SPP Southwest Power Pool

System Impact Study SPP-2004-069-1 For The Designation of a New Network Resource Requested By City Utilities of Springfield

For a Reserved Amount of 275 MW From 3/1/2008 To 3/1/2048

SPP Engineering, Tariff Studies

Table of Contents

1. EXECUTIVE SUMMARY **3**

2. INTRODUCTION **4**

3. STUDY METHODOLOGY **5**

A. DESCRIPTION 5
B. MODEL UPDATES 5
C. TRANSFER ANALYSIS 6
D. UPGRADE ANALYSIS 6

4. STUDY RESULTS **7**

A. STUDY ANALYSIS RESULTS 7

5. CONCLUSION **8**

APPENDIX A **9**

ATTACHMENT: ***SPP-2004-069-1 Tables***

1. Executive Summary

City Utilities of Springfield has requested a system impact study to designate a New Network Resource in the SPA Control Area for 275 MW to serve Network Load in the SPA Control Area. The period of the service requested is from 3/1/2008 to 3/1/2048. This request is for OASIS reservation number 669189.

The principal objective of this study is to identify system problems and potential system modifications necessary to facilitate the additional 275 MW request while maintaining system reliability. The SPA to SPA 275 MW request was studied using three System Scenarios. The service was modeled by a transfer from the new designated network resource in the SPA Control Area to the Network Load in the SPA Control Area. The three scenarios were studied to capture worst case system limitations dependent on the bias of the transmission system.

Tables 1.1, 1.2, and 1.3 list the SPP facility overloads caused or impacted by the transfer modeled, using Scenarios 1, 2, and 3, respectively. Tables 2.1, 2.2, and 2.3 list the SPP voltage violations caused or impacted by the transfer modeled, using Scenarios 1, 2, and 3, respectively. Tables 3.1, 3.2, and 3.3 list the Non-SPP facility overloads caused or impacted by the transfer modeled, using Scenarios 1, 2, and 3, respectively. Tables 4.1, 4.2, and 4.3 list the Non-SPP voltage violations caused or impacted by the transfer modeled, using Scenarios 1, 2, and 3, respectively.

The study results of the SPA to SPA 275 request show that limiting constraints exist. Due to the limiting constraints identified, the Transmission Service Request cannot be granted. Any solutions, upgrades, and costs provided in the System Impact Study are planning estimates only. SPP will also review the possibility of curtailment of previously confirmed service and/or the redispatch of units as an option for relieving the additional impacts on the SPP facilities caused by the SPA to SPA request. These options will be evaluated as part of the Facility Study. Execution of a Facility Study Agreement is now required to maintain queue position. The final ATC, upgrade solutions, cost assignments, and available redispatch and curtailment options will be determined upon the completion of the facility study.

2. Introduction

City Utilities of Springfield has requested a system impact study to designate a New Network Resource in the SPA Control Area for 275 MW to serve a Network Load in the SPA Control Area. The principal objective of this study is to identify the restraints on the SPP Regional Tariff System that may limit the requested service and determine the least cost solutions required to alleviate the limiting facilities.

This study includes steady-state contingency analyses (PSS/E function ACCC) and Available Transfer Capability (ATC) analyses. The steady-state analyses consider the impact of the request on transmission line and transformer loadings, and bus voltages for outages of single transmission lines, transformers, and generating units, and selected multiple transmission lines and transformers on the SPP system and first tier Non - SPP systems.

The SPA to SPA 275 MW request was studied using three System Scenarios. The service was modeled from the new designated network resource in the SPA Control Area to the Network Load in the SPA Control Area. The three scenarios were studied to capture worst case system limitations dependent on the bias of the transmission system.

3. Study Methodology

A. Description

The system impact analysis was conducted to determine the steady-state impact of the requested service on the SPP and first tier Non - SPP control area systems. The steady-state analysis was done to ensure current SPP Criteria and NERC Planning Standards requirements are fulfilled. The Southwest Power Pool conforms to the NERC Planning Standards, which provide the strictest requirements, related to voltage violations and thermal overloads during normal conditions and during a contingency. It requires that all facilities be within normal operating ratings for normal system conditions and within emergency ratings after a contingency. Normal operating ratings and emergency operating ratings monitored are Rate A and B in the SPP MDWG models, respectively. The upper bound and lower bound of the normal voltage range monitored is 105% and 95%. The upper bound and lower bound of the emergency voltage range monitored is 110% and 90%. The SPS Tuco 230 kV bus voltage is monitored at 92.5% due to pre-determined system stability limitations.

The contingency set includes all SPP facilities 69kV and above, SPP First Tier facilities 115 kV and above, any defined contingencies for these control areas, and generation unit outages for the control areas with SPP reserve share program redispatch. The monitor elements include all SPP control area branches, ties, and buses 69 kV and above, and all first tier Non – SPP control area branches and ties 69 kV and above. Voltage monitoring was performed for SPP control area buses 69 kV and above.

A 3 % transfer distribution factor (TDF) cutoff was applied to all SPP control area facilities. For first tier Non – SPP control area facilities, a 3 % TDF cutoff was applied to AECI, AMRN, and ENTR and a 2 % TDF cutoff was applied to MEC, NPPD, and OPPD. For voltage monitoring, a 0.02 per unit change in voltage must occur due to the transfer to be considered a valid limit to the transfer.

B. Model Updates

SPP used nine seasonal models to study the SPA to SPA 275 MW request for the requested service period. The SPP 2005 Series Cases Update 1 2006 April Minimum (06AP), 2006 Spring Peak (06G), 2006 Summer Shoulder (06SH), 2006 Fall Peak (06FA), 2007 Summer Peak (07SP), 2007/08 Winter Peak (07WP), 2010 Summer Peak (10SP), 2010/11 Winter Peak (10WP), and 2015 Summer Peak (15SP) were used to study the impact of 275 MW request on the system during the requested service period of 3/1/2008 to 3/1/2048.

The chosen base case models were modified to reflect the most current modeling information. From the nine seasonal models, three system scenarios were developed. Scenario 1 includes SWPP OASIS transmission requests not already included in the SPP 2005 Series Cases flowing in a West to East direction with ERCOT exporting and the Southwestern Public Service (SPS) Control Area exporting to outside control areas and exporting to the Lamar HVDC Tie. Scenario 2 includes transmission requests not already included in the SPP 2005 Series Cases flowing in an East to West direction with ERCOT net importing and SPS importing from an outside control area and importing from the Lamar HVDC Tie. The third scenario includes SWPP OASIS transmission requests not already included in the SPP 2005 Series Cases flowing in a West to East direction with ERCOT net importing and SPS importing from an outside control area and importing from the Lamar HVDC Tie. The system scenarios were developed to minimize counter flows to the transfer studied.

C. Transfer Analysis

Using the selected cases both with and without the requested transfer modeled, the PSS/E Activity ACCC was run on the cases and compared to determine the facility overloads caused or impacted by the transfer. The PSS/E options chosen to conduct the analysis can be found in Appendix A.

D. Upgrade Analysis

This system impact study does not include analysis with the assigned upgrades modeled. To determine the final cost and possible start date of the requested service, additional analysis will be performed to determine the impact of modeling the assigned upgrades for the request.

4. Study Results

A. Study Analysis Results

Tables 1 through 4 contain the initial steady-state analysis results of the System Impact Study. The Tables are in the attached workbook *SPP-2004-069-1 Tables*. The tables identify the seasonal case in which the event occurred, the facility control area location, applicable ratings of the overloaded facility, the loading percentage or voltage with and without the transfer, the percent transfer distribution factor (TDF) if applicable, and the estimated ATC value using interpolation if calculated. Comments are provided in the tables to document any SPP or Non - SPP identification or assignment of the event, existing mitigations plans or criteria to disregard the event as a limiting constraint, upgrades and costs to mitigate a limiting constraint, or any specific study procedures associated with modeling an event.

Tables 1.1, 1.2, and 1.3 list the SPP Facility Overloads caused or impacted by the transfer modeled, using Scenarios 1, 2, and 3, respectively. Tables 2.1, 2.2, and 2.3 list the SPP facility voltage violations caused or impacted by the transfer modeled, using Scenarios 1, 2, and 3, respectively. Tables 3.1, 3.2, and 3.3 list the Non-SPP Facility Overloads caused or impacted by the transfer modeled, using Scenarios 1, 2, and 3, respectively. Tables 4.1, 4.2, and 4.3 list the Non-SPP facility voltage violations caused or impacted by the transfer modeled, using Scenarios 1, 2, and 3, respectively. Solutions with engineering and construction costs are provided in the tables.

Tables 1.1a, 1.2a, and 1.3a document the modeling representation of the events identified in Tables 1.1, 1.2, and 1.3 to include bus numbers and bus names.

5. Conclusion

The study results of the SPA to SPA 275 request show that limiting constraints exist. Due to the limiting constraints identified, the Transmission Service Request cannot be granted. Any solutions, upgrades, and costs provided in the System Impact Study are planning estimates only. SPP will also review the possibility of curtailment of previously confirmed service and/or the redispatch of units as an option for relieving the additional impacts on the SPP facilities caused by the SPA to SPA request. These options will be evaluated as part of the Facility Study. Execution of a Facility Study Agreement is now required to maintain queue position. The final ATC, upgrade solutions, cost assignments, and available redispatch and curtailment options will be determined upon the completion of the facility study.

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 immediately
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 from 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

Study Case	From Area	To Area	Monitored Branch Overload	Rate <MVA>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	ATC (MW)	Solution	Estimated Cost
06AP			NONE IDENTIFIED						211*		
06G			NONE IDENTIFIED						275		
06SH			NONE IDENTIFIED						275		
06FA			NONE IDENTIFIED						275		
07SP			NONE IDENTIFIED						275		
07WP	SPRM	SWPA	CLAY - SPRINGFIELD 161KV	167	61.7	107.7	28.0	JAMES RIVER - SOUTHWEST 161KV	229	Replace disconnect switches at Springfield.	$200,000
10SP	SPRM	SPRM	NEERGARD - NORTON 69KV	70	67.9	103.7	9.1	MILL - PACKER 69KV	247	Solution Undetermined	
10SP	SWPA	SPRM	BROOKLINE - SPRINGFIELD 161KV	380	77.8	100.5	31.4	BROOKLINE - JUNCTION 161KV	269	Upgrade Modeled is Assigned to SPP-2003-253. Scheduled Completion Date 6/1/2007. Additional Upgrades Required. Solution Undetermined	
10WP	SPRM	SWPA	CLAY - SPRINGFIELD 161KV	167	66.3	111.2	27.3	JAMES RIVER - SOUTHWEST 161KV	206	See Previous Upgrade Specified for Facility	
10WP	SPRM	SWPA	CLAY - SPRINGFIELD 161KV	167	73.9	102.7	17.5	SERCW-02 HUBEN - MORGAN 345KV FRANKS - HUBEN 345KV	249	See Previous Upgrade Specified for Facility	
15SP	SPRM	SPRM	NEERGARD - NORTON 69KV	70	81.8	118.4	9.3	MILL - PACKER 69KV	137	Solution Undetermined	
15SP	SPRM	SPRM	JAMES RIVER - SEMINOLE 69KV	80	87.0	110.0	6.7	JAMES RIVER - TWIN OAKS 69KV	155	Solution Undetermined	
15SP	SPRM	SPRM	JAMES RIVER - TWIN OAKS 69KV	108	81.2	104.6	9.2	JAMES RIVER - SEMINOLE 69KV	221	Solution Undetermined	
15SP	SPRM	SPRM	JAMES RIVER - TWIN OAKS 69KV	108	81.4	104.2	8.9	JAMES RIVER - SOUTH HIGHWAY 65 69KV	224	Solution Undetermined	
15SP	SPRM	SPRM	JAMES RIVER - TWIN OAKS 69KV	108	80.2	104.1	9.4	JAMES RIVER - PLAINVIEW 69KV	228	Solution Undetermined	
15SP	SPRM	SPRM	BROOKLINE - JUNCTION 161KV	358	65.1	107.2	54.8	BATTLEFIELD - MAIN 161KV	228	Solution Undetermined	
15SP	SPRM	SPRM	GRAND - MAIN 69KV	108	56.1	108.6	20.6	JAMES RIVER 161/69KV TRANSFORMER	230	Solution Undetermined	
15SP	SPRM	SPRM	MAIN 161/69KV TRANSFORMER CKT 1	134	63.8	106.0	20.6	MAIN 161/69KV TRANSFORMER CKT 2	236	Solution Undetermined	
15SP	SPRM	SPRM	MAIN 161/69KV TRANSFORMER CKT 2	134	63.6	105.8	20.5	MAIN 161/69KV TRANSFORMER CKT 1	237	Solution Undetermined	
15SP	SPRM	SPRM	JAMES RIVER - TWIN OAKS 69KV	108	75.3	103.8	11.2	GRAND - MAIN 69KV	238	Solution Undetermined	
15SP	SWPA	SPRM	BROOKLINE - SPRINGFIELD 161KV	380	78.7	102.1	32.3	BROOKLINE - JUNCTION 161KV	251	Upgrade Modeled is Assigned to SPP-2003-253. Scheduled Completion Date 6/1/2007. Additional Upgrades Required. Solution Undetermined	
15SP	SPRM	SPRM	KICKAPOO - SUNSET 69KV	108	70.8	102.7	12.5	JAMES RIVER - TWIN OAKS 69KV	251	Solution Undetermined	
15SP	SPRM	SPRM	GRAND - MAIN 69KV	108	54.7	104.2	19.4	LAUREL - NICHOLS 69KV	252	Solution Undetermined	
15SP	SPRM	SPRM	GRAND - MAIN 69KV	108	57.9	102.5	17.5	REMOVE UNIT 5 FROM BUS 59899 [JRPS#5 113.800] DISPATCH	260	Solution Undetermined	
										Total Estimated Engineering and Construction Cost	$200,000

* Transfer Limited to the Seasonal Network Load Forecast

Study Case	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	ATC (MW)	Solution	Estimated Cost
06AP		NONE IDENTIFIED				211*		
06G		NONE IDENTIFIED				275		
06SH		NONE IDENTIFIED				275		
06FA		NONE IDENTIFIED				275		
07SP		NONE IDENTIFIED				275		
07WP		NONE IDENTIFIED				275		
10SP		NONE IDENTIFIED				275		
10WP	EMDE	59404 PUR390 269.0	0.9125	0.8823	OPEN LINE FROM BUS 59480 MON383 5 161 TO BUS 59591 MON383 269.0 TO BUS 59712 MON383 112.5 CKT1	182	Solution Undetermined	
15SP		NONE IDENTIFIED				275		
							Total Estimated Engineering and Construction Cost	$0

* Transfer Limited to the Seasonal Network Load Forecast

Study Case	From Area	To Area	Monitored Branch Overload	Rate <MVA>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	Comments
06AP			NONE IDENTIFIED						
06G			NONE IDENTIFIED						
06SH			NONE IDENTIFIED						
06FA			NONE IDENTIFIED						
07SP			NONE IDENTIFIED						
07WP			NONE IDENTIFIED						
10SP			NONE IDENTIFIED						
10WP			NONE IDENTIFIED						
15SP			NONE IDENTIFIED						

Study Case	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	Comments
06AP		NONE IDENTIFIED				
06G		NONE IDENTIFIED				
06SH		NONE IDENTIFIED				
06FA		NONE IDENTIFIED				
07SP		NONE IDENTIFIED				
07WP		NONE IDENTIFIED				
10SP		NONE IDENTIFIED				
10WP		NONE IDENTIFIED				
15SP		NONE IDENTIFIED				

Study Case	From Area	To Area	Monitored Branch Overload	Rate <MVA>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	ATC (MW)	Solution	Estimated Cost
06AP			NONE IDENTIFIED						211*		
06G			NONE IDENTIFIED						275		
06SH			NONE IDENTIFIED						275		
06FA			NONE IDENTIFIED						275		
07SP			NONE IDENTIFIED						275		
07WP			NONE IDENTIFIED						275		
10SP	SPRM	SPRM	NEERGARD - NORTON 69KV	70	67.8	103.5	9.1	MILL - PACKER 69KV	248	Solution Undetermined	
10SP			NONE IDENTIFIED						275		
10WP			NONE IDENTIFIED						275		
15SP	SPRM	SPRM	NEERGARD - NORTON 69KV	70	81.7	118.3	9.3	MILL - PACKER 69KV	138	Solution Undetermined	
15SP	SPRM	SPRM	JAMES RIVER - SEMINOLE 69KV	80	86.9	109.7	6.6	JAMES RIVER - TWIN OAKS 69KV	158	Solution Undetermined	
15SP	SPRM	SPRM	JAMES RIVER - TWIN OAKS 69KV	108	81.2	104.4	9.1	JAMES RIVER - SEMINOLE 69KV	223	Solution Undetermined	
15SP	SPRM	SPRM	JAMES RIVER - TWIN OAKS 69KV	108	81.3	103.9	8.9	JAMES RIVER - SOUTH HIGHWAY 65 69KV	228	Solution Undetermined	
15SP	SPRM	SPRM	JAMES RIVER - TWIN OAKS 69KV	108	80.2	103.9	9.3	JAMES RIVER - PLAINVIEW 69KV	229	Solution Undetermined	
15SP	SPRM	SPRM	GRAND - MAIN 69KV	108	55.5	107.8	20.5	JAMES RIVER 161/69KV TRANSFORMER	234	Solution Undetermined	
15SP	SPRM	SPRM	JAMES RIVER - TWIN OAKS 69KV	108	75.2	103.5	11.1	GRAND - MAIN 69KV	241	Solution Undetermined	
15SP	SPRM	SPRM	MAIN 161/69KV TRANSFORMER CKT 1	134	61.6	103.9	20.7	MAIN 161/69KV TRANSFORMER CKT 2	249	Solution Undetermined	
15SP	SPRM	SPRM	MAIN 161/69KV TRANSFORMER CKT 2	134	61.4	103.7	20.6	MAIN 161/69KV TRANSFORMER CKT 1	251	Solution Undetermined	
15SP	SPRM	SPRM	KICKAPOO - SUNSET 69KV	108	70.8	102.7	12.5	JAMES RIVER - TWIN OAKS 69KV	252	Solution Undetermined	
15SP	SPRM	SPRM	GRAND - MAIN 69KV	108	54.2	103.3	19.3	LAUREL - NICHOLS 69KV	257	Solution Undetermined	
15SP	SPRM	SPRM	BROOKLINE - JUNCTION 161KV	358	59.7	101.7	54.7	BATTLEFIELD - MAIN 161KV	264	Solution Undetermined	
15SP	SPRM	SPRM	GRAND - MAIN 69KV	108	57.0	101.6	17.5	REMOVE UNIT 5 FROM BUS 59899 [JRPS#5 113.800] DISPATCH	265	Solution Undetermined	
										Total Estimated Engineering and Construction Cost	$0

* Transfer Limited to the Seasonal Network Load Forecast

Study Case	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	ATC (MW)	Solution	Estimated Cost
06AP		NONE IDENTIFIED				211*		
06G		NONE IDENTIFIED				275		
06SH		NONE IDENTIFIED				275		
06FA		NONE IDENTIFIED				275		
07SP		NONE IDENTIFIED				275		
07WP		NONE IDENTIFIED				275		
10SP		NONE IDENTIFIED				275		
10WP		NONE IDENTIFIED				275		
15SP		NONE IDENTIFIED				275		
							Total Estimated Engineering and Construction Cost	$0

* Transfer Limited to the Seasonal Network Load Forecast

Study Case	From Area	To Area	Monitored Branch Overload	Rate <MVA>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	Comments
06AP			NONE IDENTIFIED						
06G			NONE IDENTIFIED						
06SH			NONE IDENTIFIED						
06FA			NONE IDENTIFIED						
07SP			NONE IDENTIFIED						
07WP			NONE IDENTIFIED						
10SP			NONE IDENTIFIED						
10WP			NONE IDENTIFIED						
15SP	ENTR	ENTR	99824 5MELBRN 161 99834*5SAGE * 161 1	148	96.2	104.8	4.6	REMOVE UNIT 2 FROM BUS 59893 [SWPS#2 120.000] DISPATCH	

Study Case	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	Comments
06AP		NONE IDENTIFIED				
06G		NONE IDENTIFIED				
06SH		NONE IDENTIFIED				
06FA		NONE IDENTIFIED				
07SP		NONE IDENTIFIED				
07WP		NONE IDENTIFIED				
10SP		NONE IDENTIFIED				
10WP		NONE IDENTIFIED				
15SP		NONE IDENTIFIED				

SPP-2004-069-1
Table 1.3 - SPP Facility Overloads
Caused or Impacted by Transfer Using Scenario 3

Southwest Power Pool
System Impact Study

Study Case	From Area	To Area	Monitored Branch Overload	Rate <MVA>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	ATC (MW)	Solution	Estimated Cost
06AP			NONE IDENTIFIED						211*		
06G			NONE IDENTIFIED						275		
06SH			NONE IDENTIFIED						275		
06FA			NONE IDENTIFIED						275		
07SP			NONE IDENTIFIED						275		
07WP	SPRM	SWPA	CLAY - SPRINGFIELD 161KV	167	55.6	101.8	28.0	JAMES RIVER - SOUTHWEST 161KV	264	See Previous Upgrade Specified for Facility in Scenario 1	
10SP	SPRM	SPRM	NEERGARD - NORTON 69KV	70	67.9	103.6	9.1	MILL - PACKER 69KV	247	Solution Undetermined	
10WP	SPRM	SWPA	CLAY - SPRINGFIELD 161KV	167	59.3	103.8	27.0	JAMES RIVER - SOUTHWEST 161KV	252	See Previous Upgrade Specified for Facility in Scenario 1	
15SP	SPRM	SPRM	NEERGARD - NORTON 69KV	70	81.7	118.4	9.3	MILL - PACKER 69KV	137	Solution Undetermined	
15SP	SPRM	SPRM	JAMES RIVER - SEMINOLE 69KV	80	86.9	109.8	6.7	JAMES RIVER - TWIN OAKS 69KV	157	Solution Undetermined	
15SP	SPRM	SPRM	JAMES RIVER - TWIN OAKS 69KV	108	81.2	104.5	9.1	JAMES RIVER - SEMINOLE 69KV	222	Solution Undetermined	
15SP	SPRM	SPRM	JAMES RIVER - TWIN OAKS 69KV	108	81.4	104.1	8.9	JAMES RIVER - SOUTH HIGHWAY 65 69KV	226	Solution Undetermined	
15SP	SPRM	SPRM	JAMES RIVER - TWIN OAKS 69KV	108	80.2	104.0	9.3	JAMES RIVER - PLAINVIEW 69KV	229	Solution Undetermined	
15SP	SPRM	SPRM	GRAND - MAIN 69KV	108	55.8	108.2	20.6	JAMES RIVER 161/69KV TRANSFORMER	232	Solution Undetermined	
15SP	SPRM	SPRM	JAMES RIVER - TWIN OAKS 69KV	108	75.3	103.6	11.1	GRAND - MAIN 69KV	240	Solution Undetermined	
15SP	SPRM	SPRM	MAIN 161/69KV TRANSFORMER CKT 1	134	62.7	105.0	20.6	MAIN 161/69KV TRANSFORMER CKT 2	242	Solution Undetermined	
15SP	SPRM	SPRM	MAIN 161/69KV TRANSFORMER CKT 2	134	62.6	104.8	20.6	MAIN 161/69KV TRANSFORMER CKT 1	244	Solution Undetermined	
15SP	SPRM	SPRM	BROOKLINE - JUNCTION 161KV	358	62.7	104.7	54.7	BATTLEFIELD - MAIN 161KV	244	Solution Undetermined	
15SP	SPRM	SPRM	KICKAPOO - SUNSET 69KV	108	70.8	102.7	12.5	JAMES RIVER - TWIN OAKS 69KV	252	Solution Undetermined	
15SP	SPRM	SPRM	GRAND - MAIN 69KV	108	54.6	103.8	19.3	LAUREL - NICHOLS 69KV	254	Solution Undetermined	
15SP	SPRM	SPRM	GRAND - MAIN 69KV	108	57.5	102.1	17.5	REMOVE UNIT 5 FROM BUS 59899 [JRPS#5 113.800] DISPATCH	262	Solution Undetermined	
										Total Estimated Engineering and Construction Cost	$0

* Transfer Limited to the Seasonal Network Load Forecast

Study Case	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	ATC (MW)	Solution	Estimated Cost
06AP		NONE IDENTIFIED				211*		
06G		NONE IDENTIFIED				275		
06SH		NONE IDENTIFIED				275		
06FA		NONE IDENTIFIED				275		
07SP		NONE IDENTIFIED				275		
07WP		NONE IDENTIFIED				275		
10SP		NONE IDENTIFIED				275		
10WP	EMDE	59404 PUR390 269.0	0.9135	0.8851	OPEN LINE FROM BUS 59480 MON383 5 161 TO BUS 59591 MON383 269.0 TO BUS 59712 MON383 112.5 CKT1	193	Solution Undetermined	
15SP		NONE IDENTIFIED				275		
							Total Estimated Engineering and Construction Cost	$0

* Transfer Limited to the Seasonal Network Load Forecast

Study Case	From Area	To Area	Monitored Branch Overload	Rate <MVA>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	Comments
06AP			NONE IDENTIFIED						
06G			NONE IDENTIFIED						
06SH			NONE IDENTIFIED						
06FA			NONE IDENTIFIED						
07SP			NONE IDENTIFIED						
07WP			NONE IDENTIFIED						
10SP			NONE IDENTIFIED						
10WP			NONE IDENTIFIED						
15SP			NONE IDENTIFIED						

Study Case	AREA	Monitored Bus with Violation	BC Voltage (PU)	TC Voltage (PU)	Outaged Branch Causing Voltage Violation	Comments
06AP		NONE IDENTIFIED				
06G		NONE IDENTIFIED				
06SH		NONE IDENTIFIED				
06FA		NONE IDENTIFIED				
07SP		NONE IDENTIFIED				
07WP		NONE IDENTIFIED				
10SP		NONE IDENTIFIED				
10WP		NONE IDENTIFIED				
15SP		NONE IDENTIFIED				

Study Case	From Area	To Area	Monitored Branch Overload	Rate <MVA>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	ATC (MW)	Solution	Estimated Cost
06AP			NONE IDENTIFIED						211*		
06G			NONE IDENTIFIED						275		
06SH			NONE IDENTIFIED						275		
06FA			NONE IDENTIFIED						275		
07SP			NONE IDENTIFIED						275		
07WP	SPRM	SWPA	52692 SPRGFLD5 161 to 59970 CLAY 5 161 CKT 1	167	61.7	107.7	28.0	59954 SWPS 5 161 to 59961 JRPS 5 161 CKT 1	229	Replace disconnect switches at Springfield.	$200,000
10SP	SPRM	SPRM	59928 NORTON 2 69 to 59930 NEERGRD2 69 CKT 1	70	67.9	103.7	9.1	59918 MILL 2 69 to 59932 PACKER 2 69 CKT 1	247	Solution Undetermined	
10SP	SWPA	SPRM	52692 SPRGFLD5 161 to 59969 BRKLNE 5 161 CKT 1	380	77.8	100.5	31.4	59955 JUNCTN 5 161 to 59969 BRKLNE 5 161 CKT 1	269	Upgrade Modeled is Assigned to SPP-2003-253. Scheduled Completion Date 6/1/2007. Additional Upgrades Required. Solution Undetermined	
10WP	SPRM	SWPA	52692 SPRGFLD5 161 to 59970 CLAY 5 161 CKT 1	167	66.3	111.2	27.3	59954 SWPS 5 161 to 59961 JRPS 5 161 CKT 1	206	See Previous Upgrade Specified for Facility	
10WP	SPRM	SWPA	52692 SPRGFLD5 161 to 59970 CLAY 5 161 CKT 1	167	73.9	102.7	17.5	SERCW-02 96042 7HUBEN 345 96045 7MORGAN 345 CKT 1 96041 7FRANKS 345 96042 7HUBEN 345 CKT 1	249	See Previous Upgrade Specified for Facility	
15SP	SPRM	SPRM	59928 NORTON 2 69 to 59930 NEERGRD2 69 CKT 1	70	81.8	118.4	9.3	59918 MILL 2 69 to 59932 PACKER 2 69 CKT 1	137	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59934 SEMINOL2 69 CKT 1	80	87.0	110.0	6.7	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	155	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	108	81.2	104.6	9.2	59904 JRPS 2 69 to 59934 SEMINOL2 69 CKT 1	221	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	108	81.4	104.2	8.9	59904 JRPS 2 69 to 59908 S HY65 2 69 CKT 1	224	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	108	80.2	104.1	9.4	59904 JRPS 2 69 to 59905 PLAINVI2 69 CKT 1	228	Solution Undetermined	
15SP	SPRM	SPRM	59955 JUNCTN 5 161 to 59969 BRKLNE 5 161 CKT 1	358	65.1	107.2	54.8	59958 MAIN 5 161 to 59959 BATFLD 5 161 CKT 1	228	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59922 GRAND 2 69 CKT 1	108	56.1	108.6	20.6	59904 JRPS 2 69 to 59961 JRPS 5 161 CKT 1	230	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59958 MAIN 5 161 CKT 1	134	63.8	106.0	20.6	59921 MAIN 2 69 to 59958 MAIN 5 161 CKT 2	236	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59958 MAIN 5 161 CKT 2	134	63.6	105.8	20.5	59921 MAIN 2 69 to 59958 MAIN 5 161 CKT 1	237	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	108	75.3	103.8	11.2	59921 MAIN 2 69 to 59922 GRAND 2 69 CKT 1	238	Solution Undetermined	
15SP	SWPA	SPRM	52692 SPRGFLD5 161 to 59969 BRKLNE 5 161 CKT 1	380	78.7	102.1	32.3	59955 JUNCTN 5 161 to 59969 BRKLNE 5 161 CKT 1	251	Upgrade Modeled is Assigned to SPP-2003-253. Scheduled Completion Date 6/1/2007. Additional Upgrades Required. Solution Undetermined	
15SP	SPRM	SPRM	59906 KICKAPO2 69 to 59907 SUNSET 2 69 CKT 1	108	70.8	102.7	12.5	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	251	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59922 GRAND 2 69 CKT 1	108	54.7	104.2	19.4	59924 LAUREL-2 69 to 59925 NICHOLS2 69 CKT 1	252	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59922 GRAND 2 69 CKT 1	108	57.9	102.5	17.5	REMOVE UNIT 5 FROM BUS 59899 [JRPS#5 113.800] DISPATCH	260	Solution Undetermined	

* Transfer Limited to the Seasonal Network Load Forecast

Study Case	From Area	To Area	Monitored Branch Overload	Rate <MVA>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	ATC (MW)	Solution	Estimated Cost
06AP			NONE IDENTIFIED						211*		
06G			NONE IDENTIFIED						275		
06SH			NONE IDENTIFIED						275		
06FA			NONE IDENTIFIED						275		
07SP			NONE IDENTIFIED						275		
07WP			NONE IDENTIFIED						275		
10SP	SPRM	SPRM	59928 NORTON 2 69 to 59930 NEERGRD2 69 CKT 1	70	67.8	103.5	9.1	59918 MILL 2 69 to 59932 PACKER 2 69 CKT 1	248	Solution Undetermined	
10SP			NONE IDENTIFIED						275		
10WP			NONE IDENTIFIED						275		
15SP	SPRM	SPRM	59928 NORTON 2 69 to 59930 NEERGRD2 69 CKT 1	70	81.7	118.3	9.3	59918 MILL 2 69 to 59932 PACKER 2 69 CKT 1	138	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59934 SEMINOL2 69 CKT 1	80	86.9	109.7	6.6	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	158	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	108	81.2	104.4	9.1	59904 JRPS 2 69 to 59934 SEMINOL2 69 CKT 1	223	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	108	81.3	103.9	8.9	59904 JRPS 2 69 to 59908 S HY65 2 69 CKT 1	228	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	108	80.2	103.9	9.3	59904 JRPS 2 69 to 59905 PLAINVI2 69 CKT 1	229	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59922 GRAND 2 69 CKT 1	108	55.5	107.8	20.5	59904 JRPS 2 69 to 59961 JRPS 5 161 CKT 1	234	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	108	75.2	103.5	11.1	59921 MAIN 2 69 to 59922 GRAND 2 69 CKT 1	241	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59958 MAIN 5 161 CKT 1	134	61.6	103.9	20.7	59921 MAIN 2 69 to 59958 MAIN 5 161 CKT 2	249	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59958 MAIN 5 161 CKT 2	134	61.4	103.7	20.6	59921 MAIN 2 69 to 59958 MAIN 5 161 CKT 1	251	Solution Undetermined	
15SP	SPRM	SPRM	59906 KICKAPO2 69 to 59907 SUNSET 2 69 CKT 1	108	70.8	102.7	12.5	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	252	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59922 GRAND 2 69 CKT 1	108	54.2	103.3	19.3	59924 LAUREL-2 69 to 59925 NICHOLS2 69 CKT 1	257	Solution Undetermined	
15SP	SPRM	SPRM	59955 JUNCTN 5 161 to 59969 BRKLNE 5 161 CKT 1	358	59.7	101.7	54.7	59958 MAIN 5 161 to 59959 BATFLD 5 161 CKT 1	264	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 269.0 59922*GRAND 269.0 1	108	57.0	101.6	17.5	REMOVE UNIT 5 FROM BUS 59899 [JRPS#5 113.800] DISPATCH	265	Solution Undetermined	

* Transfer Limited to the Seasonal Network Load Forecas

Study Case	From Area	To Area	Monitored Branch Overload	Rate <MVA>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	ATC (MW)	Solution	Estimated Cost
06AP			NONE IDENTIFIED						211*		
06G			NONE IDENTIFIED						275		
06SH			NONE IDENTIFIED						275		
06FA			NONE IDENTIFIED						275		
07SP			NONE IDENTIFIED						275		
07WP	SPRM	SWPA	52692 SPRGFLD5 161 to 59970 CLAY 5 161 CKT '	167	55.6	101.8	28.0	59954 SWPS 5 161 to 59961 JRPS 5 161 CKT 1	264	See Previous Upgrade Specified for Facility in Scenario 1	
10SP	SPRM	SPRM	59928 NORTON 2 69 to 59930 NEERGRD2 69 CKT 1	70	67.9	103.6	9.1	59918 MILL 2 69 to 59932 PACKER 2 69 CKT 1	247	Solution Undetermined	
10WP	SPRM	SWPA	52692 SPRGFLD5 161 to 59970 CLAY 5 161 CKT '	167	59.3	103.8	27.0	59954 SWPS 5 161 to 59961 JRPS 5 161 CKT 1	252	See Previous Upgrade Specified for Facility in Scenario 1	
15SP	SPRM	SPRM	59928 NORTON 2 69 to 59930 NEERGRD2 69 CKT 1	70	81.7	118.4	9.3	59918 MILL 2 69 to 59932 PACKER 2 69 CKT 1	137	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59934 SEMINOL2 69 CKT '	80	86.9	109.8	6.7	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	157	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	108	81.2	104.5	9.1	59904 JRPS 2 69 to 59934 SEMINOL2 69 CKT 1	222	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	108	81.4	104.1	8.9	59904 JRPS 2 69 to 59908 S HY65 2 69 CKT '	226	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	108	80.2	104.0	9.3	59904 JRPS 2 69 to 59905 PLAINVI2 69 CKT '	229	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59922 GRAND 2 69 CKT 1	108	55.8	108.2	20.6	59904 JRPS 2 69 to 59961 JRPS 5 161 CKT '	232	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	108	75.3	103.6	11.1	59921 MAIN 2 69 to 59922 GRAND 2 69 CKT 1	240	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59958 MAIN 5 161 CKT 1	134	62.7	105.0	20.6	59921 MAIN 2 69 to 59958 MAIN 5 161 CKT 2	242	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59958 MAIN 5 161 CKT 2	134	62.6	104.8	20.6	59921 MAIN 2 69 to 59958 MAIN 5 161 CKT 1	244	Solution Undetermined	
15SP	SPRM	SPRM	59955 JUNCTN 5 161 to 59969 BRKLNE 5 161 CKT 1	358	62.7	104.7	54.7	59958 MAIN 5 161 to 59959 BATFLD 5 161 CKT '	244	Solution Undetermined	
15SP	SPRM	SPRM	59906 KICKAPO2 69 to 59907 SUNSET 2 69 CKT '	108	70.8	102.7	12.5	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	252	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59922 GRAND 2 69 CKT 1	108	54.6	103.8	19.3	59924 LAUREL-2 69 to 59925 NICHOLS2 69 CKT 1	254	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59922 GRAND 2 69 CKT 1	108	57.5	102.1	17.5	REMOVE UNIT 5 FROM BUS 59899 [JRPS#5 113.800] DISPATCH	262	Solution Undetermined	

* Transfer Limited to the Seasonal Network Load Forecast

Study Case	From Area	To Area	Monitored Branch Overload	Rate <MVA>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	ATC (MW)	Solution	Estimated Cost
06AP			NONE IDENTIFIED						211*		
06G			NONE IDENTIFIED						275		
06SH			NONE IDENTIFIED						275		
06FA			NONE IDENTIFIED						275		
07SP			NONE IDENTIFIED						275		
07WP	SPRM	SWPA	52692 SPRGFLD5 161 to 59970 CLAY 5 161 CKT '	167	55.6	101.8	28.0	59954 SWPS 5 161 to 59961 JRPS 5 161 CKT 1	264	See Previous Upgrade Specified for Facility in Scenario 1	
10SP	SPRM	SPRM	59928 NORTON 2 69 to 59930 NEERGRD2 69 CKT 1	70	67.9	103.6	9.1	59918 MILL 2 69 to 59932 PACKER 2 69 CKT 1	247	Solution Undetermined	
10WP	SPRM	SWPA	52692 SPRGFLD5 161 to 59970 CLAY 5 161 CKT '	167	59.3	103.8	27.0	59954 SWPS 5 161 to 59961 JRPS 5 161 CKT 1	252	See Previous Upgrade Specified for Facility in Scenario 1	
15SP	SPRM	SPRM	59928 NORTON 2 69 to 59930 NEERGRD2 69 CKT 1	70	81.7	118.4	9.3	59918 MILL 2 69 to 59932 PACKER 2 69 CKT 1	137	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59934 SEMINOL2 69 CKT '	80	86.9	109.8	6.7	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	157	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	108	81.2	104.5	9.1	59904 JRPS 2 69 to 59934 SEMINOL2 69 CKT 1	222	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	108	81.4	104.1	8.9	59904 JRPS 2 69 to 59908 S HY65 2 69 CKT '	226	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	108	80.2	104.0	9.3	59904 JRPS 2 69 to 59905 PLAINVI2 69 CKT '	229	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59922 GRAND 2 69 CKT 1	108	55.8	108.2	20.6	59904 JRPS 2 69 to 59961 JRPS 5 161 CKT '	232	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	108	75.3	103.6	11.1	59921 MAIN 2 69 to 59922 GRAND 2 69 CKT 1	240	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59958 MAIN 5 161 CKT 1	134	62.7	105.0	20.6	59921 MAIN 2 69 to 59958 MAIN 5 161 CKT 2	242	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59958 MAIN 5 161 CKT 2	134	62.6	104.8	20.6	59921 MAIN 2 69 to 59958 MAIN 5 161 CKT 1	244	Solution Undetermined	
15SP	SPRM	SPRM	59955 JUNCTN 5 161 to 59969 BRKLNE 5 161 CKT 1	358	62.7	104.7	54.7	59958 MAIN 5 161 to 59959 BATFLD 5 161 CKT '	244	Solution Undetermined	
15SP	SPRM	SPRM	59906 KICKAPO2 69 to 59907 SUNSET 2 69 CKT '	108	70.8	102.7	12.5	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	252	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59922 GRAND 2 69 CKT 1	108	54.6	103.8	19.3	59924 LAUREL-2 69 to 59925 NICHOLS2 69 CKT 1	254	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59922 GRAND 2 69 CKT 1	108	57.5	102.1	17.5	REMOVE UNIT 5 FROM BUS 59899 [JRPS#5 113.800] DISPATCH	262	Solution Undetermined	

* Transfer Limited to the Seasonal Network Load Forecast

Study Case	From Area	To Area	Monitored Branch Overload	Rate <MVA>	BC % Loading	TC % Loading	%TDF	Outaged Branch Causing Overload	ATC (MW)	Solution	Estimated Cost
06AP			NONE IDENTIFIED						211*		
06G			NONE IDENTIFIED						275		
06SH			NONE IDENTIFIED						275		
06FA			NONE IDENTIFIED						275		
07SP			NONE IDENTIFIED						275		
07WP	SPRM	SWPA	52692 SPRGFLD5 161 to 59970 CLAY 5 161 CKT '	167	55.6	101.8	28.0	59954 SWPS 5 161 to 59961 JRPS 5 161 CKT 1	264	See Previous Upgrade Specified for Facility in Scenario 1	
10SP	SPRM	SPRM	59928 NORTON 2 69 to 59930 NEERGRD2 69 CKT 1	70	67.9	103.6	9.1	59918 MILL 2 69 to 59932 PACKER 2 69 CKT 1	247	Solution Undetermined	
10WP	SPRM	SWPA	52692 SPRGFLD5 161 to 59970 CLAY 5 161 CKT '	167	59.3	103.8	27.0	59954 SWPS 5 161 to 59961 JRPS 5 161 CKT 1	252	See Previous Upgrade Specified for Facility in Scenario 1	
15SP	SPRM	SPRM	59928 NORTON 2 69 to 59930 NEERGRD2 69 CKT 1	70	81.7	118.4	9.3	59918 MILL 2 69 to 59932 PACKER 2 69 CKT 1	137	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59934 SEMINOL2 69 CKT '	80	86.9	109.8	6.7	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	157	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	108	81.2	104.5	9.1	59904 JRPS 2 69 to 59934 SEMINOL2 69 CKT 1	222	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	108	81.4	104.1	8.9	59904 JRPS 2 69 to 59908 S HY65 2 69 CKT '	226	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	108	80.2	104.0	9.3	59904 JRPS 2 69 to 59905 PLAINVI2 69 CKT '	229	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59922 GRAND 2 69 CKT 1	108	55.8	108.2	20.6	59904 JRPS 2 69 to 59961 JRPS 5 161 CKT '	232	Solution Undetermined	
15SP	SPRM	SPRM	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	108	75.3	103.6	11.1	59921 MAIN 2 69 to 59922 GRAND 2 69 CKT 1	240	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59958 MAIN 5 161 CKT 1	134	62.7	105.0	20.6	59921 MAIN 2 69 to 59958 MAIN 5 161 CKT 2	242	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59958 MAIN 5 161 CKT 2	134	62.6	104.8	20.6	59921 MAIN 2 69 to 59958 MAIN 5 161 CKT 1	244	Solution Undetermined	
15SP	SPRM	SPRM	59955 JUNCTN 5 161 to 59969 BRKLNE 5 161 CKT 1	358	62.7	104.7	54.7	59958 MAIN 5 161 to 59959 BATFLD 5 161 CKT '	244	Solution Undetermined	
15SP	SPRM	SPRM	59906 KICKAPO2 69 to 59907 SUNSET 2 69 CKT '	108	70.8	102.7	12.5	59904 JRPS 2 69 to 59933 TWINOAK2 69 CKT 1	252	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59922 GRAND 2 69 CKT 1	108	54.6	103.8	19.3	59924 LAUREL-2 69 to 59925 NICHOLS2 69 CKT 1	254	Solution Undetermined	
15SP	SPRM	SPRM	59921 MAIN 2 69 to 59922 GRAND 2 69 CKT 1	108	57.5	102.1	17.5	REMOVE UNIT 5 FROM BUS 59899 [JRPS#5 113.800] DISPATCH	262	Solution Undetermined	

* Transfer Limited to the Seasonal Network Load Forecast