2A path, South to North, for year 2006 including the projected summer peak.

TOT 2A (also known as Western Electricity Coordinating Council Path 31) is the transmission path from Colorado to the Four Corners area. The path consists of three transmission lines:

- Hesperus-San Juan 345-kV line,
- Lost Canyon-Shiprock 230-kV line,
- El Paso Tap-Glade Tap 115-kV line

PSCo Transmission has a 200 MW allocation of TOT 2A South to North capacity. Full path rating, 690 MW, is normally available in the South to North direction.

The latest Loads and Resource projection for 2006 was used to determine the need for TRM. The L and R table is included after Section V below. PSCo has ownership in one other path into Colorado—TOT 3. This path has been constrained in the import direction (North to South) numerous times and PSCo has very limited ownership on this path. TOT 2 A is very rarely constrained in the import direction (South to North).

Study Results

Using the criteria of maintaining a minimum 12.0 percent Margin (Total Resource/Firm Load) the TRM on TOT 2A for 2006 is 66 MW for the month of July-other months the TRM is zero (0) based on the most recent load and resource projections. This will maintain transmission capacity to deliver firm purchases over the path under emergency conditions. Due to constraints on TOT 3 it is appropriate to reserve all the 66 MW on TOT 2A for July 2006.

II. TRM BACKGROUND

From the latest WECC ATC document- -Determination of Available Transfer Capability Within the Western Interconnection dated-June 2001-currently posted on the WECC website:

-“In the Western Interconnection methodology, firm ATC reductions associated with TRM may include the following components.

- Transmission necessary for the activation of operating reserves
- Unplanned transmission outages (for paths in which contingencies have not already been considered in establishing the path rating)
- Simultaneous limitations associated with operation under a nomogram
- Loading variations due to balancing of generation and load
- Uncertainty in load distribution and/or load forecast
- Allowances for unscheduled flow "

Second Source-NERC Standard MOD-008-0-Effective April 1, 2005-- allows all the above for TRM.

On path TOT 2 A, S-N operating reserves can be moved to the PSCo system. TOT 3, the other major import path into Colorado, is a Qualified Path in WECC, meaning it has a documented history of unscheduled flow impacts. Should TOT 3 become restricted by unscheduled flow or other reasons, then TOT 2 A becomes the only remaining import path in which PSCo has any capacity. TOT 3 is operated under a nomogram and TTC in real time is a function of a variety of conditions including real time flows across the two DC ties-Stegall and Sidney and the total level of LRS generation (this which relates to the fourth bullet above). Both TOT 2 and TOT 3 paths can be restricted by unplanned outages beyond N-1

Same WECC source---"CBM is a uni-directional quantity with identifiable beneficiaries, and its use is intended only for the time of emergency generation deficiencies."

TRM covers a number of constraints on import capability across TOT 2A or reasons to call on TOT 2 A for emergency energy imports -unscheduled flow, unplanned transmission outages, loading variations due to balancing load and generation.

III. RESERVE METHODOLOGY

The Reserve Margin Docket (No. 00D-169E):

In March 2000, PSCo initiated the Reserve Margin Docket in response to the issues raised by the Office of Consumer Counsel ("OCC") in Docket No. 99I-323E regarding the appropriate methodology to be used in determining the Company's reserve margin requirement. Specifically, the OCC was interested in the level of capacity reserves for the

PSCo system that would satisfy a probabilistic reserve margin criterion such as a Loss of Load Probability ("LOLP") of one day in ten years[1]. The calculation of LOLP for an electric system captures the complex interaction between the effects of electric demand (i.e., load), hourly load patterns, transmission import capability, installed generation capacity, and the availability characteristics of generation and transmission resources.

PSCo used the MARELI "Multi-Area Reliability" computer model to determine the level of reserve capacity that would equate to a LOLP of 1 day in 10 years for the PSCo system. The MARELI model is a product of New Energy Associates, developers of the "Strategist" and PROMOD utility planning models. MARELI is specifically designed to calculate LOLP for both a group of electric systems as well as for any individual electric system. The LOLP study effort determined that a 12% reserve margin for the PSCo system would equate to a LOLP of 1 day in 10 years. The Company however identified that an additional amount of reserves above 12% would be necessary to account for load forecast uncertainty and resource development risk.

A stipulation in this docket was approved by the Commission in which the Stipulating Parties agreed that a range of 1% to 5% higher than the minimum 12% reserve level established by the LOLP study was a reasonable estimate of the additional reserves necessary to take into account these additional risks. As such, a reserve margin range of 13% to 17% was deemed appropriate for PSCo's 2002 IRP filing.

- *2.) Losses of Generation Supply*
- *3.) Purchase of Power*
- *4.) Losses of Transmission Capability*

Each of these three risk factors was accounted for in the LOLP analysis of the PSCo system in Docket No. 00D-169E (i.e., the Reserve Margin Docket) that established that a 12% level of planning reserves on the PSCo system would meet a LOLP of 1 day in 10 years. A LOLP of one day in ten years is a commonly accepted industry standard of defining an acceptable level of reliability on an electric system.

Losses of generation supply and purchase power contracts located inside the TOT-constrained area of eastern Colorado were accounted for by representing the availability characteristics of PSCo's generation supply resource (both owned and purchased) in the LOLP analysis. Both planned outages and unplanned outage characteristics were represented.

Both losses of transmission capability and purchase of power from generation sources located outside the TOT-constrained area of eastern Colorado were accounted for by modeling TOTs 3 and 5 as generation supply resources with specific availability profiles at different transmission transfer capabilities.

[1] A LOLP of one day in ten years is a commonly accepted industry standard of defining an acceptable level of reliability on an electric system.

PSCo strives to provide electric service at all times to its firm customers. As a result, the Company works to maintain an adequate supply of electric generation that not only will meet the expected maximum demand of its customers (i.e., the "peak" demand) but also will do so during unforeseen events (power plant outages, higher than expected load etc.). To accomplish this, PSCo utilizes a combination of measures and practices that focus on three different time horizons - real-time, mid-term, and long-term.

IV. STUDY PROCEDURE/CALCULATIONS

The following criteria was used:

Sufficient TRM on TOT 2A South to North to meet the 12.0 percent Margin of Total Resources over Firm Load (Native PSCo load only) for all months of 2006. Use the 12.0 percent for the Near Term (next calendar year) without additional reserve above 12.0 percent since there is an increased certainty of the load and resource picture for the coming 12 months versus the mid term and long term years.

Calculations

In the following Table is from a December 2005 submittal by PSCo to WECC and is for Calendar 2006. The only month below 12 percent Margin (Surplus divided by Firm Load) is the month of July. The amount of reserve on TOT 2A to restore the 12.0 percent is calculated as follows: (888 + X)/7947=.12 or X=954-888=**66 MW.**

So PSCo Transmission will post TRM for TOT 2A of zero for all months of 2006 except July. July 2006 TRM for TOT 2A will be 66 MW.

V. CONTACT INFORMATION

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Loads and Resources Summary

Public Service Co. of Colorado

Peak Demand - Megawatts		Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06
Loads	Firm	6437	6337	5977	5648	6304	7324
	Interruptible & Load Mgt	115	112	114	103	130	194
	Total Load	6552	6449	6091	5751	6434	7518
Resources	Hydro - Conv.	59	59	59	62	62	62
	Hydro - Pmp. Storage	300	300	300	210	210	210
	Steam - Coal	3175	3175	3175	3177	3177	3177
	Steam - Oil	1	1	1	1	1	1
	Steam - Gas	184	184	184	184	184	184
	Nuclear	0	0	0	0	0	0
	Combustion Turbine	1713	1713	1713	1696	1512	1512
	Combined Cycle	2337	2337	2337	2274	2245	2245
	Geothermal	0	0	0	0	0	0
	Internal Combustion	206	206	206	206	206	206
	Other	22	22	22	22	22	22
	Total Resources	7997	7997	7997	7832	7619	7619
Outages	Forced Outages	0	0	0	0	0	0
	Inoperable Capability	0	0	0	0	0	0
	Scheduled Maintenance	0	0	360	544	147	0
	Total Outages	0	0	360	544	147	0
Transfers	Firm/Joint Plt. Imports	-1743	-1742	-1743	-1685	-1720	-1759
	Firm/Joint Plt. Exports	235	235	235	235	235	235
	Net Imports / Exports	-1508	-1507	-1508	-1450	-1485	-1524
	Joint Plant Transfers	-411	-411	-411	-378	-378	-378
	Net Firm Transfers[2]	-1097	-1096	-1097	-1072	-1107	-1146
	Planned Purch. / Sales	0	0	0	0	0	0
	Available Resources	9094	9093	8734	8360	8579	8765
	Margin Over Firm Load (MW)	2656	2755	2757	2712	2275	1440
	Margin Over Firm Load (%)	41%	43%	46%	48%	36%	20%

Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06
7947	7574	6883	5814	6284	6602
210	209	126	114	127	127
8156	7783	7009	5929	6411	6729
62	62	62	59	59	59
210	210	210	300	300	300
3177	3177	3177	3177	3177	3177
1	1	1	1	1	1
184	184	184	184	184	184
0	0	0	0	0	0
1512	1512	1512	1713	1713	1713
2245	2245	2245	2309	2309	2309
0	0	0	0	0	0
206	206	206	206	206	206
22	22	22	22	22	22
7619	7619	7619	7971	7971	7971
0	0	0	0	0	0
0	0	0	0	0	0
0	0	324	284	0	0
0	0	324	284	0	0
-1829	-1780	-1704	-1709	-1748	-1752
235	235	235	235	235	235
-1594	-1545	-1469	-1474	-1513	-1517
-378	-378	-378	-383	-383	-383
-1216	-1167	-1091	-1091	-1130	-1134
0	0	0	0	0	0
8835	8786	8386	8778	9101	9105
888	1212	1503	2963	2817	2502
11%	16%	22%	51%	45%	38%