



SPP *Southwest Power Pool*

***System Impact Study SPP-2001-369b
For Transmission Service
Requested By
Texas – New Mexico Power
Company***

From SPS to EDDY

***For a Reserved Amount Of
35MW
From 12/09/01 To 1/1/03***

Revision to SPP-2001-369

SPP Transmission Planning

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Revision to original SPP-2001-369 to reflect increase in ratings by Southwestern Public Service Company.

1. Executive Summary

Texas – New Mexico Power 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 12/9/01 to 1/1/03. The request is for OASIS reservation 315889 for an amount of 35MW.

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

Texas – New Mexico Power 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 35MW. 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 35MW 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 35MW.

3. Study Methodology

A. Description

Two analyses were conducted to determine the impact of the 35MW transfer on the system. The first analysis was conducted to identify any new overloads caused by the 35MW 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 35MW 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 35MW 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, 288319(SPP-2001-260), 311909(SPP-2001-339), and 311914 (SPP-2001-340) are included in the models for a total amount of 165MW.

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 35MW transfer. Upgrades associated with these new overloads can be directly assigned to the SPS to EDDY 35MW transfer.

Table 2 documents overloads on Non SPP Regional Tariff participants' transmission systems caused by the 35MW transfer.

Table 3 documents the impact on previously assigned and identified facilities caused by the 35MW transfer.

Table 1 – SPP Facility Overloads caused by the SPS to EDDY 35MW 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 | 35 |
| 02G | SPS-SPS | POTASH JUNCTION INTERCHANGE TO CARLSBAD PLANT, 115KV 52252 POTJCT3 115 to 52310 CARLSBD3 115 CKT 1 | 90 | 99.8 | 103 | 118 | 76.1 | 78.6 | PCA INTERCHANGE TO CARLSBAD PLANT, 115KV 52240 PCA3 115 to 52310 CARLSBD3 115 CKT1 | 35 |
| 02G | SPS-SPS | POTASH JUNCTION INTERCHANGE 230/115KV TR CKT 1 52253 POTJCT6 230 to 52252 POTJCT3 115 CKT 1 | 150 | 98.7 | 101.6 | 172.5 | 85.8 | 88.3 | EDDY COUNTY INTERCHANGE TO CUNNINGHAM STATION, 230KV 52185 EDDYCO6 230 to 52209 CUNNINH6 230 CKT1 | 35 |
| 02SP | | NONE | | | | | | | NONE | 35 |
| 02FA | SPS-SPS | POTASH JUNCTION INTERCHANGE 230/115KV TR CKT 1 52253 POTJCT6 230 to 52252 POTJCT3 115 CKT 1 | 150 | 97.9 | 101 | 172.5 | 85.1 | 87.8 | EDDY COUNTY INTERCHANGE TO CUNNINGHAM STATION, 230KV 52185 EDDYCO6 230 to 52209 CUNNINH6 230 CKT1 | 35 |
| 02WP | SPS-SPS | POTASH JUNCTION INTERCHANGE 230/115KV TR CKT 1 52253 POTJCT6 230 to 52252 POTJCT3 115 CKT 1 | 150 | 97.4 | 101.1 | 172.5 | 84.7 | 87.9 | EDDY COUNTY INTERCHANGE TO CUNNINGHAM STATION, 230KV 52185 EDDYCO6 230 to 52209 CUNNINH6 230 CKT1 | 35 |

Table 2 – Non - SPP Facility Overloads caused by the SPS to EDDY 35MW 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 | 35 |
| 02G | | NONE | | | | | | | NONE | 35 |
| 02SP | | NONE | | | | | | | NONE | 35 |
| 02FA | | NONE | | | | | | | NONE | 35 |
| 02WP | | NONE | | | | | | | NONE | 35 |

Table 3 – Previously Assigned and Identified SPP Facilities Impacted by the SPS to EDDY 35MW 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 | SPS-SPS | POTASH JUNCTION INTERCHANGE TO CARLSBAD PLANT, 115KV 52252 POTJCT3 115 to 52310 CARLSBD3 115 CKT 1 | 90 | 103.5 | 106.4 | 118 | 78.9 | 81.1 | PCA INTERCHANGE TO CARLSBAD PLANT, 115KV 52240 PCA3 115 to 52310 CARLSBD3 115 CKT1 | 35 |
| 02G | | NONE | | | | | | | NONE | 35 |
| 02SP | SPS-SPS | LUBBOCK EAST INTERCHANGE 230/115KV TR 51689 LUBE6 230 to 51688 LUBE3 115 CKT 1 | 150 | 100.6 | 101.3 | 172.5 | 87.5 | 88.1 | TUCO INTERCHANGE 230/115KV TR 51532 TUCO3 115 to 51533 TUCO6 230 CKT1 | 35 |
| 02SP | SPS-SPS | POTASH JUNCTION INTERCHANGE 230/115KV TR CKT 1 52253 POTJCT6 230 to 52252 POTJCT3 115 CKT 1 | 150 | 101.1 | 104.1 | 172.5 | 87.9 | 90.5 | EDDY COUNTY INTERCHANGE TO CUNNINGHAM STATION, 230KV 52185 EDDYCO6 230 to 52209 CUNNINH6 230 CKT1 | 35 |
| 02SP | SPS-SPS | ROOSEVELT COUNTY TO TOLK, 230KV CKT1 51203 ROOSEVL6 230 to 51437 TOLKW6 230 CKT 1 | 451 | 104.3 | 105.9 | 541 | 87.1 | 88.3 | ROOSEVELT COUNTY TO TOLK, 230KV CKT2 51203 ROOSEVL6 230 to 51435 TOLKE6 230 CKT2 | 35 |
| 02SP | SPS-SPS | ROOSEVELT COUNTY TO TOLK, 230KV CKT2 51203 ROOSEVL6 230 to 51435 TOLKE6 230 CKT 2 | 451 | 104.1 | 105.7 | 541 | 86.8 | 88.2 | ROOSEVELT COUNTY TO TOLK, 230KV CKT1 51203 ROOSEVL6 230 to 51437 TOLKW6 230 CKT1 | 35 |
| 02FA | | NONE | | | | | | | NONE | 35 |
| 02WPP | | NONE | | | | | | | NONE | 35 |

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 35MW 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 - 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. Excl'd 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 - Phase shift adjustment
 - Flat start
 - Lock DC taps
 - Lock switched shunts