SPP Southwest Power Pool

System Impact Study SPP-2001-339b For Transmission Service Requested By Southwestern Public Service Company

From SPS to EDDY

For a Reserved Amount Of 50MW From 1/1/02 To 1/1/03

Revision to SPP-2001-339

SPP Transmission Planning

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Revision to original SPP-2001-339 to reflect increase in ratings by Southwestern Public Service Company.

1. Executive Summary

Southwestern Public Service Company has requested a system impact study for long-term Firm Point-to-Point transmission service from SPS to EDDY. The period of the transaction is from 1/1/02 to 1/1/03. The request is for OASIS reservation 311909 for an amount of 50MW.

Previous studies done for transfers from SPS to EDDY have shown limitations in the SPS control area. Due to an increase in ratings on these facilities by Southwestern Public Service Company, these facilities have been removed as limiting constraints.

2. Introduction

Southwestern Public Service Company has requested an impact study for transmission service from SPS to EDDY.

The principal objective of this study is to identify the restraints on the SPP Regional Tariff System that may limit the transfer to less than 50MW. This study includes steady-state contingency analyses (PSS/E function ACCC) and Available Transfer Capability (ATC) analyses.

The steady-state analysis considers the impact of the 50MW transfer on transmission line loading and transmission bus voltages for outages of single and selected multiple transmission lines and transformers on the SPP system.

ATC analyses shows the amount of First Contingency Incremental Transfer Capabilities (FCITC) between the given study systems and what the limitations are, if any, for transferring up to 50MW.

3. Study Methodology

A. Description

Two analyses were conducted to determine the impact of the 50MW transfer on the system. The first analysis was conducted to identify any new overloads caused by the 50MW transfer. The second analysis was done to ensure that available capacity exists on previously identified circuits.

The first analysis was to study the steady-state analysis impact of the 50MW transfer on the SPP system. The second step was to study Available Transfer Capability (ATC) of the facilities identified in the steady-state analysis impact. The steady-state analysis was done to ensure current SPP Criteria and NERC Planning Standards requirements are fulfilled. The Southwest Power Pool (SPP) conforms to the NERC Planning Standards, which provide the strictest requirements, related to thermal overloads with a contingency. It requires that all facilities be within emergency ratings after a contingency.

The second analysis was done to determine the impact of the transfer on previously assigned and identified facilities.

B. Model Updates

The SPP 2001 Series Cases 2001/02 Winter Peak, 2002 Spring, 2002 Summer Peak, 2002 Fall, and 2002/03 Winter Peak were used to study the impact of the 50MW transfer on the SPP system during the transaction period of 1/1/02 to 1/1/03.

The chosen base case models were modified to reflect the most current modeling information. The cases were modified to reflect future firm transfers during the request period that were not already included in the January 2001 base case series models.

The previously studied renewals, Oasis Reservations 288310, 288314, and 288319(SPP-2001-260), are included in the models for a total amount of 98MW.

C. Transfer Analysis

Using the created models and the ACCC function of PSS\E, single and select double contingency outages were analyzed. Then full AC solution was used to obtain the most accurate results possible. Any facility overloaded, using MVA ratings, in the transfer case and not overloaded in the base case was flagged. The PSS/E options chosen to conduct the Impact Study analysis can be found in Appendix A.

4. Study Results

A. Study Analysis Results

Tables 1, 2, and 3 contain the analysis results of the System Impact Study. The tables identify the seasonal case in which the event occurred; the emergency rating of the overloaded circuit (Rate B), the contingent loading percentage of circuit with and without the studied transfer, the estimated ATC value using interpolation if calculated, any SPP identification or assignment of the event, and any solutions received from the transmission owners.

Table 1 shows the new facility overloads caused by the 50MW transfer. Upgrades associated with these new overloads can be directly assigned to the SPS to EDDY 50MW transfer.

Table 2 documents overloads on Non SPP Regional Tariff participants' transmission systems caused by the 50MW transfer.

Table 3 documents the impact on previously assigned and identified facilities caused by the 50MW transfer.

Table 1 – SPP Facility Overloads caused by the SPS to EDDY 50MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	New Rate B	New BC % Loading	New TC % Loading	Outaged Branch Causing Overload	ATC (MW)
		POTASH JUNCTION INTERCHANGE TO CARLSBAD PLANT, 115kV							**PCA INTERCHANGE TO CARLSBAD PLANT, 115KV**	
01WP	SPS-SPS	52252 POTJCT3 115 to 52310 CARLSBD3 115 CKT 1	90	98.3	102.1	118	74.9	77.9	52240 PCA3 115 to 52310 CARLSBD3 115 CKT1	50
02G		NONE							NONE	50
		LUBBOCK EAST INTERCHANGE 230/115KV TR							**TUCO INTERCHANGE 230/115KV TR**	
02SP	SPS-SPS	51689 LUBE6 230 to 51688 LUBE3 115 CKT 1	150	99.6	100.6	172.5	86.6	87.5	51532 TUCO3 115 to 51533 TUCO6 230 CKT1	50
02FA		NONE							NONE	50
02WP		NONE							NONE	50

Table 2 – Non - SPP Facility Overloads caused by the SPS to EDDY 50MW Transfer

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	Outaged Branch Causing Overload	ATC (MW)
01WP		NONE				NONE	50
02G		NONE				NONE	50
02SP		NONE				NONE	50
02FA		NONE				NONE	50
02WP		NONE				NONE	50

Table 3 – Previously Assigned and Identified SPP Facilities Impacted by the SPS to EDDY 50MW Transfer.

Study Year	From Area - To Area	Branch Over 100% Rate B	Rate B	BC % Loading	TC % Loading	New Rate B	New BC % Loading	New TC % Loading	Outaged Branch Causing Overload	ATC (MW)
01WP		NONE							NONE	50
02G		NONE							NONE	50
02SP	SPS-SPS	**ROOSEVELT COUNTY TO TOLK, 230KV CKT1** 51203 ROOSEVL6 230 to 51437 TOLKW6 230 CKT 1	451	101.3	103.5	541	84.5	86.2	**ROOSEVELT COUNTY TO TOLK, 230KV CKT2** 51203 ROOSEVL6 230 to 51435 TOLKE6 230 CKT2	50
02SP	SPS-SPS	**ROOSEVELT COUNTY TO TOLK, 230KV CKT2** 51203 ROOSEVL6 230 to 51435 TOLKE6 230 CKT 2	451	101.2	103.3	541	84.4	86.1	**ROOSEVELT COUNTY TO TOLK, 230KV CKT1** 51203 ROOSEVL6 230 to 51437 TOLKW6 230 CKT1	50
02FA		NONE							NONE	50
02WP		NONE							NONE	50

5. Conclusion

Previous studies for the SPS to EDDY transfer have shown limitations in the SPS control area. Due to ratings increases by SPS, these facilities no longer limit the transfer.

No facilities limit the SPS to EDDY 50MW transfer; therefore, it will be accepted.

Appendix A

PSS/E CHOICES IN RUNNING LOAD FLOW PROGRAM AND ACCC

BASE CASES:
Solutions - Fixed slope decoupled Newton-Raphson solution (FDNS)
1. Tap adjustment – Stepping
2. Area interchange control – Tie lines only
3. Var limits – Apply automatically
4. Solution options - X Phase shift adjustment
   _ Flat start
   _ Lock DC taps
   _ Lock switched shunts

ACCC CASES:
Solutions – AC contingency checking (ACCC)
1. MW mismatch tolerance –0.5
2. Contingency case rating – Rate B
3. Percent of rating – 100
4. Output code – Summary
5. Min flow change in overload report – 1mw
6. Excld cases w/ no overloads form report – YES
7. Exclude interfaces from report – NO
8. Perform voltage limit check – YES
9. Elements in available capacity table – 60000
10. Cutoff threshold for available capacity table – 99999.0
11. Min. contng. case Vltg chng for report – 0.02
12. Sorted output – None

Newton Solution:
1. Tap adjustment – Stepping
2. Area interchange control – Tie lines only
3. Var limits - Apply automatically
4. Solution options - X Phase shift adjustment
   _ Flat start
   _ Lock DC taps
   _ Lock switched shunts