SPP Southwest Power Pool

System Impact Study SPP-2001-084 For Transmission Service Requested By Aquila Energy Marketing Corp. (AEMC)

From SECI to EES

For a Reserved Amount Of 125 MW From 1/1/02 To 1/1/05

SPP Coordinated Planning

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1. Executive Summary

Aquila Energy Marketing Corp. (AEMC) has requested a system impact study for long-term Firm Point-to-Point transmission service from SECI to EES. The period of the transaction is from 1/1/02 to 1/1/05. The request is for OASIS reservations 242311 and 242312 for an amount of 125 MW.

Due to the existence of higher priority requests starting on or after 1/1/2003, the SECI to EES transfer was previously evaluated for the first year of service from the requested start date of 1/1/2002 through a period ending 1/1/2003. It was determined that the SECI to EES transfer impacted previously identified facilities that limited the ATC to zero. The facilities could not be relieved through system upgrades in the time period available; therefore, the service could not be provided for the period of 1/1/2002 to 1/1/2003. This study was performed to identify constraints on the SPP Regional Tariff Transmission System that result in zero ATC for the 125 MW transfer for the remaining period of the request from 1/1/2003 to 1/1/2005. The SECI to EES 125 MW transfer impacts the IPC Jefferson to Lieberman 138kV line loading for the outage of the Longwood to Wilkes 345 kV line. The Southwest Power Pool determined that the ATC is limited to zero due to the loading of this facility in the 2003 Summer Peak and 2005 Summer Peak models. An abbreviated analysis was conducted for the requested service period from 1/1/03 to 1/1/05 and no analysis was conducted for the remaining planning horizon from 1/1/05 to 4/1/09 to save on time and cost of conducting a full study resulting in the same conclusion.

The IPC Jefferson to Lieberman 138kV line loading for the outage of the Longwood to Wilkes 345 kV line limits the ATC to zero during the 2003 and 2004 Summer months. The facility cannot be relieved through system upgrades in the time period available; therefore, the request will be refused.

2. Introduction

Aquila Energy Marketing Corp. has requested a system impact study for long-term Firm Point-to-Point transmission service from SECI to EES.

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 125 MW. This study includes an abbreviated steady-state contingency analysis using PSS/E and Available Transfer Capability (ATC) analysis for the requested service period.

The abbreviated steady-state analysis considers the impact of the 125 MW transfer on the IPC Jefferson to Lieberman 138kV line loading for the outage of the Longwood to Wilkes 345 kV line.

3. Study Methodology

A. Description

An abbreviated analysis was done to determine available capacity on previously identified circuits. The analysis was done to determine the impact of the transfer on the IPC Jefferson to Lieberman 138kV line loading for the outage of the Longwood to Wilkes 345 kV line.

B. Model Updates

SPP used two seasonal models to study the SECI to EES 125 MW transfer for the requested service period. The SPP 2002 Series Cases 2003 Summer Peak and 2005 Summer Peak were used to study the impact of a 125 MW transfer on the SPP system during the requested service period of 1/1/03 to 1/1/05. The 2005 Summer Peak model was used to provide an approximation for the 2004 Summer Peak. The Summer Peak models apply to the months of June through September.

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 requested service period that were not already included in the January 2002 base case series models.

C. Transfer Analysis

Using the created models, the IPC Jefferson to Lieberman 138kV line loading was determined for the outage of the Longwood to Wilkes 345 kV line. The PSS/E options chosen to conduct the Impact Study analysis can be found in Appendix A.

4. Study Results

A. Study Analysis Results

Table 1 contains the analysis results of the System Impact Study. The table identifies 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 loading of the IPC Jefferson to Lieberman 138kV line loading for the outage of the Longwood to Wilkes 345 kV line. Available solutions are given in the table.

Table 1a of Appendix B documents the modeling representation of the events identified in Table 1 to include bus numbers and bus names.

Table 1 – IPC Jefferson to Lieberman 138kV line loading for the Outage of the Longwood to Wilkes 345 kV line Impacted by the SECI to EES 125 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Comments
03SP	KACP-KACP	**IPC Jefferson - Lieberman 138KV**	136	105.8	107.0	**Longwood - Wilkes 345kV**	0	Reconductor 26.35 miles of 336 ACSR with 795 ACSR, Replace Switches @ Lieberman. 30 Month Lead Time
05SP	KACP-KACP	**IPC Jefferson - Lieberman 138KV**	136	129.3	130.8	**Longwood - Wilkes 345kV**	0	Reconductor 26.35 miles of 336 ACSR with 795 ACSR, Replace Switches @ Lieberman, Reset Relays @ Jefferson IPC, & Reconductor 0.65 miles 397MCM to 795MCM. 30 Month Lead Time

5. Conclusion

The IPC Jefferson to Lieberman 138kV line loading for the outage of the Longwood to Wilkes 345 kV line limits the ATC to zero during the 2003 and 2004 Summer months. The facility cannot be relieved through system upgrades in the time period available; therefore, the requests will be refused.

Appendix A

PSS/E CHOICES IN RUNNING LOAD FLOW PROGRAM
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 immediately
4. Solution options - X Phase shift adjustment
   _ Flat start
   _ Lock DC taps
   _ Lock switched shunts

Appendix B

Table 1a – Model Data for the IPC Jefferson to Lieberman 138kV line loading for the Outage of the Longwood to Wilkes 345 kV line Impacted by the SECI to EES 125 MW Transfer

Study Year	From Area To Area	Branch Over 100% Rate B	Rate B	BC %Loading	TC %Loading	Outaged Branch That Caused Overload	ATC	Comments
03SP	KACP-KACP	**53548 IPCJEFF4 138 to 53420 LIEBERM4 138 CKT 1**	136	105.8	107.0	**53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1**	0	Reconductor 26.35 miles of 336 ACSR with 795 ACSR, Replace Switches @ Lieberman. 30 Month Lead Time
05SP	KACP-KACP	**53548 IPCJEFF4 138 to 53420 LIEBERM4 138 CKT 1**	136	129.3	130.8	**53424 LONGWD 7 345 to 53620 WILKES 7 345 CKT1**	0	Reconductor 26.35 miles of 336 ACSR with 795 ACSR, Replace Switches @ Lieberman, Reset Relays @ Jefferson IPC, & Reconductor 0.65 miles 397MCM to 795MCM. 30 Month Lead Time