

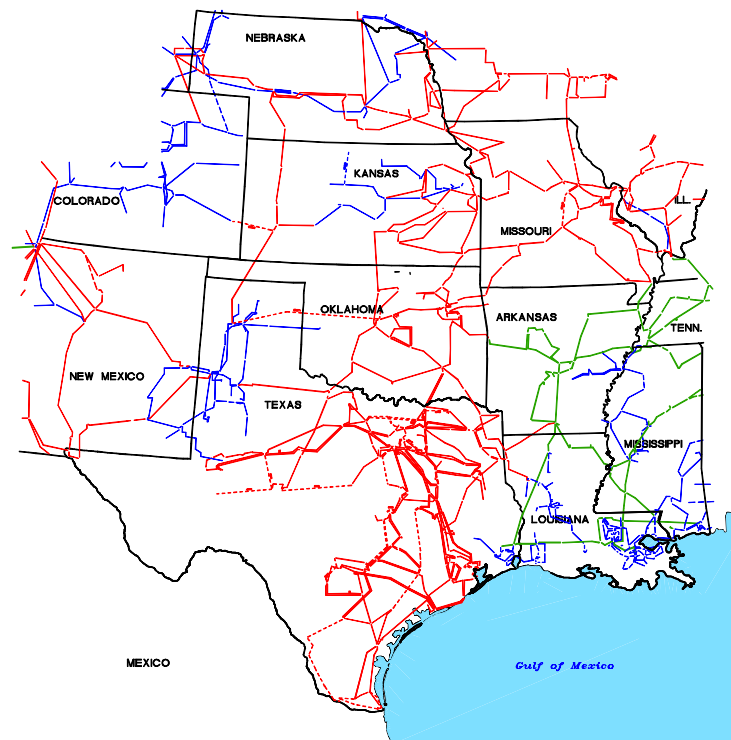
Southwest Power Pool

Intra-Regional Appraisal and Study Observation

2003 Winter Peak

Transmission Assessment

November 2003





SOUTHWEST POWER POOL
Intra-Regional Appraisal and Study Observation
2003 Winter Peak Transmission Assessment

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Overview

In accordance with the MAIN-MAPP-SPP (MMS) Agreement to review the reliability of the interconnected system along the interface of the three regions, a study was made to determine the ability of this system to transfer power between MAIN, MAPP and SPP, and their respective subregions for the modeled 2003 winter peak conditions. The primary goal of this report is to review and assess the overall adequacy of the Southwest Power Pool region's interconnected bulk electric transmission system based on the results of the MMS study.

The specific tasks involved were:

1. Determine the adequacy of the bulk transmission system for numerous contingency conditions.
2. Review the application of operating guides required in this study to assure they perform as intended.
3. Determine areas where special operating procedures might be required to reduce heavy transmission loading during contingency conditions.

Regional transfers were studied with information supplied by neighboring regions. Individual NERC Regions are allowed to simulated transfers using their own criteria defined for transmission assessments. The MAIN-MAPP-SPP (MMS) study is performed for summer and winter peaks by a separate study group at the request of NERC. Transfer capability of the inter- and intra-transmission system was also studied as an indicator of the overall adequacy of the transmission system. The simulated transfers do not represent how commercial business is done and should not be used as an indicator of commercially available transmission capacity for the given season. These transfer numbers are not simultaneous and cannot be added together (see NERC document on Transfer Capability).

The NERC Planning Standards define system reliability in terms of adequacy and security. This report addresses system adequacy. This study does not assess system security, which involves the system's response to sudden disturbances and requires the use of study techniques such as short circuit and stability analysis.

This study does not determine if adequate generating capacity exists to create the transfers documented here, especially if the system is experiencing a wide-spread temporary power deficiency as has happened during adverse weather conditions. **The nature of the study was to focus on the bulk transmission network.**

SPP is divided into two sub-regions consisting of the North and South. The North Sub-Region contains the operating companies in the states of Kansas and Missouri. The South Sub-Region contains the remaining companies in SPP which includes all of Oklahoma and parts of Arkansas, Louisiana, Mississippi, New Mexico, and Texas.

Each transfer direction was studied to determine any limiting facilities under any single contingency event (Linear FCITC - First Contingency Incremental Transfer Capability) up to the transfer test level. The four most limiting elements are noted. Operating Guides used are shown as applicable to increase transfer capability.

This study is based on a single “snapshot” which includes many variables and thus, many assumptions. Many of these variables (load, generation dispatch, unit outages, generating additions, etc.) will change throughout the 2003 winter peak season, so they will differ from those simulated in the models. These transfer capability numbers, therefore, should be taken as a **guide** to transmission adequacy during 2003 winter peak period.

A change in the method used in simulating the transfer levels could also vary the values of the transfer capability number. For more specific details on the transmission assessment methodology and procedures, contact the Southwest Power Pool office.

Sub-Regional Appraisal and Study Observations 2003 Winter Peak Transmission Assessment

I. General Observations

The MAIN TASG case was developed from the 2003 Winter Peak model of the SPP 2003 Basecase series of load flow cases along with models from MAIN, MAPP and SERC. The sub-regions of MAIN, MAPP and SPP along with member companies are listed below.

SPP-North

The SPP-North sub-region consists of the utilities located principally within the states of Kansas and Missouri. The member systems in the area are:

- The Board of Public Utilities, Kansas City
- City Power & Light, Independence
- City Utilities, Springfield
- The Empire District Electric Company
- Kansas City Power & Light Company
- Midwest Energy Inc.
- Sunflower Electric Power Corp.
- Aquila, Inc.
 - Missouri Public Service Company
 - West Plains Energy
 - St. Joseph Light & Power
- Westar Energy
 - Westar Energy, Inc.
 - Kansas Gas and Electric Company

SPP-South

The SPP-South sub-region consists of the utilities located principally within the states of Oklahoma, Arkansas, Louisiana, Mississippi, New Mexico, and Texas. The member systems in the area are:

- American Electric Power
 - AEP Public Service Company of Oklahoma
 - AEP Southwestern Electric Power Company
- Central Louisiana Electric Company
- City of Lafayette, Louisiana
- Louisiana Energy & Power Authority
- Grand River Dam Authority
- Oklahoma Gas & Electric Company
- Oklahoma Municipal Power Authority
- Southwestern Power Administration
- Southwestern Public Service Company
- Western Farmers Electric Cooperative
- Duke Energy McClain

MAIN-South

The member systems in the area are :

- Ameren
- Central Illinois Light Company
- Columbia Water & Light
- City Water Light and Power, Springfield, Illinois
- Duke Energy Audrain County – IPP Control Area
- Electric Energy, Incorporated
- Illinois Municipal Electric Agency
- Illinois Power Company
- Southern Illinois Power Cooperative
- Soyland Power Cooperative

Iowa (MAPP)

The member systems in the area are :

- Mid-American Energy Company
- Muscatine Power and Water Company

Minnesota (MAPP)

The member systems in the area are :

- Dairyland Power Cooperative
- Great River Energy
- Cooperative Power
- United Power Association
- Manitoba Hydro-Electric Board
- Minnesota Power
- Excel Energy Company
- Southern Minnesota Power

II. Nonsimultaneous Import Transfer Capabilities (MW) for SPP Subregions

Transfer Direction	2003 Winter		2002 Winter		2003 Winter Limiting Element (2003 Winter Outaged Element)	Owner
	FCITC	Notes	FCITC	Notes		
AMRN-SPP-N	1500*		1500*		No Limit Found (Each Valid Contingency Tested)	
IOWA-SPP-N	1200*		1200*		No Limit Found (Each Valid Contingency Tested)	
MINN-SPP-N	700		1500*	4,44	Austin-Hayward 161 kV (Adams-Pleasant Valley 345 kV) (Adams 345/161 kV Tr.) (Adams-Hazleton 345 kV)	SMP (NSP) (NSP) (MEC- ALTW)
SMAIN-SPP-N	1500*	61	1500*		No Limit Found (Each Valid Contingency Tested)	
AMRN-SPP-S	1500		1300		Fort Smith 500/161 kV Tr. (Fort Smith 500/345 kV Tr.)	OKGE (OKGE)
SPP-N-SPP-S	1200*		1200*		No Limit Found (Each Valid Contingency Tested)	
SPP-S-SPP-N	1500*		1500*		No Limit Found (Each Valid Contingency Tested)	

(*) Denotes transfer level studied or based upon the transfer level studied.

(l) Indicates the implementation of a nonemergency guide.

(i) Indicates the implementation of an emergency guide.

A description of the following guides can be found in Exhibit D-2:

(4) Arpin Area Operating Guides

(44) Taconite Harbor Emergency Operating Guide

(61) Poweshiek-Reasnor Operating Guide

SPP-North Imports

SPP-N import FCITC from AMRN is 1500 MW. No limit was identified up to this transfer level. This is the same level reported in the 2002 winter study with no limitation found. With IPP participation in the AMRN export transfer points, SPP-N import FCITC from AMRN is 1500 MW with the Poweshiek-Reasnor Operating Guide available.

SPP-N import FCITC from IOWA is 1200 MW. No limiting element was identified up to this transfer level. This is the same FCITC reported for the 2002 winter study with no limiting element identified up to the transfer level.

SPP-N import FCITC from MINN is 700 MW limited by the Austin-Hayward 161 kV line (SMP) for the outage of Hazleton-Adams 345 kV line (ALTW-MEC), Adams 345/161 kV transformer (NSP) and Adams-Pleasant Valley 345 kV line (NSP). The import FCITC of 700 MW is a decrease from the 1500 MW FCITC reported in the 2002 winter study with no limitations found.

SPP-N import FCITC from SMAIN is 1500 MW with no limit found up to the test level with the Poweshiek-Reasnor Operating Guide available. No limitation was found up to the test level in the 2002 winter study. The FCITC level remained the same with IPP participation in the SMAIN export transfer points.

SPP-N import FCITC from SPP-S is 1500 MW. No limiting element was identified up to this transfer level. This is the same FCITC reported for the 2002 winter study with no limiting element identified up to the transfer level.

SPP-South Imports

SPP-S import FCITC from AMRN is 1500 MW limited by the Fort Smith 500/161 kV transformer (OKGE) for the outage of Fort Smith 500/345 kV transformer (OKGE). This level is an increase from the 1300 MW FCITC reported in the 2002 winter study limited by the Danville-N.Magazine 161 kV line (ESI-AEPW) for the outage of Fort Smith-ANO 500 kV line (OKGE-ESI). The FCITC level remained the same with IPP participation in the AMRN export transfer points.

SPP-S import FCITC from SPP-N is 1200 MW. No limiting element was identified up to this transfer level. This is the same FCITC reported for the 2002 winter study with no limiting element identified up to the transfer level.

**Southwest Power Pool
Regional Appraisal and Study Observations
2003 Winter Peak Transmission Assessment**

I. General Observations

The MAIN load is approximately 6.2% lower in this study compared to the load modeled in the 2002 winter study. The MAPP and SPP loads are approximately 2.5% and 0.9% higher, respectively, in this study compared to the loads modeled for the 2002 winter peak period.

To obtain transfer capabilities representative of the MAIN, MAPP and SPP regions, the following sub-regional or geographic participation factors were used:

MAIN import and export ALTW 7.4%; NI 34.5%; SMAIN 33.9%; WUMS 24.2%

MAPP import IOWA 21.9%; MINN 47.6%; NEBR 30.5%
MAPP export IOWA 30.6%; MINN 24.9%; NEBR 26.1%; DAKS 18.4%

SPP import SPP-N 32.4%; SPP-S 67.5%
SPP export SPP-N 27.7%; SPP-S 72.3%

II. Regional First Contingency Incremental Transfer Capability (FCITC)

The FCITC are incremental above the modeled base case transactions. These values should be considered along with the base case transfers listed in Section V of this report. The following tables show the FCITC for the SPP Inter-Regional Transfers.

Transfer Direction	2003 Winter		2002 Winter		2003 Winter Limiting Element (2003 Winter Outaged Element)	Owner
	FCITC	Notes	FCITC	Notes		
MAPP-MAIN	2000*	4	2000*	4	No Limit Found (Each Valid Contingency Tested)	
SPP-MAIN	1700		2500	4	Elk City 230/138 kV Tr. (Oklaunion-Lawton 345 kV) (Oklaunion DC Tie)	AEPW (AEPW) (AEPW- ERCOT)
MAIN-MAPP	1450	61	1500		Salem 345/161 kV Tr. (Sub 91-Quad Cities 345 kV) (Sub 91 345/161 kV Tr.) (Davenport-Sub 91 345 kV)	ALTW (MEC- ComEd) (MEC) (MEC)
SPP-MAPP	2000*	8,60	600		No Limit Found (Each Valid Contingency Tested)	
MAIN-SPP	1600		1300		Fort Smith 500/161 kV Tr. (Fort Smith 500/345 kV Tr.)	OKGE (OKGE)
MAPP-SPP	2000*		2000*	4	No Limit Found (Each Valid Contingency Tested)	
TVA-SPP	1100		900		Fort Smith 500/161 kV Tr. (Fort Smith 500/345 kV Tr.)	OKGE (OKGE)

⁽¹⁾ FCTTC is defined as the scheduled transfers plus the lower of either the FCITC or test level.

(*) Denotes transfer level studied or based upon the transfer level studied.

(I) Indicates the implementation of a nonemergency guide.

(i) Indicates the implementation of an emergency guide.

A description of the following guides can be found in Exhibit D-2:

- (4) Arpin Area Operating Guides
- (8) Granville Operating Guide
- (60) Cornell Operating Guide
- (61) Poweshiek-Reasnor Operating Guide

SPP-Imports

The SPP import FCITC from MAIN is 1600 MW limited by the Fort Smith 500/161 kV transformer (OKGE) for the outage of Fort Smith 500/345 kV transformer (OKGE). This level is an increase from the 1300 MW FCITC reported in the 2002 winter study limited by the Danville N.Magazine 161 kV line (ESI AEPW) for the outage of Fort Smith ANO 500 kV line (OKGE ESI).

The SPP import FCITC from MAPP is 2000 MW with no limit found up to the transfer study level. No limit was reported up to the transfer level in the 2002 winter study.

The SPP import FCITC from TVA is 1100 MW limited by the Fort Smith 500/161 kV transformer (OKGE) for the outage of Fort Smith 500/345 kV transformer (OKGE). This level is an increase from the 900 MW FCITC reported in the 2002 winter study limited by Danville N.Magazine 161 kV line (ESI AEPW) for the outage of Fort Smith ANO 500 kV line (OKGE ESI).

SPP IMPORTS

FROM	TRANSFER CONDITION	CAPABILITY MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
MAIN	IITC	2500*		No Limit Found				None
	FCITC	1600	<=	Fort Smith 500/161 kV Tr.	354	478E	.078	Fort Smith 500/345 kV Tr.
		1600		(61A,R) Reasnor-Des Moines 161 kV	134	188E	.033	Bondurant-Montezuma 345 kV
		2500*		No Additional Limit Found				Each Valid Contingency Tested
MAINx	IITC	2500*		No Limit Found				None
	FCITC	1600	<=	Fort Smith 500/161 kV Tr.	354	478E	.078	Fort Smith 500/345 kV Tr.
		1600		(61A,R) Reasnor-Des Moines 161 kV	134	188E	.034	Bondurant-Montezuma 345 kV
		2500*		No Additional Limit Found				Each Valid Contingency Tested
MAPP	IITC	2000*		No Limit Found				None
	FCITC	2000*	<=	No Limit Found				Each Valid Contingency Tested
SERCW	IITC	2500*		No Limit Found				None
	FCITC	1200	<=	Fort Smith 500/161 kV Tr.	354	478E	.105	Fort Smith 500/345 kV Tr.
		1300		Danville-Magazine 161 kV	97	148E	.038	Fort Smith-ANO 500 kV
		1800		(53a) Wilbert-Livonia 138 kV	221	289E	.038	Webre-Richard 500 kV
		1800		Russleville S.-Dardanelle 161 kV	202	333E	.073	Fort Smith-ANO 500 kV

FROM	TRANSFER CAPABILITY		LIMITING ELEMENT	PTDF/			FACILITY OUTAGE(S)
	CONDITION	MW (NOTE)		FLOW	RATING	OTDF	
TVA	IITC	2500*	No Limit Found				None
	FCITC	1100 <=	Fort Smith 500/161 kV Tr.	354	478E	.114	Fort Smith 500/345 kV Tr.
		1200	Danville-Magazine 161 kV	97	148E	.041	Fort Smith-ANO 500 kV
		1700	Russleville S.-Dardanelle 161 kV	202	333E	.078	Fort Smith-ANO 500 kV
TVAx	IITC	2500*	No Limit Found				None
	FCITC	1100 <=	Fort Smith 500/161 kV Tr.	354	478E	.117	Fort Smith 500/345 kV Tr.
		1200	Danville-Magazine 161 kV	97	148E	.043	Fort Smith-ANO 500 kV
		1600	Russleville S.-Dardanelle 161 kV	202	333E	.080	Fort Smith-ANO 500 kV

SPP NORTH (SPP-N) IMPORTS

FROM	TRANSFER CONDITION	CAPABILITY MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
AMRN	IITC	1500*		No Limit Found				None
	FCITC	1500* <=		No Limit Found				Each Valid Contingency Tested
AMRNx	IITC	1500*		No Limit Found				None
	FCITC	1500	(61A)	Poweshiek-Reasnor 161 kV	178	222E	.030	Bondurant-Montezuma 345 kV
		1500	(61A)	Poweshiek-Reasnor 161 kV	177	222E	.030	Bondurant-GDMEC 345 kV Bondurant-Sycamore 345 kV Bondurant-Montezuma 345 kV
		1500* <=		No Additional Limit Found				Each Valid Contingency Tested
IOWA	IITC	1200*		No Limit Found				None
	FCITC	1200* <=		No Limit Found				Each Valid Contingency Tested
MINN	IITC	1500*		No Limit Found				None
	FCITC	700	<= (R)	Austin-Hayward 161 kV	139	167E	.040	Adams-Pleasant Valley 345 kV Adams 345/161 kV Tr. Adams-Hazleton 345 kV
		750	(44a,R)	Silver Bay Bus Tie 115 kV	26	120E	.129	Taconite Harbor-Hoyt Lake 138 kV
		1100	(4A)	Arpin 345/138 kV Tr.	244	333E	.084	Arpin-Rocky Run 345 kV
		1400		Lime Creek-Emery 161 kV	74	193E	.085	Hazleton-Adams 345 kV
		1500*		No Additional Limit Found				Each Valid Contingency Tested
SMAIN	IITC	1500*		No Limit Found			None	
	FCITC	1500	(61A)	Reasnor-Des Moines 161 kV	134	188E	.036	Bondurant-Montezuma 345 kV
		1500* <=		No Additional Limit Found				Each Valid Contingency Tested

FROM	TRANSFER CAPABILITY		LIMITING ELEMENT	PTDF/			FACILITY OUTAGE(S)
	CONDITION	MW (NOTE)		FLOW	RATING	OTDF	
SMAXx	IITC	1500*	No Limit Found				None
	FCITC	1500	(61A) Reasnor-Des Moines 161 kV	134	188E	.037	Bondurant-Montezuma 345 kV
		1500	(61A) Poweshiek-Reasnor 161 kV	177	222E	.030	Bondurant-GDMEC 345 kV Bondurant-Sycamore 345 kV Bondurant-Montezuma 345 kV
		1500* <=	No Additional Limit Found				Each Valid Contingency Tested
SPP-S	IITC	1500*	No Limit Found				None
	FCITC	1500* <=	No Limit Found				Each Valid Contingency Tested

SPP SOUTH (SPP-S) IMPORTS

FROM	TRANSFER CAPABILITY		LIMITING ELEMENT	PTDF/ FLOW RATING OTDF			FACILITY OUTAGE(S)
	CONDITION	MW (NOTE)					
AMRN	IITC	1500*	No Limit Found				None
	FCITC	1500 <=	Fort Smith 500/161 kV Tr.	354	478E	.083	Fort Smith 500/345 kV Tr.
		1500*	No Additional Limit Found				Each Valid Contingency Tested
AMRNx	IITC	1500*	No Limit Found				None
	FCITC	1500 <=	Fort Smith 500/161 kV Tr.	354	478E	.083	Fort Smith 500/345 kV Tr.
		1500*	No Additional Limit Found				Each Valid Contingency Tested
SPP-N	IITC	1200*	No Limit Found				None
	FCITC	1200* <=	No Limit Found				Each Valid Contingency Tested

FOOTNOTES

- (R) This element repeats as a limit for other outages.
- (A) Availability of operating guide for both emergency and nonemergency transactions will increase capability to the reported FCITC level.
- (a) Availability of operating guide for emergency transactions will increase capability to the reported FCITC Level.
- (<) Reported FCITC limit for nonemergency transactions.
- (<-) Reported FCITC limit for emergency transactions.
- (<=) Reported FCITC limit for emergency and nonemergency transactions.
- (I) Indicates implementation of a nonemergency operating guide.
- (i) Indicates implementation of an emergency operating guide.
- (*) Denotes transfer level studied.

Operating Guides

- (4) Arpin Area Operating Guide
- (8) Granville Operating Guide
- (44) Taconite-Harbor Emergency Operating Guide
- (60) Cornell Operating Guide
- (61) Poweshiek-Reasnor Operating Guide

DESCRIPTION OF OPERATING GUIDES/PROCEDURES

Arpin Area Operating Guide (ATC11c) (rev March 2001)

The completion of the Baldwin-Marathon City project (Pine Lake-Cassel 115 kV rebuild) by June 1, 2001 will require modification of the existing Arpin Operating Guide. Modification of the guide is required to fully realize the benefits of the upgraded NSP-ATCLLC interconnection at the T-Corners 115 kV substation. It is anticipated that maintaining the T-Corners interconnection during an outage of the 345 kV line will improve the post-contingency phase angle separation across the 345 kV system. The Arpin Operating guide, which removes limitations on lower voltage facilities during an outage of King-Eau Claire-Arpin 345 kV or Arpin-Rocky Run 345 kV line, is currently under inter-regional review by those transmission entities affected by the guide.

Although not in its final form, the Arpin operating guide included within this study includes two portions to remove limits on lower voltage 115 kV facilities which parallel the King-Eau Claire-Arpin-Rocky Run 345 kV line.

- Part I: For an outage of the King-Eau Claire-Arpin or the Eau Claire-Arpin 345 kV line, this study maintained the interconnection at T Corners (the T Corners-Wien 115 kV line) and simulated the automatic opening of the Arpin-Hume 115 kV line to remove overloads on the 115 kV system between Wien and Arpin.
- Part II: For an outage of the Arpin-Rocky Run 345 kV line, this study maintained the T Corners interconnection, simulated the automatic opening of the Port Edwards-Sand Lake and Port Edwards- Saratoga 138 kV lines to remove overloads on the 138 kV system between Arpin and Port Edwards, and simulated the opening of the Arpin-Hume 115 kV line to remove overloads on the 115 kV system between Arpin and Wien.

Arpin Area Operating Guide (ALTE & WPS) (Guide as used in past studies)

The Arpin area operating guide consists of opening substation breakers to prevent transmission lines from overloading during specific transmission line outages or overload conditions. The Arpin area operating guide is described as three separate parts. All parts of the Arpin area operating guide are required for this seasonal transmission assessment study.

- Part I: The first part of the Arpin area operating guide consists of opening a 115 kV breaker at the T Corners substation to prevent the Wissota - T Corners - Wien 115 kV line from overloading. The Wissota - T Corners - Wien 115 kV line is most susceptible to overloading for the outage of any portion of the King - Eau Claire - Arpin 345 kV line. The T Corners 115 kV breaker will operate automatically for an

overload of the T Corners - Wien 115 kV when the flow is from T Corners to Wien.

Part II: The second part of the Arpin area operating guide consists of opening 138 kV breakers at the Port Edwards substation on the Port Edwards - Wautoma and Port Edwards - Saratoga 138 kV lines to prevent the Arpin - Sigel 138 kV line from overloading. This portion of the guide also requires the operation of a 46 kV breaker at the West Wisconsin Rapids substation to open the West Wisconsin Rapids - Water Quality 46 kV line. The Arpin - Sigel 138 kV line is most susceptible to overloading for the Arpin - Rocky Run 345 kV line outage. These breakers will open automatically for an overload of the Arpin - Sigel 138 kV line.

Part III: The third part of the Arpin area operating guide consists of opening a 115 kV breaker at the Sherman Street substation on the Sherman Street - Cassel 115 kV line to prevent an overload of the Wien - Cassel 115 kV line. The Wien - Cassel 115 kV line is most susceptible to overloads for the outage of the Arpin - Rocky Run 345 kV line. The 115 kV breaker at Sherman Street will open automatically for an overload of the Wien - Cassel 115 kV line.

Granville Operating Guide (WE)

The Granville operating guide consists of closing the Granville 345 kV bus section breaker 1-2 and the Granville - Arcadian 345 kV line following the outage of 345 kV bus section #1 to clear a transformer #1 failure. It also consists of closing the Granville 345 kV bus section breaker 2-3 and the Granville - Edgewater 345 kV line following the outage of 345 kV bus section #3 to clear transformer #3 failure. This procedure is performed by supervisory control.

Taconite Harbor Emergency Operating Guide (MP)

MAPP systems do not implement operating procedures for the purpose of increasing nonemergency transfers. However, if a situation exists where a utility requires emergency import, the MAPP system(s) responsible for the operating procedure will implement the procedure only as long as the implementation of the guide isn't detrimental to the network or system reliability. Minnesota Power has an automatic tripping scheme that would open the Taconite Harbor 138/115 kV transformer, for overloads on any of the series elements between Laskin and Colby 115 kV substations. This is done based on about 90% of the emergency rating of the above circuits. Load shedding is also available at the Hoyt Lake Plant as well as generation adjustment.

Cornell Operating Guide (ATCLLC)

During certain transmission contingencies, including the outages of the Arcadian-Granville and Wempletown-Paddock 345 kV lines, the Center-Fiebrantz 138 kV line overloads. The Cornell Operating Guide consists of opening the Cornell-Fiebrantz 138 kV line to reduce loading on the Center-Fiebrantz 138 kV line. This procedure is performed by supervisory control.

Poweshiek-Reasnor Operating Guide (ALTW-MEC)

The outage of the Montezuma-Bondurant 345 kV line can cause unacceptable overloads on the Poweshiek-Reasnor 161 kV line. This guide relieves overloads on the Poweshiek-Reasnor 161 kV line by opening the Reasnor-Des Moines 161 kV line, Knoxville-Pleasantville 69 kV line, Prairie City-S.E. Osceola 69 kV line (Murray-Osceola).

Basecase Schedules for 2003 Winter Peak

FROM		TO		MW Interchange		
Region	Co.	Region	Co.	2003 W	2002 W	
MATN	AI.TE	MAPP	ND	-46	-44	
MATN	AI.TE	MAPP	NSP	61	57	
MATN	AI.TW	MAPP	DPC	-5	0	
MATN	AI.TW	MAPP	GRE	-65	0	
MATN	AI.TW	MAPP	MRC	-154	-135	
MATN	AI.TW	MAPP	NSP	-5	0	
MATN	AI.TW	MAPP	SMP	13	0	
MATN	AI.TW	MAPP	WAPA	-41	-16	
MATN	ComEd	MAPP	GRE	50	0	
MATN	ComEd	MAPP	MRC	MRC's Share of Quad Cities	428	428
MATN	ComEd	MAPP	MRC	300	50	
MATN	TP	MAPP	NSP	102	102	
MATN	MGE	MAPP	DPC	-30	0	
MATN	WE	MAPP	MP	-62	-62	
MATN	WE	MAPP	NSP	-42	-42	
MATN	WPS	MAPP	MHRB	-108	-100	
MATN	WPS	MAPP	MP	-76	0	
MATN	WPS	MAPP	NSP	0	-100	
MAIN to MAPP Net				320	138	
MATN	AMRN	SPP	SPA	-16	-16	
MATN	CWL	SPP	KACY	-20	-20	
MATN	CWL	SPP	SPA	-78	-78	
MATN	CWL	SPP	SPRM	-8	-8	
MAIN to SPP Net				-122	-122	
MAPP	NPPD	SPP	MPS	90	80	
MAPP	WAPA	SPP	SECT	3	-3	
MAPP TO SPP Net				93	77	