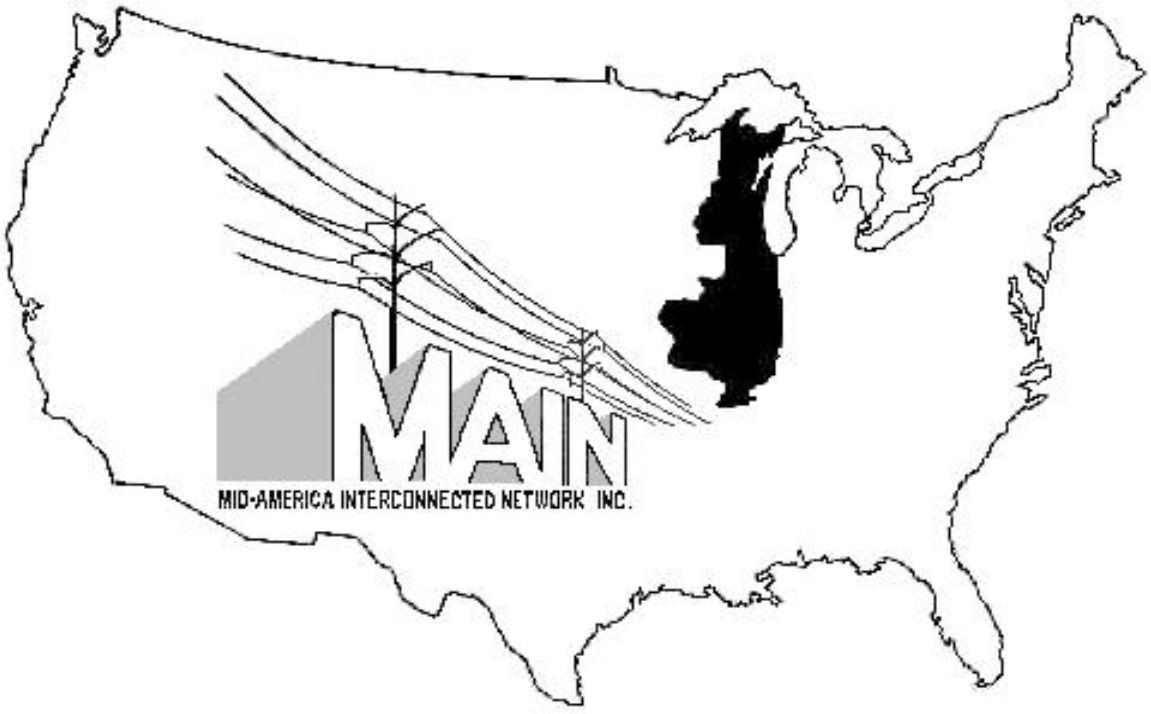
MID-AMERICA INTERCONNECTED NETWORK INCORPORATED

REGIONAL RELIABILITY COUNCIL

2000/01 MAIN
Winter Transmission
Assessment Study

Including
MAIN-ECAR-TVA, MAIN-MAPP-SPP, and MAIN-SERC WEST
Interregional Appraisals

November, 2000



Summary of Definitions*

Definition	Key Facilities** Out of Service	Thermal Rating Of Limiting Facility
First Contingency Incremental Transfer Capability (FCITC) (But not greater than IITC)	One	Emergency
Installed Incremental Transfer Capability (IITC)	None	Normal
First Contingency Total Transfer Capability (FCTTC) (FCITC plus normal base power transfers)	One	Emergency

* See MAIN Guide No. 2
** Anticipated during transfers

Availability of Additional Studies

All requesting companies in MAIN, the MAIN, MAPP and SPP Coordination Centers, AEP, and TVA have received a full set of computer study results. This data is available for reference if questions arise about specific system conditions that were studied.

The transfer capability results found here are not the same as the Available Transfer Capability (ATC) posted on the MAIN OASIS. For further understanding, see the section entitled “Understanding and Use of this Report”.

If system conditions occur or are expected which are not covered in this report, the MAIN companies are encouraged to contact the MAIN Coordination Center for assistance in conducting appropriate power flow studies. The MAIN Coordination Center has computer facilities, the 2000/01 winter power flow base case, and the capability for providing power flow study results in 4-7 hours under emergency conditions. For nonemergency conditions a 24 hour turn-around time can be met.

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November, 2000

Prepared by

MAIN Transmission Assessment Study Group

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CONTENTS

Understanding and Use of this Report

This report summarizes the results of a study of expected MAIN 2000/01 winter peak conditions. The study was made, and the report was prepared, by the MAIN Transmission Assessment Studies Group (TASG). The report defines transfer capability, provides expected system transfer capabilities, and offers general operating guidance.

Limitations on the Use of Reported Transfer Capability Values

It is important to note that the transfer capabilities reported in this study are benchmarks to gauge the transmission system strength based on a snapshot of the expected winter peak conditions. The reported values are not intended to be absolute limits to system operation for all system conditions. Therefore, judgment should be used in reviewing these reported transfer levels before assuming that these values are either optimistic or pessimistic for use in daily system operation.

The study results provide a reliability assessment of the transmission system's ability to support area, regional and subregional imports and exports. However, these import and export values apply only for the conditions simulated in the study and therefore may not represent the worst case. Since actual system conditions at any point in time may vary considerably from conditions modeled in the study, users should base their decisions upon conditions or factors as they actually exist. Discussion with transmission planners of the individual systems and the MAIN Coordination Center may be helpful in making such decisions.

The incremental transfer capability values reported in Exhibit D-1 are nonsimultaneous, meaning that only one incremental transfer was studied in addition to those transfers described in the base case interchange schedule of Exhibit C-2. Many factors can affect the incremental transfer capabilities on a daily basis, including any deviations from the base interchange schedule, from the assumed source and sink points and their participation percentages in the transfer schedules, and from the system conditions represented in the base case power flow model (system load levels, generation dispatch, outaged transmission elements, changes in transmission network configuration, etc.).

For this transmission reliability study, emergency-operating guides are utilized. These guides are considered for use if a load serving entity is in jeopardy of dropping firm load. Consequently, these emergency guides are not available for routine commercial transaction. In addition, the following practices used in this transmission reliability study are different than those used in MAIN studies to calculate ATC for commercial purposes:

- Modeling of base case transactions that have no associated transmission service has been permitted. This is being done to allow peak load conditions to be modeled as well as simulating other scenarios for reliability evaluations. The modeling of these transactions may result in transmission element loadings that differ from those that exist in the models used to calculate ATC. This practice may result in different transfer capabilities than reported in this study.

- Some exports are modeled using source points that are represented by load reduction when there is available generation, and some imports are modeled using sink points that exclude on-line generation. This practice may result in reduced transmission element loadings or may lower the distribution factor used which would result in higher reported transfer capabilities.

- Some regional and subregional (areas) transfer directions studied do not represent directions for which transmission service is sold. The source and sink points associated with these regional and subregional (areas) transfer directions may result in distribution factors and limits that are different than those obtained for the transfer directions for which ATC is sold.

Therefore, the transfer capability results found here are not the same as the Available Transfer Capability (ATC) posted on the MAIN OASIS.

Operating Guides

One or more operating guides may be assumed to be available/implemented to obtain the transfer capability levels reported on an interregional as well as area and subregional basis. However, depending on the specific outage, implementation of related operating guide(s) will be required. Some of these operating guides have been in use for a considerable period of time. The operating guides identified in this study, **except for those involving generation redispatch**, have been verified by the MAIN TASG and are considered effective, to a varying extent, in relieving the loadings on the limiting transmission facilities or increasing transfer capabilities. A table , A-0, has been added in this report. This table shows the effects on FCITC values with and without the implementation of unverified operating guides that involve redispatch.

For this study, the operating guides are assumed available for all transfer directions, if transfer capability is enhanced. In reality, some operating guides may require a redispatch of generation or undesirable transmission operation which would impose a burden on the utility with the limiting facility, whether or not that utility is contractually involved in the particular transfer.

The operating guide description will clearly state if the guide is for emergency use only.

Five operating guides used in this report to determine transfer capabilities have been designated for emergency use. Eight emergency operating guides were used in the 1999/00 winter study. The description of these guides appear in Exhibit D-2. It is recommended that the user of this report review these guides to be aware of the complexity of the guide including under what conditions and how it will be implemented.

Judgement of Adequacy

The judgements of adequacy that appear in this report are based on transfer capabilities determined only under the study conditions simulated. These judgements of adequacy are only for a snapshot in time and may be different at other times during the 2000/01 winter season. When a different set of conditions are simulated, transfer capabilities may be higher or lower than the values used to judge adequacy. All judgements of adequacy are based on MAIN guidelines as stated in MAIN Guide No. 2.

An electronic copy of this report is available at **http://www.maininc.org** under the heading "Documents for Downloading".

LIST OF EXHIBITS

PART I

OVERVIEW

Introduction

This report is presented in two parts. Part I summarizes the transfer capability of the MAIN transmission system and surrounding systems. This summary consists of individual appraisals for two areas in SMAIN (AMRN and IP), the three subregions of MAIN (NI, SMAIN and WUMS) as well as interregional appraisals of the MAIN-ECAR-TVA (MET), MAIN-MAPP-SPP (MMS), and MAIN-SERC West (MSw) interfaces. Part II provides details of the tests and models used in the study and the results of major power transfer and transmission element outage simulations. The major transfers and outages simulated have the potential for significant impact on the operations of MAIN and surrounding systems. The list of major transfers and outages in Part II may help in making daily operational decisions.

This study also has a listing of Key Facilities on the MET interface identifying transmission facilities and interregional operating conditions that are critical to the reliability of the interconnected system.

Testing of the MAIN Transmission System

To test the approximate ability of the total MAIN system to interchange power with surrounding regions, the TASG ran computer studies assuming that the subregions of MAIN would contribute the following percentages of the total MAIN export or import.

NI - 39.1%	SMAIN - 35.8%
WUMS - 25.1%	

These percentages are proportional to the forecasted peak loads of the MAIN subregions to the total MAIN regional load.

A detailed listing of generation and load locations and their percent of change for each region and subregion is not included in the report but can be found on the MAIN home page under the heading FERC 715 Filings and then under the heading TASG Subsystem Data.

This study was conducted in accordance with MAIN Guide No. 2, dated May 10, 1996, and was based on facility ratings provided by the individual utilities. Utilities use different rating methodologies. The ratings range from continuous (normal) to ratings that are valid for a specific period of time (emergency).

The MW ratings shown in Exhibit D-1 are MVA ratings that have been adjusted for var flow in the base case.

The study results provide a reliability assessment of the transmission system's ability to support regional and subregional imports and exports. **See the section in the front of this report entitled "Understanding and Use of this Report" for further discussion.**

SECTION A

GENERAL OBSERVATIONS AND SUMMARY

Expected Interregional Conditions

The MAIN Transmission Task Force Steering Committee (TTFSC) judges the interregional nonsimultaneous FCTTC of the transmission system to MAIN from ECAR, MAPP, SPP and TVA to be **adequate** and from SERCW to be **marginally adequate** during the 2000/01 winter period. This judgement of adequacy is based on MAIN guidelines as applied to transfer capability determined using emergency and unconditional operating guides, during peak load conditions as modeled in this study. Overall, MAIN's import capabilities for this winter are considered **adequate**. **Five operating guides used in this study to determine transfer capabilities have been designated for emergency use only**.

It is important to note that the transfer capabilities reported in this study are benchmarks to gauge the transmission system strength based on a snapshot of the expected winter peak conditions. The reported values are not intended to be absolute limits to system operation for all system conditions. Therefore, judgment should be used in reviewing these reported transfer levels before assuming that these values are either optimistic or pessimistic for use in daily system operation. **For further understanding, see the section in the front of this report, entitled "Understanding and Use of this Report"**.

Based on the information received from the SERC West representative, Entergy has established a policy of using a 2.5% response factor for their facilities for ATC and reliability study purposes. This study has considered the 2.5% OTDF cutoff for all Entergy facilities with the exclusion of the reporting of the MAIN, MAPP and SPP (MMS) interregional transfers. This exclusion is based on the MMS procedure originally agreed to in the Fall of 1991 and then in the Summer of 1995, that a 3.0% OTDF cutoff will be used for the MMS Transfer Capability Study.

Compared to the 1999/00 winter study, the MAIN import FCITC levels from MAPP, SERCW, SPP and TVA have decreased, while the ECAR to MAIN FCITC of 4000 MW (the test level) is the same. The MAPP to MAIN FCITC of 1700 MW is a 100 MW decrease from the 1999/00 winter reported level. The SPP to MAIN FCITC level of 1400 MW is a 250 MW decrease from the 1999/00 winter reported level. The TVA to MAIN FCITC level of 2500 MW is an 800 MW decrease from the 1999/00 winter reported level. The SERCW to MAIN FCITC level of 600 MW is a 1700 MW decrease from the 1999/00 winter reported level. This value is limited by an Entergy facility and therfore a 2.5% cutoff was used. Had the 3.0% PTDF/OTDF criteria been used for Entergy limitations in this seasons study, as it had been in previous studies, the SERCW to MAIN FCITC level would be 1500 MW, a 700 MW decrease from the 1999/00 winter reported level.

The ECAR import FCITC level from TVA of 1700 MW is a 900 MW decrease from the 1999/00 winter reported level. The ECAR import FCITC from MAIN is 3400 MW, which is a decrease of 600 MW from the 1999/00 winter reported level. The reported FCITC for MAIN to ECAR in the 1999/00 winter study was 4000 MW (test level) and was the maximum transfer studied.

The TVA import FCITC from MAIN of 2100 MW is a 900 MW decrease from the 1999/00 winter reported level. The TVA import FCITC from ECAR of 2700 MW is a 300 MW increase from the 1999/00 winter reported level. The TVA import FCITC from SPP of 1400 MW is a 300 MW decrease from the 1999/00 winter reported level. The TVA import FCITC from SERCW of 550 MW is an 1650 MW decrease from the 1999/00 winter reported level.

The MAPP import FCITC from MAIN of 2000 MW is the same as that reported in 1999/00 winter study and was the maximum transfer studied. The MAPP import FCITC from SPP of 1200 MW is a 400 MW decrease from the 1999/00 winter reported level. The MAPP import from SERCW of 1600 MW is 200 MW decrease from the 1999/00 reported level.

The SPP import FCITC from MAIN of 2450 MW is a 550 MW increase from the 1999/00 winter reported level. The SPP import FCITC from MAPP of 2000 MW (which was the maximum transfer studied) is a 600 MW increase from the 1999/00 winter reported level. The SPP import FCITC from TVA of 1800 MW is a 400 MW decrease from the 1999/00 winter reported level. The SPP import FCITC from SERCW of 1500 MW is the same as the 1999/00 winter reported level.

The SERCW import FCITC from MAIN of 3000 MW is the same as the 1999/00 winter reported level and was the maximum transfer studied. The SERCW import FCITC from MAPP of 2000 MW is the same as the 1999/00 winter reported level and was the maximum transfer studied. The SERCW import FCITC from TVA of 3000 MW (which was the maximum transfer studied) is a 300 MW increase from the reported 1999/00 level. The SERCW import FCITC from SPP of 1400 MW is a 300 MW decrease from the reported 1999/00 level.

For details of the interregional analysis, see the MAIN-ECAR-TVA (MET) Appraisal, MAIN-MAPP-SPP (MMS) Appraisal, and MAIN-SERC WEST (MSw) Appraisal in Sections B-6, B-7 and B-8, respectively.

Exhibit A-0 shows a comparison of the effects of redispatch operating guides on FCITC values. Exhibit A-1 shows the interregional FCITC determined in the 2000/01 winter study, assuming the availability of operating guides to enhance transfer capabilities. These transfer capabilities are nonsimultaneous, and incremental to the expected schedule of normal transfers, as shown in Exhibit C-2, and are based on forecasted winter peak load conditions.

Expected MAIN Area, Subregional and Surrounding Area Conditions

Exhibit A-2 and A-3 shows the MAIN area, subregional and surrounding area FCITC for areas that are contractually tied, assuming the availability of operating guides to enhance transfer capability. These transfer capabilities are nonsimultaneous, incremental to the expected schedule of normal transfers, and are based on forecasted peak load conditions.

Following are summaries of the individual MAIN subregional appraisals regarding their respective import capabilities for expected 2000/01 winter peak conditions.

Ameren (AMRN)

The Ameren winter import FCITC values from the contractually tied areas except for ESI, Iowa, SPP-N, and SERCW are about the same for this winter when compared to the results of the 1999/00 winter seasonal study. Based on the results of this 2000/01 winter study, import FCTTC from ten out of eleven of the contractually tied study areas with Ameren are judged to be **adequate**. The import FCTTC from ESI is judged to be **marginally adequate**. The AMRN appraisal, Section B-1 in this report, contains the details of this year's winter study and a comparison with the results of the 1999/00 winter study.

Northern Illinois (NI)

All NI import FCTTC from directly interconnected areas are judged to be **adequate** for the expected 2000/01 winter peak conditions. NI import FCTTC values from AMRN, ECAR, IP, SMAIN, WUMS, and IOWA are unchanged or down slightly (100 to 400 MW) when compared to the 1999/00 winter study. For the directly connected areas to the east the FCTTC values are unchanged. Details are provided in the NI appraisal in Section B-2.

Illinois Power (IP)

The 2000/01 winter import FCITC levels from AMRN, ECAR, ECAR East, ECAR West, IOWA, NI, TVA and WUMS are 1500 MW, with no limit found up to the study level. These values are the same as reported in 1999/00 winter study. The Arpin Area operating guide is required to reach this level for Iowa imports. The Oak Creek and Lakeview-Zion-Waukegan operating guides are required to reach this level for WUMS imports. All reported IP import FCTTC levels from directly interconnected areas (AMRN, ECAR, IOWA, NI, and TVA) are deemed **adequate** for the 2000/01 winter period. Details are provided in the IP area appraisal in Section B-3.

South MAIN (SMAIN)

Compared to the 1999/00 winter study, SMAIN import FCTTC for the 2000/01 winter study has increased from ECAR, IOWA, MINN, and NEBR. SMAIN import FCTTC from NI, TVA and WUMS has not changed for this winter's study, while SMAIN import FCTCC from SPP-N and SERCW has decreased for the winter 2000/01 study.

Based on the results of the 2000/01 MAIN winter study, the import FCTTC from ECAR, IOWA, MINN, NI, SPP-N, SERCW, TVA, and WUMS are judged to be **adequate**. Details are provided in the SMAIN area appraisal, Section B-4.

Wisconsin-Upper Michigan Systems (WUMS)

Based on the 2000/01 winter study results, WUMS import capability from the south is greater than that reported in the 1999/00 winter study, and import capability from the west is approximately the same. Import FCTTC from MINN is 1100 MW, from NI 2100 MW, from IOWA 1600 MW, from EC/NI/SM 2100 MW and from MAPP 1700 MW. Import FCTTC levels from MINN, NI and MAPP are judged to be **adequate** for the expected 2000/01 winter conditions. Details are provided in the WUMS subregion appraisal in Section B-5.

Definitions of Installed Incremental Transfer Capability (IITC), First Contingency Incremental Transfer Capability (FCITC) and First Contingency Total Transfer Capability (FCTTC)

The transfer capability results found here are not the same as the Available Transfer Capability (ATC) posted to the MAIN OASIS. As defined in MAIN Guide No. 2, **IITC** is "the total amount of power above existing or projected schedules that can be transferred on a normal system (i.e., no contingency outages) in a specific direction under the importing system's peak load conditions with no facility loaded above its normal rating." **FCITC** is "the maximum amount of power above existing or projected schedules that can be safely transferred in a specific direction under the importing system's expected peak load conditions without any facility being loaded above its emergency rating and all transmission system voltages remaining within acceptable limits following the outage of the most critical facility." **FCTTC** is defined "as the amount of normal base power transfers plus incremental transfers above the base transfers that can be safely transferred in a specific direction under the importing system's expected peak load conditions without any facility being loaded above its emergency rating and all transmission system voltages remaining within acceptable limits following the outage of the most critical facility."

Limitations on the Use of Reported IITC and FCITC Values

The transfer capability results found here are not the same as the Available Transfer Capability (ATC) posted on the MAIN OASIS.

See the section in the front of this report, entitled "Understanding and Use of this Report," for further discussion.

Assessment of Adequacy

Item A. 2. of the "MAIN Transmission Planning Principles and Guides," MAIN Guide No. 2 states that "Transmission between and within electric systems should have sufficient capability to accommodate projected system requirements and anticipated intra regional, interregional, and transregional real and reactive power flows under normal and credible contingency conditions while not excessively burdening neighboring electric systems." For this purpose, MAIN and its subregions will assess the adequacy of the first contingency total transfer capabilities (FCTTC) reported in the seasonal transmission assessment studies performed by the Transmission Assessment Study Group and the interchange capability studies performed by the Future Systems Study Group. The importing party will have the responsibility to assess each FCTTC as adequate, marginally adequate, or inadequate according to the following guidelines.

1) A reported FCTTC value will be presumed adequate unless stated, and argued, otherwise.

2) An assessment of marginally adequate shall indicate that the importing party believes that the given transfer capability value is on the borderline between adequate and inadequate.

3) The importing party may assess an FCTTC as inadequate due to an unfavorable comparison with one or more of the following:
   a) requirements for firm imports or firm transmission service,

   b) maximum transfer anticipated during the study period,

   c) expected level of inrush after the sudden loss of a large generating unit or plant, and,

   d) transfer capability required by MAIN Guide No. 6 to maintain system reliability.

4) MAIN as a region and its subregions should expect a geographic diversity in its import options. Thus, a MAIN regional or subregional import capability from a certain direction may be considered inadequate or marginally adequate if it is significantly lower than the import capabilities from other directions and is significantly lower than the amount of capacity that the exporting region or subregion may be expected to have available in the season.

5) The importing party may consider the ability of the interconnected system to accommodate an unplanned severe condition in assessing its import capability.

6) The importing party may consider the following in assessing its import capabilities:

   a) the trend of its import capabilities in recent TASG studies,

   b) the historical relationship between actual day to day FCTTC values calculated by the MAIN Coordination Center for the importing party and FCTTC's calculated in MAIN's seasonal transmission assessment studies,

   c) the effect of coincident transactions initiated by itself, the exporter, or other parties within or outside of MAIN, and,

   d) the number and complexity of operating guides, particularly of third parties, that would be required to achieve a particular FCTTC.

The MAIN Transmission Task Force Steering Committee (TTFSC) is responsible for assessing the adequacy of MAIN's imports and follows the above guidelines. Each subregion assesses the adequacy of its imports according to guidelines adopted by the individual members of those subregions and applies those guidelines to the import capabilities calculated by TTFSC study groups. Those subregional assessment guidelines, may be based on more detailed planning criteria or guides and operating policies, including those for transfer capability, and may reflect individual system characteristics, geography and demographics, but must, at a minimum, meet the MAIN guidelines. Any additional requirements for the adequacy of import capability of subregions are determined solely by the subregions. Because of differences in subregional assessment guidelines from each other, and from MAIN as a whole, the assessment of one entity may differ from that of another for a similar transfer.

Operating Guides

See the section in the front of this report entitled "Understanding and Use of this Report," for further discussion. All operating guide descriptions are now included in Exhibit D-2.

Comparison of the Effects of Redispatch Operating Guides on Nonsimultaneous First Contingency Incremental Transfer Cabability Values

The effect of the following redispatch operating guides has not been verified; however, the next FCITC has been reported assuming the redispatch guide would be effective to that level.

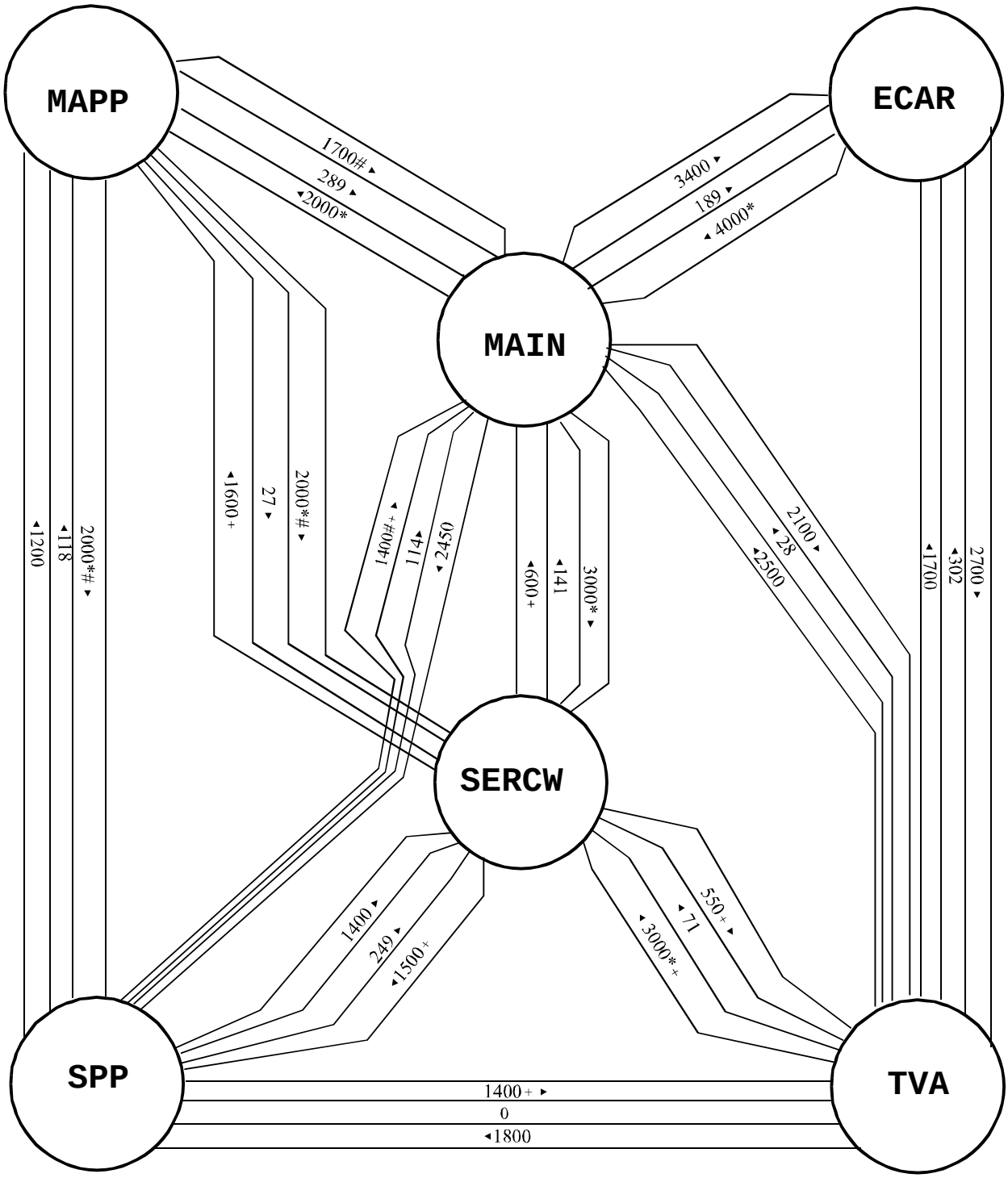
Guide Number and Name**	FCITC with Redispatch Oper. Guide (MW)***	FCITC without Redispatch Oper. Guide (MW)***	Amount Gained By Using Redispatch Oper. Guide (MW)***
34. Allen Steam Plant Emergency Operating Guide			
AMRN->ESI	2000*	1400	600
TVA->SERCW	3000*	1500	1500
5. Auburn Operating Guide			
SPP-N->AMRN	1000*	1000	0
SPP-N->SMAIN	1000*	1000	0
28. Braswell Emergency Operating Guide			
ESI->AMRN	450	0	450
SPP-S->AMRN	1000	0	1000
SERCW->AMRN	1600	0	1600
SERCW->IOWA	1600	0	1600
SERCW->MAIN	600	0	600
SPP->MAIN	1400	0	1400
SERCW->MAPP	1600	0	1600
SERCW->NI	600	0	600
SERCW->SMAIN	1600	0	1600
SERCW->TVA	550	0	550
SPP->TVA	1400	0	1400
27. Little Gypsy-Madisonville Emergency Operating Guide			
ESI->AMRN	450	0	450
SERCW->AMRN	1600	0	1600
SERCW->IOWA	1600	0	1600
SERCW->MAIN	600	0	600
SERCW->MAPP	1600	0	1600
SERCW->NEBR	650	0	650
SERCW->NI	600	0	600
SERCW->SMAIN	1600	0	1600
SERCW->SPP	1500	0	1500
SERCW->TVA	550	0	550

Guide Number and Name**	FCITC with Redispatch Oper. Guide (MW)***	FCITC without Redispatch Oper. Guide (MW)***	Amount Gained By Using Redispatch Oper. Guide (MW)***
31. Michoud-Front Street-Slidell Emergency Operating Guide			
ESI->AMRN	450	0	450
SERCW->AMRN	1600	0	1600
SERCW->IOWA	1600	0	1600
SERCW->MAIN	600	0	600
SERCW->MAPP	1600	0	1600
SERCW->NEBR	650	0	650
SERCW->NI	600	0	600
SERCW->SMAIN	1600	0	1600
SERCW->SPP	1500	0	1500
SERCW->TVA	550	0	550
44. Taconite-Harbor Emergency Operating Guide			
MINN->AMRN	1200	0	1200
MINN->NI	1300	0	1300
MINN->SMAIN	1200	0	1200
MINN->SPP-N	1200	0	1200
MINN->WUMS	850	0	850

* Denotes the transfer level studied.
** Guide number refers to the number assigned to the guide for consistency in referencing in the report.
*** Zero values may represent negative values and redispatch in the base case may be necessary.

EXHIBIT
A-1

Nonsimultaneous First Contingency Incremental Transfer Capability (FCITC-MW) Between MAIN, ECAR, MAPP, SERCW, SPP, and TVA



Incremental Transfer < Base Electricity Transfer = Incremental Transfer

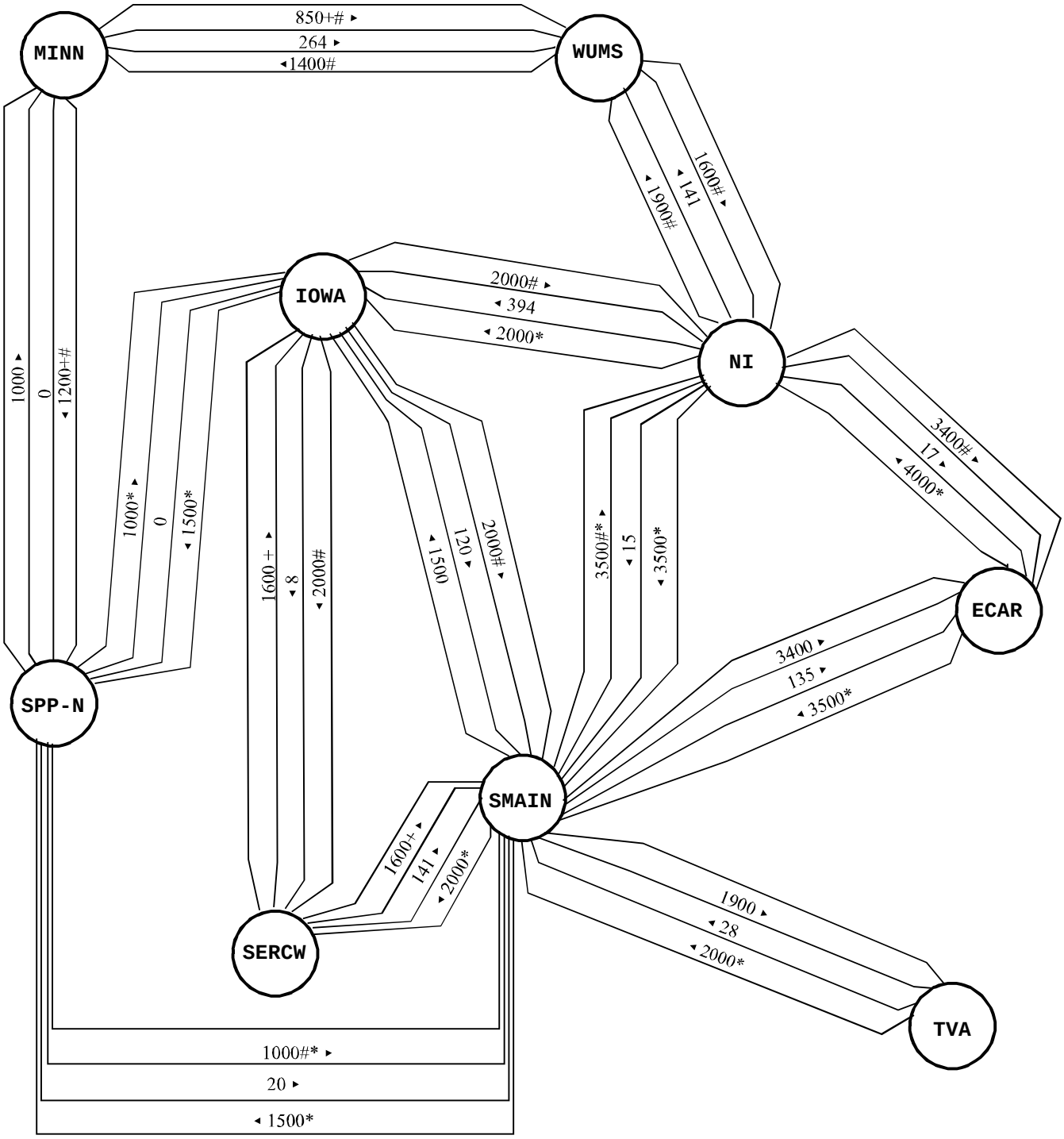
\# Indicates that one or more operating guides must be available/implemented to allow the noted capability to be used.

* Indicates no limit was found up to the study level.

\+ Requires one or more emergency operating guides be available/implemented to allow the noted capability to be used.

EXHIBIT
A-2

Nonsimultaneous First Contingency Incremental Transfer Capability (FCITC-MW) of MAIN Internal and Surrounding Systems



Incremental Transfer < Base Electricity Transfer = Incremental Transfer

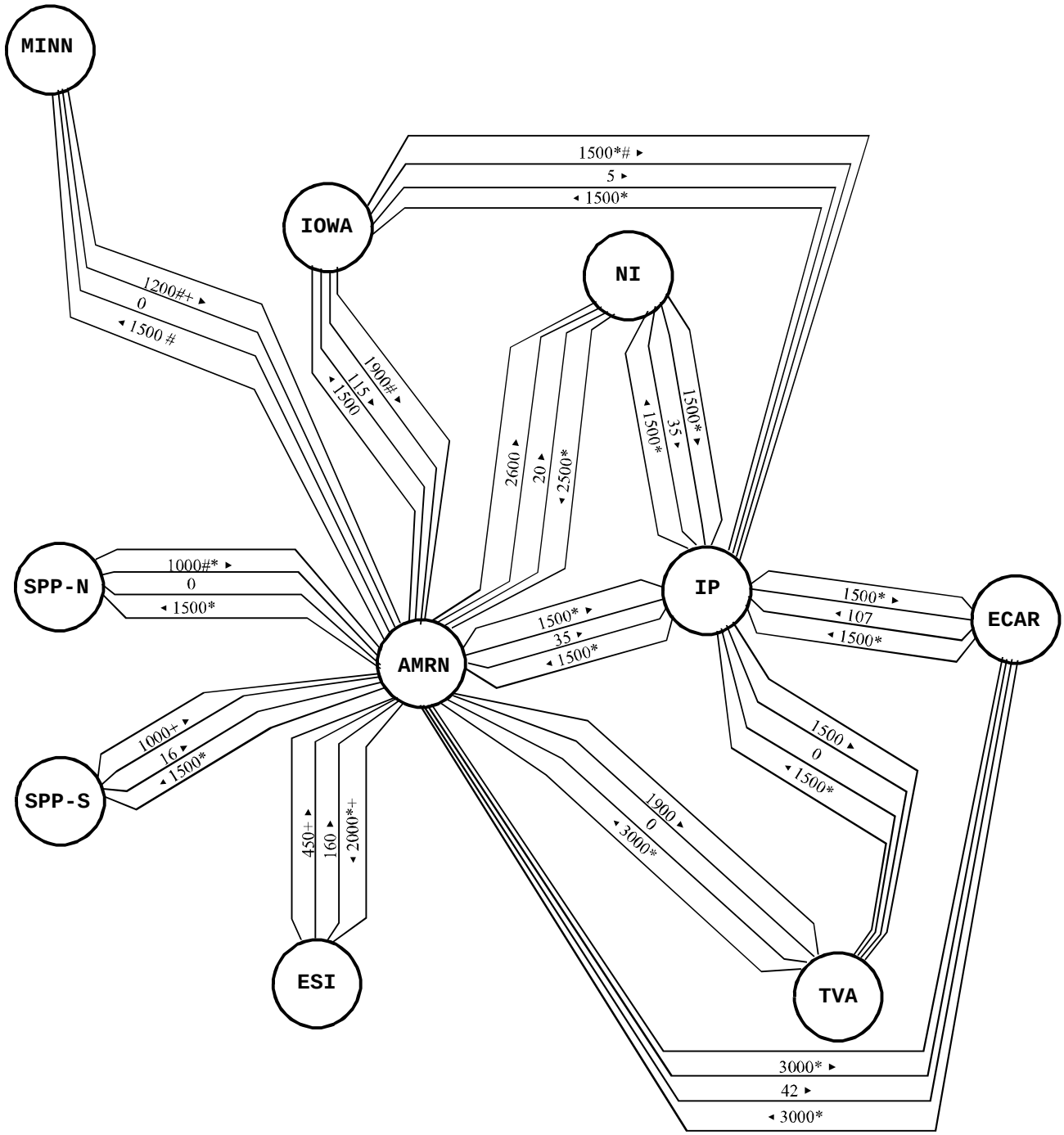
\# Indicates that one or more operating guides must be available/implemented to allow the noted capability to be used.

* Indicates no limit was found up to the study level.

\+ Requires one or more emergency operating guides be available/implemented to allow the noted capability to be used.

EXHIBIT
A-3

Nonsimultaneous First Contingency Incremental Transfer Capability (FCITC-MW) of AMRN and IP and Surrounding Systems



Incremental Transfer <
Base Electricity Transfer
= Incremental Transfer

\# Indicates that one or more operating guides must be available/implemented to allow the noted capability to be used.

* Indicates no limit was found up to the study level.

\+ Requires one or more emergency operating guides be available/implemented to allow the noted capability to be used.

SECTION B

AREA, SUBREGION AND INTERREGIONAL APPRAISALS

The purpose of this section is to provide details of MAIN areas and subregions, MET, MMS, and MSw import and export capabilities and to discuss critical or limiting facilities.

First Contingency Incremental Transfer Capability (FCITC) values, as determined in this study, are based on a linear load flow technique. AC load flow analysis was performed by individual entities to verify the results of the linear technique on selected transfer capabilities and to confirm adequacy of voltage levels.

The reported nonsimultaneous FCITC is the maximum amount of power in excess of the base interchange schedule (Exhibit C-2) that can be reliably transferred in a specific direction under peak load conditions without any facility becoming loaded above its normal rating in the base case or emergency rating following the outage of the most critical transmission element. In the base case, where pre-contingency facility loadings reach normal thermal ratings at a transfer level below that at which any first contingency transfer limits are reached, the transfer capability is defined as that transfer level at which such normal ratings are reached.

The nonsimultaneous interchange capabilities provided in Exhibit D-1 are based on an analysis of the modeled transmission system at the time of forecasted peak load. In some cases, the exporting system may be modeled at less than peak load to simulate a high enough level of transfer to adequately test the transmission system. These assumptions emphasize that this study presents an assessment on the state of the transmission system, not the generation system. As such, the FCITC values provided in this report should not be interpreted as indicating either an availability or a deficiency of generating capability that would support or require such a transfer.

SECTION B-1

AMEREN (AMRN)

AREA APPRAISAL

GENERAL OBSERVATIONS

There have been several changes on the Ameren System since the 1999/00 winter study was completed. A Joppa 345 kV ring bus was inserted into the “Shawnee-Kelso-Lutesville” 345 kV circuit to accommodate the Joppa 345/161 kV 600 MVA transformer. The 345 kV ring bus addition created the “Shawnee-Joppa 345” 345 kV circuit and the “Joppa 345-Kelso-Lutesville” 345 kV circuit. This Joppa transformer was added to increase the outlet capability of the Joppa Power Plant for those times when the DOE load is near or below 450 MW. The DOE minimum load experienced during the 2000 summer season was around 175 MW. The 2000/01 winter DOE load is expected to be at least 1000 MW.

The St. Francois 345/138 kV Substation has a 345 kV breaker separating the existing 345/138 kV, 560 MVA transformer from the new 345/138 kV, 560 MVA transformer. This new transformer was placed in service before the 2000 summer to provide additional support in the area for the Taum Sauk pump storage plant. With the addition of the 345 kV bus tie breaker, the Rush Island-St. Francois-Lutesville 345 kV line is now reconfigured as the Rush Island-St. Francois 345 kV line and the Lutesville-St. Francois 345 kV line with a tapped transformer on each line.

A new Mason-McClay 138 kV line was in service for summer 2000. The line was added to provide increased reliability and to serve future load. This 15-mile line connects St. Louis County with St. Charles County.

New generation, totaling 793.6 MW, has been added to the Ameren system. Ameren has added combustion turbine generators (CTG) at Gibson City, Pinckneyville, EEInc, and the Meramec Power Plant. IPP generation has been added in downtown St. Louis, and at Neoga. Exhibit C-1 of this report provides additional information on facility additions and changes since the 1999/00 study.

Along with the Ameren circuit and generation changes for this past summer and this winter, most of Soyland Power Cooperative load and all of Soyland's generation is now in the Ameren control area and has been reflected in the model. Soyland's load has been modeled in both Ameren and IP areas in past studies. 300 MW of customer load and Soyland's generation was modeled entirely in IP's area in the past.

Based on the results of this 2000/01 Winter Study, AMRN judges the import FCTTC for ten out of eleven contractually tied study areas with AMRN to be **adequate**. The ten contractually tied study areas are ECAR, ECAR West, IOWA, IP, MINN, NI, SERCW, SPP-N, SPP-S, and TVA. The import FCTTC from (Entergy)ESI is considered **marginally adequate**. Also, Ameren expects its simultaneous import capability to be adequate, based upon the nonsimultaneous import capability results from this study.

The transfer capability results found here are not the same as the Available Transfer Capability (ATC) posted on the MAIN OASIS. The transfer capability reported in this study is to gauge the system strength for reliable system operation under expected winter peak conditions. The posted ATC values indicate the transmission system transfer capability available for commercial purposes. Please refer to the section in the front of this report entitled "Understanding and Use of this Report" for the limitations associated with the transfer capabilities shown in this appraisal.

The AMRN net scheduled import this winter is 415 MW. The 2000/01 winter AMRN interchange schedule consists of:

FROM REGION	FROM CO.	TO REGION	TO CO.		MW Interchange 2000/01 W	MW Interchange 1999/00 W
MAIN	AMRN	ECAR	CIN	For WVPA	65	65
MAIN	AMRN	ECAR	CIN	For SWEC	-8	-8
MAIN	AMRN	ECAR	CIN	For Edgar	-15	-17
AMRN to ECAR Net					**42**	**40**
MAIN	AMRN	MAPP	MEC		-115	-115
AMRN to IOWA Net					**-115**	**-115**
MAIN	AMRN	MAIN	CWL		60	75
AMRN to CWL Net					**60**	**75**
MAIN	AMRN	MAIN	IP	For Soyland	35	0
AMRN to IP Net					**35**	**0**
MAIN	AMRN	MAIN	EEI		-300	-300
AMRN to EEI Net					**-300**	**-300**
MAIN	AMRN	MAIN	NI	Rockfalls & Winnekta	20	55
AMRN to NI Net					**20**	**55**
MAIN	AMRN	SERCW	ESI		-160	-160
MAIN	AMRN	SERCW	AECI		19	23
AMRN to SERCW Net					**-141**	**-137**
MAIN	AMRN	SPP-S	SPA	For Jackson	-16	-16
AMRN to SPP-S Net					**-16**	**-16**
AMRN NET					**-415**	**-398**

FIRST CONTINGENCY TRANSFER CAPABILITY

The AMRN import capability table for FCITC and FCTTC is presented below.

Import Capability
Nonsimultaneous Transfer Capabilities (MW)

Transfer Direction	2000/01 Winter FCITC (MW)	2000/01 Winter FCTTC[1] (MW)	2000/01 Winter Note	1999/00 Winter FCITC (MW)	1999/00 Winter FCTTC[1] (MW)	1999/00 Winter Note	2000/01 Winter Limiting Element (Outage Element)	Owner
ECAR	3000*	3000*		3000*	3000*		No Limit Found	
ECARWEST	3000*	3000*		3000*	3000*		No Limit Found	
ESI	450	600	27,28, 31	1600	1800	27,31, 28,33	Little Gypsy-Madisonville 230 kV (Sorrento-French Settlement 230 kV)	ESI (ESI)
IOWA	1900	2000	4	1500	1600		Viele-Denmark 161 kV (Niota-Burlington 161 kV)	ALTW (ALTW)
IP	1500*	1500*		1500*	1500*		No Limit Found	
MINN	1200	1200	44,4	1100	1100	4,23	Lime Creek-Emery 161 kV (Adams-Hazleton 345 kV)	ALTW (ATLW/NSP)
NEBR	1000	1000	4	950	950		S1211-Sub701 161 kV (Council Bluffs 345/161 kV Tr.)	OPPD (MEC)
NI	2500*	2400*		2500*	2400*		No Limit Found	
SPP-N	1000*	1000*	5	1200*	1200*		No Additional Limit Found	
SPP-S	1000	1100	28	1200	1200		Elk City 230/138 kV Tr. (Oklaunion-Tuco 345 kV) (Oklaunion-Lawton 345 kV) (Oklaunion DC Tie) (Tuco 345/230 kV Tr.)	CSWS (SPS/CSWS) (CSWS) (CSWS-ERCOT) (SPS)
SERCW	1600	1800	27,28, 31	2000*	2100*	27,31, 28,33	McKnight-Franklin 500 kV (Richard-Webre 500 kV)	ESI (ESI)
TVA	3000*	3000*		3000*	3000*		No Limit Found	
WUMS	1700	1700	37,9	1700	1700	37	Pleasant Prairie-Zion 345 kV (Arcadian-Zion 345 kV)	WE/ComEd (WE/ComEd)

* Denotes transfers level studied
([1]) FCTTC is defined as the scheduled transfers plus the lower of FCITC or test level.
(I) Indicated the implementation of a nonemergency operating guide.
(i) Indicated the implementation of an emergency operating guide/procedure.

A description of the following guides is located in Exhibit D-2.

(4) Arpin Area Operating Guide
(5) Auburn Operating Guide
(9) Lakeview-Zion-Waukegan Operating Guide
(23)Boswell Emergency Operating Guide
(27)Little Gypsy-Madisonville Emergency OG
(28)Braswell Emergency Operating Guide
(31)Michoud-Slidell Emergency Operating Guide
(33)McKnight-Franklin Emergency Operating Guide
(37)Oak Creek Operating Guide
(44)Taconite Harbor Emergency Operation Guide

KEY FACILITIES AND LIMITING ELEMENTS

Additional information on the key facilities and limiting elements, which affect AMRN imports, is given in the following sections. A detailed discussion is provided for each AMRN import FCITC from a contractually interconnected area where there is a sizable difference between FCITC values reported in this 2000/01 analysis and in the 1999/00 study report.

A complete listing of the limiting elements and the associated outages for both contractually and noncontractually interconnected areas for IITC and FCITC can be found in Exhibit D-1.

The linear analysis computer calculations used a distribution factor cutoff of 2.5% for the OTDF. However, a 3% cutoff value was used for determining the valid transfer capability limits except for those transfer limits involving ESI facilities, where a 2.5% response factor was used. ESI has lowered their OTDF cutoff this year from 3.0% to 2.5% for reliability and commercial purposes to be consistent with their other reliability studies.

AMRN GUIDELINES FOR ADEQUACY

In general, Ameren (AMRN) judges the adequacy of the nonsimultaneous import FCTTC (FCTTC = scheduled transfers + the lower of FCITC or test level) in part on the need for geographical diversity of supply from all contractually interconnected areas, and on the relationship between the reported import FCTTC and the contractual interconnection capability. From a geographical diversity standpoint, the strongest transfer capability support for Ameren is expected from the east and moderate support is from the west.

FIRST CONTINGENCY TRANSFER CAPABILITY

The AMRN import power transfer participation points and percentages are slightly different for this winter study from the 1999/00 winter study. The import points(power plant locations)and percentages for this 2000/01 winter study and for the 1999/00 winter study are shown in the table below.

	Winter 2000/01	Winter 1999/00
Plant	(%)	(%)
Labadie	32	37
Rush	16	17
Meramec	10	5
Sioux	13	8
Meredosia	2	4
Coffeen	12	13
Newton	15	16
	100	100

AMRN Import FCITC from ESI

The 2000/01 winter AMRN import FCITC from ESI is 450 MW. The Little Gypsy-Madisonville 230 kV line (ESI) is the limiting facility for the outage of the Sorrento-French Settlement 230 kV line(ESI). The FCTTC import level is 600 MW and is considered **marginally adequate**.

Three operating guides were required to reach this level of transfer. These guides were the Little Gypsy-Madisonville 230 kV Emergency Operating Guide, the Braswell Emergency Operating Guide, and the Michoud-Slidell Emergency Operating Guide. The 1999/00 winter AMRN import FCITC from ESI was 1600 MW with four operating guides required to reach this level. The Michoud-Slidell 230 kV line (ESI) was the limiting facility for the outage of the Sorrento-French Settlement 230 kV (ESI). The same three guides plus the McKnight-Franklin Emergency Operating Guide were available during the 1999/00 study. ESI has withdrawn the McKnight-Franklin Emergency Operating Guide from the available guides in this study.

This year the Little Gypsy-Madisonville 230 kV line for the outage of the Sorrento-French Settlement 230 kV line has a flow of 436 MW or about 46 MW higher than last years reported values. With the OTDF the same in this year study compared with last year study and with the limiting element ratings unchanged, the major reason for the lower transfer capability is the heavier flow on the Little Gypsy-Madisonville 230 kV line with the above identified outage.

AMRN Import FCITC from IOWA

The 2000/01 winter AMRN import FCITC from IOWA is 1900 MW. The Viele-Denmark 161 kV line (ALTW) is the limiting facility for the outage of Niota-Burington 161 kV line (ALTW). The import FCTTC will be reported as 2000 MW and is considered **adequate**.

The Arpin Operating guide was required to reach this level of transfer. Without the availability of this operating guide, the FCITC level would have been 250 MW. Last year the FCITC was 1500 MW with the same limiting element and outage element.

The Denmark-Viele 161 kV line is carrying 87 MW or about 5 MW more in this year’s model than in last year’s model. Last year the OTDF on the Denmark-Viele 161 kV line for the outage of the Niota-Burington 161 kV line was 5.6% and this year it is 4.1%. Therefore, the major reason for the higher transfer capability is the lower calculated OTDF in this study.

AMRN Import FCITC from SERCW

The 2000/01 winter AMRN import FCITC from SERCW is 1600 MW. The McKnight-Franklin 500 kV line (ESI) is the limiting facility for the outage of Richard-Webre 500 kV line (ESI). The import FCTTC will be reported as 1800 MW and is considered **adequate**.

Three operating guides were required to reach this level of transfer. These guides were the Little Gypsy-Madisonville 230 kV Emergency Operating Guide, the Michoud-Slidell Emergency Operating Guide, and the Braswell Emergency Operating Guide. Last year the McKnight-Franklin Emergency Operating Guide was also used to reach the 2000 MW FCITC value. The base case flows, the rating, and the OTDF are about the same compared to last years model. Therefore, the reason for the 400 MW reduction in FCITC values is because the McKnight-Franklin Emergency Operating Guide was unavailable for use this year.

ANALYSIS OF var FLOWS AND VOLTAGES FOR AMRN IMPORT LIMITATIONS

In an effort to identify var or voltage problems associated with power transfers into the AMRN area from contractually interconnected surrounding areas, AC load flow studies of nonsimultaneous power transfers into AMRN were completed. Levels of power transfer into the AMRN area studied in this analysis were either identical to the IITC or FCITC levels reported in the import capability table and Exhibit D-1 or slightly higher.

In the cases studied, no loading on transmission facilities within AMRN or surrounding contractually interconnected areas exceeded normal ratings with IITC levels and conditions simulated, nor were emergency ratings exceeded with FCITC levels and conditions simulated. For the conditions described in Exhibit D-1 at the reported AMRN import FCITC level, AMRN transmission system voltages were judged to be adequate.

SECTION B-2

NORTHERN ILLINOIS (NI)

SUBREGION APPRAISAL

GENERAL OBSERVATIONS

Two new Independent Power Producer (IPP) generation projects have located in the NI sub-region since the study last winter. These two IPPs are the Rockford Energy Center and the Lincoln Energy Center. An additional 110 MW of generation was installed at Rocky Road. These additions total 986 MW of generation.

Also since last winter, ComEd installed a new 345 kV double circuit from Lockport-Lombard to relieve several potential 345 kV and 138 kV overload conditions during single and multiple contingency conditions. A 138kV, 300 MVA phase shifting transformer at TSS 78 Franklin Park was added to relieve overloads under contingency situations. In addition, three 5 ohm inductors were installed at Crosby and Northwest TSSs, circuit breakers were upgraded, auto sectionalizing at Electric Junction was installed, 11 miles of 138 kV line between Dresden and Joliet stations were reconductored, 340 Mvar of station capacitor banks were added, and various sags limits were alleviated.

Based on the results of this study, the import FCTTC values from AMRN, ECAR, IOWA, IP, SMAIN, and WUMS, are all judged by ComEd to be **adequate**.

The transfer capability results found here are not the same as the Available Transfer Capability (ATC) posted on the MAIN OASIS.

Only firm transactions with firm transmission service have been modeled. The NI net scheduled export, as of July 10, for the 2000/01 winter peak period was 567 MW. This is a 234 MW increase in exports from the study last year, when the NI total net scheduled export was 333 MW. The incremental transfer capabilities reported on the next pages are in addition to the following scheduled interchanges. The source or sink of the base transfers is assumed to be the direct connect entity with which ComEd has contracted, unless otherwise reported.

NI 2000/01 Winter Scheduled Base Transactions

FROM REGION	FROM CO.	TO REGION	TO CO.		MW Interchange 2000/01 W	MW Interchange 1999/00 W
MAIN	NI	ECAR	AEP		17	17
	NI to ECAR Net				**17**	**17**
MAIN	NI	MAPP	MEC	Share of Quad Cities	394	197
	NI to IOWA Net				**394**	**197**
MAIN	NI	MAIN	IP		35	35
	NI to IP Net				**35**	**35**
MAIN	NI	MAIN	AMRN	Rockfalls & Winnekta	-20	-55
	NI to AMRN Net				**-20**	**-55**
MAIN	NI	MAIN	MGE		15	30
MAIN	NI	MAIN	WE		-49	-41
MAIN	NI	MAIN	ALTE		175	150
	NI to WUMS Net				**190**	**180**
	NI NET				**567**	**333**

The 394 MW export to MEC represents MEC's partial ownership of Quad Cities generation within the ComEd control area. The 20 MW import from AMRN represents ComEd wheeling to Rock Falls, a wholesale customer within the AMRN control area but physically located within the ComEd service area, and Winnetka, a wholesale customer within the ComEd control area. The 49 MW import from WE represents ComEd wheeling to Geneva, a wholesale customer within the WE control area but physically located in the ComEd service area.

Details about the NI import and export transfer points used in this study may be found on the MAIN homepage under the heading FERC 715 Filings and then under the heading TASG Subsystem Data.

FIRST CONTINGENCY INCREMENTAL TRANSFER CAPABILITY (FCITC)

The NI import FCITC and FCTTC levels are listed in the following table:

NI Nonsimultaneous Import Capability (MW)

Imports From	2000/01 Winter			1999/00 Winter			2000/01 Winter Limiting Element (2000/01 Winter Outaged Element)	Owner
	FCITC	FCTTC[1]	Note	FCITC	FCTTC[1]	Note		
AMRN	2600	2600	-	3000*	3000*	-	Palmyra 345/161 kV Tr. (Louisa-Sub T Hills 345 kV) (Palm Tap-Palmyra 345 kV)	AMRN (MEC) (AMRN)
ECAR	4000*	4000*	-	4000*	4000*	-	No Limit Found (Each Valid Contingency Tested)	-
ECAR EAST	4000*	4000*	-	4000*	4000*	-	No Limit Found (Each Valid Contingency Tested)	-
ECAR WEST	4000*	4000*	-	4000*	4000*	-	No Limit Found (Each Valid Contingency Tested)	-
IOWA	2000*	1600*	4	1900	1700	4	No Additional Limit Found (Each Valid Contingency Tested)	-
IP	1500*	1500*	-	1500*	1500*	-	No Limit Found (Each Valid Contingency Tested)	-
MINN	1300	1300	4, 44	1200	1200	4,6,23,24	Eau Claire-Arpin 345 kV Limit (None)	MINN-WUMS
SERCW	600	600	27,28,31	2200	2200	27,28,31, 33	Little Gypsy-Madisonville 230 kV (Sorrento-French Settlement 230 kV)	ESI (ESI)
SMAIN	3500*	3500*	42	3300	3300	-	No Additional Limit Found (Each Valid Contingency Tested)	-
TVA	2100	2100	-	3000	3000	-	Bull Run-Volunteer 500 kV (Watts Bar-Volunteer 500 kV)	TVA (TVA)
WUMS	1600	1500	9,37	1600	1700	9,37	Pleasant Prairie-Zion 345 kV (Arcadian-Zion 345 kV)	WE/ComEd (WE/ComEd)

([1]) FCTTC is defined as the scheduled transfer plus the lower of either the FCITC or the test level.
(*) Indicates that no limit was found up to the study level.
(I) Indicates the implementation of a nonemergency guide.
(i) Indicates the implementation of an emergency guide.

(4) Arpin Area Operating Guide
(9) Lakeview-Zion-Waukegan Operating Guide
(23) Boswell Emergency Operating Guide
(24) Rochester Emergency Operating Guide
(27) Little Gypsy-Madisonville Emergency Operating Guide
(28) Braswell Emergency Operating Guide
(31) Michoud-Slidell Emergency Operating Guide
(33) McKnight-Franklin Emergency Operating Guide
(37) Oak Creek Operating Guide
(42) Tazewell Operating Guide
(44) Taconite-Harbor Emergency Operating Guide

See Exhibit D-2 for a description of the operating guides and procedures listed above.

NI Assessment of Adequacy of Import Capability

The 2000/01 winter import capability FCTTCs do not vary significantly from those found in the 1999/00 winter TASG study, with the exception of NI imports from SERCW, which decreased by 1600 MW (from 2200 MW to 600 MW this winter), from the levels reported last year. This lower transfer capability is due to the heavier flow on the Little Gypsy-Madisonville 230 kV line for the outage of the Sorrento-French Settlement 230 kV line.

The FCTTC import capabilities from AMRN, ECAR, IOWA, IP, SMAIN, and WUMS are all considered **adequate** for the levels shown in the preceding table.

ANALYSIS OF var FLOWS AND VOLTAGES

Confirming power flow cases have been run verifying the Exhibit D-1 transfer capabilities and use of operating guides. There are no var flow or voltage profile problems in the NI subregion for the FCTTC import limits from AMRN, ECAR, IOWA, IP, SMAIN or WUMS.

SECTION B-3

ILLINOIS POWER (IP)

AREA APPRAISAL

GENERAL OBSERVATIONS

There have been no changes to the EHV transmission system in the Illinois Power (IP) control area since the 1999/00 MAIN Winter Transmission Assessment Study. It should be noted that Soyland generation and integrated load along with 300 MW of customer load has been moved to Ameren's control area as of summer 2000.

All of the reported IP import FCTTC values from directly interconnected areas are considered to be **adequate** for the 2000/01 winter period.

The transfer capability results found here are not the same as the Available Transfer Capability (ATC) posted on the MAIN OASIS.

IP 2000/01 Winter - Scheduled Transactions (MW)

The IP net interchange for the winter of 2000/01 is a net export of 33 MW, compared to a net import of 163 MW for the 1999/00 winter study. Specific IP scheduled transactions are as follows:

FROM		TO			MW Interchange	
REGION	CO.	REGION	CO.		2000/01 W	1999/00 W
MAIN	IP	ECAR	CIN	For SWEC	-47	-49
MAIN	IP	ECAR	LGEE	For IMEA	-60	-60
	IP to ECAR Net				**-107**	**-109**
MAIN	IP	MACC	PJM500		235	0
	IP to MACC Net				**235**	**0**
MAIN	IP	MAPP	MEC		-5	0
	IP to MAAP Net				**-5**	**0**
MAIN	IP	NI	CE	For IMEA	-35	-35
	IP to NI Net				**-35**	**-35**
MAIN	IP	SMAIN	AMRN	For SYPC	-35	0
MAIN	IP	SMAIN	SIPC	For Monroe Co	-20	-19
	IP to SMAIN Net				**-55**	**-19**
	IP NET				**33**	**-163**

FIRST CONTINGENCY TRANSFER CAPABILITY

The import FCITC and FCTTC values for the IP area during the 2000/01 winter peak load conditions are shown in the following tables:

IP Nonsimultaneous Import Transfer Capabilities (MW)

Import From	2000/01 Winter FCITC	2000/01 Winter FCTTC[1]	NOTE	2000/01 Winter FCITC	2000/01 Winter FCTTC[1]	Note	2000/01 Winter Limiting Element (2000/01 Winter Outaged Element)	Owner
AMRN	1500*	1500*		1500*	1500*		No Limit Found (Each valid contingency tested)	
ECAR	1500*	1600*		1500*	1600*		No Limit Found (Each valid contingency tested)	
ECAR EAST	1500*	1500*		1500*	1500*		No Limit Found (Each valid contingency tested)	
ECAR WEST	1500*	1600*		1500*	1600*		No Limit Found (Each valid contingency tested)	
IOWA	1500*	1500*	4	1500*	1500*		No Additional Limit Found (Each valid contingency tested)	
NI	1500*	1500*		1500*	1500*		No Limit Found (Each valid contingency tested)	
TVA	1500*	1500*		1500*	1500*		No Limit Found (Each valid contingency tested)	
WUMS	1500*	1500*	37,9	1500*	1500*		No Additional Limit Found (Each valid contingency tested)	

([1]) FCTTC is defined as the scheduled transfers plus the lower of either the FCITC or test level.
(*) Denotes transfer level studied.
(I) Indicates the implementation of a nonemergency guide.
(i) Indicates the implementation of an emergency guide.

(4) Arpin Area Operating Guide
(9) Lakeview-Zion-Waukegan Operating Guide
(37) Oak Creek Operating Guide

A complete description of each operating guide is located in Exhibit D-2.

KEY FACILITIES AND LIMITING ELEMENTS

The 2000/01 winter import FCITC values from AMRN, ECAR, IOWA, NI and TVA are 1500 MW, with no limit found up to the test level. The Arpin Area operating guide is required to reach this level for Iowa imports. These levels are deemed **adequate**. They are the same as last year.

A more complete listing of the limiting elements and their associated outages for import and export capabilities with both directly interconnected and other areas can be found in Exhibit D-1.

The linear analysis computer calculations used a distribution factor cutoff of 2.5% for the OTDF. For the IP import entries in Exhibit D-1, a 3% cutoff value was used for determining the valid transfer capability limits.

Import Participation Points

The participation buses and percentages for IP import power transfers are shown in the table below. Baldwin participation is higher due to the fact that none of the units are off-line for planned maintenance. Baldwin Unit 2 was off-line for planned maintenance in the 1999/00 winter study. Havana and Vermilion units are off-line in the basecase and therefore will not be considered as import participation points. Availability of all three of the Baldwin units and a 300 MW decrease in peak load results in these units being off-line.

Import Bus		2000/01	1999/00
Baldwin	345 kV	84%	40%
Havana	138 kV	0%	18%
Hennepin	138 kV	5%	14%
Vermilion	138 kV	0%	6%
Wood River NE	138 kV	11%	22%
		100%	100%

ANALYSIS OF var FLOWS AND VOLTAGES

Load flows have been run for all areas directly interconnected to IP to confirm the nonsimultaneous import FCTTC levels reported. Each load flow was run with the transfer level and limiting outage reported for the given area. The results of these cases did not reveal any voltage problems at these import FCTTC levels.

SECTION B-4

SOUTH MAIN (SMAIN)

SUBREGION APPRAISAL

GENERAL OBSERVATIONS

The SMAIN subregion includes the AMRN, CILC, CWL, CWLP, EEInc, IP, and SIPC control areas.

There have been several changes in the SMAIN subregion since the 1999/00 winter study was completed.

Several of those changes have occurred in the AMRN control area. In the AMRN system, the Joppa 345 kV ring bus was inserted into the "Shawnee-Kelso-Lutesville" 345 kV circuit to accommodate the Joppa 345/161 kV 600 MVA transformer. The 345 kV ring bus addition created the "Shawnee-Joppa 345" 345 kV circuit and the "Joppa 345-Kelso-Lutesville" 345 kV circuit. This Joppa transformer was added to increase the outlet capability of the Joppa Power Plant for those times when the DOE load is near or below 450 MW. The DOE minimum load experienced during the 2000 summer season was around 175 MW. The 2000/01 winter DOE load is expected to be at least 1000 MW.

Also in the AMRN system, the St. Francois 345/138 kV Substation now has a 345 kV breaker separating the existing 345/138 kV, 560 MVA transformer from the new 345/138 kV, 560 MVA transformer. This new transformer was placed in service before the 2000 summer to provide additional support in the area for the Taum Sauk pumped storage plant. With the addition of the 345 kV bus tie breaker, the Rush Island-St. Francois-Lutesville 345 kV line is now reconfigured as the Rush Island-St. Francois 345 kV line and the Lutesville-St. Francois 345 kV line with a tapped transformer on each line. Along with the existing 345/138 kV transformer will be one multiple terminal line contingency. The Lutesville-St. Francois 345 kV line and the new St. Francois 345/138 kV transformer will be another multiple terminal line contingency.

A new Mason-McClay 138 kV line was put in service in AMRN for summer 2000. The line was added to provide increased reliability and to serve future load. This 15-mile line connects St. Louis County with St. Charles County.

New generation totalling 793.6 MW has been added to the AMRN system. Ameren has added combustion turbine generators (CTG) at Gibson City, Pinckneyville, EEInc, and the Meramec Power Plant. IPP generation has been added in downtown St. Louis, and at Neoga.

Exhibit C-1 of this report provides additional information on facility additions and changes since the 1999/00 study.

Along with the Ameren circuit and generation changes for this past summer and this winter, most of Soyland Power Cooperative load and all of Soyland's generation is being modeled in the Ameren control area. Soyland's load has been modeled in both Ameren and IP areas in past studies. 300 MW of customer load and Soyland's generation was modeled entirely in IP's area in the past.

A total of 25 MW has been added to the CILC control area since the 1999/00 winter study. This consists of eight diesel power modules (12.5 MW) at each of two locations, Hallock and Kickapoo.

Five turbines (266 MW) have been added at Joppa to the EEInc system since the 1999/00 winter study.

There have been no changes to the CWLP, CWL, or SIPC systems since the 1999/00 winter study.

The only change in the IP system is the removal of Soyland's generation and integrated load from the IP control area to the AMRN control area.

Based on the results of this 2000/01 Winter Study, SMAIN import FCTTC levels from ECAR, IOWA, MINN, NI, SERCW, SPP-N, TVA, and WUMS are judged to be **adequate**.

The transfer capability results found here are not the same as the Available Transfer Capability (ATC) posted on the MAIN OASIS. The transfer capability reported in this study is to gauge the system strength for reliable system operation under expected winter peak conditions. The posted ATC values indicate the transmission system transfer capability available for commercial purposes. Please refer to the section in the front of this report entitled "Understanding and Use of this Report" for the limitations associated with the transfer capabilities shown in this appraisal.

The SMAIN net scheduled export this winter is 452 MW. The 2000/01 winter SMAIN interchange schedule consists of:

FROM REGION	FROM CO.	TO REGION	TO CO.		MW Interchange 2000/01 W	MW Interchange 1999/00 W
MAIN	AMRN	ECAR	CIN	For WVPA	65	65
MAIN	AMRN	ECAR	CIN	For SWEC	-8	-8
MAIN	AMRN	ECAR	CIN	For Edgar	-15	-17
MAIN	EEInc	ECAR	LGEE	For SWEC	200	200
MAIN	IP	ECAR	CIN	For IMEA	-47	-49
MAIN	IP	ECAR	LGEE	For Edgar	-60	-60
SMAIN to ECAR Net					**135**	**131**
MAIN	AMRN	MAPP	MEC		-115	-115
SMAIN to IOWA Net					**-115**	**-115**
MAIN	AMRN	MAIN	NI	For Rockfalls & Winnetka	20	55
MAIN	IP	MAIN	NI		-35	-35
SMAIN to NI Net					**-15**	**20**
MAIN	AMRN	SERCW	AECI		19	23
MAIN	AMRN	SERCW	ESI		-160	-160
SMAIN to SERCW Net					**-141**	**-137**
MAIN	CWL	SPP	KACY		-20	-20
SMAIN to SPP-N Net					**-20**	**-20**
MAIN	AMRN	SPP	SPA	For Jackson	-16	-16
MAIN	CWL	SPP	SPA		-78	-76
SMAIN to SPP-S Net					**-94**	**-92**
MAIN	SIPC	TVA	TVA	From SEPA	-28	-28
SMAIN to TVA Net					**-28**	**-28**
MAIN	IP	MAAC	PJM500		235	0
SMAIN to MAAC Net					**235**	**0**
MAIN	EEInc	SERC	DOE		500	500
SMAIN to DOE					**500**	**500**
SMAIN NET					**452**	**259**

FIRST CONTINGENCY TRANSFER CAPABILITY

The SMAIN import capability table for FCITC and FCTTC is presented below.

Import Capability
Nonsimultaneous Transfer Capabilities (MW)

Transfer Direction	2000/01 Winter FCITC (MW)	2000/01 Winter FCTTC[1] (MW)	2000/01 Winter Note	1999/00 Winter FCITC (MW)	1999/00 Winter FCTTC[1] (MW)	1999/00 Winter Note	2000/01 Winter Limiting Element (2000/01 Winter Outaged Element)	Owner
ECAR	3500*	3400*		3000	2900		No Limit Found	
ECAREAST	3500*	3500*		3000	2900		No Limit Found	
ECARWEST	3500*	3400*		3000	2900		No Limit Found	
IOWA	2000	2100	4	1500	1600		Denmark-Viele 161 kV (Niota-Burlington 161 kV)	ALTW (ALTW)
MINN	1200	1200	44,4	1100	1100	4,23	Lime Creek-Emery 161 kV (Adams-Hazleton 345 kV)	IPW (ATLW/NSP)
NEBR	1000	1000	4	900	900		S1211-Sub701 161 kV (Council Bluffs 345/161 kV Tr.)	OPPD (MEC)
NI	3500*	3500*		3500*	3500*		No Limit Found	
SPP-N	1000*	1000*	5	1200*	1300*		No Additional Limit Found	
SERCW	1600	1800	27,28, 31	2000*	2100*	27,28, 31,33	McKnight-Franklin 500 kV (Richard-Webre 500 kV)	ESI (ESI)
TVA	2000*	2000*		2000*	2000*		No Limit Found	
WUMS	1700	1700	37,9	1700	1700	37	Pleasant Prairie-Zion 345 kV (Zion-Arcadian 345 kV)	WE/ComEd (WE/ComEd)

* Denotes transfers level studied
([1]) FCTTC is defined as the scheduled transfers plus the lower of FCITC or test level.
(I) Indicated the implementation of a nonemergency operating guide.
(i) Indicated the implementation of an emergency operating guide/procedure.

A description of the following guides is located in Exhibit D-2.

(4) Arpin Area Operating Guide
(5) Auburn Operating Guide
(9) Kenosha-Zion-Waukegan Operating Guide
(23)Boswell Emergency Operating Guide
(27)Little Gypsy-Madisonville Emergency OG
(28)Braswell Emergency Operating Guide
(31)Michoud-Slidell Emergency Operating Guide
(33)McKnight-Franklin Emergency Operating Guide
(37)Oak Creek Operating Guide
(44)Taconite Harbor Emergency Operation Guide

KEY FACILITIES AND LIMITING ELEMENTS

Additional information on the key facilities and limiting elements, which affect SMAIN imports, is given in the following sections. A detailed discussion is provided for each SMAIN import FCTTC from a contractually interconnected area where there is a sizable difference between FCITC values reported in this 2000/01 analysis and in the 1999/00 study report.

A complete listing of the limiting elements and the associated outages for both contractually and noncontractually interconnected areas for IITC and FCITC can be found in Exhibit D-1.

SMAIN Import from ECAR

The 2000/01 winter import FCITC values from ECAR, ECAR West, and ECAR East is 3500 MW for each region. The FCTTC from ECAR, ECAR West, and ECAR East is 3400 MW, 3500 MW, and 3400 MW, respectively. There were no limits found up to the study level. These levels are considered **adequate**.

No operating guides are required to reach the reported levels.

For the 1999/00 winter study, the FCTTC level for ECAR, ECAR West, and ECAR East was 2900 MW for each region.

SMAIN Import from IOWA

The 2000/01 winter import FCITC from IOWA is 2000 MW. This transfer is limited by the Denmark-Viele 161 kV line (ALTW) for an outage of the Niota-Burlington 161 kV line (ALTW). The FCTTC is 2100 MW. This level is considered **adequate**.

The Arpin Area Operating Guide is required to reach the reported level.

For the 1999/00 winter study, the FCTTC level for IOWA was 1600 MW.

SMAIN Import from SPP-N

The 2000/01 winter import FCITC from SPP-N is 1000 MW. There were no limits found up to the study level. The FCTTC is 1000 MW. This level is considered **adequate**.

The Auburn Operating Guide is required to reach the reported level.

For the 1999/00 winter study, the FCTTC level for SPP-N was 1300 MW.

SMAIN Import from SERCW

The 2000/01 winter import FCITC from SERCW is 1600 MW. This transfer is limited by the McKnight-Franklin 500 kV line (ESI) for an outage of the Richard-Webre 500 kV line (ESI). The FCTTC is 1800 MW. This level is considered **adequate**.

The Braswell Emergency Operating Guide, Little Gypsy-Madisonville Emergency Operating Guide, and the Michoud-Slidell Emergency Operating Guide is required to reach the reported level.

For the 1999/00 winter study, the FCTTC level for SERCW was 2100 MW.

ANALYSIS OF var FLOWS AND VOLTAGES FOR SMAIN IMPORT LIMITATIONS

In an effort to identify var or voltage problems associated with power transfers into the SMAIN area from contractually interconnected surrounding areas, AC load flow studies of nonsimultaneous power transfers into SMAIN were completed. Levels of power transfer into the SMAIN area studied in this analysis were either identical to the IITC or FCITC levels reported in the import capability table and Exhibit D-1 or slightly higher.

In the cases studied, no loading on transmission facilities within SMAIN or surrounding contractually interconnected areas exceeded normal ratings with IITC levels and conditions simulated, nor were emergency ratings exceeded with FCITC levels and conditions simulated. For the conditions described in Exhibit D-1 at the reported SMAIN import FCITC level, SMAIN transmission system voltages were judged to be adequate.

SECTION B-5

WISCONSIN - UPPER MICHIGAN SYSTEMS (WUMS)

SUBREGION APPRAISAL

GENERAL OBSERVATIONS

The only significant change to the EHV (230 kV and above) transmission system, since the MAIN 1999/00 Winter Transmission Assessment Study, is the conversion of two 230 kV lines, Oak Creek-Arcadian and Arcadian-Bluemound to a single 230 kV line from Oak Creek to Bluemound, bypassing the Arcadian substation. In addition, the 230 kV bus at Arcadian is out of service for conversion to a 138 kV bus as part of the Oak Creek-Arcadian project. The new double circuit 138 kV line from Perkins to Indian Lake is also worth noting here because it creates a new interconnection between WUMS and Edison Sault Electric Company, which is in ECAR. In addition, a total of 406.5 MW of generation has been added since the MAIN 1999/00 Winter Transmission Assessment Study. This includes 300 MW of IPP owned generation at Menasha in WEC's northern service territory between the Butte Des Morts and Wooden Shoe substations. This also includes 79.5 MW of MG&E owned generation at West Marinette, and 27 MW of generation at Manitowoc Public Utilities, both of which are in WPS's service territory.

In addition to these system changes, the utilities in WUMS which own transmission system assets are going through an organizational change. It is anticipated that on January 1, 2001, the American Transmission Company, LLC, will assume the transmission system assets of the participating companies, which presently consist of Alliant Energy, Madison Gas & Electric, Wisconsin Electric, Wisconsin Public Power Inc., and Wisconsin Public Service. The American Transmission Company will be wholly owned by the companies contributing transmission assets or purchasing equity interests. As a result, transmission system facilities identified in this report as being owned by one of the participating companies are expected to be owned by the American Transmission Company as of January 1, 2001.

The WUMS 2000/01 Winter import FCTTC values from AMRN, ECAR, EC/NI/SM, NI and SMAIN are all equal to or greater than 1900 MW which represents a significant increase over the capabilities reported in 1999/00. Import FCTTC from IP is 1500 MW with no limit found up to the transfer level studied, which is 100 MW greater than the FCTTC reported in 1999/00. Import FCTTC from IOWA is 1600 MW, from MAPP is 1700 MW, and from MINN is 1100 MW. Each of these values are within 100 MW of the import capability reported in 1999/00. The WUMS 2000/01 Winter import FCTTC levels from **MAPP, MINN and NI** are all considered to be **adequate.**

The limiting facility for the AMRN, ECAR, EC/NI/SM, NI, and SMAIN directions is the Rockdale 345/138 kV transformer #T22 (WEC) with an outage of the Rockdale-Columbia 345 kV line (MGE). The limitation for the IOWA, MAPP, and MINN directions is the Eau Claire-Arpin 345 kV Limit (MINN-WUMS) with no outage. The import FCTTC levels reported rely on the availability of several operating guides. The Winter 2000/01 capabilities and the Winter 1999/00 capabilities, along with the operating guides used, are provided for each import direction in the **WUMS Nonsimultaneous Import Transfer Capabilities (MW)** table in this section.

The transfer capability results found here are not the same as the Available Transfer Capability (ATC) posted on the MAIN OASIS. Refer to the section in the front of this report entitled **"Understanding and Use of this Report"** for further discussion.

The WUMS net import schedule for the 2000/01 Winter study is 822 MW compared to 819 MW for the 1999/00 Winter study. The following table summarizes the WUMS transactions modeled in the 2000/01 and 1999/00 Winter base cases. It should be noted, that the WUMS net import schedule for the 2000/01 Winter study includes 155 MW of replacement power from the FRCC and WSCC regions to serve expected load on the Consolidated Water Power system in the WPS area for which no power nor transmission service has been contracted for. This noncontracted power transaction is not included in any of the FCTTC values reported in this study. It does, however, impact the base flows of the contractually tied areas.

WUMS 2000/01 Winter – Scheduled Transactions (MW)

FROM		TO			MW Interchange	
REGION	CO.	REGION	CO.		2000/01 W	1999/00 W
MAPP	ALTW	MAIN	ALTE		199	0
MAPP	DPC	MAIN	ALTE		5	0
MAPP	MP	MAIN	ALTE		42	0
MAPP	NSP	MAIN	ALTE		0	-37
MAPP	WAPA	MAIN	ALTE		100	200
MAPP	NSP	MIAN	WE		0	150
MAPP	MP	MAIN	WPPI		62	62
MAPP	NSP	MAIN	WPS		155	155
MAPP to WUMS Net					**563**	**530**
MAIN	ComEd	MAIN	ALTE		175	150
MAIN	ComEd	MAIN	MGE		15	30
MAIN	ComEd	MAIN	WE	(w/ Geneva)	-49	-41
ECAR	CONS	MAIN	WE		-37	0
EC/NI/SM to WUMS Net					**104**	**139**
FRCC		MAIN	WPS		75	75
WSCC		MAIN	WPS		80	75
FRCC/WSCC to WUMS Net					**155**	**150**
WUMS NET IMPORT					**822**	**819**

FIRST CONTINGENCY TRANSFER CAPABILITY

Linear power flow simulations were performed to identify the WUMS import first contingency incremental transfer capability (FCITC) with both contractually and noncontractually tied areas. The FCTTC is defined as the lower of the FCITC or test level plus the base transfer between the two respective study areas. The WUMS nonsimultaneous import FCITC and FCTTC levels are listed in the following table. The WUMS export capabilities are summarized in the area appraisal for the applicable importing area. Refer to Exhibit D-1 for a complete listing of the limiting facilities, outages, and operating guides for the WUMS IITC and FCITC levels with both contractually and noncontractually tied areas.

WUMS Nonsimultaneous Import Transfer Capabilities (MW)

Import From	2000/01 Winter			1999/00 Winter			2000/01 Limiting Element (2000/01 Outaged Element)	Owner Owner
	FCITC	FCTTC[1]	Notes	FCITC	FCTTC[1]	Note		
AMRN	2000	2000	4,29,45	1500	1500	4,8,32	Rockdale 345/138 kV Tr. #T22 (Rockdale-Columbia 345 kV)	WEC (MGE)
ECAR	2000	1900	4,29,45	1300	1300	4,8,32	Rockdale 345/138 kV Tr. #T22 (Rockdale-Columbia 345 kV)	WEC (MGE)
EC/NI/SM	2000	2100	4,29,45	1400	1500	4,8,32	Rockdale 345/138 kV Tr. #T22 (Rockdale-Columbia 345 kV)	WEC (MGE)
IOWA	1400	1600	4,6,29	1500	1500	4,6,32	Eau Claire-Arpin 345 kV Limit (None)	MINN-WUMS
IP	1500*	1500*	4,29	1400	1400	4,8,32	No Additional Limit Found (None)	
MAPP	1100	1700	4,6,29	1200	1700	4,6,32	Eau Claire-Arpin 345 kV Limit (None)	MINN-WUMS
MINN	850	1100	4,6,29, 44	850	1200	4,6,32	Eau Claire-Arpin 345 kV Limit (None)	MINN-WUMS
NI	1900	2100	4,29,45	1300	1400	4,8,32	Rockdale 345/138 kV Tr. #T22 (Rockdale-Columbia 345 kV)	WEC (MGE)
SMAIN	2000	2000	4,29,45	1400	1400	4,8,32	Rockdale 345/138 kV Tr. #T22 (Rockdale-Columbia 345 kV)	WEC (MGE)

([1]) FCTTC is defined as the base transfer plus the lower of the FCITC or test.
(I) Indicates implementation of nonemergency guide.
(i) Indicates implementation of an emergency guide.
(*) Denotes transfer level studied.

Exhibit D-2 contains a description of all operating guides used in this study.

(4) Arpin Area Operating Guide
(6) Council Creek Operating Guide
(8) Granville Operating Guide
(29) Rockdale Operating Guide
(32) Racine Operating Guide
(44) Taconite-Harbor Emergency Op. Guide
(45) Columbia Operating Guide

WUMS methodology for selecting import and export points is consistent with previous studies. For exports, all available generation is used first, then load reductions are used as necessary. For the 2000/01 Winter study WUMS did not need to rely on load reductions to reach maximum export test levels. The WUMS import participation points include a small number of large generators which are consistent with those used in past studies.

The linear analysis computer simulations in this study use a distribution factor cutoff of 2.5% for the PTDF/OTDF. However, for the entries in Exhibit D-1 associated with WUMS imports, a 3% cutoff value is used for determining the valid transfer capability limits in accordance with the MAIN Transmission Assessment Study Group Procedural Manual.

The study documented here is a thermal analysis. Voltage stability and dynamic stability constraints are not identified but can and do exist.

KEY FACILITIES AND LIMITING ELEMENTS

Large simultaneous energy transactions from north to south through MAPP result in considerable west to east energy flows on the MAPP to WUMS interface. An outage of the Eau Claire-Arpin 345 kV line (NSP-ALTE), along with implementation of the Arpin Area Operating Guide, can result in a phase angle in excess of 90° across that open circuit. The maximum acceptable phase angle established for a safe re-close of this line is 60°. Consequently, the Minnesota-Eastern Wisconsin Phase Angle Reduction Guide was developed, which currently prescribes a pre-contingency flow limit of 775 MW on the Eau Claire-Arpin 345 kV line. This flow limit restricts the phase angle across the open circuit to a value which can be reduced to less than 60°. The guide further prescribes a process of implementing inadvertent schedules for quickly reducing the phase angle below 60° to allow a safe re-close of the line. This flow limit, referred to as the Eau Claire - Arpin 345 kV limit, is being enforced in this study in determining the maximum available FCITC and FCTTC limits.

The Eau Claire-Arpin 345 kV limit is sensitive to WUMS and MAIN imports from the west for no transmission outage conditions. The Eau Claire-Arpin 345 kV line flow limit is a limitation for MAIN imports from MAPP (refer to Section B-7 MMS Interregional Appraisal) and for NI imports from MINN (refer to Section B-2 NI Subregional Appraisal).

The Hydrolane-T Corners-Wien 115 kV line (NSP-WPS) and the Council Creek 69 kV interconnection (ALTE-DPC) are both sensitive to imports from the west and southwest for the outage of the Eau Claire-Arpin 345 kV line (NSP-ALTE). Without the availability of the Arpin Area and Council Creek operating guides, the Western Wisconsin transmission interface would severely restrict transactions utilizing the interface. In September 1993, WPS and NSP filed a joint construction application with the Public Service Commission of Wisconsin to rebuild the Hydrolane-T Corners-Wien 115 kV line with 161 kV construction, but operation remaining at 115 kV. This construction application was approved by the PSCW on June 24, 1997. The construction schedule for the project, which includes this rebuild, is estimated to be completed in 2001.

The Arpin–Sigel 138 kV line (ALTE) and the Arpin 345/138 kV transformer (ALTE) are sensitive to imports from the west and southwest for the outage of the Arpin-Rocky Run 345 kV line (ALTE-WPS). Without the availability of the Arpin Area and Council Creek operating guides, the western Wisconsin transmission interface would severely restrict transactions utilizing the interface.

Sherman Street-Cassel 115 kV line (WPS) is a limitation for WUMS exports to the west for an outage of the Arpin-Hume 115 kV line (ALTE-WPS), Arpin 345/138 kV transformer (ALTE), King-Eau Claire–Arpin 345 kV line (NSP-ALTE) or the Arpin–Rocky Run 345 kV line (ALTE-WPS).

The Oak Creek 345/230 kV transformer (WE) and the Oak Creek 230/138 kV transformer (WE) are sensitive to WUMS exports to the south and southwest with one transformer being the limit for an outage of the other transformer. The Oak Creek 230 kV bus-tie is also showing up as a limit for an outage of the Oak Creek-Bluemound 230 kV line. The Oak Creek Operating Guide, which consists of opening the Oak Creek 230 kV bus section 6-9 tie breaker will relieve the overload on these elements and allow the FCITC levels reported. These limitations will be eliminated with the installation of a second Oak Creek 345/230 kV, 300 MVA transformer as part of the Oak Creek–Arcadian Transmission Project, which is scheduled to be completed in spring of 2001.

The Lakeview-Zion-Waukegan 138 kV line (WE-ComEd) is sensitive to WUMS exports to the south because of the increased north-south flows that result with the outage of the Pleasant Prairie-Zion 345 kV line (WE-ComEd). The Lakeview-Zion-Waukegan Operating Guide, which calls for the opening of this line by supervisory control at Lakeview, allows the FCITC levels reported.

The Rockdale 345/138 kV transformer T22 (WEC) is sensitive to WUMS imports for an outage of the Rockdale 345/138 kV transformer T21 (ALTE), which also trips the Rockdale - Columbia 345 kV line (MGE) from service. The Rockdale Operating Guide, which switches the Rockdale - Columbia 345 kV line back in service, allows the FCITC levels reported. The Rockdale 345/138 kV transformer T22 is also sensitive to WUMS imports for an outage of Columbia 345/138 kV transformers T21 and T22 (ALTE), which trips the Rockdale - Columbia 345 kV line from service. The Columbia Operating Guide, which switches the Rockdale - Columbia 345 kV line back in service, allows the FCITC levels reported. The Rockdale 345/138 kV transformer T22 is the limiting element for import directions from the south for an outage of the Rockdale - Columbia 345 kV line.

WUMS Imports From EC/NI/SM

The WUMS FCITC import from EC/NI/SM in the 2000/01 Winter study is 2000 MW, with the availability/implementation of the Arpin Area, Rockdale, and Columbia operating guides. The limiting facility is the Rockdale 345/138 kV transformer # T22 (WEC) for an outage of the Rockdale to Columbia 345 kV line (MGE). Without the availability / implementation of the indicated operating guides, the Winter 2000/01 FCITC import is limited to 0 MW. The WUMS FCTTC import from EC/NI/SM is 2100 MW. For comparison, the FCITC for the 1999/00 Winter Study was 1400 MW with the limiting facility being the Tosa West-Granville 138 kV line (WEC) for an outage of the Arcadian-Granville 345 kV line (WEC).

WUMS Imports From IOWA

The WUMS FCITC import from IOWA in the 2000/01 Winter study is 1400 MW, with the availability of the Arpin Area, Council Creek, and Rockdale operating guides. The limiting facility is the Eau Claire-Arpin 345 kV Limit (MINN-WUMS) with no outage. Without the availability of the indicated operating guides the Winter 2000/01 FCITC import is limited to 0 MW. The WUMS FCTTC import from IOWA is 1600 MW. For comparison, the FCITC for the 1999/00 Winter Study was 1500 MW with the same limiting facility.

WUMS Imports From MAPP

The WUMS FCITC import from MAPP in the 2000/01 Winter study is 1100 MW, with the availability of the Arpin Area, Council Creek, and Rockdale operating guides. The limiting facility is the Eau Claire-Arpin 345 kV Limit (MINN-WUMS) with no outage. Without the availability of the indicated operating guides the Winter 2000/01 FCITC import is limited to 0 MW. The WUMS FCTTC import from MAPP is 1700 MW and is considered **adequate**. For comparison, the FCITC for the 1999/00 Winter Study was 1200 MW with the same limiting facility.

WUMS Imports From MINN

The WUMS FCITC import from MINN in the 2000/01 Winter study is 850 MW, with the availability of the Arpin Area, Council Creek, and Rockdale operating guides, along with the Taconite-Harbor Emergency operating guide. The limiting facility is the Eau Claire-Arpin 345 kV Limit (MINN-WUMS) with no outage. Without the availability of the indicated operating guides the Winter 2000/01 FCITC import is limited to 0 MW. The WUMS FCTTC import from MINN is 1100 MW and is considered **adequate**. For comparison, the FCITC for the 1999/00 Winter Study was also 850 MW with the same limiting facility.

WUMS Imports From NI

The WUMS FCITC import from NI in the 2000/01 Winter study is 1900 MW, with the availability/implementation of the Arpin Area, Rockdale, and Columbia operating guides. The limiting facility is the Rockdale 345/138 kV transformer # T22 (WEC) for an outage of the Rockdale to Columbia 345 kV line (MGE). Without the availability of the indicated operating guides the Winter 2000/01 FCITC import is limited to 0 MW. The WUMS FCTTC import from NI is 2100 MW and is considered **adequate**. For comparison, the FCITC for the 1999/00 Winter Study was 1300 MW with the limiting facility being the Tosa West-Granville 138 kV line (WEC) for an outage of the Arcadian-Granville 345 kV line (WEC).

ANALYSIS OF var FLOWS AND VOLTAGES

Several AC solution power flow simulations were performed to identify var flow and voltage profiles during WUMS imports from the contractually tied areas of NI, MAPP and MINN. The confirming power flow simulations considered the WUMS import IITC and FCITC levels from NI and MINN shown in Exhibit D-1 and detailed in this appraisal. The AC power flow simulations verify the WUMS IITC and FCITC import levels from NI and MINN reported in Exhibit D-1.

SECTION B-6

MAIN-ECAR-TVA (MET)

INTERREGIONAL APPRAISAL

In accordance with the MAIN-ECAR-TVA (MET) Agreement to appraise the reliability of the transmission systems on the interface of these three networks, studies were conducted to determine the strength of the interconnected systems to transfer power between MAIN and ECAR, MAIN and TVA, and ECAR and TVA for projected 2000/01 winter peak load conditions.

GENERAL OBSERVATIONS

On a nonsimultaneous basis, the MAIN import FCTTC from ECAR and TVA are judged to be **adequate**. Overall, the MET transmission systems, under the conditions currently projected for the 2000/01 winter operating season, are expected to perform adequately at the reported FCTTC values. However, the MET utilities should maintain close operations surveillance and control during periods of heavy interregional transfers to ensure the continued reliability of the bulk power system.

It is important to note that the transfer capabilities reported in this study are benchmarks to gauge the transmission system strength based on a snapshot of the expected winter peak conditions. The reported values are not intended to be absolute limits to system operation for all system conditions. Therefore, judgment should be used in reviewing these reported transfer levels before assuming that these values are either optimistic or pessimistic for use in daily system operation.

The load level modeled in this study for the MAIN region is about 3.1 percent higher than that modeled in the 1999/00 MAIN Winter Transmission Assessment Study. The load level modeled for TVA is approximately 0.2 percent lower than in the 1999/00 winter study. The load level modeled for ECAR is about 4.1 percent higher than its 1999/00 winter modeled load. The base power flows on the TVA-ECAR interface are predominantly from south to north and are about 286 MW higher than those found in the 1999/00 winter study. The ECAR-MAIN interface base power flows are predominantly from east to west and are about 9 MW higher than those found in the previous winter study. The base power flows on the MAIN-TVA interface are from TVA to MAIN and are 140 MW less than those in the 1999/00 winter model.

The load at the DOE facility in Paducah, Kentucky was modeled at 1000 MW for the MAIN 2000/01 winter peak load model, which is the same as the 1999/00 winter study.

The reported MET FCITC and FCTTC levels are shown in the tables in this section. While the limiting facilities are noted, further details are shown in Exhibit D-1 of this report. Exhibit C-1 contains details of facility additions and changes since the 1999/00 winter study. Operating guides that are available for MET transactions are discussed in Exhibit D-2. The import and export participation points for the MAIN, ECAR, and TVA regions can be found on the MAIN homepage. The expected interchanges across the MET interface as modeled in this 2000/01 winter study are:

FROM REGION	FROM CO.	TO REGION	TO CO.		MW Interchange 2000/01 W	MW Interchange 1999/00 W
MAIN	AMRN	ECAR	CIN	For WVPA	65	65
MAIN	AMRN	ECAR	CIN	For SWEC	-8	-8
MAIN	AMRN	ECAR	CIN	For Edgar	-15	-17
MAIN	ComEd	ECAR	AEP		17	17
MAIN	EEInc	ECAR	LGEE		200	200
MAIN	IP	ECAR	CIN	For IMEA	-47	-49
MAIN	IP	ECAR	LGEE	For SWEC	-60	-60
MAIN	WE	ECAR	CONS	For ESE	-37	0
MAIN to ECAR Net					**189**	**148**
MAIN	SIPC	TVA	TVA	From SEPA	-28	-28
MAIN to TVA Net					**-28**	**-28**
ECAR	BREC	TVA	TVA	From SEPA	-190	-190
ECAR	BREC	TVA	TVA	Wheel to OPC	100	0*
ECAR	CIN	TVA	TVA	For BVUB	146	116
ECAR	EKPC	TVA	TVA	From SEPA	-100	-100
ECAR	EKPC	TVA	TVA	TVA Load	-28	-26
ECAR	EKPC	TVA	TVA		0	-100
ECAR	EKPC	TVA	TVA	Wheel from SOCO	-100	0
ECAR	LGEE	TVA	TVA	From SEPA	-62	-62
ECAR	LGEE	TVA	TVA	TVA Load	-68	-68
ECAR to TVA Net					**-302**	**-430**

* Was reported differently in the 1999/00 Winter study

Since the 1999/00 winter study there has been a change worthy of note. In line with the earlier change in the study test level from 6000 MW to 4000 MW is the increase from 2.5% to 3% in the PTDF/OTDF cutoff for assessing MET IITC and FCITC. The use of a 2.5% response factor cutoff was originally implemented along with the 6000 MW test level, because this percentage of a 6000 MW transfer was a fairly large amount of facility load increase to relieve through local operating procedures. Since the 6000 MW transfer test level is no longer being used, the use of a 2.5% transfer response factor cutoff no longer has the same significance. It was therefore left up to each MET member to

determine the PTDF/OTDF cutoff to use in assessing import capabilities.

First Contingency Transfer Capability

The following FCITC and FCTTC levels for MAIN, ECAR, and TVA were determined for the 2000/01 winter study and compared to 1999/00 winter study results:

Nonsimultaneous Import Transfer Capabilities

Transfer Direction	2000/01 Winter FCITC (MW)	2000/01 Winter FCTTC[1] (MW)	2000/01 Winter Note	1999/00 Winter FCITC (MW)	1999/00 Winter FCTTC[1] (MW)	1999/00 Winter Note	2000/01 Winter Limiting Element (2000/01 Winter Outaged Element)	Owner
ECAR to MAIN	4000*	3800*		4000*	3900*		No Limit Found (Each Valid Contingency Tested)	
ECAREAST to MAIN	4000	4000		4000*	4000*		ElRama 138 kV Bus Tie (None)	DLCO
ECARWEST to MAIN	4000*	3800*		4000*	3900*		No Limit Found (Each Valid Contingency Tested)	
TVA to MAIN	2500	2600		3300	3400		Bull Run-Volunteer 500 kV (Watts Bar-Volunteer 500 kV)	TVA (TVA)
MAIN to ECAR	3400	3600		4000*	4100*	15	Ashtabula 345/138 kV Tr. (Eastlake 345/138 kV Tr.	FE (FE)
MAIN to ECAREAST	2600	2600		4000*	4000*	15	Ashtabula 345/138 kV Tr. (Eastlake 345/138 kV Tr.	FE (FE)
MAIN to ECARWEST	4000*	4000*	15	4000*	4100*	15	No Additional Limit Found (Each Valid Contingency Tested)	-
TVA to ECAR	1700	2000		2600	3100		Bull Run-Volunteer 500 kV (Watts Bar-Volunteer 500 kV)	TVA (TVA)
TVA to ECAREAST	1600	1600		2700	2700	14	Bull Run-Volunteer 500 kV (Watts Bar-Volunteer 500 kV)	TVA (TVA)
TVA to ECARWEST	1800	2100		2400	2800		Bull Run-Volunteer 500 kV (Watts Bar-Volunteer 500 kV)	TVA (TVA)
MAIN to TVA	2100	2100		3000	3000		Cumberland-Davidson 500 kV (Cumberland-Johnsonville 500 kV)	TVA (TVA)
ECAR to TVA	2700	2400		2400	2000		Cumberland-Davidson 500 kV (Cumberland-Johnsonville 500 kV)	TVA (TVA)
ECAREAST to TVA	2900	2900		2800	2800		Cumberland-Davidson 500 kV (Cumberland-Johnsonville 500 kV)	TVA (TVA)
ECARWEST to TVA	2500	2200		2300	1800		Cumberland-Davidson 500 kV (Cumberland-Johnsonville 500 kV)	TVA (TVA)
SPP to TVA	1400	1400	28	1700	1700	28	Elk City 230/138 kV Tr. (Oklaunion-Tuco 345 kV) (Oklaunion-Lawton 345 kV) (Oklaunion DC Tie) (Tuco 345/230 kV Tr.)	CSWS (CSWS-SPS) (CSWS) (CSWS-ERCOT) (SPS)

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

(*) Denotes transfer level studied.
(I) Indicates the implementation of a nonemergency operating guide.
(i) Indicates the implementation of an emergency operating guide.

(14) Santeetlah-Robbinsville Operating Guide
(15) State Line-Wolf Lake-Sheffield 138 kV Operating Guide
(28) Braswell Emergency Operating Guide

(See Exhibit D-2 for descriptions of 2000/01 winter guides)

MAIN IMPORT CAPABILITY

To determine transfer capabilities for the MAIN region, the following import and export participation factors for MAIN were used:

IMPORTS and EXPORTS

NI - 39.1%
SMAIN - 35.8%
WUMS - 25.1%

The generation and load points used by MAIN areas and subregions can be found on the MAIN home page under the heading FERC 715 Filings and then under the heading TASG Subsystem Data. This season MAIN imports from ECAR and TVA are being judged based on the use of a 3% or greater power distribution factor (PTDF) or outage transfer distribution factor (OTDF) as compared to the 2.5% or greater criteria that has been used in previous studies.

The ECAR to MAIN FCITC is 4000 MW which is also the transfer test level, at which no limit was found for each valid contingency tested. This transfer capability is the same as the 1999/00 winter FCITC. The MAIN import FCTTC of 3800 MW from ECAR is judged to be **adequate.**

The MET study included transfers from ECAR, ECAR EAST and ECAR WEST. The ECAR EAST to MAIN FCITC is 4000 MW limited by ElRama 138 kV Bus Tie (DLCO) for no outage. This transfer capability is similar to that of the 1999/00 winter FCITC of 4000 MW which was also the transfer test level, at which no limit was found for each valid contingency tested.

The ECAR WEST to MAIN FCITC is 4000 MW which is also the transfer test level, at which no limit was found for each valid contingency tested. This transfer capability is the same as reported in the 1999/00 winter study.

The TVA to MAIN FCITC is 2500 MW. This FCITC is limited by the Bull Run-Volunteer 500 kV line (TVA) for the outage of the Watts Bar-Volunteer 500 kV line (TVA). This transfer capability is 800 MW lower than that reported in the 1999/00 winter study as limited by the Summershade-Summershade Tap 161 kV line (TVA-EKPC) for the outage of the Summershade-Summershade 161 kV line (TVA-EKPC) which did not require the availability of any operating guides. The MAIN import FCTTC of 2600 MW from TVA is judged to be **adequate**.

ECAR IMPORT CAPABILITY

ECAR FCITC levels were determined for the entire group of ECAR companies (ECAR), for an eastern group of ECAR companies (ECAR EAST), and for a western group of ECAR companies (ECAR WEST). The western group of companies consists of those ECAR members whose transmission systems are predominantly in the Indiana, Kentucky, western Michigan, and western Ohio areas. The remaining ECAR members comprise the eastern group of ECAR companies. Export and import levels of 4000 MW were tested for all three groups. A change from the 1999/00 winter study is the use of a 3% PTDF/OTDF cutoff instead of 2.5%, as in previous studies, for the reasons explained under General Observations. Although a formal definition of adequacy is not available for ECAR, all of the FCITC and FCTTC values for ECAR, ECAR EAST, and ECAR WEST imports found in this study are adequate.

The 2000/01 winter MAIN to ECAR FCITC is 3400 MW, limited by the loading on the Ashtabula 345/138 kV transformer (FE) anticipating the outage of the Eastlake 345/138 kV transformer (FE). No operating guides are required to reach this level of imports. This FCITC is 600 MW lower than the value reported in the 1999/00 winter study, in which no limit was found up to the study test level of 4000 MW. The Ashtabula 345/138 kV transformer is a limiting facility in this study due to the changes in the generation dispatch used for ECAR imports in this study.

The 2000/01 winter MAIN to ECAR EAST FCITC is 2600 MW, and is also limited by the Ashtabula 345/138 kV transformer (FE) anticipating the outage of the Eastlake 345/138 kV transformer (FE). This level of imports is not dependent on the availability of any operating guides. This FCITC is 1600 MW lower than the corresponding value found in the 1999/00 winter study, in which no limit was found up to the 4000 MW test level. The Ashtabula 345/138 kV transformer poses a limit in this study due to changes in the generation dispatch used for ECAR EAST imports in this study.

The 2000/01 winter MAIN to ECAR WEST FCITC is 4000 MW, with no limit found up to the study test level. The State Line-Wolf Lake 138 kV operating guide must be available to reach this level of imports. This FCITC is the same value that was found in the 1999/00 winter study for ECAR WEST imports from MAIN.

The 2000/01 winter TVA to ECAR, ECAR EAST, and ECAR WEST FCITC are all limited by the loading on the Bull Run-Volunter 500 kV line (TVA) anticipating the outage of the Watts Bar-Volunteer 500 kV line (TVA), to levels of 1700 MW, 1600 MW, and 1800 MW, respectively. These FCITC can be obtained without the availability of any operating

guides. These FCITC values are 900 MW, 1100 MW, and 600 MW lower, respectively, than the corresponding values found in the 1999/00 winter study. Heavier base case line loadings contributed to the reductions in the current FCITC values for ECAR, ECAR EAST, and ECAR WEST imports from TVA. The 1999/00 winter FCITC for imports from TVA were established by either the Summershade-Summershade Tap 161 kV line (TVA-EKPC) anticipating the outage of Summershade-Summershade 161 kV (TVA-EKPC) or the same set of limiting facility and outage associated with the FCITC determined in this study.

TVA IMPORT CAPABILITY

For the 2000/01 winter study model, base case loading on TVA's Cumberland-Davidson and Cumberland-Johnsonville 500 kV lines was slightly higher than in the 1999/00 winter study model. For the TVA 4000 MW import test level, two large units were included in the import simulation for both the 1999/00 and 2000/01 winter studies. In the 1999/00 winter study, the two large units were Cumberland 1 and Paradise 1. In the 2000/01 winter study, the two large units were Sequoyah 1 and Paradise 3. Because a Cumberland unit did not participate in the 2000/01 winter import simulation, contingency loading on the 500 kV lines in the vicinity of Cumberland were identified as transfer limitations for TVA imports from the MAIN and ECAR Regions.

The MAIN to TVA FCITC is projected to be 2100 MW, limited by the Cumberland-Davidson 500 kV line (TVA) for an outage of the Cumberland-Johnsonville 500 kV line (TVA). This is a decrease of 900 MW from the 1999/00 winter study results, where the New Hardinsburg 161/138 kV transformer (Big Rivers) was found to limit MAIN to TVA transfers. The MAIN to TVA FCTTC of 2100 MW is judged to be **adequate** for projected 2000/01 winter peak conditions.

The ECAR to TVA FCITC is projected to be 2700 MW, limited by the Cumberland-Davidson 500 kV line (TVA) for an outage of the Cumberland-Johnsonville 500 kV line (TVA). This is an increase of 300 MW over the 1999/00 winter study results, where the New Hardinsburg 161/138 kV transformer (Big Rivers) was found to limit ECAR to TVA transfers. The contingency flow and transfer response on the New Hardinsburg 161/138 kV transformer were both lower in this winter's study. The ECAR to TVA FCTTC of 2400 MW is judged to be **adequate** for projected 2000/01 winter peak conditions.

The ECAR WEST to TVA FCITC is projected to be 2500 MW, limited by the Cumberland-Davidson 500 kV line (TVA) for an outage of the Cumberland-Johnsonville 500 kV line (TVA). This is an increase of 200 MW over the 1999/00 winter study results, where the New

Hardinsburg 161/138 kV transformer (Big Rivers) was found to limit ECAR to TVA transfers. The contingency flow and transfer response on the New Hardinsburg 161/138 kV transformer were both lower in this winter's study. The ECAR WEST to TVA FCTTC of 2200 MW is judged to be **adequate** for projected 2000/01 winter peak conditions.

The ECAR EAST to TVA FCITC is projected to be 2900 MW, limited by the Cumberland-Davidson 500 kV line (TVA) for an outage of the Cumberland-Johnsonville 500 kV line (TVA). This is an increase of 100 MW over the 1999/00 winter study results, where the New Hardinsburg 161/138 kV transformer (Big Rivers) was found to limit ECAR to TVA transfers. The contingency flow and transfer response on the New Hardinsburg 161/138 kV transformer were both lower in this winter's study. The ECAR EAST to TVA FCTTC of 2900 MW is judged to be **adequate** for projected 2000/01 winter peak conditions.

The SPP to TVA FCITC is projected to be 1400 MW, limited by the Elk City 230/138 kV transformer (CSWS) for an outage of the Oklaunion-Tuco 345 kV tie line (CSWS-SPS), the Oklaunion-Lawton 345 kV line (CSWS), the Tuco 345/230 kV transformer (SPS), and the Oklaunion DC tie (CSWS-ERCOT). This is a 300 MW decrease from the 1999/2000 winter study results, where the same facility was found to limit SPP to TVA transfers.

MAIN SUBREGIONS TRANSFER CAPABILITY

The following table summarizes the export FCITC and FCTTC levels from the subregions of MAIN to ECAR and TVA.

Nonsimultaneous FCITC and FCTTC (MW) Exports from MAIN Subregions

Transfer Direction	2000/01 Winter			1999/00 Winter			2000/01 Winter Limiting Element (2000/01 Winter Outaged Element)	Owner
	FCITC (MW)	FCTTC[1] (MW)	Note	FCITC (MW)	FCTTC[1] (MW)	Note		
AMRN to ECAR	3000*	3000*		3000*	3000*		No Limit Found (Each Valid Contingency Tested)	
IP to ECAR	1500*	1400*		1500*	1400*		No Limit Found (Each Valid Contingency Tested)	-
NI to ECAR	3400	3400	15	4000*	4000*	15	Ashtabula 345/138 kV Tr. (Eastlake 345/138 kV Tr.)	FE (FE)
SMAIN to ECAR	3400	3500		3500*	3400*		Ashtabula 345/138 kV Tr. (Eastlake 345/138 kV Tr.)	FE (FE)
IP to ECAREAST	1500*	1500*		1500*	1500*		No Limit Found (Each Valid Contingency Tested)	-
NI to ECAREAST	2600	2600		4000*	4000*	15	Ashtabula 345/138 kV Tr. (Eastlake 345/138 kV Tr.)	FE (FE)
SMAIN to ECAREAST	2600	2600		3500*	3500*		Ashtabula 345/138 kV Tr. (Eastlake 345/138 kV Tr.)	FE (FE)
AMRN to ECARWEST	3000*	3000*		3000*	3000*		No Limit Found (Each Valid Contingency Tested)	-
IP to ECARWEST	1500*	1400*		1500*	1400*		No Limit Found (Each Valid Contingency Tested)	-
NI to ECARWEST	4000*	4000*	15	4000*	4000*	15	No Additional Limit Found (Each Valid Contingency Tested)	-
SMAIN to ECARWEST	3500*	3500*		3500*	3400*		No Limit Found (Each Valid Contingency Tested)	-
AMRN to TVA	1900	1900		3100	3100	38	Cumberland-Davidson 500 kV (Cumberland-Johnsonville 500 kV)	TVA (TVA)
IP to TVA	1500	1500		1500*	1500*		Johnsonville-Davidson 500 kV (Cumberland-Davidson 500 kV)	TVA (TVA)
NI to TVA	2400	2400		2700	2700		Cumberland-Davidson 500 kV (Cumberland-Johnsonville 500 kV)	TVA (TVA)
SMAIN to TVA	1900	1900		3200	3200	38	Cumberland-Davidson 500 kV (Cumberland-Johnsonville 500 kV)	TVA (TVA)

([1]) FCTTC is defined as the scheduled transfers plus the lower of FCITC or test level.
(*) Denotes transfer level studied.
(I) Indicates the implementation of a nonemergency operating guide.
(i) Indicates the implementation of an emergency operating guide/procedure.

(15) State Line-Wolf Lake-Sheffield 138 kV Operating Guide
(38) Hayti-Blythville Emergency Operating Guide

(See Exhibit D-2 for descriptions of operating guides)

For details of assessments of MAIN subregional imports between directly interconnected areas, refer to the MAIN subregional appraisals in Sections B-1 through B-5.

SECTION B-7
MAIN-MAPP-SPP (MMS)
INTERREGIONAL APPRAISAL

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 2000/01 winter peak conditions.

SUMMARY AND GENERAL OBSERVATIONS

The MAIN, MAPP and SPP loads are approximately 3.1%, 2.5% and 3.8% higher, respectively, than those modeled for the 1999/00 winter peak period.

Based on the information received from the SERC West representative, Entergy has established a policy of using a 2.5% response factor for their facilities for ATC and reliability study purposes. This study has considered the 2.5% OTDF cutoff for all Entergy facilities with the exclusion of the reporting of the MAIN, MAPP and SPP (MMS) interregional transfers. This exclusion is based on the MMS procedure originally agreed to in the Fall of 1991 and then in the Summer of 1995 that a 3.0% OTDF cutoff will be used for the MMS Transfer Capability Study.

In the following paragraphs, interregional FCITC and FCTTC between the MMS regions are discussed. The most limiting facility for each transfer capability is noted in the tables below. Additional limits and their respective outage(s) are shown in Exhibit D-1.

INTERREGIONAL TRANSFER CAPABILITY

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	NI 39.1%;	SMAIN 35.8%;	WUMS 25.1%	
MAPP import	IOWA 20.0%;	MINN 51.0%;	NEBR 29.0%	
MAPP export	IOWA 33.5%;	MINN 34.9%;	NEBR 20.0%;	DAKS 11.6%
SPP import	SPP-N 31.9%;	SPP-S 68.1%		
SPP export	SPP-N 27.9%;	SPP-S 72.1%		

The specific transfer points and their percentages used for the MAIN, MAPP and SPP subregional studies can be found on the

MAIN home page under the heading FERC 715 Filings and then under the heading TASG Subsystem Data.

For the purposes of this study, the MAIN, MAPP and SPP regions have been further subdivided into geographic subregions. These subregions are geographic boundaries only and do not necessarily represent actual control area boundaries. Refer to the glossary in Section F for a listing of each region's assigned subregions and the individual companies within those subregions.

The tables and discussions below include a reference to First Contingency Total Transfer Capability (FCTTC) which is defined as the lower of the FCITC or test level plus base case scheduled interchange between the respective study areas. These scheduled base case interchanges are detailed in Exhibit C-2. The expected interchanges across the MMS interface as modeled in this 2000/01 Winter study are listed in the following table:

FROM		TO			MW Interchange	
Region	**Co.**	**Region**	**Co.**		**2000/01 W**	**1999/00 W**
MAIN	ALTE	MAPP	ALTW		-199	0
MAIN	ALTE	MAPP	DPC		-5	0
MAIN	ALTE	MAPP	MP		-42	0
MAIN	ALTE	MAPP	NSP		0	37
MAIN	ALTE	MAPP	WAPA		-100	-200
MAIN	AMRN	MAPP	MEC		-115	-115
MAIN	ComEd	MAPP	MEC	Share of Quad Cities	394	-197
MAIN	IP	MAPP	MEC		-5	0
MAIN	WE	MAPP	MP		-62	-62
MAIN	WPS	MAPP	NSP		-155	-155
	MAIN to MAPP Net				-289	-448
MAIN	AMRN	SPP	SPA	For Jackson	-16	-16
MAIN	CWL	SPP	KACY		-20	-20
MAIN	CWL	SPP	SPA		-78	-76
	MAIN to SPP Net				-114	-112
MAPP	MEC	SPP	INDN		0	15
MAPP	NPPD	SPP	SECI		3	0
MAPP	SJLP	SPP	KCPL		-121	-156
MAPP	WAPA	SPP	SECI		0	12
	MAPP TO SPP Net				-118	-129

Nonsimultaneous Import Capabilities (MW) for MAIN-MAPP-SPP Regions

Transfer Direction	2000/01 Winter			1999/00 Winter			2000/01 Winter Limiting Element (2000/01 Winter Outaged Element)	Owner
	FCITC	FCTTC[1]	Note	FCITC	FCTTC[1]	Note		
MAPP-MAIN	1700	2000	4	1800	2200	4	Eau Claire-Arpin 345 kV Flow Limit (None)	MINN-WUMS
SPP-MAIN	1400	1500	4,28	1650	1800		Elk City 230/138 kV Tr. (Oklaunion-Tuco 345 kV) (Oklaunion-Lawton 345 kV) (Oklaunion DC Tie) (Tuco 345/230 kV Tr.)	CSWS (CSWS-SPS) (CSWS) (CSWS-ERCOT) (SPS)
MAIN-MAPP	2000*	1700*		2000*	1550*		No Limit Found (Each Valid Contingency Tested)	
SPP-MAPP	1200	1350		1600	1750		Eckles Road-MoCity 161 kV (Sibley-Hawthorn 345 kV)	INDN-AECI (MPS-KCPL)
MAIN-SPP	2450	2350		1900	1750		Franks 345/161 kV Transformer (Franks–Huben 345 kV) (Huban–Morgan 345 kV)	AECI (AECI) (AECI)
MAPP-SPP	2000*	1900*	4	1400	1250	4	No Additional Limit Found (Each Valid Contingency Tested)	
TVA-SPP	1800	1800		1400	1400		Wilbert-Livonia 161 kV (Richard-Webre 500 kV)	ESI (ESI)

([1]) FCTTC is defined as the scheduled transfers plus the lower of either the FCITC or test level.
(*) Denotes 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 Guide
(28) Braswell Emergency Operating Guide

MAIN IMPORT CAPABILITIES

The 2000/01 winter MAPP to MAIN FCITC is 1700 MW limited by the Eau Claire-Arpin 345 kV limit (MINN-WUMS) for no outage with the availability of the Arpin Area Operating Guide. Without the availability of this guide the MAPP to MAIN FCITC would be 0 MW as limited by the T Corners-Wien 115 kV line (NSP-WPS) for the outage of the Eau Claire-Arpin 345 kV line (NSP-ALTE). The FCITC of 1700 MW is 100 MW less than that reported in the 1999/00 winter study as limited by the Eau Claire-Arpin 345 kV Flow Limit (MINN-WUMS) for a flow of 775 MW with the Arpin Area Operating Guide available.

The 2000/01 winter SPP to MAIN FCITC is 1400 MW limited by the Elk City 230/138 kV transformer (CSWS) for the outage of the

Oklaunion-Tuco 345 kV line (CSWS-SPS), the Tuco 345/230 kV transformer (SPS), Oklaunion-Lawton 345 kV line (CSWS) and the Oklaunion DC Tie (CSWS-ERCOT) with the availability of the Arpin Area Operating Guide. This is a 250 MW decrease from the 1650 MW level reported in the 1999/00 winter study as limited by the same facility and outage combination.

The MAIN TTFSC judges the MAIN nonsimultaneous import FCTTC from MAPP and SPP to be **adequate** for modeled 2000/01 winter peak conditions.

For details of assessments of MAIN subregional imports between directly interconnected areas, refer to the MAIN subregional appraisals in Sections B-1 through B-5.

MAPP IMPORT CAPABILITIES

The MAPP 2000/01 winter import FCITC from MAIN is 2000 MW with no limit found up to the 2000 MW transfer level studied. The FCITC of 2000 MW is the same as that reported in the 1999/00 winter study. No operating guides were required to reach this level in the 2000/01 study as well as in the 1999/00 winter study.

The MAPP 2000/01 winter import FCITC from SPP is 1200 MW limited by the Eckles Road - MoCity 161 kV line (INDN-AECI) for the outage of the Sibley - Hawthorn 345 kV line (MPS-KCPL). No operating guides were required to reach this level. The 1200 MW FCITC is a 400 MW decrease from the 1999/00 winter study FCITC. The 1999/00 FCITC was limited by the South Coffeyville-Dearing 138 kV line (CSWS-WR) for the loss of the Coffeyville Tap-Neosho 345 kV line (CSWS-WR). The FCITC 400 MW decrease can be attributed primarily to base flow differences between the 1999/00 winter and 2000/01 winter base case models. In the 1999/00 winter study, no operating guides were required to reach the reported transfer level.

SPP IMPORT CAPABILITIES

The 2000/01 winter import FCITC from MAIN is 2450 MW limited by the Franks 345/161 kV transformer (AECI) for the outage of Franks-Huben-Morgan 345 kV line (AECI). This level is an increase from the 1900 MW FCITC reported in the 1999/00 winter study.

The 2000/01 winter import FCITC from MAPP is 2000 MW. No limiting element was identified up to this transfer level with the availability of the Arpin Area Operating Guide. This level is an increase from the 1400 MW FCITC reported in the 1999/00 winter study.

The 2000/01 winter import FCITC from TVA is 1800 MW limited by the Wilbert-Livonia 138 kV line (ESI) for the outage of Richard-Webre 500 kV line (ESI). This is an increase from the 1400 MW FCITC reported in the 1999/00 winter study.

TRANSFER CAPABILITIES BETWEEN AREAS AND SUBREGIONS OF MAIN, MAPP, AND SPP

The following table and discussion summarize the export FCITC and FCTTC from the subregions of MAIN to MAPP and SPP:

Nonsimultaneous Import Transfer Capabilities (MW) for MAPP Subregions

Transfer Direction	2000/01 Winter			1999/00 Winter			2000/01 Winter Limiting Element (2000/01 Winter Outaged Element)	Owner
	FCITC	FCTTC[1]	NOTES	FCITC	FCTTC[1]	NOTES		
AMRN-IOWA	1500	1300		1900*	1800*		Eckles Road-MoCity 161 kV (Sibley-Hawthorn 345 kV)	INDN-AECI (MPS-KCPL)
IP-IOWA	1500*	1500*		1500*	1500*		No Limit Found (Each Valid Contingency Tested)	
NI-IOWA	2000*	2400*		1900*	2100*		No Limit Found (Each Valid Contingency Tested)	
SPP-N-IOWA	1000*	1000*		1200*	1200*		No Limit Found (Each Valid Contingency Tested)	
SMAIN-IOWA	1500	1400		1900*	1800*		Eckles Road-MoCity 161 kV (Sibley-Hawthorn 345 kV)	INDN-AECI (MPS-KCPL)
WUMS-IOWA	2000*	1800*	9,37	1900*	1900*	37	No Additional Limit Found (Each Valid Contingency Tested)	
AMRN-MINN	1500*	1500*	29	2000*	2000*		No Additional Limit Found (Each Valid Contingency Tested)	
NI-MINN	2000*	2000*	29	2000*	2000*	8	No Additional Limit Found (Each Valid Contingency Tested)	
SPP-N-MINN	1000*	1000*		1200*	1200*		No Limit Found (Each Valid Contingency Tested)	
SMAIN-MINN	2000*	2000*	29	2000*	2000*		No Additional Limit Found (Each Valid Contingency Tested)	
WUMS-MINN	1400	1700	37	1700	1100		Roeder-Wautoma 138 kV (None)	ALTE
AMRN-NEBR	650	650		350	350		Philips-S. Philips J 115 kV (Summit-E. McPherson 230 kV)	WR (WR)
SMAIN-NEBR	700	700		350	350		Philips-S. Philips J 115 kV (Summit-E. McPherson 230 kV)	WR (WR)

Nonsimultaneous Import Transfer Capabilities (MW) for SPP Subregions

Transfer Direction	2000/01 Winter			1999/01 Winter			2000/01 Winter Limiting Element (2000/01 Winter Outaged Element)	Owner
	FCITC	FCTTC[1]	Notes	FCITC	FCTTC[1]	Notes		
AMRN-SPP-N	1500*	1500*		1500*	1500*	16	No Limit Found (Each Valid Contingency Tested)	
IOWA-SPP-N	1500*	1500*		1200	1250		No limit found (Each Valid Contingency Tested)	
MINN-SPP-N	1200	1200	4,44	1100	1100	4,23	Lime Creek-Emery 161 kV (Adams-Hazelton 345 kV)	ALTW (NSP/ALTW)
SMAIN-SPP-N	1500*	1500*		1500*	1400*		No limit found (Each Valid Contingency Tested)	
AMRN-SPP-S	1500*	1500*		1500*	1500*	12	No limit found (Each Valid Contingency Tested)	

([1]) FCTTC is defined as the scheduled transfers plus the lower of either the FCITC or test level.
(*) Denotes 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 are in Exhibit D-2:

(4) Arpin Area Operating Guide
(8) Granville Operating Guide
(9) Lakeview-Zion-Waukegan Operating Guide
(12) Maries Operating Guide
(16) Thomas Hill Operating Guide
(23) Boswell Emergency Operating Guide
(29) Rockdale Operating Guide
(37) Oak Creek Operating Guide
(44) Taconite-Harbor Emergency Operating guide

SPP-N import FCITC from AMRN is 1500 MW. No limiting element was identified up to this transfer level. This is equal to the 1500 MW FCITC reported in the 1999/00 winter study.

SPP-N import FCITC from IOWA is 1500 MW. No limiting element was identified up to this transfer level. This is up from the 1200 MW FCITC reported in the 1999/00 winter study.

SPP-N import FCITC from MINN is 1200 MW, limited by the Lime Creek-Emery 161 kV line (ALTW) for the outage of Adams-Hazleton 345 kV line (NSP-ALTW) with the availability of the Taconite-Harbor Emergency Operating Guide, and the Arpin Area Operating Guide. This is up from the 1100 MW FCITC reported in the 1999/00 winter study.

SPP-N import FCITC from SMAIN is 1500 MW. No limiting element was identified up to this transfer level. This is equal to the 1500 MW FCITC reported in the 1999/00 winter study.

SPP-S import FCITC from AMRN is 1500 MW. No limiting element was identified up to this transfer level. This is equal to the 1500 MW FCITC reported in the 1999/00 winter study.

SECTION B-8

MAIN-SERC WEST (MSw)

INTERREGIONAL APPRAISAL

To review the reliability of the interconnected system along the interface of MAIN and SERC West (MSw), a study was made to determine the ability of this system to transfer power between MAIN, SERC West (SERCW), and their respective subregions and areas for the expected 2000/01 winter peak conditions.

SUMMARY AND GENERAL OBSERVATIONS

The SERC West subregion, as modeled in this study, is composed of Entergy Services, Associated Electric Cooperative, and Cajun Electric Power Cooperative. These companies were members of Southwest Power Pool until January 1998 when they left SPP and joined SERC to form the Entergy subregion. To avoid confusion with the Entergy control area the Entergy subregion is called SERC West for the purposes of this study.

The MAIN and SERCW loads are approximately 3.1% and 1.6% higher respectively, than those modeled for the 1999/00 winter peak period.

In the following paragraphs, interregional FCITC and FCTTC between MAIN and SERC West regions are discussed. The most limiting facility/outage pair for each transfer capability is noted in the tables below. Additional limits and their respective outage(s) are shown in Exhibit D-1.

INTERREGIONAL TRANSFER CAPABILITY

To obtain transfer capabilities representative of the MAIN and SERCW regions, the following participation factors were used:

MAIN import and export	NI 39.1%;	SMAIN 35.8%;	WUMS 25.1%
SERCW import and export	CAJN 6.6%;	ESI 66.7%;	AECI 26.7%

The specific transfer points, and their percentages, used for the MAIN and SERCW subregional can be found on the MAIN home page under the heading FERC 715 Filings.

First Contingency Total Transfer Capability (FCTTC) is defined as the scheduled transfers plus the lower of either the FCITC or test level. These scheduled base case transfers are detailed in Exhibit C-2. The expected net interchanges between SERC West and the other regions included in this study are shown in the table below.

FROM REGION	FROM CO.	TO REGION	TO CO.	MW Interchange 2000/01 W	MW Interchange 1999/00 W
SERCW	AECI	MAIN	AMRN	-19	-23
SERCW	ESI	MAIN	AMRN	160	160
	SERCW to MAIN Net			**42**	**40**
SERCW	AECI	MAPP	NPPD	-19	0
SERCW	AECI	MAPP	MEC	-8	0
	SERCW to MAPP Net			**-27**	**0**
SERCW	LAGN	SERC	SMEPA	75	75
SERCW	ESI	SERC	SOCO	580	128
SERCW	ESI	SERC	SMEPA	-185	-240
SERCW	ESI	SERC	AEC	0	190
	SERCW to SERC Net			**470**	**153**
SERCW	AECI	SPP	SPA	-553	-559
SERCW	AECI	SPP	CSWS	31	30
SERCW	AECI	SPP	GRDA	-272	-329
SERCW	AECI	SPP	WFEC	0	-4
SERCW	AECI	SPP	MPS	0	70
SERCW	AECI	SPP	EDE	0	100
SERCW	LAGN	SPP	CLEC	105	102
SERCW	LAGN	SPP	SPA	-90	-90
SERCW	LAGN	SPP	CSWS	109	110
SERCW	ESI	SPP	CLEC	20	20
SERCW	ESI	SPP	LEPA	-105	-101
SERCW	ESI	SPP	SPA	354	352
SERCW	ESI	SPP	CSWS	152	99
	SERCW to SPP Net			**-249**	**-200**
SERCW	ESI	TVA	TVA	-71	-61
	SERCW to TVA			**-71**	**-61**
	SERCW *NET*			**-264**	**29**

Transfer Capability for MAIN and SERC WEST Regions

The following table and discussion summarize the nonsimultaneous FCITC and FCTTC between MAIN and SERC West. Transfer studies were also conducted between SERC West and other regions. Those results are also shown in this table for informational purposes.

Transfer Direction	2000/01 Winter			1999/00 Winter			2000/01 Winter Limiting Element (2000/01 Winter Outaged Element)	Owner
	FCITC	FCTTC[1]	Note	FCITC	FCTTC[1]	Note		
SERCW-MAIN	600	750	27,28,31	2300	2400	27,28 31,33	Little Gypsy-Madisonville 230 kV (Sorrento-French Settlement 230 kV)	ESI-CLEC (ESI-CAJN)
MAIN-SERCW	3000*	2900*	4	3000*	2900*		No Limit Found (Each Valid Contingency Tested)	
SERCW-MAPP	1600	1600	27,28,31	1800	1800	27,31,33	McKnight-Franklin 500 kV (Richard-Webre 500 kV)	ESI (ESI)
MAPP-SERCW	2000*	2000*	4	2000*	2000*	4	No Limit Found (Each Valid Contingency Tested)	
SERCW-SPP	1500	1300	27,31	1500	1300	27,31	McKnight-Franklin 500 kV (Richard-Webre 500 kV)	ESI (ESI)
SPP-SERCW	1400	1700		1700	1900		Elk City 230/138 kV Tr. (Oklaunion-Lawton 345 kV) (Oklaunion-Tuco 345 kV) (Tuco 345/230 kV Tr.) (Oklaunion DC Tie)	SPS (PSO) (SPS) (SPS) (PSO)
SERCW-TVA	550	500	27,28,31	2200	2200	27,28 31,33	Little Gypsy-Madisonville 230 kV (Michoud-Front Street 230 kV)	ESI-CLEC (ESI-CLEC)
TVA-SERCW	3000*	3000*	34	2700	2800	34	No Limit Found (Each Valid Contingency)	

([1]) FCTTC is defined as the scheduled transfers plus the lower of either the FCITC or test level.
(*) Denotes transfer level studied.

A description of the following guides are in Exhibit D-2:

(4) Arpin Area Operating Guide
(27) Little Gypsy-Madisonville Emergency Operating Guide
(28) Braswell Emergency Operating Guide
(31) Michoud-Slidell Emergency Operating Guide
(33) McKnight-Franklin Emergency Operating Guide
(34) Allen Steam Plant Emergency Operating Guide

MAIN IMPORT CAPABILITIES

The 2000/01 winter MAIN FCTTC import from SERC West is 750 MW, limited by the Little Gypsy-Madisonville 230 kV line (ESI-CLEC) for the outage of the Sorrento-French Settlement 230 kV line (ESI-CAJN) with the availability of the Little Gypsy-Madisonville, Michoud-Slidell and Braswell emergency operating guides. Without the availability of these guides the MAIN import from SERC West would be zero as limited by the Little Gypsy-Madisonville 230 kV line (ESI-CLEC) for the outage of the Michoud-Front Street 230 kV line (ESI-CLEC).

The 750 MW FCTTC is a 1650 MW decrease from the 1999/00 winter reported level. This change in FCTTC is due in part to the use of a lower cutoff distribution factor for Entergy facilities (2.5% vs. 3.0%) and higher base case generation levels in Entergy's southeastern Louisiana area. Another contributing factor is an increase of 235 MW in the net exports from the SERCW subregion as

compared to the 1999/00 winter study. Had a 3% cutoff distribution factor been used the MAIN FCTTC import from SERC West would have been 1400 MW limited by the Little Gypsy-Madisonville 230 kV line (ESI-CLEC) for the outage of the French Settlement-Hammond 230 kV line (ESI-CAJN). The MAIN TTFSC judges the MAIN import FCTTC of 750 MW from SERC West to be **marginally adequate** for the expected 2000/01 winter peak conditions. The 750 MW level is lower than recent historical levels primarily due to changes in study assumptions described above.

SERC WEST IMPORT CAPABILITIES

The SERC West 2000/01 winter import FCITC from MAIN is 3000 MW, with no valid limit found up to the study level. This is identical to the results found in the 1999/00 winter study.

FCITC & FCTTC BETWEEN INDIVIDUAL SUBREGIONS OF MAIN AND SERC WEST

The following tables and discussion summarize the FCITC and FCTTC between the subregions and areas of MAIN and SERC West. Subregional transfer studies were also conducted between SERC West and selected MAPP subregions. Those results are also shown in these tables for informational purposes.

SERC West Nonsimultaneous Import/Export Transfer Capabilities (MW)

Transfer Direction	2000/01 Winter			1999/00 Winter			2000/01 Winter Limiting Element (2000/01 Winter Outaged Element)	Owner
	FCITC	FCTTC[1]	Note	FCITC	FCTTC[1]	Note		
AMRN-ESI	2000*	1800*	34	2000*	1800*	34,38	No limit found (Each valid contingency tested)	
AMRN-SERCW	2000*	1900*		2000*	1800*		No limit found (Each valid contingency tested)	
NI-SERCW	3000*	3000*		3000*	3000*		No limit found (Each valid contingency tested)	
SMAIN-SERCW	2000*	1900*		2000*	2000*		No limit found (Each valid contingency tested)	
IOWA-SERCW	2000*	2000*	4	1700	1700		No limit found (Each valid contingency tested)	
NEBR-SERCW	1000	1000	4	1000	1000		S1211-SUB701 161 kV (Council Bluffs 345/161 kV)	OPPD-MEC (MEC)
SERCW-IOWA	1600	1600	27,28 ,31	1700	1700	27,31 ,33	McKnight-Franklin 500 kV (Richard-Webre 500 kV)	ESI (ESI)
SERCW-NEBR	650	650	27,31	350	350	27,31	Philips-S. Philips J 115 kV (Summit-E.McPherson 230 kV)	WERE (WERE)

([1]) FCTTC is defined as the scheduled transfers plus the lower of either the FCITC or test level.
(*) Denotes transfer level studied.

A description of the following guides are in Exhibit D-2:
(4) Arpin Area Operating Guide
(27) Little Gypsy-Madisonville Emergency Operating Guide
(28) Braswell Emergency Operating Guide
(31) Michoud-Slidell Emergency Operating Guide
(33) McKnight-Franklin Emergency Operating Guide
(34) Allen Steam Plant Emergency Operating Guide
(38) Hayti-Blytheville Emergency Operating Guide

Both the ESI and SERCW import FCITC from AMRN and the SERCW import FCITC from SMAIN for this 2000/01 winter are 2000 MW, with no valid limit being found up to the study test level. These are identical to the results of the 1999/00 winter study. To reach the 2000 MW FCITC level for ESI imports from AMRN the Allen Steam-Horn Lake emergency operating guide was used. Without the availability of this guide the AMRN to ESI FCITC is 1400 MW as limited by the Allen Steam-Horn Lake 161 kV line for the outage of the Freeport 500/230 kV transformer.

SERCW 2000/01 winter import FCITC from NI is 3000 MW, with no valid limit being found up to the study test level. This is identical to the results of the 1999/00 winter study.

PART II

DETAILED RESULTS

Introduction

This part highlights the detailed work carried out by the Transmission Assessment Studies Group of the MAIN Transmission Task Force in preparing the study of MAIN for conditions modeled during the 2000/01 winter.

Computer Model of the 2000/01 Winter Conditions

The transmission system configuration map is based on the network expected to be in service for the 2000/01 winter season (for reference, the MAIN Principal Power Supply Facilities Existing and Authorized, dated January 2000, is included in the back cover pocket). A tabulation of the major lines, transformers, and generating units, additions and changes in MAIN and the surrounding systems since the 1999/00 winter season, and which are included in the base case power flow model, are shown in **Exhibit C-1**.

MAIN, MAPP, SPP, ECAR, TVA and SERCW jointly develop a power flow model to be used for the 2000/01 MAIN Winter Transmission Assessment Study. This model is used to provide consistent interregional transfer capability results. All the 115 kV through 765 kV lines and transformers modeled in the defined areas of study were monitored and outaged.

All interarea interchange schedules for the 2000/01 winter period, as represented in this study, are in a table shown in **Exhibit C-2**.

A table of facilities which are overloaded under first contingency without any incremental system transfers are shown in **Exhibit C-3**.

Simulated Testing of the MAIN Transmission System

The testing criteria used for establishing transfer capability limits and the definitions of these capabilities are contained in MAIN GUIDE NO. 2, "TRANSMISSION PLANNING PRINCIPLES AND GUIDES AND THE SIMULATION TESTING OF THE MAIN BULK POWER TRANSMISSION SYSTEM TO ASSESS ADEQUACY AND RELIABILITY," dated November 18, 1994.

The reliability of the MAIN Transmission System under extreme disturbance conditions is studied by the Future Systems Study Group utilizing the criteria of MAIN GUIDE NO. 2 and by the individual subregions of MAIN. Conclusions from these studies have been that all areas have adequate transmission to prevent cascading tripping following an extreme disturbance.

Summary of Transfer Capabilities

Summaries of approximate nonsimultaneous Installed Incremental Transfer Capabilities (IITC) and First Contingency Incremental Transfer Capabilities (FCITC) for MAIN, the MAIN companies, and adjacent systems along the MAIN interface are shown in **Exhibit D-1**. All transfer capabilities are incremental and are, therefore, in addition to the contracted interchange schedules shown in **Exhibit C-2**.

Exhibit D-2 provides descriptions of the operating guides for the 2000/01 MAIN Winter Transmission Assessment Study.

Exhibit D-3 provides a listing of critical facilities affecting MET transfers.

Participation Factors

Section E has been eliminated from this report. Participation factors for this study can be found on the MAIN home page under the heading FERC 715 Filings and then under the heading TASG Subsystem Data.

Glossary of Area, Subregion, Region, and System Designations

A list of the area, subregion, region, and system designations used in this report is given in **Section F**.

SECTION C

DESCRIPTION OF COMPUTER MODEL

The generation, load, and transmission system modeled for this study are those projected for the 2000/01 winter peak. This section describes the computer model.

Exhibit C-1 contains a list of major transmission lines, transformers, and generator additions and changes that have been placed in service since the 1999/00 winter, or are expected to be in service before the 2000/01 winter peak.

Exhibit C-2 is a table of the base case area interchange schedules.

Exhibit C-3 tabulates the facilities that were identified to overload without incremental transfers for the listed outaged facilities. These facilities may exhibit a response to transfers lower than 3%. Overloaded facilities are screened using linearized contingency calculation activity.

MAJOR SYSTEM ADDITIONS AND CHANGES MODELED IN MAIN AND SURROUNDING AREAS SINCE THE 1999/00 MAIN WINTER TRANSMISSION ASSESSMENT STUDY

A. Transmission Line Additions and Changes

Region	Area	Company	Facility	Voltage (kV)	Scheduled In-Service Date
MAIN	NI	ComEd	Lockport-Lisle	345	In-Service
		ComEd	Dresden-Joliet (Reconductor)	138	In-Service
		ComEd	Franklin Park Phase Shifter	138	In-Service
		ComEd	Line 11417-Northwest 5 Ohm Inductor	138	In-Service
		ComEd	Lines 4525 and 4527-Crosby 5 Ohm Inductor	138	In-Service
	SMAIN	AMRN	Shawnee-Joppa TS[1]	345	In-Service
		AMRN	Joppa TS-Kelso-Lutesville[1]	345	In-Service
		AMRN	Mason-McClay	138	In-Service
	WUMS	WEC	Perkins-Indian Lake (2 Ckts)	138	In-Service
		WEC	Oak Creek-Bluemound	230	9/15/00
SURROUNDING	ECAR	IP&L	Wheatland-Breed/Petersburg	345	In-Service
		CIN	Wheatland-Gibson/Qualitech	345	In-Service
		LGEE	Middletown-Trimble County #2	345	In-Service
		DECO	Belle River-Blackfoot	345	In-Service
		DECO	Greenwood-Belle River/Pontiac (Reconfiguration of three terminal line to bypass Jewell Station)	345	In-Service
	MAPP	OTP	Oslo – Thief River Falls	115	In-Service
		OTP	Rush Lake – Perham – Frazee	115	In-Service
		OPPD	Sub 1226 – Sub 1237	161	In-Service
		OPPD	Sub 1237 – Sub 1253	161	In-Service
		MEC	88 St – 100th and 54TH Ave	161	In-Service

[1] The Joppa TS 345 kV Substation ring bus has been inserted into the Shawnee-Kelso-Lutesville 345 kV line, therefore, two new lines have been formed: Shawnee-Joppa TS 345 kV and Joppa TS-Lutesville 345 kV.

MAJOR SYSTEM ADDITIONS AND CHANGES MODELED IN MAIN AND SURROUNDING AREAS SINCE THE 1999/00 MAIN WINTER TRANSMISSION ASSESSMENT STUDY

A. Transmission Line Additions and Changes (Continued)

Region	Area	Company	Facility	Voltage (kV)	Scheduled In-Service Date
SURROUNDING (Cont.)	SERCW	ESI	Reconductor Hayti-Blytheville 161 kV	161	In-Service
	SPP	CLEC	Boise-Cooper #2	138	In-Service
		MPS	Warrensburg-Odessa	161	In-Service
	TVA	TVA	Johnsonville-Gleason-Weakley (Gleason terminal installed in Johnsonville-Weakley line to connect IPP)	500	In-Service
			Batesville Gen.–Batesville 1 & 2	161	In-Service
			Shawnee-Coleman-Paducah (Add 5% phase reactor)	161	In-Service
			Red Hills-Sturgis	161	In-Service
			Red Hills-Ackerman-Sturgis	161	In-Service
			Pin Hook-Smyrna	161	In-Service
			Alcoa-Dumplin Valley-White Pine (Dumplin Valley terminal installed in Alcoa-White Pine line)	161	11/00
			Dumplin Valley-Pigeon Forge	161	11/00
			John Sevier-White Pine-Newport (John Sevier-Newport line looped to White Pine)	161	11/00
			Burnsville-Glen-Corinth (upgrade)	161	1/01

MAJOR SYSTEM ADDITIONS AND CHANGES MODELED IN MAIN AND SURROUNDING AREAS SINCE THE 1999/00 MAIN WINTER TRANSMISSION ASSESSMENT STUDY

B. Transformer Additions

Region	Area	Company	Facility	Voltage (kV)	Nameplate Rating (MVA)	Scheduled In-Service Date
MAIN	NI		----None----			
	SMAIN	AMRN EEInc.	St. Francois Tr. #2 Joppa 345 Sub Tr. #1	345/138 345/161	560 600	In-Service In-Service
	WUMS		----None----			
SURROUNDING	ECAR	CONS DECO DECO HE LGEE AEP OVEC OH OH FE	Battle Creek T-1 St. Clair T-9 Bunce Creek PAR B3N Bloomington T-2 Middletown T-3 Cloverdale T-2[2] Sargents T-1[2] Lambton PAR L51D Lambton PAR L4D Star T-2[2]	345/138 345/230 230/230 345/230 345/138 345/138 345/138 230/230 230/230 345/138	500 1000 675 500 448 675 300 845 845 448	In-Service In-Service In-Service In-Service In-Service In-Service In-Service In-Service In-Service In-Service
	MAPP		----None----			
	SERCW	ESI	El Dorado[2]	500/115	448	In-Service

[2] Replacement with higher capacity transformer bank.

MAJOR SYSTEM ADDITIONS AND CHANGES MODELED IN MAIN AND SURROUNDING AREAS SINCE THE 1999/00 MAIN WINTER TRANSMISSION ASSESSMENT STUDY

B. Transformer Additions (Continued)						
Region	Area	Company	Facility	Voltage (kV)	Nameplate Rating (MVA)	Scheduled In-Service Date
	SPP	KCPL KCPL	Hawthorn North #2 Craig #3	345/161 345/161	550/605 400/440	In-Service In-Service
	TVA	IPP IPP	Gleason Gleason	500/18 500/13.8	480 240	In-Service In-Service

MAJOR SYSTEM ADDITIONS AND CHANGES MODELED IN MAIN AND SURROUNDING AREAS SINCE THE 1999/00 MAIN WINTER TRANSMISSION ASSESSMENT STUDY

C. Generator Additions and Changes						
Region	Area	System	Company	Facility	Rating (MW)	Scheduled In-Service Date
MAIN	NI	ComEd	ENLC	Lincoln Energy Center	576	In-Service
		ComEd	IPP	Rockford Energy Center	300	In-Service
		ComEd	IP	Rocky Road	110	In-Service
	SMAIN	AMRN	AMRN	Gibson City #1	135	In-Service
		AMRN	AMRN	Gibson City #2	135	In-Service
		AMRN	AMRN	Pinckneyville #1	44	In-Service
		AMRN	AMRN	Pinckneyville #2	44	In-Service
		AMRN	AMRN	Pinckneyville #3	44	In-Service
		AMRN	AMRN	Pinckneyville #4	44	In-Service
		AMRN	AMRN	Meramec CTG2	50	In-Service
		AMRN	IPP	Neoga #1	47	In-Service
		AMRN	IPP	Neoga #2	47	In-Service
		AMRN	IPP	Neoga #3	47	In-Service
		AMRN	IPP	Neoga #4	47	In-Service
		AMRN	IPP	Neoga #5	47	In-Service
		AMRN	IPP	Neoga #6	47	In-Service
		AMRN	IPP	Neoga #7	47	In-Service
		AMRN	IPP	Neoga #8	47	In-Service
		AMRN	IPP	Trigen #1	7.8	In-Service
		AMRN	IPP	Trigen #2	7.8	In-Service
		CILC	CILC	Hallock	12.5	In-Service
		CILC	CILC	Kickapoo	12.5	In-Service
		EEInc	IPP	Joppa CTG #1	60	In-Service
		EEInc	IPP	Joppa CTG #2	60	In-Service
		EEInc	IPP	Joppa CTG #3	60	In-Service
		EEInc	IPP	Joppa CTG #4	43	In-Service
		EEInc	IPP	Joppa CTG #5	43	In-Service

MAJOR SYSTEM ADDITIONS AND CHANGES MODELED IN MAIN AND SURROUNDING AREAS SINCE THE 1999/00 MAIN WINTER TRANSMISSION ASSESSMENT STUDY

C. Generator Additions and Changes (Continued)

Region	Area	System	Company	Facility	Rating (MW)	Scheduled In-Service Date
MAIN (Cont.)	WUMS	WEC	IPP	Neevin (Menasha) #1	150	In-Service
		WEC	IPP	Neevin (Menasha) #2	150	In-Service
		WPS	MGE	West Marinette M34	79.5	In-Service
		WPS	MPU	Custer	27	In-Service
SURROUNDING	ECAR	CIN	IPP	Madison 1	80	In-Service
		CIN	IPP	Madison 2	80	In-Service
		CIN	IPP	Madison 3	80	In-Service
		CIN	IPP	Madison 4	80	In-Service
		CIN	IPP	Madison 5	80	In-Service
		CIN	IPP	Madison 6	80	In-Service

MAJOR SYSTEM ADDITIONS AND CHANGES MODELED IN MAIN AND SURROUNDING AREAS SINCE THE 1999/00 MAIN WINTER TRANSMISSION ASSESSMENT STUDY

C. Generator Additions and Changes (Continued)						
Region	Area	System	Company	Facility	Rating (MW)	Scheduled In-Service Date
SURROUNDING (Cont.)	ECAR (Cont.)	CIN	IPP	Madison 7	80	In-Service
		CIN	IPP	Madison 8	80	In-Service
		CIN	IPP	Vermillion 1	80	In-Service
		CIN	IPP	Vermillion 2	80	In-Service
		CIN	IPP	Vermillion 3	80	In-Service
		CIN	IPP	Vermillion 4	80	In-Service
		CIN	IPP	Vermillion 5	80	In-Service
		CIN	IPP	Vermillion 6	80	In-Service
		CIN	IPP	Vermillion 7	80	In-Service
		CIN	IPP	Vermillion 8	80	In-Service
		CIN	ENWC	Wheatland 3	125	In-Service
		CIN	ENWC	Wheatland 4	125	In-Service
		CONS	CONS	Cobb 1	56	In-Service
		CONS	CONS	Cobb 3	56	In-Service
		DECO	IPP	River Rouge 1	240	In-Service
		DECO	IPP	DIG 1	174	In-Service
		DECO	IPP	DIG 2	188	In-Service
		DPL	IPP	Greenville 1	56	In-Service
		DPL	IPP	Greenville 2	56	In-Service
		DPL	IPP	Greenville 3	56	In-Service
		DPL	IPP	Greenville 4	56	In-Service
		FE	IPP	Richland 4	130	In-Service
		FE	IPP	Richland 5	130	In-Service
		HE	HE	Worthington 1	170	In-Service
		IPL	IPL	Georgetown 1	75	In-Service
		IPL	IPP	Georgetown 2	75	In-Service
		IPL	IPP	Georgetown 3	75	In-Service

MAJOR SYSTEM ADDITIONS AND CHANGES MODELED IN MAIN AND SURROUNDING AREAS SINCE THE 1999/00 MAIN WINTER TRANSMISSION ASSESSMENT STUDY

C. Generator Additions and Changes (Continued)

Region	Area	System	Company	Facility	Rating (MW)	Scheduled In-Service Date
SURROUNDING (Cont.)	ECAR (Cont.)	IPL	ENWI	Wheatland 1	125	In-Service
		IPL	ENWI	Wheatland 2	125	In-Service
		LGEE	LGEE	Brown CT 8 (Increased Capacity)	130	In-Service
		LGEE	LGEE	Brown CT 9 (Increased Capacity)	130	In-Service
		LGEE	LGEE	Brown CT 11 (Increased Capacity)	130	In-Service
		LGEE	LGEE	Brown CT 12 (Increased Capacity)	130	In-Service
		LGEE	LGEE	Brown 6	185	In-Service
		LGEE	LGEE	Brown 7	185	In-Service
	MAPP			----None----		
	SERCW	ESI	Tenaska	Frontier IPP Plant	103	In-Service
	SPP	SPS	City	Mackenzie #1 (Lubbock)	40	In-Service
		SPS	City	Mackenzie #2 (Lubbock)	40	In-Service
		GRDA	AECI	Chouteau Combined Cycle Plant	530	In-Service
	TVA	TVA	TVA	Gallatin CTs 5-8	307	In-Service
			TVA	Johnsonville CTs 17-20	308	In-Service
			IPP	Gleason CTs 1-3	510	In-Service
			IPP	Red Hills	440	1/01

2000/01 MAIN WINTER AREA INTERCHANGE SCHEDULE

REGION	FROM	TO	2000/01W
ECAR	AEP	AP	12
	AEP	FE	376
	AEP	CIN	-386
	AEP	ComEd	-17
	AEP	CP&L-E	246
	AEP	CP&L-W	209
	AEP	CSWS	0
	AEP	DAYTON	-265
	AEP	DLCO	0
	AEP	DUKE	42
	AEP	EKPC	153
	AEP	IP&L	0
	AEP	LGEE	-66
	AEP	NIPS	0
	AEP	NYPP	-13
	AEP	OVEC	-168
	AEP	SIGE	50
	AEP	Virtual ECAR	0
	AEP	VP	17
	---	---	---
	AEP	TOTALS	190
ECAR	AP	AEP	-12
	AP	DLCO	-120
	AP	FE	194
	AP	OVEC	-50
	AP	Virtual ECAR	0
	AP	VP	-560
	---	---	---
	AP	TOTALS	-548
ECAR	BREC	HE	0
	BREC	SOUTHERN	0
	BREC	TVA	-90
	---	---	---
	BREC	TOTALS	-90
ECAR	CIN	AEP	386
	CIN	AMRN	-42
	CIN	DAYTON	61
	CIN	DUKE	0
	CIN	EKPC	-38
	CIN	HE	-597
	CIN	IP	47
	CIN	LGEE	-14
	CIN	NIPS	219
	CIN	NYPP	-5
	CIN	OVEC	-36
	CIN	TVA	146
	CIN	Virtual ECAR	0
	---	---	---
	CIN	TOTALS	127
ECAR	CONS	AEP	0
	CONS	DECO	-501
	CONS	FE	312
	CONS	WE	-37
	---	---	---
	CONS	TOTALS	-226
ECAR	DAYTON	AEP	265
	DAYTON	CIN	-61
	DAYTON	FE	33
	DAYTON	OVEC	-20
	DAYTON	NYPP	-5
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	DAYTON	TOTALS	212
ECAR	DECO	CONS	501
	DECO	DUKE	0
	DECO	IMO	0
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	DECO	TOTALS	501
ECAR	DLCO	AEP	0
	DLCO	AP	120
	DLCO	FE	474
	DLCO	PECO	100
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	DLCO	TOTALS	694
ECAR	EKPC	AEP	-153
	EKPC	CIN	38
	EKPC	HE	-50
	EKPC	LGEE	304
	EKPC	SOUTHERN	0
	EKPC	TVA	-228
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	EKPC	TOTALS	-89
ECAR	FE	AEP	-376
	FE	AP	-194
	FE	CONS	-312
	FE	DAYTON	-33
	FE	DLCO	-474
	FE	NYPP	-59
	FE	OVEC	-82
	FE	PENELEC	-332
	FE	PEPCO	450
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	FE	TOTALS	-1412
ECAR	HE	BREC	0
	HE	CIN	597
	HE	EKPC	50
	HE	PECO	400
	HE	Virtual ECAR	0
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	HE	TOTALS	1047
ECAR	IP&L	Virtual ECAR	0
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	IP&L	TOTALS	0
ECAR	LGEE	AEP	66
	LGEE	CIN	14
	LGEE	DOE	0
	LGEE	EEInc	-200
	LGEE	EKPC	-304
	LGEE	IP	60
	LGEE	OVEC	-38
	LGEE	TVA	-130
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	LGEE	TOTALS	-532
ECAR	NIPS	AEP	0
	NIPS	CIN	-219
	NIPS	Virtual ECAR	0
	NIPS	WE	0
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	NIPS	TOTALS	-219

REGION	FROM	TO	2000/01W
ECAR	OVEC	AEP	168
	OVEC	AP	50
	OVEC	CIN	36
	OVEC	DAYTON	20
	OVEC	FE	82
	OVEC	LGEE	38
	OVEC	SIGE	6
	OVEC	TOTALS	400
ECAR	SIGE	AEP	-50
	SIGE	HE	0
	SIGE	OVEC	-6
	SIGE	TOTALS	-56
ECAR	Virtual ECAR	AEP	0
	Virtual ECAR	AP	0
	Virtual ECAR	CIN	0
	Virtual ECAR	FE	0
	Virtual ECAR	HE	0
	Virtual ECAR	IP&L	0
	Virtual ECAR	NIPS	0
	Virtual ECAR	TOTALS	0
ECAR	ECAR	TOTALS	-1
ERCOT	ERCOT	CSWS	83
	ERCOT	TOTALS	83
ERCOT	ERCOT	TOTALS	83
FLORIDA	FLORIDA	SOUTHERN	-2368
	FLORIDA	WPS *	75
	FLORIDA	TOTALS	-2293
FLORIDA	FLORIDA	TOTALS	-2293
MAAC	AE	Intra-PJM	-245
	AE	TOTALS	-245
MAAC	BG&E	Intra-PJM	-3839
	BG&E	TOTALS	-3839
MAAC	DP&L	Intra-PJM	-989
	DP&L	TOTALS	-989
MAAC	Intra-PJM	AE	245
	Intra-PJM	BG&E	3839
	Intra-PJM	DP&L	989
	Intra-PJM	JCP&L	1042
	Intra-PJM	METED	710
	Intra-PJM	PECO	1545
	Intra-PJM	PENELEC	-113
	Intra-PJM	PEPCO	291
	Intra-PJM	PJM500	-11019
	Intra-PJM	PP&L	553
	Intra-PJM	PSE&G	1918
	Intra-PJM	TOTALS	0
MAAC	JCP&L	Intra-PJM	-1042
	JCP&L	TOTALS	-1042
MAAC	METED	Intra-PJM	-710
	METED	TOTALS	-710
MAAC	PECO	CPL-E	0
	PECO	DLCO	-100
	PECO	FE	0
	PECO	HE	-400
	PECO	Intra-PJM	-1545
	PECO	TOTALS	-2045
MAAC	PENELEC	FE	332
	PENELEC	Intra-PJM	113
	PENELEC	NYPP	486
	PENELEC	TOTALS	931
MAAC	PEPCO	FE	-450
	PEPCO	Intra-PJM	-291
	PEPCO	TOTALS	-741
MAAC	PJM500	Intra-PJM	11019
	PJM500	IP	-235
	PJM500	NYPP	-94
	PJM500	TOTALS	10690
MAAC	PP&L	CPL-E	0
	PP&L	Intra-PJM	-553
	PP&L	TOTALS	-553
MAAC	PSE&G	Intra-PJM	-1918
	PSE&G	TOTALS	-1918
MAAC	MAAC	TOTALS	-461

REGION	FROM	TO	2000/01W
MAIN	ALTE	ALTW	-199
	ALTE	ComEd	-175
	ALTE	DPC	-5
	ALTE	MGE	225
	ALTE	MP	-42
	ALTE	WAPA	-100
	ALTE	WE	184
	ALTE	WPS	216
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	ALTE	TOTALS	104
MAIN	AMRN	AECI	19
	AMRN	ComEd	20
	AMRN	CIN	42
	AMRN	CWL	60
	AMRN	EEInc	-300
	AMRN	ESI	-160
	AMRN	IP	35
	AMRN	MEC	-115
	AMRN	SPA	-16
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	AMRN	TOTALS	-415
MAIN	ComEd	AEP	17
	ComEd	ALTE	175
	ComEd	AMRN	-20
	ComEd	ENLC	0
	ComEd	IP	35
	ComEd	MEC	394
	ComEd	MGE	15
	ComEd	PJM500	0
	ComEd	WE	-49
	ComEd	WPS	0
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	ComEd	TOTALS	567
MAIN	CILC	AMRN	0
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	CILC	TOTALS	0
MAIN	CWL	AMRN	-60
	CWL	KACY	-20
	CWL	SPA	-78
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	CWL	TOTALS	-158
MAIN	CWLP	TVA	0
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	CWLP	TOTALS	0
MAIN	EEInc	AMRN	300
	EEInc	DOE	500
	EEInc	IP	0
	EEInc	LGEE	200
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	EEInc	TOTALS	1000
MAIN	ENLC	ComEd	0
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	ENLC	TOTALS	0
MAIN	IP	AMRN	-35
	IP	CIN	-47
	IP	ComEd	-35
	IP	EEInc	0
	IP	LGEE	-60
	IP	MEC	-5
	IP	PJM500	235
	IP	SIPC	-20
	IP	TVA	0
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	IP	TOTALS	33
MAIN	MGE	ALTE	-225
	MGE	ComEd	-15
	MGE	WPS	-102
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	MGE	TOTALS	-342
MAIN	SIPC	IP	20
	SIPC	TVA	-28
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	SIPC	TOTALS	-8
MAIN	UPPC	ALTE	0
	UPPC	WE	-65
	UPPC	WPS	-30
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	UPPC	TOTALS	-95
MAIN	WE	ALTE	-184
	WE	ComEd	49
	WE	CONS	37
	WE	IP	0
	WE	MP	-62
	WE	NIPS	0
	WE	UPPC	65
	WE	WPS	-65
	WE	WR	0
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	WE	TOTALS	-160
MAIN	WPS	ALTE	-216
	WPS	ComEd	0
	WPS	FLORIDA *	-75
	WPS	MGE	102
	WPS	NSP	-155
	WPS	UPPC	30
	WPS	WE	65
	WPS	WSCC *	-80
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	WPS	TOTALS	-329
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MAIN	MAIN	TOTALS	197
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MAPP	ALTW	AECI	0
	ALTW	ALTE	199
	ALTW	Intra-MAPP	-547
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	ALTW	TOTALS	-348
MAPP	DPC	ALTE	5
	DPC	Intra-MAPP	210
	DPC	MGE	0
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	DPC	TOTALS	215
MAPP	GRE	Intra-MAPP	318
	GRE	SMP	0
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	GRE	TOTALS	318
MAPP	Intra-MAPP	ALTW	547
	Intra-MAPP	DPC	-210
	Intra-MAPP	GRE	-318
	Intra-MAPP	LES	476
	Intra-MAPP	MEC	314
	Intra-MAPP	MHEB	-937
	Intra-MAPP	MP	86
	Intra-MAPP	MPW	-16
	Intra-MAPP	NPPD	-459
	Intra-MAPP	NSP	701
	Intra-MAPP	OPPD	12
	Intra-MAPP	OTP	548
	Intra-MAPP	SJLP	62
	Intra-MAPP	SMP	121
	Intra-MAPP	SPC	100
	Intra-MAPP	WAPA	-1027
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	Intra-MAPP	TOTALS	0

REGION	FROM	TO	2000/01W
MAPP	LES	Intra-MAPP	-476
	LES	KCPL	0
	LES	WAPA	0
	LES	TOTALS	-476
MAPP	MEC	AECI	8
	MEC	AMRN	115
	MEC	ComEd	-394
	MEC	Intra-MAPP	-314
	MEC	IP	5
	MEC	TOTALS	-580
MAPP	MHEB	Intra-MAPP	937
	MHEB	IMO	200
	MHEB	WPS	0
	MHEB	TOTALS	1137
MAPP	MP	ALTE	42
	MP	ALTW	0
	MP	Intra-MAPP	-86
	MP	IMO	-150
	MP	WE	62
	MP	WPS	0
	MP	TOTALS	-132
MAPP	MPW	Intra-MAPP	16
	MPW	TOTALS	16
MAPP	NPPD	AECI	19
	NPPD	Intra-MAPP	459
	NPPD	LES	0
	NPPD	SECI	3
	NPPD	TOTALS	481
MAPP	NSP	ALTE	0
	NSP	Intra-MAPP	-701
	NSP	MHEB	0
	NSP	WE	0
	NSP	WPS	155
	NSP	TOTALS	-546
MAPP	OPPD	Intra-MAPP	-12
	OPPD	SJLP	0
	OPPD	WAPA	0
	OPPD	TOTALS	-12
MAPP	OTP	Intra-MAPP	-548
	OTP	MHEB	0
	OTP	NSP	0
	OTP	TOTALS	-548
MAPP	SJLP	Intra-MAPP	-62
	SJLP	KCPL	-121
	SJLP	NPPD	0
	SJLP	OPPD	0
	SJLP	TOTALS	-183
MAPP	SMP	GRE	0
	SMP	Intra-MAPP	-121
	SMP	TOTALS	-121
MAPP	SPC	Intra-MAPP	-100
	SPC	TOTALS	-100
MAPP	WAPA	ALTE	100
	WAPA	Intra-MAPP	1027
	WAPA	IP	0
	WAPA	KCPL	0
	WAPA	MEC	0
	WAPA	NPPD	0
	WAPA	OPPD	0
	WAPA	SECI	0
	WAPA	WR	0
	WAPA	TOTALS	1127
MAPP	MAPP	TOTALS	248
NPCC	IMO	CONS	0
	IMO	DECO	0
	IMO	HQ	-800
	IMO	MHEB	-200
	IMO	MP	150
	IMO	TOTALS	-850
NPCC	HQ	CORNWALL	0
	HQ	IMO	800
	HQ	NB	400
	HQ	NEPOOL	200
	HQ	NYPP	400
	HQ	TOTALS	1800
NPCC	NB	HQ	-400
	NB	NS	0
	NB	NEPOOL	600
	NB	TOTALS	200
NPCC	NS	NB	0
	NS	TOTALS	0
NPCC	NEPOOL	HQ	-200
	NEPOOL	NB	-600
	NEPOOL	NYPP	-123
	NEPOOL	TOTALS	-923
NPCC	NYPP	AEP	13
	NYPP	CIN	5
	NYPP	CORNWALL	0
	NYPP	DAYTON	5
	NYPP	FE	59
	NYPP	HQ	-400
	NYPP	NEPOOL	123
	NYPP	PENELEC	-486
	NYPP	PJM500	94
	NYPP	TOTALS	-587
NPCC	NPCC	TOTALS	-360

REGION	FROM	TO	2000/01W
SERC	AEC	DUKE	0
	AEC	ESI	0
	AEC	SMEPA	61
	AEC	SOUTHERN	-65
	AEC	TOTALS	-4
SERC	AECI	ALTW	0
	AECI	AMRN	-19
	AECI	BCA	0
	AECI	CSWS	31
	AECI	ESI	0
	AECI	GRDA	-272
	AECI	KCPL	0
	AECI	MEC	-8
	AECI	NPPD	-19
	AECI	SPA	-553
	AECI	WFEC	0
	AECI	TOTALS	-840
SERC	BCA	AECI	0
	BCA	MPS	0
	BCA	SMEPA	0
	BCA	TVA	0
	BCA	TOTALS	0
SERC	CP&L-E	AEP	-246
	CP&L-E	DUKE	450
	CP&L-E	SCPSA	191
	CP&L-E	SOUTHERN	-50
	CP&L-E	VP	25
	CP&L-E	TOTALS	370
SERC	CP&L-W	AEP	-209
	CP&L-W	TVA	-14
	CP&L-W	TOTALS	-223
DOE	DOE	AMRN	0
	DOE	EEInc	-500
	DOE	LGEE	0
	DOE	TVA	-500
	DOE	TOTALS	-1000
SERC	DUKE	AEC	0
	DUKE	AEP	-42
	DUKE	CIN	0
	DUKE	CP&L-E	-450
	DUKE	HARTWELL	-219
	DUKE	SCPSA	-349
	DUKE	SEPA-JST	-80
	DUKE	SOUTHERN	75
	DUKE	YADKIN	0
	DUKE	TOTALS	-1065
SERC	ENBR	TVA	0
	ENBR	TOTALS	0
SERC	ENCA	TVA	0
	ENCA	TOTALS	0
SERC	ENGL	TVA *	500
	ENGL	TOTALS	500
SERC	ENNA	TVA	0
	ENNA	TOTALS	0

REGION	FROM	TO	2000/01W
SERC	ESI	AEC	0
	ESI	AECI	0
	ESI	AMRN	160
	ESI	CLEC	20
	ESI	CSWS	152
	ESI	LAGN	-755
	ESI	LEPA	-105
	ESI	SMEPA	-185
	ESI	SOUTHERN	580
	ESI	SPA	354
	ESI	TVA	-71
	ESI	TOTALS	150
SERC	HARTWELL	DUKE	219
	HARTWELL	SOUTHERN	135
	HARTWELL	TOTALS	354
SERC	LAGN	CLEC	105
	LAGN	CSWS	109
	LAGN	ESI	755
	LAGN	SMEPA	75
	LAGN	SPA	-90
	LAGN	TOTALS	954
SERC	SCE&G	SCPSA	296
	SCE&G	SEPA-JST	-21
	SCE&G	SOUTHERN	0
	SCE&G	TOTALS	275
SERC	SCPSA	CP&L-E	-191
	SCPSA	DUKE	349
	SCPSA	SCE&G	-296
	SCPSA	SEPA-JST	-63
	SCPSA	SEPA-RBR	-152
	SCPSA	SOUTHERN	-100
	SCPSA	TOTALS	-453
SERC	SEPA-JST	DUKE	80
	SEPA-JST	SCE&G	21
	SEPA-JST	SCPSA	63
	SEPA-JST	SOUTHERN	116
	SEPA-JST	TOTALS	280
SERC	SEPA-RBR	SCPSA	152
	SEPA-RBR	SOUTHERN	376
	SEPA-RBR	TOTALS	528
SERC	SMEPA	AEC	-61
	SMEPA	BCA	0
	SMEPA	ESI	185
	SMEPA	LAGN	-75
	SMEPA	TOTALS	49
SERC	SOUTHERN	AEC	65
	SOUTHERN	BREC	0
	SOUTHERN	CP&L-E	50
	SOUTHERN	CP&L-W	0
	SOUTHERN	DUKE	-75
	SOUTHERN	EKPC	0
	SOUTHERN	ESI	-580
	SOUTHERN	HARTWELL	-135
	SOUTHERN	FLORIDA	2368
	SOUTHERN	SEPA-RBR	-376
	SOUTHERN	SEPA-JST	-116
	SOUTHERN	SCPSA	100
	SOUTHERN	TVA	-341
	SOUTHERN	TOTALS	960

REGION	FROM	TO	2000/01W
SERC	TVA	BCA	0
	TVA	BREC	90
	TVA	CIN	-146
	TVA	CP&L-W	14
	TVA	DOE	500
	TVA	DUKE	0
	TVA	ENBR	0
	TVA	ENCA	0
	TVA	ENGL *	-500
	TVA	ENNA	0
	TVA	ESI	71
	TVA	EKPC	228
	TVA	IP	0
	TVA	LGEE	130
	TVA	MPS	0
	TVA	SIPC	28
	TVA	SOUTHERN	341
	TVA	TOTALS	756
SERC	VP	AEP	-17
	VP	AP	560
	VP	CP&L-E	-25
	VP	TOTALS	518
SERC	YADKIN	DUKE	0
	YADKIN	TOTALS	0
SERC	SERC	TOTALS	2109
SPP	CLEC	CSWS	315
	CLEC	ESI	-20
	CLEC	LAFA	225
	CLEC	LAGN	-105
	CLEC	LEPA	41
	CLEC	TOTALS	456
SPP	CSWS	AEP	0
	CSWS	AECI	-31
	CSWS	CLEC	-315
	CSWS	EDE	45
	CSWS	ERCOT	-83
	CSWS	ESI	-152
	CSWS	GRDA	-48
	CSWS	LAGN	-109
	CSWS	OKGE	0
	CSWS	OMPA	121
	CSWS	SPA	-254
	CSWS	SPS	-145
	CSWS	WFEC	-20
	CSWS	WR	0
	CSWS	TOTALS	-991
SPP	EDE	AECI	0
	EDE	CSWS	-45
	EDE	KCPL	-80
	EDE	WR	-192
	EDE	TOTALS	-317
SPP	GRDA	AECI	272
	GRDA	CSWS	48
	GRDA	OKGE	0
	GRDA	OMPA	25
	GRDA	SPA	84
	GRDA	SPRM	60
	GRDA	TOTALS	489
SPP	INDN	KCPL	-90
	INDN	MEC	0
	INDN	TOTALS	-90
SPP	KACY	CWL	20
	KACY	KCPL	18
	KACY	MPS	0
	KACY	SPA	-38
	KACY	WR	23
	KACY	TOTALS	23
SPP	KCPL	AECI	0
	KCPL	ALTW	0
	KCPL	EDE	80
	KCPL	INDN	90
	KCPL	KACY	-18
	KCPL	MIDW	4
	KCPL	MPS	5
	KCPL	SJLP	121
	KCPL	SPA	-5
	KCPL	WR	137
	KCPL	TOTALS	414
SPP	LAFA	CLEC	-225
	LAFA	LEPA	58
	LAFA	SPA	-6
	LAFA	TOTALS	-173
SPP	LEPA	CLEC	-41
	LEPA	ESI	105
	LEPA	LAFA	-58
	LEPA	SPA	-14
	LEPA	TOTALS	-8
SPP	MIDW	KCPL	-4
	MIDW	SECI	-35
	MIDW	WEPK	0
	MIDW	WR	-117
	MIDW	TOTALS	-156
SPP	MPS	BCA	0
	MPS	KACY	0
	MPS	KCPL	-5
	MPS	WR	-166
	MPS	TOTALS	-171
SPP	OKGE	CSWS	0
	OKGE	GRDA	0
	OKGE	OMPA	56
	OKGE	SPA	-31
	OKGE	WFEC	0
	OKGE	TOTALS	25
SPP	OMPA	CSWS	-121
	OMPA	GRDA	-25
	OMPA	OKGE	-56
	OMPA	SPA	-50
	OMPA	WFEC	-15
	OMPA	WR	-51
	OMPA	TOTALS	-318
SPP	SECI	MIDW	35
	SECI	WPEK	52
	SECI	NPPD	-3
	SECI	TOTALS	84

REGION	FROM	TO	2000/01W
SPP	SPA	AECI	553
	SPA	AMRN	16
	SPA	CWL	78
	SPA	CSWS	254
	SPA	ESI	-354
	SPA	GRDA	-84
	SPA	KACY	38
	SPA	KCPL	5
	SPA	LAFA	6
	SPA	LAGN	90
	SPA	LEPA	14
	SPA	OKGE	31
	SPA	OMPA	50
	SPA	SPRM	12
	SPA	WPEK	20
	SPA	WR	92
	SPA	WFEC	272
	SPA	TOTALS	1093
SPP	SPRM	GRDA	-60
	SPRM	SPA	-12
	SPRM	TOTALS	-72
SPP	SPS	CSWS	145
	SPS	WSCC	239
	SPS	TOTALS	384
SPP	WPEK	SECI	-52
	WPEK	SPA	-20
	WPEK	WR	-177
	WPEK	TOTALS	-249
SPP	WFEC	AECI	0
	WFEC	CSWS	20
	WFEC	OKGE	0
	WFEC	OMPA	15
	WFEC	SPA	-272
	WFEC	TOTALS	-237
SPP	WR	CSWS	0
	WR	EDE	192
	WR	KACY	-23
	WR	KCPL	-137
	WR	MIDW	117
	WR	MPS	166
	WR	OKGE	0
	WR	OMPA	51
	WR	SPA	-92
	WR	SECI	0
	WR	WE	0
	WR	WPEK	177
	WR	TOTALS	451
SPP	SPP	TOTALS	637
WSCC	WSCC	SPS	-239
	WSCC	WPS	80
	WSCC	TOTALS	-159
WSCC	WSCC	TOTALS	-159
SUMMATION			0

* indicates a fictitious schedule

MAIN AND SURROUNDING INTERCONNECTED SYSTEMS
FIRST CONTINGENCY OVERLOAD PROBLEMS WITHOUT TRANSFERS
2000/01 WINTER SYSTEM CONDITIONS

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AREA	OVERLOADED FACILITY	EMER. RATING (MVA)	BASE FLOW (MW)	CONT. LOAD (MW)	PERCENT RATING	OUTAGED FACILITIES	BASE FLOW (MW)
ECAR	Wabash R.-Crawfordsville 138 kV *	146	142	166	114%	Dequine-Westwood 345 kV	237
						Westwood 345/138 kV	237
		146	142	159	109%	Attica-Lafayette 230 kV	240
						Veedsburg-Attica 230 kV	268
						Cayuga-Veedsvurg 230 kV	315
		146	142	149	102%	Breed-Dequine 345 kV	384
		146	142	157	108%	Eugene-Dequine 345 kV	493
		146	142	152	104%	Cayuga Sub-Eugene 345 kV	371
		146	142	148	102%	Jefferson-Greentown 765 kV	1303
		146	142	153	105%	Cayuga-Cayuga Sub 345 kV	427
		146	142	166	114%	Cayuga Ct-Cayuga 345 kV	587
		146	142	148	101%	Wabash R.-Staunton 230 kV	179
	Goddard-Rodburn 138 kV	191	148	198	104%	Spurlock-Avon 345 kV	309
						Avon 345/138 kV	307
	Fleming-Goddard 138 kV	172	116	191	111%	Maysville J.-Plumville 138 kV	147
						Spurlock-Maysville J. 138 kV	151
		172	116	173	101%	Plumville-Goddard 138 kV	98
	Kenton-Wedonia 138 kV	191	131	206	108%	Maysville J.-Plumville 138 kV	147
						Spurlock-Maysville J. 138 kV	151

MAIN AND SURROUNDING INTERCONNECTED SYSTEMS
FIRST CONTINGENCY OVERLOAD PROBLEMS WITHOUT TRANSFERS
2000/01 WINTER SYSTEM CONDITIONS

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AREA	OVERLOADED FACILITY	EMER. RATING (MVA)	BASE FLOW (MW)	CONT. LOAD (MW)	PERCENT RATING	OUTAGED FACILITIES	BASE FLOW (MW)
ECAR	Blue Lick-Bullit C. 161 kV	240	231	242	101%	Harding-Brown N. 345 kV	35
						Smith-Harding 345 kV	226
						Harding 345/138 kV	189
		240	231	256	107%	W. Lexington-Brown N 345 kV	468
						Ghent-W. Lexington 345 kV	743
						Lexington 345/138 kV	262
		240	231	245	102%	Mill Ck.-Paddys W. 345 kV	405
						Paddys W. 345/138 kV	205
		240	231	266	111%	Trimble C.-Clifty 345 kV	346
		240	231	264	110%	Baker-Broadford 765 kV	2109
		240	231	242	101%	Jefferson-Greentown 765 kV	1303
	Beaver Ck.-Topmost 138 kV	228	102	235	103%	Pineville-Stinnet 161 kV	152
	Burger W.-Burger E. 138 kV	150	124	155	103%	Burger W.-Cloverdale 138 kV	60
		150	124	157	105%	Burger W.-Longview 138 kV	67
	Pineville-Stinnett 161 kV	196	152	230	118%	Topmost-Beckham 138 kV	97
	Clermont 138 kV Bus Tie	170	157	172	101%	Pierce-Foster 345 kV	419
		170	157	220	129%	Beckjord-Tobasco 138 kV	230
		170	157	187	110%	Beckjord-Wilder 138 kV	155
	Bloom-Denois 230 kV	401	302	408	102%	Bedford-Columbus 345 kV	598
	Shawswick-Pleasant G. 138 kV	146	109	147	101%	Bedford-Columbus 345 kV	598

MAIN AND SURROUNDING INTERCONNECTED SYSTEMS
FIRST CONTINGENCY OVERLOAD PROBLEMS WITHOUT TRANSFERS
2000/01 WINTER SYSTEM CONDITIONS

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AREA	OVERLOADED FACILITY	EMER. RATING (MVA)	BASE FLOW (MW)	CONT. LOAD (MW)	PERCENT RATING	OUTAGED FACILITIES	BASE FLOW (MW)
ECAR	Bedford-Shawswick 138 kV	146	119	157	108%	Bedford-Columbus 345 kV	598
	Green River 161/138 kV #2	135	85	150	111%	Green River 161/138 kV #1	83
	Green River 161/138 kV #1	135	84	150	111%	Green River 161/138 kV #2	83
	Dale-Three Forks Jct. 138 kV	278	176	281	101%	J.K. Smith-Fawkes 138 kV	165
MAPP	Canaday 230/115 kV Tr. *	125	53	140	112%	Crooked Creek-Riverdale 230 kV	174
	Wien-T Corners 115 kV *	120	47	149	124%	Eau Claire-Arpin 345 kV	482
	70&Bluff-Waverly7 115 kV	90	55	110	123%	84&Leighton-Wagener7 115 kV	138
	French River-Colbyville 115 kV *	120	36	140	117%	Taconite Harbor-Hoyt Lake 138 kV	110
	Two Harbors-French River 115 kV *	120	40	144	120%	Taconite Harbor-Hoyt Lake 138 kV	110
	Waldo-Two Harbors 115 kV *	120	48	152	126%	Taconite Harbor-Hoyt Lake 138 kV	110
	Silver Bay-Silver Bay Hillside *	120	60	164	137%	Taconite Harbor-Hoyt Lake 138 kV	110
	Waldo-Silver Bay Hillside 115 kV *	120	57	161	134%	Taconite Harbor-Hoyt Lake 138 kV	110
	Fond Du Lac-Hibbard 115 kV *	45	30	47	104%	Arrowhead-98L Tap 230 kV	61
						Blackberry-98L Tap 230 kV	51
						98L Tap-Hilltop 230 kV	112
						Hilltop 230/115 kV Tr.	112
						Hilltop Jct-Hilltop 115 kV	112
						Hilltop 115/13.8 kV	0
	Fond Du Lac-Hibbard 115 kV *	45	30	50	111%	Mahtowa-Cromwell 115 kV	34

MAIN AND SURROUNDING INTERCONNECTED SYSTEMS
FIRST CONTINGENCY OVERLOAD PROBLEMS WITHOUT TRANSFERS
2000/01 WINTER SYSTEM CONDITIONS

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AREA	OVERLOADED FACILITY	EMER. RATING (MVA)	BASE FLOW (MW)	CONT. LOAD (MW)	PERCENT RATING	OUTAGED FACILITIES	BASE FLOW (MW)
MAPP	Fond Du Lac-Hibbard 115 kV *	45	30	52	115%	Mahtowa-Cromwell 115 kV	34
						Wrenshall-Mahtowa 115 kV	46
						Thomson-Wrenshall 115 kV	51
	Fond Du Lac-Hibbard 115 kV *	45	30	52	116%	Wrenshall-Mahtowa 115 kV	46
	St.Cloud-Sauk River 115 kV	200	63	207	103%	Benton-Granite City 115 kV	192
NI	Rockwell-Crosby Blue 138 kV	249	183	257	103%	Crawford-Congress Red 138kV	182
	Elmhurst-Franklin Park Blue 138 kV *	270	178	288	107%	Elmhurst-Franklin Park Red 138 kV	181
SERCW	Hammond 230/115 kV Tr.	150	98	166	110%	McKnight-Franklin 500 kV	1167
	Little Gypsy-Madisonville 230 kV	454	358	512	113%	McKnight-Franklin 500 kV	1167
	Hammond-Independence 115 kV	168	98	175	104%	Bogalusa 230/115 kV Tr.	207
	Hammond 230/115 kV Tr.	150	98	175	117%	Bogalusa 230/115 kV Tr.	207
	Little Gypsy-Madisonville 230 kV	454	358	533	118%	Michoud-Front Street 230 kV	492
	Little Gypsy-Madisonville 230 kV	454	358	517	114%	Front Street-Slidell 230 kV	447
	Ray Braswell-Clinton 115 kV	161	75	170	106%	Ray Braswell-Lakeover 500 kV	713
	Ray Braswell 500/230 kV Tr.	560	375	570	102%	Ray Braswell-Lakeover 500 kV	713
	Smackover-Camden/Maguire 115 kV	98	45	102	104%	McNeil 500/115 kV Tr.	304
	Independence-Newport 161 kV Ckt 1	372	244	406	109%	Independence-Newport 161 kV Ckt 2	224
	Independence-Newport 161 kV Ckt 2	372	224	396	107%	Independence-Newport 161 kV Ckt 1	244

MAIN AND SURROUNDING INTERCONNECTED SYSTEMS
FIRST CONTINGENCY OVERLOAD PROBLEMS WITHOUT TRANSFERS
2000/01 WINTER SYSTEM CONDITIONS

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AREA	OVERLOADED FACILITY	EMER. RATING (MVA)	BASE FLOW (MW)	CONT. LOAD (MW)	PERCENT RATING	OUTAGED FACILITIES	BASE FLOW (MW)
SMAIN	None						
SPP	Fort Junction - East Junction City	68	41	68	100%	Summit 7-Summit7X Summit 6-Summit7X	329 328
	Junction City - East Junction City	141	87	147	104%	Summit 7-Summit7X Summit 6-Summit7X	329 328
	Fort Junction - East Junction City	68	41	70	102%	Summit 6-Summit 3	184
	Junction City - East Junction City	141	87	150	106%	Summit 6-Summit 3	184
	Fort Junction - East Junction City *	68	40	79	116%	Fort Junction-East Junction City #2	44
	Anzio - Fort Junction	92	22	94	102%	Junction City-East Junction City	81
	Diana 345/138 kV Tr. #1 *	330	223	348	106%	Diana 345/138 kV Tr. #2	222
	Weleetk4 - Weletk4 Riverside Station-Okmulge	143 111	74		157	110%	
	RS Kerr - Tarby	112	36	141	126%	Bonzt-AES	166
TVA	Chandler Tap-Nixon Road 161 kV	312	230	374	120%	Alcoa-Rockford-Nixon Rd. 161 kV	212
	Boone 161/138 kV Tr.	150	-46	-171	114%	Sullivan 500/161 kV Tr.	677
	Wheeler-Nance 161 kV *	367	286	406	111%	Trinity 500/161 kV Tr.	659
	S. Primary-Third Street 115 kV	124	84	125	101%	N. Primary 161/115 kV Tr.	69
	W. Ringgold 230/115 kV Tr.	200	95	203	101%	W. Ringgold-Alpha 230 kV	108
		200	95	202	101%	Alpha 230/115 kV Tr.	107

MAIN AND SURROUNDING INTERCONNECTED SYSTEMS
FIRST CONTINGENCY OVERLOAD PROBLEMS WITHOUT TRANSFERS
2000/01 WINTER SYSTEM CONDITIONS

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AREA	OVERLOADED FACILITY	EMER. RATING (MVA)	BASE FLOW (MW)	CONT. LOAD (MW)	PERCENT RATING	OUTAGED FACILITIES	BASE FLOW (MW)
TVA	Alpha 230/115 kV Tr.	200	108	202	101%	W. Ringgold 230/115 kV Tr.	95
WUMS	T Corners 115 kV-Wien *	120	47	149	124%	Eau Claire-Arpin 345 kV	482
	Council Creek DPC ALTE 69 kV *	47	43	76	116%	Eau Claire-Arpin 345 kV	482
		47	43	71	151%	King-Eau Claire 345 kV Eau Claire-Arpin 345 kV	613 482
		47	43	52	110%	Wempletown-Paddock 345 kV	602
		47	43	50	105%	Arpin 345/138 kV Tr.	156
		47	43	48	103%	Arpin-Rocky Run 345 kV	326
		47	43	50	106%	Sigel-Arpin 138 kV	119
		47	43	48	102%	Sigel-Lakehead Pipeline Vesper 138 kV	91
		47	43	48	102%	Lakehead Pipeline Vesper- Port Edwards 138 kV	88
		47	43	48	102%	A03(Lewiston)-Kilbourn 138 kV	53
		47	43	48	103%	Trienda-A03(Lewiston) 138 kV	56
		47	43	48	102%	Kilbourn 138/69 kV Tr.	53
	Columbia 345/138 kV Tr. #1 *	200	94	309	155%	Columbia-South Fond Du Lac 345 kV	342
	Columbia 345/138 kV Tr. #3 *	200	94	309	155%	Columbia-North Madison 345 kV Columbia 345/138 kV Tr. #2	280 189

MAIN AND SURROUNDING INTERCONNECTED SYSTEMS
FIRST CONTINGENCY OVERLOAD PROBLEMS WITHOUT TRANSFERS
2000/01 WINTER SYSTEM CONDITIONS

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AREA	OVERLOADED FACILITY	EMER. RATING (MVA)	BASE FLOW (MW)	CONT. LOAD (MW)	PERCENT RATING	OUTAGED FACILITIES	BASE FLOW (MW)
WUMS	Bluemound-96th Street 138 kV #1 *	131	49	160	122%	Bluemound-96th Street 138 kV #2	126
	Rock River-Marine 138 kV	143	51	166	116%	Paddock-Blackhawk 138 kV	139
	Colley Road-Marine 138 kV	143	44	158	111%	Paddock-Blackhawk 138 kV	139

(*) Operating guides available to relieve overload

SECTION D

SUMMARY OF NONSIMULTANEOUS INCREMENTAL TRANSFER CAPABILITIES

This section presents a summary of nonsimultaneous incremental transfer capabilities[1] for imports into MAIN companies and adjacent systems on the MAIN interfaces as determined from the model of the 2000/01 winter system.

Where a transfer limitation between a MAIN subregion and another region was found to be in a system external to MAIN, the limiting condition was evaluated based on that system's rating criteria. The import capabilities presented have been coordinated with surrounding regions.

The transfer capability results found here are not the same as the Available Transfer Capability posted to the MAIN OASIS.

Exhibit D-1 summarizes interarea Installed Incremental Transfer Capability (IITC) and First Contingency Incremental Transfer Capability (FCITC) for MAIN, the MAIN companies and adjacent systems. IITC and FCITC are defined in Section A. Generally, limiting facilities that have a power transfer distribution factor (PTDF) or outage transfer distribution factor (OTDF) of 3 percent or more are listed. However, because of the higher transfer levels tested in this report (up to 4000 MW), limiting facilities that impact MET transfers are listed if they have a PTDF/OTDF of 2.5 percent or more. Both nonsimultaneous IITC and FCITC calculations assume that there are no other transfers taking place other than those described in the base interchange table of Exhibit C-2. **Users should exercise caution in applying the Installed Incremental Transfer Capability since this criteria does not include the effect of a facility outage**.

The key facility outage(s) and the limiting element associated with a particular transfer capability are given along with the flow, rating, and OTDF for the limiting element. This information is listed in the form: **FLOW RATING PTDF/OTDF**. The **FLOW** is the megawatt flow in the limiting element after the occurrence of the outage(s) and before any incremental power transfers. The MW ratings shown in Exhibit D-1 are derived from the facility ratings in MVA that have been adjusted for var flow. The **RATING** is the emergency rating when followed by the letter "E"; and normal or continuous rating when followed by the letter "N". The **PTDF/OTDF** is given for the limiting element after the occurrence of the key facility outage(s).

Incremental transfer capabilities are in addition to the anticipated base interchange schedules shown in Exhibit C-2. Deviation from these anticipated base schedules, choice of participation points posted on the MAIN website, or other system study conditions can alter base flows and PTDF's and OTDF's affecting the incremental transfer capabilities.

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[1] As defined in MAIN Guide No. 2.

The transfer capabilities provided in this report are based on an analysis of the transmission system only. Therefore, these values should not be interpreted as indicating an availability or deficiency of generating capacity requiring such a transfer.

The simultaneous transfer capability to an area cannot be assumed to equal the sum of the nonsimultaneous transfer capabilities to that area.

Exhibit D-2 provides descriptions of the operating guides included in this study.

Exhibit D-3 is a listing of critical facilities affecting MET transfers. These critical lines are listed by the company owning the limiting line and lists the critical outages as well as the response of the limiting line to outage of the critical line (LODF) and to transfers after the contingency (OTDF).

MAIN AND SURROUNDING INTERCONNECTED SYSTEM
NONSIMULTANEOUS TRANSFER CAPABILITIES
2000/01 WINTER SYSTEM CONDITIONS

A: AMEREN (AMRN) IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
ECAR	IITC	3000*		No Limit Found				None
	FCITC	3000*	<=	No Limit Found				Each Valid Contingency Tested
ECARWEST	IITC	3000*		No Limit Found				None
	FCITC	3000*	<=	No Limit Found				Each Valid Contingency Tested
ESI	IITC	2000*		No Limit Found				None
	FCITC	0	< (27a,R)	Little Gypsy-Madisonville 230 kV	526	453E	.055	Michoud-Front Street 230 kV
		0	(28a)	Ray Braswell 500/230 kV Tr.	574	548E	.039	Ray Braswell-Lakeover 500 kV
		0	(31a,R)	Michoud-Front Street 230 kV	643	638E	.078	McKnight-Franklin 500 kV
		450	(28a)	Ray Braswell 500/115 kV Tr.	526	539E	.031	Ray Braswell-Lakeover 500 kV
		450	<-	Little Gypsy-Madisonville 230 kV	436	453E	.037	Sorrento-French Settlement 230 kV
		550	(31)	Front Street-Slidel 230 kV	598	643E	.078	McKnight-Franklin 500 kV
		1400		McKnight-Franklin 500 kV	1545	1732E	.134	Richard-Webre 500 kV
		2000*		No Additional Limit Found				Each Valid Contingency Tested

A: AMEREN (AMRN) IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
IOWA	IITC	2000*		No Limit Found				None
	FCITC	250	(4A)	Arpin 345/138 kV Tr.	320	328E	.038	Arpin-Rocky Run 345 kV
		1200	(4A)	Arpin-Sigel 138 kV	248	287E	.033	Arpin-Rocky Run 345 kV
		1900	<=	Denmark-Viele 161 kV	87	167E	.041	Niota-Burlington 161 kV
		2000*		No Additional Limit Found				Each Valid Contingency Tested
IP	IITC	1500*		No Limit Found				None
	FCITC	1500*	<=	No Limit Found				Each Valid Contingency Tested
MINN	IITC	1500*		No Limit Found				None
	FCITC	0	< (44a)	Silverbay Bus Tie 115 kV	164	120E	.037	Taconite Harbor-Hoyt Lake 138 kV
		0	(4A)	T Corners-Wien 115 kV	148	118E	.075	Eau Claire-Arpin 345 kV
		0	(4A)	T Corners-Wien 115 kV	118	118E	.075	King-Eau Claire-Arpin 345 kV
		100	(4A)	Arpin 345/138 kV Tr.	318	328E	.104	Arpin-Rocky Run 345 kV
		1200	<- (R)	Lime Creek-Emery 161 kV	76	166E	.074	Adams-Hazleton 345 kV
		1500		Eau Claire-Arpin 345 kV Limit	494	775N	.193	None
		1500*		No Additional Limit Found				Each Valid Contingency Tested
NEBR	IITC	1200*		No Limit Found				None
	FCITC	200	(4A)	Arpin 345/138 kV Tr.	320	328E	.043	Arpin-Rocky Run 345 kV
		1000	<=	S1211-SUB701 161 kV	254	321E	.066	Council Bluffs 345/161 kV Tr.
		1200*		No Additional Limit Found				Each Valid Contingency Tested

A: AMEREN (AMRN) IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
NI	IITC	2500*		No Limit Found				None
	FCITC	2500*	<=	No Limit Found				Each Valid Contingency Tested
SPP-N	IITC	1000*		No Limit Found				None
	FCITC	1000	(5A)	Jeffery Energy Ctr-Auburn 230 kV	535	598E	.064	Jeffery Energy Ctr-Hoyt 345 kV
		1000*	<=	No Additional Limit Found				Each Valid Contingency Tested
SPP-S	IITC	1500*		No Limit Found				None
	FCITC	0	< (28a)	Ray Braswell 500/230 kV Tr.	574	548E	.036	Ray Braswell-Lakeover 500 kV
		0	(28a)	Ray Braswell 500/115 kV Tr.	526	539E	.031	Ray Braswell-Lakeover 500 kV
		1000	<-(R)	Elk City 230/138 kV Tr.	153	215E	.060	Oklaunion-Lawton 345 kV Oklaunion-Tuco 345 kV Tuco 345/230 kV Tr. Oklaunion DC Tie
		1500*		No Additional Limit Found				Each Valid Contingency Tested
SERCW	IITC	2000*		No Limit Found				None
	FCITC	0	< (27a,R)	Little Gypsy-Madisonville 230 kV	526	453E	.035	Michoud-Front Street 230 kV
		0	(28a)	Ray Braswell 500/230 kV Tr.	574	548E	.031	Ray Braswell-Lakeover 500 kV
		0	(31a,R)	Michoud-Front Street 230 kV	643	638E	.052	McKnight-Franklin 500 kV
		850	(31a,R)	Front Street-Slidel 230 kV	598	643E	.052	McKnight-Franklin 500 kV
		1600	<-	McKnight-Franklin 500 kV	1545	1732E	.116	Richard-Webre 500 kV
		2000*		No Additional Limit Found				Each Valid Contingency Tested

A: AMEREN (AMRN) IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
TVA	IITC	3000*		No Limit Found				None
	FCITC	3000*	<=	No Limit Found				Each Valid Contingency Tested
WUMS	IITC	2000*		No Limit Found				None
	FCITC	850	(37A)	Oak Creek 230/345 kV Tr.	287	335E	.058	Oak Creek 230/138 kV Tr.
		1300	(37A)	Oak Creek 230/138 kV Tr.	313	358E	.036	Oak Creek 230/345 kV Tr.
		1400	(9A)	Kenosha-Lakeview 138 kV	131	286E	.113	Zion-Pleasant Prairie 345 kV
		1700	<=	Pleasant Prairie-Zion 345 kV	456	1192E	.434	Zion-Arcadian 345 kV
		1800		Pleasant Prairie-Zion 345 kV	442	1192E	.427	Arcadian 345/138 kV Tr. #2 Arcadian 345/138 kV Tr. #3 Arcadian-Point Beach 345 kV Arcadian-Zion 345 kV

B: ECAR IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
AMRN	IITC	3000*		No Limit Found				None
	FCITC	3000*	<=	No Limit Found				Each Valid Contingency Tested
IP	IITC	1500*		No Limit Found				None
	FCITC	1500*	<=	No Limit Found				Each Valid Contingency Tested
MAIN	IITC	4000*		No Limit Found				None
	FCITC	3400	<=	Ashtabula 345/138 kV Tr.	195	300E	.031	Eastlake 345/138 kV Tr.
		4000*		No Additional Limit Found				Each Valid Contingency Tested
NI	IITC	4000*		No Limit Found				None
	FCITC	2800	(15A,R)	State Line-Wolf Lake 138 kV	93	200E	.038	Burnham-Sheffield 345 kV
		3400	<=	Ashtabula 345/138 kV Tr.	195	300E	.031	Eastlake 345/138 kV Tr.
		4000*		No Additional Limit Found				Each Valid Contingency Tested
SMAIN	IITC	3500*		No Limit Found				None
	FCITC	3400	<=	Ashtabula 345/138 kV Tr.	195	300E	.031	Eastlake 345/138 kV Tr.
		3500		Bull Run-Volunteer 500 kV	1750	2041E	.083	Watts Bar-Volunteer 500 kV

B: ECAR IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
TVA	IITC	2900		Volunteer-Phipps Bend 500 kV	1219	1729N	.175	None
	FCITC	1700	<=	Bull Run-Volunteer 500 kV	1750	2041E	.170	Watts Bar-Volunteer 500 kV
		2500		Summer-Summershade Tap 161 kV	147	238E	.037	Summer-Summershade 161 kV
		2900		Volunteer-Phipps Bend 500 kV	1219	1729N	.175	None
		3300		Ashtabula 345/138 kV Tr.	195	300E	.032	Eastlake 345/138 kV Tr.
		3300		Roane-Bull Run 500 kV	1326	1728E	.122	Watts Bar-Bull Run 500 kV
		3300		Volunteer-Phipps Bend 500 kV	1447	2042E	.178	Volunteer 500/161 kV Tr.

C: ECAR EAST IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
IP	IITC	1500*		No Limit Found				None
	FCITC	1500*	<=	No Limit Found				Each Valid Contingency Tested
MAIN	IITC	3900		Ashtabula 345/138 kV Tr.	122	258N	.035	None
	FCITC	2600	<=	Ashtabula 345/138 kV Tr.	195	300E	.040	Eastlake 345/138 kV Tr.
		2800	(R)	Eastlake 345/138 kV Tr.	640	726E	.031	Eastlake-Juniper 345 kV
		3900		Ashtabula 345/138 kV Tr.	122	258N	.035	None
		3900		Eastlake 345/138 kV Tr.	528	691N	.041	None
		4000*		No Additional Limit Found				Each Valid Contingency Tested
NI	IITC	3900		Ashtabula 345/138 kV Tr.	122	258N	.035	None
	FCITC	2600	<=	Ashtabula 345/138 kV Tr.	195	300E	.040	Eastlake 345/138 kV Tr.
		2800	(R)	Eastlake 345/138 kV Tr.	640	726E	.031	Eastlake-Juniper 345 kV
		3200	(15,R)	State Line-Wolf Lake 138 kV	93	200E	.033	Burnham-Sheffield 345 kV
		3900		Ashtabula 345/138 kV Tr.	122	258N	.035	None
		3900		Eastlake 345/138 kV Tr.	528	691N	.046	None
		4000*		No Additional Limit Found				Each Valid Contingency Tested
SMAIN	IITC	3500*		No Limit Found				None
	FCITC	2600	<=	Ashtabula 345/138 kV Tr.	195	300E	.041	Eastlake 345/138 kV Tr.

C: ECAR EAST IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
SMAIN	FCITC	2800	(R)	Eastlake 345/138 kV Tr.	640	726E	.031	Eastlake-Juniper 345 kV
		3200		Bull Run-Volunteer 500 kV	1750	2041E	.092	Watts Bar-Volunteer 500 kV
		3500*		No Additional Limit Found				Each Valid Contingency Tested
TVA	IITC	2800		Volunteer-Phipps Bend 500 kV	1219	1729N	.184	None
	FCITC	1600	<=	Bull Run-Volunteer 500 kV	1750	2041E	.178	Watts Bar-Volunteer 500 kV
		2500		Ashtabula 345/138 kV Tr.	195	300E	.042	Eastlake 345/138 kV Tr.
		2700		Summer-Summershade Tap 161 kV	147	238E	.034	Summer-Summershade 161 kV
		2700	(R)	Eastlake 345/138 kV Tr.	640	726E	.032	Eastlake-Juniper 345 kV
		2800		Volunteer-Phipps Bend 500 kV	1219	1729N	.184	None
		3000	(14)	Santeetlah-Robbinsville 161 kV	126	217E	.031	Sullivan-Broadford 500 kV Broadford 765/500 kV Tr.
		3100		Roane-Bull Run 500 kV	1326	1728E	.129	Watts Bar-Bull Run 500 kV

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
AMRN	IITC	3000*		No Limit Found				None
	FCITC	3000*	<=	No Limit Found				Each Valid Contingency Tested
IP	IITC	1500*		No Limit Found				None
	FCITC	1500*	<=	No Limit Found				Each Valid Contingency Tested
MAIN	IITC	4000*		No Limit Found				None
	FCITC	3100	(15A,R)	State Line-Wolf Lake 138 kV	93	200E	.034	Burnham-Sheffield 345 kV
		4000*	<=	No Additional Limit Found				Each Valid Contingency Tested
NI	IITC	4000*		No Limit Found				None
	FCITC	2400	(15A,R)	State Line-Wolf Lake 138 kV	93	200E	.045	Burnham-Sheffield 345 kV
		4000*	<=	No Additional Limit Found				Each Valid Contingency Tested
SMAIN	IITC	3500*		No Limit Found				None
	FCITC	3500*	<=	No Limit Found				Each Valid Contingency Tested
TVA	IITC	3100		Volunteer-Phipps Bend 500 kV	1219	1729N	.165	None
	FCITC	1800	<=	Bull Run-Volunteer 500 kV	1750	2041E	.160	Watts Bar-Volunteer 500 kV
		2200		Summer-Summershade Tap 161 kV	147	238E	.041	Summer-Summershade 161 kV
		3100		Volunteer-Phipps Bend 500 kV	1219	1729N	.165	None

D: ECAR WEST IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
TVA	FCITC	3200		Norris-Lafollette 161 kV	217	312E	.030	Volunteer-Phipps Bend 500 kV
		3500		Roane-Bull Run 500 kV	1326	1728E	.114	Watts Bar-Bull Run 500 kV
		3500		Volunteer-Phipps Bend 500 kV	1447	2042E	.168	Volunteer 500/161 kV Tr.
		3900		Gallatin-Hartsville 161 kV	202	318E	.030	Gallatin P-Interlake 161 kV E. Gallatin-Interlake 161 kV E. Gallatin-Fountain 161 kV Port SS-Fountain 161 kV

E: ENTERGY SERVICES, INC (ESI) IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
AMRN	IITC	2000*		No Limit Found				None
	FCITC	1400	<(34a)	Allen Steam-Horn Lake 161 kV	142	202E	.042	Freeport 500/230 kV Tr.
		2000*	<-	No Additional Limit Found				Each Valid Contingency Tested

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
AMRN	IITC	1700*		No Limit Found				None
	FCITC	1500	<=	Eckles Road-MoCity 161 kV	152	199E	.032	Sibley-Hawthorn 345 kV
		1700*		No Additional Limit Found				Each Valid Contingency Tested
IP	IITC	1500*		No Limit Found				None
	FCITC	1500*	<=	No Limit Found				Each Valid Contingency Tested
NI	IITC	2000*		No Limit Found				None
	FCITC	2000*	<=	No Limit Found				Each Valid Contingency Tested
SERCW	IITC	2000*		No Limit Found				None
	FCITC	0	<(27a,R)	Little Gypsy-Madisonville 230 kV	526	453E	.034	Michoud-Front Street 230 kV
		0	(28a)	Ray Braswell 500/230 kV Tr.	574	548E	.028	Ray Braswell-Lakeover 500 kV
		0	(31a,R)	Michoud-Front Street 230 kV	643	638E	.051	McKnight-Franklin 500 kV
		850	(31a)	Front Street-Slidell 230 kV	598	643E	.051	McKnight-Franklin 500 kV
		1600	<-	McKnight-Franklin 500 kV	1545	1732E	.116	Richard-Webre 500 kV
		1600		Maryville-Clarinda 161 kV	59	166E	.066	Maryville-Creston 161 kV
		1700		Nodaway-Maryville 161 kV	117	270E	.089	St. Joe-Midway 161 kV Midway-Maryville 161 kV
SPP-N	IITC	1000*		No Limit Found				None
	FCITC	1000*	<=	No Limit Found				Each Valid Contingency Tested

F: IOWA IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
SMAIN	IITC	2000*		No Limit Found				None
	FCITC	1500	<=	Eckles Road-MoCity 161 kV	152	199E	.031	Sibley-Hawthorn 345 kV
		2000*		No Additional Limit Found				Each Valid Contingency Tested
WUMS	IITC	2000*		No Limit Found				None
	FCITC	1000	(37A)	Oak Creek 230/345 kV Tr.	288	335E	.047	Oak Creek 230/138 kV Tr.
		1600	(9A)	Kenosha-Lakeview 138 kV	133	286E	.094	Pleasant Prairie-Zion 345 kV
		2000*	<=	No Additional Limit Found				Each Valid Contingency Tested

G: ILLINOIS POWER (IP) IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	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
ECAR	IITC	1500*		No Limit Found				None
	FCITC	1500*	<=	No Limit Found				Each Valid Contingency Tested
ECAREAST	IITC	1500*		No Limit Found				None
	FCITC	1500*	<=	No Limit Found				Each Valid Contingency Tested
ECARWEST	IITC	1500*		No Limit Found				None
	FCITC	1500*	<=	No Limit Found				Each Valid Contingency Tested
IOWA	IITC	1500*		No Limit Found				None
	FCITC	300	(4A)	Arpin 345/138 kV Tr.	318	328E	.039	Arpin-Rocky Run 345 kV
		1200	(4A)	Arpin-Sigel 138 kV	246	287E	.034	Arpin-Rocky Run 345 kV
		1500*	<=	No Additional Limit Found				Each Valid Contingency Tested
NI	IITC	1500*		No Limit Found				None
	FCITC	1500*	<=	No Limit Found				Each Valid Contingency Tested
TVA	IITC	1500*		No Limit Found				None
	FCITC	1500*	<=	No Limit Found				Each Valid Contingency Tested

G: ILLINOIS POWER (IP) IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
WUMS	IITC	1500*		No Limit Found				None
	FCITC	850	(37A)	Oak Creek 230/345 kV Tr.	288	335E	.057	Oak Creek 230/138 kV Tr.
		1300	(37A)	Oak Creek 230/138 kV Tr.	313	358E	.036	Oak Creek 230/345 kV Tr.
		1400	(9A)	Kenosha-Lakeview 138 kV	133	286E	.113	Zion-Pleasant Prairie 345 kV
		1500*	<=	No Additional Limit Found				Each Valid Contingency Tested

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
ECAR	IITC	4000*		No Limit Found				None
	FCITC	4000*	<=	No Limit Found				Each Valid Contingency Tested
ECAREAST	IITC	4000		Elrama 138 kV Bus Tie	212	337N	.031	None
		4000*		No Additional Limit Found				None
	FCITC	4000	<=	Elrama 138 kV Bus Tie	212	337N	.031	None
		4000*		No Additional Limit Found				Each Valid Contingency Tested
ECARWEST	IITC	4000*		No Limit Found				None
	FCITC	4000*	<=	No Limit Found				Each Valid Contingency Tested
MAPP	IITC	1700		Eau Claire-Arpin 345 kV Limit	493	775N	.167	None
		2000*		No Additional Limit Found				None
	FCITC	0	(4A)	T Corners-Wien 115 kV	148	118E	.063	Eau Claire-Arpin 345 kV
		0	(4A)	T Corners-Wien 115 kV	118	118E	.061	King-Eau Claire-Arpin 345 kV
		100	(4A)	Arpin 345/138 kV Tr.	318	328E	.089	Arpin-Rocky Run 345 kV
		1700	<=	Eau Claire-Arpin 345 kV Limit	493	775N	.167	None
		2000*		No Additional Limit Found				Each Valid Contingency Tested

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
SERCW	IITC	1800		Michoud-Front Street 230 kV	492	573N	.045	None
		2900		Front Street-Slidel 230 kV	447	579N	.045	None
		3000*		No Additional Limit Found				None
	FCITC	0	< (27a,R)	Little Gypsy-Madisonville 230 kV	526	453E	.042	Michoud-Front Street 230 kV
		0	(28a)	Ray Braswell 500/230 kV Tr.	574	548E	.036	Ray Braswell-Lakeover 500 kV
		0	(31a,R)	Michoud-Front Street 230 kV	643	638E	.061	McKnight-Franklin 500 kV
		450	(28a)	Ray Braswell 500/115 kV Tr.	526	539E	.029	Ray Braswell-Lakeover 500 kV
		600	<-	Little Gypsy-Madisonville 230 kV	436	453E	.029	Sorrento-French Settlement 230 kV
		750	(31)	Front Street-Slidell 230 kV	598	643E	.061	McKnight-Franklin 500 kV
		1300		Little Gypsy-Madisonville 230 kV	415	453E	.029	French Settlement-Hammond 230 kV
		1500		McKnight-Franklin 500 kV	1545	1732E	.123	Richard-Webre 500 kV
		1800		Michoud-Front Street 230 kV	492	573N	.045	None
SPP	IITC	2500*		No Limit Found				None
	FCITC	0	< (28a,R)	Ray Braswell 500/230 kV Tr.	574	548E	.031	Ray Braswell-Lakeover 500 kV
		300	(4A)	Arpin 345/138 kV Tr.	318	328E	.084	Arpin-Rocky Run 345 kV
		1400	<-	Elk City 230/138 kV Tr.	153	215E	.044	Oklaunion-Lawton 345 kV Oklaunion-Tuco 345 kV Tuco 345/230 kV Tr. Oklaunion DC Tie

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
SPP	FCITC	1450		Elk City 230/138 kV Tr.	236	215E	.044	Oklaunion-Tuco 345 kV Tuco 345/230 kV Tr.
		2500*		No Additional Limit Found				Each Valid Contingency Tested
TVA	IITC	4000*		No Limit Found				None
	FCITC	2500 <=		Bull Run-Volunteer 500 kV	1750	2041E	.115	Watts Bar-Volunteer 500 kV
		4000*		No Additional Limit Found				Each Valid Contingency Tested

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
MAIN	IITC	2000*		No Limit Found				None
	FCITC	2000*	<=	No Limit Found				Each Valid Contingency Tested
SERCW	IITC	2000*		No Limit Found				None
	FCITC	0	<(27a,R)	Little Gypsy-Madisonville 230 kV	526	453E	.034	Michoud-Front Street 230 kV
		0	(28a)	Ray Braswell 500/230 kV Tr.	574	548E	.028	Ray Braswell-Lakeover 500 kV
		0	(31a,R)	Michoud-Front Street 230 kV	643	638E	.051	McKnight-Franklin 500 kV
		850	(31a,R)	Front Street-Slidell 230 kV	598	643E	.051	McKnight-Franklin 500 kV
		1600	<-	McKnight-Franklin 500 kV	1545	1732E	.116	Richard-Webre 500 kV
		1800		Maryville-Clarinda 161 kV	59	166E	.059	Maryville-Creston 161 kV
		1800		Nodaway-Maryville 161 kV	117	270E	.084	St. Joe-Midway 161 kV Midway-Maryville 161 kV
SPP	IITC	2000*		No Limit Found				None
	FCITC	1200	<=	Eckles Road-MoCity 161 kV	152	199E	.039	Sibley-Hawthorn 345 kV
		1400	(R)	Elk City 230/138 kV Tr.	153	221E	.044	Oklaunion-Tuco 345 kV Tuco 345/230 kV Tr. Oklaunion-Lawton 345 kV Oklaunion DC Tie
		1450		Elk City 230/138 kV Tr.	236	215E	.044	Oklaunion-Tuco 345 kV Tuco 345/230 kV Tr.
		1600		LaCygne-Stilwell 345 kV	1095	1315E	.138	LaCygne-West Gardner 345 kV

J: MINNESOTA (MINN) IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
AMRN	IITC	1500*		No Limit Found				None
	FCITC	1000	(29A)	Rockdale 345/138 kV Tr. #T22	300	336E	.034	Rockdale-Columbia 345 kV Rockdale 345/138 kV Tr. #T21
		1500*	<=	No Additional Limit Found				Each Valid Contingency Tested
NI	IITC	2000*		No Limit Found				None
	FCITC	950	(29A)	Rockdale 345/138 kV Tr. #T22	300	336E	.036	Rockdale-Columbia 345 kV Rockdale 345/138 kV Tr. #T21
		2000*	<=	No Additional Limit Found				Each Valid Contingency Tested
SPP-N	IITC	1000*		No Limit Found				None
	FCITC	1000*	<=	No Limit Found				Each Valid Contingency Tested
SMAIN	IITC	2000*		No Limit Found				None
	FCITC	1000	(29A)	Rockdale 345/138 kV Tr. #T22	300	336E	.035	Rockdale-Columbia 345 kV Rockdale 345/138 kV Tr. #T21
		2000*	<=	No Limit Found				Each Valid Contingency Tested
WUMS	IITC	1400	<=	Roeder-Wautoma 138 kV	24	72N	.035	None
		2000*		No Limit Found				None
	FCITC	1300	(37A)	Oak Creek 230/345 kV Tr.	288	335E	.036	Oak Creek 230/138 kV Tr.
		1400	<=	Roeder-Wautoma 138 kV	24	72N	.035	None

J: MINNESOTA (MINN) IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
WUMS	FCITC	1800	(13)	Green Lake Tap-Roeder 138 kV	28	154E	.068	N. Appleton 345/138 kV Tr. #3 N. Appleton-Point Beach 345 kV N. Appleton-Rocky Run 345 kV
		1900		Green Lake Tap-Roeder 138 kV	28	154E	.068	N. Appleton-Rocky Run 345 kV

K: NEBRASKA (NEBR) IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
AMRN	IITC	900*		No Limit Found				None
	FCITC	650	<=	Philips-S. Philips J 115 kV	124	158E	.050	Summit-E. McPherson 230 kV
		900*		No Additional Limit Found				Each Valid Contingency Tested
SERCW	IITC	1350*		No Limit Found				None
	FCITC	0	<(27a,R)	Little Gypsy-Madisonville 230 kV	526	453E	.025	Michoud-Front Street 230 kV
		0	(31a,R)	Michoud-Front Street 230 kV	643	638E	.041	McKnight-Franklin 500 kV
		650	<-	Philips-S. Philips J 115 kV	124	158E	.051	Summit-E. McPherson 230 kV
		1000		Summit 230/115 kV Tr	273	307E	.033	Summit-E. McPherson 230 kV
		1100	(31)	Front Street-Slidell 230 kV	598	643E	.041	McKnight-Franklin 500 kV
		1350*		No Additional Limit Found				Each Valid Contingency Tested
SMAIN	IITC	1350*		No Limit Found				None
	FCITC	700	<=	Philips-S. Philips J 115 kV	124	158E	.050	Summit- E. McPherson 230 kV
		1100		Summit 230/115 kV Tr	273	307E	.032	Summit-E. McPherson 230 kV
		1350*		No Additional Limit Found				Each Valid Contingency Tested

L: NORTHERN ILLINOIS IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
AMRN	IITC	3000*		No Limit Found				None
	FCITC	2600	<=	Palmyra 345/161 kV Tr.	273	368E	.037	Louisa-Sub T-Hills 345 kV Palm Tap-Palmyra 345 kV
		3000*		No Limit Found				Each Valid Contingency Tested
ECAR	IITC	4000*		No Limit Found				None
	FCITC	4000*	<=	No Limit Found				Each Valid Contingency Tested
ECAREAST	IITC	4000*		No Limit Found				None
	FCITC	4000*	<=	No Limit Found				Each Valid Contingency Tested
ECARWEST	IITC	4000*		No Limit Found				None
	FCITC	4000*	<=	No Limit Found				Each Valid Contingency Tested
IOWA	IITC	2000*		No Limit Found				None
	FCITC	0	(4A)	T Corners-Wien 115 kV	148	118E	.037	Eau Claire-Arpin 345 kV
		0	(4A)	T Corners-Wien 115 kV	118	118E	.035	King-Eau Claire-Arpin 345 kV
		200	(4A)	Arpin 345/138 kV Tr.	318	328E	.054	Arpin-Rocky Run 345 kV
		2000*	<=	No Additional Limit Found				Each Valid Contingency Tested
IP	IITC	1500*		No Limit Found				None
	FCITC	1500*	<=	No Limit Found				Each Valid Contingency Tested

L: NORTHERN ILLINOIS IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
MINN	IITC	2000*		No Limit Found				None
	FCITC	0	< (44a)	Silverbay Bus Tie 115 kV	164	120E	.037	Taconite Harbor-Hoyt Lake 138 kV
		0	(4A)	T Corners-Wien 115 kV	148	118E	.086	Eau Claire-Arpin 345 kV
		0	(4A)	T Corners-Wien 115 kV	118	118E	.086	King-Eau Claire-Arpin 345 kV
		100	(4A)	Arpin 345/138 kV Tr.	318	328E	.120	Arpin-Rocky Run 345 kV
		1300	<-	Eau Claire-Arpin 345 kV Limit	494	775N	.224	None
		1300		Lime Creek-Emery 161 kV	79	166E	.069	Adams-Hazleton 345 kV
		1300	(8)	Granville 345/138 kV Tr. #3	420	500E	.062	Arcadian-Granville 345 kV Granville 345/138 kV Tr. #1
		1300	(4,6)	Lime Creek-Emery 161 kV	53	166E	.053	Eau Claire-Arpin 345 kV T Corners-Wien 115 kV Council Creek ALTE-DPC 69 kV Hilltop-Mauston 69 kV
SERCW	IITC	1800		Michoud-Front Street 230 kV	492	573N	.046	None
		2900		Front Street-Slidel 230 kV	447	579N	.046	None
		3000*		No Limit Found				None
	FCITC	0	< (27a,R)	Little Gypsy-Madisonville 230 kV	526	453E	.042	Michoud-Front Street 230 kV
		0	(28a)	Ray Braswell 500/230 kV Tr.	574	548E	.037	Ray Braswell-Lakeover 500 kV
		0	(31a,R)	Michoud-Front Street 230 kV	643	638E	.061	McKnight-Franklin 500 kV
		450	(28a)	Ray Braswell 500/115 kV Tr.	526	539E	.030	Ray Braswell-Lakeover 500 kV
		600	<-	Little Gypsy-Madisonville 230 kV	437	453E	.029	Sorrento-French Settlement 230 kV

L: NORTHERN ILLINOIS IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
SERCW	FCITC	750	(31,R)	Front Street-Slidel 230 kV	598	643E	.061	McKnight-Franklin 500 kV
		1500		McKnight-Franklin 500 kV	1545	1732E	.121	Richard-Webre 500 kV
		2300		Bull Run-Volunteer 500 kV	1751	2041E	.127	Watts Bar-Volunteer 500 kV
		2700		Palmyra 345/161 kV Tr.	273	368E	.035	Louisa-Sub T-Hills 345 kV Palm Tap-Palmyra 345 kV
SMAIN	IITC	3500*		No Limit Found				None
	FCITC	3200	(42A)	Holland-Mason 138 kV	45	227E	.058	Duck Creek-Tazewell 345 kV
		3300	(42A)	Mason-Tazewell 138 kV	38	228E	.058	Duck Creek-Tazewell 345 kV
		3500*	<=	No Additional Limit Found				Each Valid Contingency Tested
TVA	IITC	3500		Volunteer-Phipps Bend 500 kV	1219	1729N	.144	None
		4000*		No Limit Found				None
	FCITC	2100	<=	Bull Run-Volunteer 500 kV	1750	2041E	.137	Watts Bar-Volunteer 500 kV
		2600		Palmyra 345/161 kV Tr.	273	368E	.036	Louisa-Sub T-Hills 345 kV Palm Tap-Palmyra 345 kV
		2800		Summer-Summershade 161 kV	147	238E	.032	Summer-Summershade 161 kV
		3500		Volunteer-Phipps Bend 500 kV	1219	1729N	.144	None
VACAR	IITC	1500*		No Limit Found				None
	FCTTC	1500*	<=	No Limit Found				Each Valid Contingency Tested

L: NORTHERN ILLINOIS IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
WUMS	IITC	2000*		No Limit Found				None
	FCITC	800	(37A)	Oak Creek 230/345 kV Tr.	287	335E	.062	Oak Creek 230/138 kV Tr.
		1200	(37A)	Oak Creek 230/138 kV Tr.	313	358E	.038	Oak Creek 230/345 kV Tr.
		1200	(9A)	Kenosha-Lakeview 138 kV	131	286E	.125	Zion-Pleasant Prairie 345 kV
		1600	<=	Pleasant Prairie-Zion 345 kV	456	1192E	.046	Arcadian-Zion 345 kV
		1700	(2)	Pleasant Prairie-Zion 345 kV	442	1192E	.452	Arcadian 345/138 kV Tr. #2 Arcadian 345/138 kV Tr. #3 Arcadian-Point Beach 345 kV Arcadian-Zion 345 kV
		1700		Pleasant Prairie-Zion 345 kV	580	1192E	.357	Cherry Valley-Silver Lk. 345 kV Silver Lake 345/138 kV Red Tr.

M: SERC IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
ECAR	IITC	4000*		No Limit Found				None
	FCITC	3900	<=	Cumberland-Davidson 500 kV	2288	2597E	.079	Cumberland-Johnsonville 500 kV
		4000*		No Additional Limit Found				Each Valid Contingency Tested
MAIN	IITC	4000*		No Limit Found				None
	FCITC	2800	<=	Cumberland-Davidson 500 kV	2288	2597E	.110	Cumberland-Johnsonville 500 kV
		3200		Johnsonville-Davidson 500 kV	1394	1732E	.106	Cumberland-Davidson 500 kV
		3600		Cumberland-Johnsonville 500 kV	2241	2597E	.098	Cumberland-Davidson 500 kV
		4000*		No Additional Limit Found				Each Valid Contingency Tested

N: SERC WEST (SERCW) IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
AMRN	IITC	2000*		No Limit Found				None
	FCITC	2000*	<=	No Limit Found				Each Valid Contingency Tested
IOWA	IITC	2000*		No Limit Found				None
	FCITC	250	(4A)	Arpin 345/138 kV Tr.	320	328E	.036	Arpin-Rocky Run 345 kV
		1200	(4A)	Arpin-Sigel 138 kV	248	287E	.032	Arpin-Rocky Run 345 kV
		2000*	<=	No Additional Limit Found				Each Valid Contingency Tested
MAIN	IITC	3000*		No Limit Found				None
	FCITC	3000*	<=	No Limit Found				Each Valid Contingency Tested
MAPP	IITC	2000*		No Limit Found				None
	FCITC	0	(4A)	T Corners-Wien 115 kV	148	118E	.045	Eau Claire-Arpin 345 kV
		0	(4A)	T Corners-Wien 115 kV	118	118E	.044	King-Eau Claire-Arpin 345 kV
		150	(4A)	Arpin 345/138 kV Tr.	320	328E	.064	Arpin-Rocky Run 345 kV
		700	(4A)	Arpin-Sigel 138 kV	248	287E	.057	Arpin-Rocky Run 345 kV
		2000*	<=	No Additional Limit Found				Each Valid Contingency Tested
NEBR	IITC	1350*		No Limit Found				None
	FCITC	200	(4A)	Arpin 345/138 kV Tr.	320	328E	.041	Arpin-Rocky Run 345 kV

N: SERC WEST (SERCW) IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
NEBR	FCITC	1000	<=	S1211-SUB701 161 kV	252	321E	.066	Council Bluffs 345/161 kV Tr.
		1100	(4A)	Arpin-Sigel 138 kV	248	287E	.037	Arpin-Rocky Run 345 kV
		1300		Council Bluffs-Avoca 161 kV	125	167E	.031	Council Bluffs-Madison 345 kV
		1350*		No Additional Limit Found				Each Valid Contingency Tested
NI	IITC	3000*		No Limit Found				None
	FCITC	3000*	<=	No Limit Found				Each Valid Contingency Tested
SMAIN	IITC	2000*		No Limit Found				None
	FCITC	2000*	<=	No Limit Found				Each Valid Contingency Tested
SPP	IITC	2500*		No Limit Found				None
	FCITC	1400	<=(R)	Elk City 230/138 kV Tr.	153	221E	.044	Oklaunion-Tuco 345 kV Tuco 345/230 kV Tr. Oklaunion-Lawton 345 kV Oklaunion DC Tie
		2500*		No Additional Limit Found				Each Valid Contingency Tested
TVA	IITC	3000*		No Limit Found				None
	FCITC	1500	<(34a)	Allen Steam-Horn Lake 161 kV	142	203E	.040	Freeport 500/230 kV Tr.
		3000*	<-	No Additional Limit Found				Each Valid Contingency Tested

O: SOUTH MAIN (SMAIN) IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
ECAR	IITC	3500*		No Limit Found				None
	FCITC	3500*	<=	No Limit Found				Each Valid Contingency Tested
ECAREAST	IITC	3500*		No Limit Found				None
	FCITC	3500*	<=	No Limit Found				Each Valid Contingency Tested
ECARWEST	IITC	3500*		No Limit Found				None
	FCITC	3500*	<=	No Limit Found				Each Valid Contingency Tested
IOWA	IITC	2000*		No Limit Found				None
	FCITC	250	(4A)	Arpin 345/138 kV Tr.	320	328E	.039	Arpin-Rocky Run 345 kV
		1100	(4A)	Arpin-Sigel 138 kV	248	287E	.035	Arpin-Rocky Run 345 kV
		2000	<=	Denmark-Viele 161 kV	87	167E	.040	Niota-Burlington 161 kV
		2000*		No Additional Limit Found				Each Valid Contingency Tested
MINN	IITC	2000		No Limit Found				None
	FCITC	0	< (44a)	Silverbay Bus Tie 115 kV	164	120E	.037	Taconite Harbor-Hoyt Lake 138 kV
		0	(4A)	T Corners-Wien 115 kV	148	118E	.076	Eau Claire-Arpin 345 kV
		0	(4A)	T Corners-Wien 115 kV	118	118E	.076	King-Eau Claire-Arpin 345 kV
		100	(4A)	Arpin 345/138 kV Tr.	318	328E	.101	Arpin-Rocky Run 345 kV

O: SOUTH MAIN (SMAIN) IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
MINN	FCITC	1200	<- (R)	Lime Creek –Emery 161 kV	76	166E	.073	Adams-Hazelton 345 kV
		1300	(4,6)	Lime Creek-Emery 161 kV	96	166E	.055	Eau Claire-Arpin 345 kV T Corners-Wien 115 kV Council Creek ALTE-DPC 69 kV Hilltop-Mauston 69 kV
NEBR	IITC	1350*		No Limit Found				None
	FCITC	200	(4A)	Arpin 345/138 kV Tr.	320	328E	.043	Arpin-Rocky Run 345 kV
		1000	(4A)	Arpin-Sigel 138 kV	248	287E	.039	Arpin-Rocky Run 345 kV
		1000	<=	S1211-SUB701 161 kV	254	321E	.066	Council Bluffs 345/161 kV Tr.
		1300		Council Bluffs-Avoca 161 kV	125	167E	.033	Council Bluffs-Madison 345 kV
NI	IITC	3500*		No Limit Found				None
	FCITC	3500*	<=	No Limit Found				Each Valid Contingency Tested
SERCW	IITC	2000*		No Limit Found				None
	FCITC	0	<(27a,R)	Little Gypsy-Madisonville 230 kV	525	453E	.035	Michoud-Front Street 230 kV
		0	(28a)	Ray Braswell 500/230 kV Tr.	574	548E	.032	Ray Braswell-Lakeover 500 kV
		0	(31a,R)	Michoud-Front Street 230 kV	643	638E	.053	McKnight-Franklin 500 kV
		500	(28a)	Ray Braswell 500/115 kV Tr.	526	539E	.026	Ray Braswell-Lakeover 500 kV
		850	(31a,R)	Front Street-Slidel 230 kV	598	643E	.053	McKnight-Franklin 500 kV

O: SOUTH MAIN (SMAIN) IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
SERCW	FCITC	1600	<-	McKnight-Franklin 500 kV	1544	1732E	.116	Richard-Webre 500 kV
		2000*		No Limit Found				Each Valid Contingency Tested
SPP-N	IITC	1000*		No Limit Found				None
	FCITC	1000	(5A)	Jeffery Energy Ctr-Auburn 230 kV	535	598E	.064	Jeffery Energy Ctr-Hoyt 345 kV
		1000*	<=	No Additional Limit Found				Each Valid Contingency Tested
TVA	IITC	2000*		No Limit Found				None
	FCITC	2000*	<=	No Limit Found				Each Valid Contingency Tested
WUMS	IITC	2000*		No Limit Found				None
	FCITC	850	(37A)	Oak Creek 230/345 kV Tr.	287	335E	.058	Oak Creek 230/138 kV Tr.
		1300	(37A)	Oak Creek 230/138 kV Tr.	313	358E	.036	Oak Creek 230/345 kV Tr.
		1400	(9A)	Kenosha-Lakeview 138 kV	131	286E	.113	Zion-Pleasant Prairie 345 kV
		1700	<=	Pleasant Prairie-Zion 345 kV	456	1192E	.437	Zion-Arcadian 345 kV
		1700	(2)	Pleasant Prairie-Zion 345 kV	442	1192E	.430	Arcadian 345/138 kV Tr. #2 Arcadian 345/138 kV Tr. #3 Arcadian-Point Beach 345 kV Arcadian-Zion 345 kV

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
MAIN	IITC	2500*		No Limit Found				None
	FCITC	2450	<=	Franks 345/161 kV Tr	307	390E	.034	Franks-Huben 345 kV Huben-Morgan 345 kV
		2500*		No Additional Limit Found				Each Valid Contingency Tested
MAPP	IITC	2000*		No Limit Found				None
	FCITC	0	(4A)	T Corners-Wien 115 kV	148	118E	.038	Eau Claire-Arpin 345 kV
		0	(4A)	T Corners-Wien 115 kV	118	118E	.035	King-Eau Claire-Arpin 345 kV
		200	(4A)	Arpin 345/138 Tr	318	328E	.054	Arpin-Rocky Run 345 kV
		850	(4A)	Arpin-Sigel 138 kV	246	287E	.048	Arpin-Rocky Run 345 kV
		2000*	<=	No Additional Limit Found				Each Valid Contingency Tested
SERCW	IITC	2300		Michoud-Front Street 230 kV	492	573N	.045	None
		2500*		No Limit Found				None
	FCITC	0	< (27a,R)	Little Gypsy-Madisonville 230 kV	526	453E	.031	Michoud-Front Street 230 kV
		0	(31a,R)	Michoud-Front Street 230 kV	643	638E	.046	McKnight-Franklin 500 kV
		1500	<-	McKnight-Franklin 500 kV	1545	1732E	.123	Richard-Webre 500 kV
		1800		Wilbert-Livonia 138 kV	242	289E	.027	Richard-Webre 500 kV
		2300		Michoud-Front Street 230 kV	492	573N	.045	None
		2500*		No Additional Limit Found				Each Valid Contingency Tested

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
TVA	IITC	2000*		No Limit Found				None
	FCITC	1800	<=	Wilbert-Livonia 138 kV	242	289E	.027	Richard-Webre 500 kV
		1900	(R)	Batesville-Cushman 161 kV	89	146E	.030	Fort Smith-ANO 500 kV
		2100	(R)	McNeil-Couch 115 kV	114	167E	.026	Black Rock-Hardy 161 kV
		2200	(R)	Cushman-Sage 161 kV	81	146E	.030	Fort Smith-ANO 500 kV
		2400	(R)	Dardanelle-Dardanelle 161 kV	83	167E	.035	Fort Smith-ANO 500 kV
		2500*		No Additional Limit Found				Each Valid Contingency Tested

Q: SPP NORTH (SPP-N) IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	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
IOWA	IITC	1500*		No Limit Found				None
	FCITC	1500*	<=	No Limit Found				Each Valid Contingency Tested
MINN	IITC	1500*		No Limit Found				None
	FCITC	0	< (44a)	Silverbay Bus Tie 115 kV	164	120E	.037	Taconite Harbor-Hoyt Lake 138 kV
		0	(4A)	T Corners-Wien 115 kV	148	118E	.062	Eau Claire-Arpin 345 kV
		0	(4A)	T Corners-Wien 115 kV	118	118E	.035	King-Eau Claire-Arpin 345 kV
		100	(4A,R)	Arpin 345/138 Tr	318	329E	.084	Arpin-Rocky Run 345 kV
		500	(4A)	Arpin-Sigel 138 kV	246	287E	.076	Arpin-Rocky Run 345 kV
		1200	<-	Lime Creek-Emery 161 kV	76	166E	.075	Adams-Hazelton 345 kV
		1200	(4,6)	Lime Creek-Emery 161 kV	96	166E	.057	Eau Claire-Arpin 345 kV T Corners-Wien 115 kV Council Creek ALTE-DPC 69 kV Hilltop-Mauston 69 kV
		1300	(4,6)	Lime Creek-Emery 161 kV	92	166E	.058	King-Eau Claire-Arpin 345 kV T Corners-Wien 115 kV Council Creek ALTE-DPC 69 kV Hilltop-Mauston 69 kV

Q: SPP NORTH (SPP-N) IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
MINN	FCITC	1500	(4,6)	Lime Creek-Emery 161 kV	83	166E	.056	Arpin-Rocky Run 345 kV Port Edwards-Sand Lake 138 kV Saratoga-Port Edwards 138 kV Sherman St.-Cassel 115 kV Council Creek ALTE-DPC 69 kV W. Wis Rapids-Water Quality 46 kV
		1500*		No Additional Limit Found				Each Valid Contingency Tested
SMAIN	IITC	1500*		No Limit Found				None
	FCITC	1500*	<=	No Limit Found				Each Valid Contingency Tested

R: SPP SOUTH (SPP-S) IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	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

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
AMRN	IITC	3500*		No Limit Found				None
	FCITC	1900	<=	Cumberland-Davidson 500 kV	2288	2597E	.164	Cumberland-Johnsonville 500 kV
		2100		Johnsonville-Davidson 500 kV	1394	1732E	.161	Cumberland-Davidson 500 kV
		2400		Cumberland-Johnsonville 500 kV	2241	2597E	.145	Cumberland-Davidson 500 kV
		2800		Fredericktown-Fredericktown Tap	69	168E	.036	St. Francois 345/138 kV Tr. #1 Lutesville-St. Francois 345 kV
		3200		Rivermines-Fredericktown 138 kV	82	191E	.034	St. Francois 345/138 kV Tr. #1 Lutesville-St. Francois 345 kV
ECAR	IITC	4000*		No Limit Found				None
	FCITC	2700	<=	Cumberland-Davidson 500 kV	2288	2597E	.116	Cumberland-Johnsonville 500 kV
		3200		Cumberland-Johnsonville 500 kV	2241	2597E	.109	Cumberland-Davidson 500 kV
		3800		Johnsonville-Davidson 500 kV	1394	1732E	.090	Cumberland-Davidson 500 kV
		3900		New Hardinsburg 161/138 kV Tr.	65	224E	.041	Coleman-National Aluminum 161 kV
		4000*		No Additional Limit Found				Each Valid Contingency Tested
ECAREAST	IITC	3700		Elrama 138 kV Bus Tie	212	337E	.034	None
	FCITC	2900	<=	Cumberland-Davidson 500 kV	2288	2597E	.106	Cumberland-Johnsonville 500 kV
		3500		Cumberland-Johnsonville 500 kV	2241	2597E	.100	Cumberland-Davidson 500 kV

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
ECARWEST	IITC	4000*		No Limit Found				None
	FCITC	2500	<=	Cumberland-Davidson 500 kV	2288	2597E	.123	Cumberland-Johnsonville 500 kV
		3100		Cumberland-Johnsonville 500 kV	2241	2597E	.115	Cumberland-Davidson 500 kV
		3200		Marion Co. 161/138 kV Tr.	69	166E	.030	Alcade 345/161 kV Tr. N. Brown-Alcalde 345 kV Alcalde-Pineville 345 kV
		3200		Lebanon-Marion Co. 138 kV	69	166E	.030	Alcade 345/161 kV Tr. N. Brown-Alcalde 345 kV Alcalde-Pineville 345 kV
		3400		New Hardinsburg 161/138 kV Tr.	65	224E	.046	Coleman-National Aluminum 161 kV
IP	IITC	1500*		No Limit Found				None
	FCITC	1500	<=	Johnsonville-Davidson 500 kV	1394	1732E	.228	Cumberland-Davidson 500 kV
		1500*		No Additional Limit Found				Each Valid Contingency Tested
MAIN	IITC	4000*		No Limit Found				None
	FCITC	2100	<=	Cumberland-Davidson 500 kV	2288	2597E	.147	Cumberland-Johnsonville 500 kV
		2500		Johnsonville-Davidson 500 kV	1394	1732E	.137	Cumberland-Davidson 500 kV
		2700		Cumberland-Johnsonville 500 kV	2241	2597E	.132	Cumberland-Davidson 500 kV
		4000*		No Additional Limit Found				Each Valid Contingency Tested

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
NI	IITC	4000*		No Limit Found				None
	FCITC	2400	<=	Cumberland-Davidson 500 kV	2288	2597E	.130	Cumberland-Johnsonville 500 kV
		2900		Johnsonville-Davidson 500 kV	1394	1732E	.115	Cumberland-Davidson 500 kV
		3000		Cumberland-Johnsonville 500 kV	2241	2597E	.118	Cumberland-Davidson 500 kV
		4000*		No Additional Limit Found				Each Valid Contingency Tested
SERCW	IITC	2800*		Front Street-Slidell 230 Kv	447	579N	.047	None
	FCITC	0	<(27a,R)	Little Gypsy-Madisonville 230 kV	526	453E	.044	Michoud-Front Street 230 kV
		0	(28a)	Ray Braswell 500/230 kV Tr.	574	548E	.046	Ray Braswell-Lakeover 500 kV
		0	(31a,R)	Michoud-Front Street 230 kV	643	638E	.064	McKnight-Franklin 500 kV
		350	(28a)	Ray Braswell 500/115 kV Tr.	526	539E	.037	Ray Braswell-Lakeover 500 kV
		550	<-	Little Gypsy-Madisonville 230 kV	436	453E	.031	Sorrento-French Settlement 230 k
		1500		McKnight-Franklin 500 kV	1545	1732E	.124	Richard-Webre 500 kV
		1900		Johnsonville-Davidson 500 kV	1395	1732E	.174	Cumberland-Davidson 500 kV
SMAIN	IITC	3500*		No Limit Found				None
	FCITC	1900	<=	Cumberland-Davidson 500 kV	2288	2597E	.162	Cumberland-Johnsonville 500 kV
		2200		Johnsonville-Davidson 500 kV	1394	1732E	.151	Cumberland-Davidson 500 kV
		2400		Cumberland-Johnsonville 500 kV	2241	2597E	.145	Cumberland-Davidson 500 kV

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
SMAIN	FCITC	3300		Fredericktown-Fredericktown Tap	69	168E	.030	St. Francois 345/138 kV Tr. #1 Lutesville-St. Francois 345 kV
		3500*		No Additional Limit Found				Each Valid Contingency Tested
SPP	IITC	3500*		No Limit Found				None
	FCITC	0	<(28a)	Ray Braswell 500/230 kV Tr.	574	548E	.040	Ray Braswell-Lakeover 500 kV
		400	(28a)	Ray Braswell 500/115 kV Tr.	526	539E	.034	Ray Braswell-Lakeover 500 kV
		1400	<-(R)	Elk City 230/138 kV Tr.	153	215E	.044	Oklaunion-Lawton 345 kV Oklaunion-Tuco 345 kV Tuco 345/230 kV Tr. Oklaunion DC Tie
		1700		Bull Shoals-Midway 161 kV	105	162E	.034	Norfork-Bull Shoals 161 kV
		2000		Johnsonville-Davidson 500 kV	1394	1732E	.166	Cumberland-Davidson 500 kV

T: WISCONSIN-UPPER MICHIGAN SYSTEMS (WUMS) IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
AMRN	IITC	2000*		No Limit Found				None
	FCITC	0	(4A)	T Corners-Wien 115 kV	148	118E	.049	Eau Claire-Arpin 345 kV
		0	(4A)	T Corners-Wien 115 kV	118	118E	.047	King-Eau Claire-Arpin 345 kV
		150	(4A)	Arpin 345/138 kV Tr.	318	329E	.068	Arpin-Rocky Run 345 kV
		350	(29A)	Rockdale 345/138 kV Tr. #T22	300	336E	.099	Rockdale-Columbia 345 kV Rockdale 345/138 kV Tr. #T21
		1200	(4A)	Saratoga-Baker 115 kV	91	138E	.040	Arpin-Rocky Run 345 kV
		2000	(45A)	Rockdale 345/138 kV Tr. #T22	204	336E	.067	Rockdale-Columbia 345 kV Columbia 345/138 kV Tr. #T21 Columbia 345/138 kV Tr. #T22
		2000	<=	Rockdale 345/138 kV Tr. #T22	203	336E	.067	Rockdale-Columbia 345 kV
		2000*		No Additional Limit Found				Each Valid Contingency Tested
ECAR	IITC	2000*		No Limit Found				None
	FCITC	0	(4A)	T Corners-Wien 115 kV	148	118E	.040	Eau Claire-Arpin 345 kV
		0	(4A)	T Corners-Wien 115 kV	118	118E	.039	King-Eau Claire-Arpin 345 kV
		200	(4A)	Arpin 345/138 kV Tr.	318	329E	.055	Arpin-Rocky Run 345 kV
		350	(29A)	Rockdale 345/138 kV Tr. #T22	300	336E	.100	Rockdale-Columbia 345 kV Rockdale 345/138 kV Tr. #T21
		1400	(4A)	Saratoga-Baker 115 kV	91	138E	.034	Arpin-Rocky Run 345 kV

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
ECAR	FCITC	2000	(45)	Rockdale 345/138 kV Tr. #T22	204	336E	.067	Rockdale-Columbia 345 kV Columbia 345/138 kV Tr. #T21 Columbia 345/138 kV Tr. #T22
		2000	<=	Rockdale 345/138 kV Tr. #T22	203	336E	.067	Rockdale-Columbia 345 kV
		2000*		No Additional Limit Found				Each Valid Contingency Tested
EC/NI/SM	IITC	2000*		No Limit Found				None
	FCITC	0	(4A)	T Corners-Wien 115 kV	148	118E	.041	Eau Claire-Arpin 345 kV
		0	(4A)	T Corners-Wien 115 kV	118	118E	.040	King-Eau Claire-Arpin 345 kV
		200	(4A)	Arpin 345/138 kV Tr.	318	329E	.056	Arpin-Rocky Run 345 kV
		350	(29A)	Rockdale 345/138 kV Tr. #T22	300	336E	.100	Rockdale-Columbia 345 kV Rockdale 345/138 kV Tr. #T21
		1400	(4A)	Saratoga-Baker 115 kV	91	138E	.035	Arpin-Rocky Run 345 kV
		2000	(45A)	Rockdale 345/138 kV Tr. #T22	204	336E	.067	Rockdale-Columbia 345 kV Columbia 345/138 kV Tr. #T21 Columbia 345/138 kV Tr. #T22
		2000	<=	Rockdale 345/138 kV Tr. #T22	203	336E	.068	Rockdale-Columbia 345 kV
		2000*		No Additional Limit Found				Each Valid Contingency Tested
IOWA	IITC	1400		Eau Claire-Arpin 345 kV Limit	493	775N	.202	None
		2000*		No Additional Limit Found				None
	FCITC	0	(6A,R)	Council Creek ALTE-DPC 69 kV	69	42E	.032	Eau Claire-Arpin 345 kV

T: WISCONSIN-UPPER MICHIGAN SYSTEMS (WUMS) IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
IOWA	FCITC	0	(4A)	T Corners-Wien 115 kV	148	118E	.075	Eau Claire-Arpin 345 kV
		0	(4A)	T Corners-Wien 115 kV	118	118E	.071	King-Eau Claire-Arpin 345 kV
		100	(4A)	Arpin 345/138 kV Tr.	318	329E	.105	Arpin-Rocky Run 345 kV
		400	(29A)	Rockdale 345/138 kV Tr. #T22	300	336E	.091	Rockdale-Columbia 345 kV Rockdale 345/138 kV Tr. #T21
		800	(4A)	Saratoga-Baker 115 kV	91	138E	.058	Arpin-Rocky Run 345 kV
		1400	<=	Eau Claire-Arpin 345 kV Limit	493	775N	.202	None
		1700	(13)	Rocky Run-Whiting Ave 115 kV	161	233E	.044	N. Appleton 345/138 kV Tr. #3 N. Appleton-Point Beach 345 kV N. Appleton-Rocky Run 345 kV
		1700	(4,6)	Eden-Wyoming Valley 138 kV	109	192E	.049	Eau Claire-Arpin 345 kV T Corners-Wien 115 kV Council Creek ALTE-DPC 69 kV Hilltop-Mauston 69 kV
IP	IITC	1500*		No Limit Found				None
	FCITC	0	(4A)	T Corners-Wien 115 kV	148	118E	.044	Eau Claire-Arpin 345 kV
		0	(4A)	T Corners-Wien 115 kV	118	118E	.042	King-Eau Claire-Arpin 345 kV
		200	(4A)	Arpin 345/138 kV Tr.	318	329E	.059	Arpin-Rocky Run 345 kV
		350	(29A)	Rockdale 345/138 kV Tr. #T22	300	336E	.102	Rockdale-Columbia 345 kV Rockdale 345/138 kV Tr. #T21
		1300	(4A)	Saratoga-Baker 115 kV	91	138E	.036	Arpin-Rocky Run 345 kV
		1500*	<=	No Additional Limit Found				None

T: WISCONSIN-UPPER MICHIGAN SYSTEMS (WUMS) IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
MAPP	IITC	1100		Eau Claire-Arpin 345 kV Limit	493	775N	.252	None
		1900		T Corners-Wien 115 kV	43	118N	.041	None
		2000*		No Additional Limit Found				None
	FCITC	0	(6A,R)	Council Creek ALTE-DPC 69 kV	69	42E	.038	Eau Claire-Arpin 345 kV
		0	(4A)	T Corners-Wien 115 kV	148	118E	.094	Eau Claire-Arpin 345 kV
		0	(4A)	T Corners-Wien 115 kV	118	118E	.091	King-Eau Claire-Arpin 345 kV
		100	(4A)	Arpin 345/138 kV Tr.	318	329E	.132	Arpin-Rocky Run 345 kV
		450	(29A)	Rockdale 345/138 kV Tr. #T22	300	336E	.080	Rockdale-Columbia 345 kV Rockdale 345/138 kV Tr. #T21
		700	(4A)	Saratoga-Baker 115 kV	91	138E	.068	Arpin-Rocky Run 345 kV
		1100	<=	Eau Claire-Arpin 345 kV Limit	493	775N	.252	None
		1300	(13)	Rocky Run-Whiting Ave 115 kV	161	233E	.054	N. Appleton 345/138 kV Tr. #3 N. Appleton-Point Beach 345 kV N. Appleton-Rocky Run 345 kV
		1400		Rocky Run-Whiting Ave 115 kV	156	233E	.055	N. Appleton-Rocky Run 345 kV
MINN	IITC	850		Eau Claire-Arpin 345 kV Limit	493	775N	.325	None
		1400		T Corners-Wien 115 kV	43	118N	.055	None
		2000*		No Additional Limit Found				None

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
MINN	FCITC	0	< (44a)	Silver Bay Bus Tie 115 kV	164	120E	.037	Taconite Harbor-Hoyt Lake 138 kV
		0	(6A,R)	Council Creek ALTE-DPC 69 kV	69	42E	.046	Eau Claire-Arpin 345 kV
		0	(4A)	T Corners-Wien 115 kV	148	118E	.124	Eau Claire-Arpin 345 kV
		0	(4A)	T Corners-Wein 115 kV	118	118E	.122	King-Eau Claire-Arpin 345 kV
		50	(4A)	Arpin 345/138 kV Tr.	318	329E	.171	Arpin-Rocky Run 345 kV
		550	(29A)	Rockdale 345/138 kV Tr. #T22	300	336E	.065	Rockdale-Columbia 345 kV Rockdale 345/138 kV Tr. #T21
		550	(4A)	Saratoga-Baker 115 kV	91	138E	.085	Arpin-Rocky Run 345 kV
		850	<-	Eau Claire-Arpin 345 kV Limit	493	775N	.325	None
		1000	(13)	Rocky Run-Whiting Ave 115 kV	161	233E	.070	N. Appleton 345/138 kV Tr. #3 N. Appleton-Point Beach 345 kV N. Appleton-Rocky Run 345 kV
		1100		Rocky Run-Whiting Ave 115 kV	156	233E	.071	N. Appleton-Rocky Run 345 kV
NI	IITC	2000*		No Limit Found				None
	FCITC	0	(4A)	T Corners-Wien 115 kV	148	118E	.037	Eau Claire-Arpin 345 kV
		0	(4A)	T Corners-Wien 115 kV	118	118E	.036	King-Eau Claire-Arpin 345 kV
		200	(4A)	Arpin 345/138 kV Tr.	318	329E	.050	Arpin-Rocky Run 345 kV
		350	(29A)	Rockdale 345/138 kV Tr. #T22	300	336E	.101	Rockdale-Columbia 345 kV Rockdale 345/138 kV Tr. #T21
		1500	(4A)	Saratoga-Baker 115 kV	91	138E	.032	Arpin-Rocky Run 345 kV

T: WISCONSIN-UPPER MICHIGAN SYSTEMS (WUMS) IMPORTS

FROM	TRANSFER CAPABILITY CONDITION	MW	(NOTE)	LIMITING ELEMENT	FLOW	RATING	PTDF/ OTDF	FACILITY OUTAGE(S)
NI	FCITC	1900	(45A)	Rockdale 345/138 kV Tr. #T22	204	336E	.068	Rockdale-Columbia 345 kV Columbia 345/138 kV Tr. #T21 Columbia 345/138 kV Tr. #T22
		1900	<=	Rockdale 345/138 kV Tr. #T22	203	336E	.068	Rockdale-Columbia 345 kV
		2000*		No Additional Limit Found				Each Valid Contingency Tested
SMAIN	IITC	2000*		No Limit Found				None
	FCITC	0	(4A)	T Corners-Wien 115 kV	148	118E	.047	Eau Claire-Arpin 345 kV
		0	(4A)	T Corners-Wien 115 kV	118	118E	.045	King-Eau Claire-Arpin 345 kV
		150	(4A)	Arpin 345/138 kV Tr.	318	329E	.065	Arpin-Rocky Run 345 kV
		350	(29A)	Rockdale 345/138 kV Tr. #T22	300	336E	.100	Rockdale-Columbia 345 kV Rockdale 345/138 kV Tr. #T21
		1200	(4A)	Saratoga-Baker 115 kV	91	138E	.039	Arpin-Rocky Run 345 kV
		2000	(45A)	Rockdale 345/138 kV Tr. #T22	204	336E	.067	Rockdale-Columbia 345 kV Columbia 345/138 kV Tr. #T21 Columbia 345/138 kV Tr. #T22
		2000	<=	Rockdale 345/138 kV Tr. #T22	203	336E	.068	Rockdale-Columbia 345 kV
		2000*		No Additional 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

(1) Guide Not Used in 2000/01 Winter Study
(2) Arcadian Operating Guide
(3) Arklahoma Emergency Operating Guide
(4) Arpin Area Operating Guide
(5) Auburn Operating Guide
(6) Council Creek Operating Guide
(7) Guide Not Used in 2000/01 Winter Study
(8) Granville Operating Guide
(9) Lakeview-Zion-Waukegan Operating Guide
(10) Lake Road-Nashua Operating Guide
(11) Lisle Operating Guide
(12) Maries Operating Guide
(13) North Appleton Operating Guide
(14) Santeetlah-Robbinsville Operating Guide
(15) State Line-Wolf Lake-Sheffield 138 kV Operating Guide
(16) Thomas Hill Operating Guide
(17) Guide Not Used in 2000/01 Winter Study
(18) Guide Not Used in 2000/01 Winter Study
(19) Collins-Lockport Emergency Operating Guide
(20) McCook Operating Guide
(21) Guide Not Used in 2000/01 Winter Study
(22) Guide Not Used in 2000/01 Winter Study
(23) Boswell Emergency Operating Guide
(24) Rochester Emergency Operating Guide
(25) Guide Not Used in 2000/01 Winter Study
(26) Guide Not Used in 2000/01 Winter Study
(27) Little Gypsy-Madisonville Emergency Operating Guide
(28) Braswell Emergency Operating Guide
(29) Rockdale Operating Guide
(30) Guide Not Used in 2000/01 Winter Study
(31) Michoud-Front Street-Slidell Emergency Operating Guide
(32) Racine Operating Guide
(33) McKnight-Franklin Emergency Operating Guide
(34) Allen Steam Plant Emergency Operating Guide
(35) Guide Not Used in 2000/01 Winter Study
(36) Wilbert-Livonia Emergency Operating Guide
(37) Oak Creek Operating Guide
(38) Hayti-Blytheville Emergency Operating Guide
(39) Rockport Operating Guide
(40) Genoa Emergency operating Guide
(41) Guide Not Used in 2000/01 Winter Study
(42) Tazewell Operating Guide
(43) Hoyt-Stranger Operating Guide
(44) Taconite-Harbor Emergency Operating Guide
(45) Columbia Operating Guide

For Operating Guide descriptions see Exhibit D-2.

DESCRIPTION OF OPERATING GUIDES

Allen Steam Plant Emergency Operating Guide (TVA)

The outage of Freeport 500/230 kV transformer can result in limits to transfer by the Allen Steam-Horn Lake 161 kV line and the Horn Lake 161/115 kV transformer. This limit to transfers can be eliminated **during emergency situations** by redispatching generation at the Allen steam plant. This operating guide will not be used to increase nonemergency transactions.

Arcadian Operating Guide (WE)

The Arcadian operating guide consists of closing the Arcadian 345 kV bus section breaker #1-2, the Arcadian-Granville 345 kV line and the Arcadian-Pleasant Prairie 345 kV line following the outage of the 345 kV bus section #1 to clear a 345/230 transformer #1 failure. It also consists of closing the Arcadian 345 kV bus section breaker #1-2, the Arcadian-Point Beach 345 kV line and the Arcadian-Zion 345 kV line following the outage of the 345 kV bus section #2 to clear a failure of either 345/138 kV transformers #2 or #3. This procedure is performed by supervisory control.

Arpin Area Operating Guide (ALTE & WPS)

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.

Auburn Operating Guide (WR)

The outage of the Jeffrey-Hoyt 345 kV line can cause unacceptable overloads in the Auburn substation area. When this outage occurs, and overloads are noted in the Auburn substation area, generation at Jeffrey will be reduced until all overloads in the Auburn area are within acceptable limits.

Boswell 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.

If one of the three Boswell 230 kV transmission outlets trip, or becomes out of service, Boswell generation at Units #3 and #4 will be reduced to be within the guidelines for operation on two outlets. The Boswell Operating Guide consists of reducing generation at Boswell until the Boswell 230 kV transmission outlets are loaded at or below their respective emergency rating.

All Boswell generation limits are based on either Summer or

Winter emergency thermal MVA ratings. The actual Boswell generation limit depends upon Manitoba Hydro to U.S. transfer level, International Falls phase shifter flow, Boswell 115 kV generation and line conductor temperature. Since the Manitoba - Minnesota 500 kV transmission upgrade, Boswell generation is not limited transiently. Boswell generation can exceed these limits up to a level at which a thermal line limit is reached.

Braswell Emergency Operating Guide (ESI)

The outage of the Ray Braswell-Lakeover 500 kV line can result in limits to transfer in the area around the Ray Braswell substation. The limiting facilities include Ray Braswell 500/230 kV transformer, Ray Braswell 500/115 kV transformer, Ray Braswell-Clinton 115 kV line, and Ray Braswell–Northside 230 kV line. These limits to transfer can be eliminated **during emergency situations** by redispatching generation at the Rex Brown and Baxter Wilson plants. This operating guide will not be used to increase nonemergency transactions.

Columbia Transformer Operating Guide (ALTE)

The Columbia operating guide consists of manually isolating the faulted 345/138kV transformer(s) at the Columbia Generating Station operated by Alliant Energy Co. and restoring the remaining transmission element(s).

Bus #1 at Columbia connects Transformers #21 and #23 (200 MVA apiece) and the Columbia-Rockdale (COL-ROE) 345 kV line. A fault in either T21 or T23 will result in the outage of all three elements initially. The operating step consists of removing T21 and T23 from service and restoring the COL-ROE 345kV line.

Bus #2 at Columbia connects Transformer #22 (400 MVA) and the Columbia-North Madison and Columbia-South Fond du Lac 345 kV lines. A fault on Transformer #22 will result in the outage of all three elements. The operating step consists of removing T22 from service and restoring the two 345 kV lines.

For the loss of Bus #2 due to a fault on T22: Between the initial outage and the restoration of the two 345 kV lines (approximately 1 hour), Columbia Units 1 and 2 will need to back down to approximately 600 MW total to reduce the overload on T21 and T23. Once the lines are restored, both units can return to maximum output.

Council Creek Operation Guide (ALTE)

The Council Creek operating guide consists of the opening of a bus tie breaker at the Council Creek substation to relieve overloads on the 69 kV system which connects the Council Creek 138 kV substation with the Monroe County 161 kV and Hillsboro 161 kV substations. Operation of the breaker at Council Creek separates the ALTE system from the DPC system while maintaining the integrity of the DPC 69 kV system between the Monroe County and Hillsboro 161 kV substations. The 69 kV system is most susceptible to overloading for an outage of any portion of the King - Eau Claire - Arpin 345 kV line. The breaker at the Council Creek substation will open automatically for overload conditions.

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.

Hayti-Blytheville Emergency Operating Guide (ESI/AECI)

The outage of the New Madrid-Dell 500 kV line and the two parallel 500/345 kV transformers at New Madrid can result in limits to transfer by the Hayti-Blytheville 161 kV line. This limit to transfers can be improved **during emergency situations** by opening the Hayti-Blytheville 161 kV line. If necessary, and availability of generation permit, additional relief can be obtained by reducing generation at New Madrid power plant by up to 200 MW and at St Francis power plant by up to 100 MW. This operating guide will not be used to increase nonemergency transactions.

Lakeview-Zion-Waukegan Operating Guide (WE-ComEd)

For various 345 kV line outages near Zion station, the Bain-Kenosha 138 kV line (WE), the Kenosha-Lakeview 138 kV line (WE) and or the Lakeview-Zion-Waukegan 138 kV line (WE-ComEd) can be limiting for WUMS and MAIN exports. However, an operating guide may be available which calls for the opening of the Lakeview-Zion-Waukegan 138 kV line at either end. The line can be opened at Lakeview by WE supervisory control, or at Waukegan by

ComEd supervisory control.

Under certain system operating conditions, ComEd is concerned about opening the line due to resulting low voltage at Waukegan. The guide is normally available, but its availability for implementation is to be coordinated with ComEd.

Little Gypsy-Madisonville Emergency Operating Guide (ESI)

The outage of the McKnight-Franklin 500 kV line or either section of the Michoud-Front Street-Slidell 230 kV line can result in limits to transfer by the Little Gypsy-Madisonville 230 kV line. This limit to transfers can be eliminated **during emergency situations** by redispatching generation at either the Michoud or Little Gypsy plants. This operating guide will not be used to increase nonemergency transactions.

Maries Operating Guide (AECI)

The Maries 161/138 kV transformer limits transfers in the 138/161 kV direction for the outage of the Bland-Franks 345 kV line. The limitation imposed by this transformer is a local area problem because the Maries-Osage-1 138 kV line can be opened at Maries by supervisory control. This action reduces the flow on the Maries 161/138 kV transformer to a level at which transfers can continue up to the next limit. The Maries operating guide is unconditionally available.

McKnight-Franklin Emergency Operating Guide (ESI) **(Procedure listed for reference, procedure is no longer available)**

The outage of Richard-Webre 500 kV line can result in limits to transfer by the McKnight-Franklin 500 kV line. This limit to transfers can be eliminated **during emergency situations** by redispatching generation at the Ninemile and Little Gypsy plants. This operating guide will not be used to increase nonemergency transactions.

Michoud-Front Street-Slidell Emergency Operating Guide (ESI)

The outage of either the McKnight-Franklin 500 kV line, the Bogalusa-Franklin 500 kV line, the Bogalusa 500/230 kV transformer, or the Little Gypsy-Madisonville 230 kV line can result in limits to transfer by the Michoud-Front Street or the Front Street-Slidell

230 kV lines. This limit to transfers can be eliminated **during emergency situations** by redispatching generation at the Michoud plant. This operating guide will not be used to increase nonemergency transactions.

North Appleton Operating Guide (WE)

The North Appleton operating guide consists of closing North Appleton 345 kV series bus section breakers 12-1 and 12-2, the North Appleton-Fitzgerald 345 kV line and the North Appleton-Kewaunee 345 kV line following outage of 345 kV bus section #1 to clear a transformer #1 failure. It also consists of closing North Appleton 345 kV series bus section breakers 23-2 and 23-3, the North Appleton-Rocky Run 345 kV line and the North Appleton-Point Beach 345 kV line following outage of 345 kV bus section #3 to clear a transformer #3 failure. This procedure is performed by supervisory control.

Oak Creek Operating Guide (WE)

The Oak Creek Operating Guide consists of opening the Oak Creek 230 kV bus section 6-9 tie breaker to relieve an overload on either the Oak Creek 345/230 kV transformer or the Oak Creek 230/138 kV transformer. Outage of either one of these transformers can cause the other to be a limit during system export conditions. Splitting the bus sections per this operating guide will eliminate these limitations. This procedure is performed by supervisory control.

Racine Operating Guide (WE)

The Racine Operating Guide consists of opening substation breakers to prevent system overloads during specific outages. The Racine Operating Guide is described as three separate parts.

Part I: The first part of the Racine operating guide consists of closing the Racine 345 kV bus section breaker #1-2 and the Racine-Oak Creek 345 kV line following the outage of the 345 kV bus section #2 to clear a 345/138 kV transformer #2 failure. It also consists of closing the Racine 345 kV bus section breaker #1-2 and the Racine-Pleasant Prairie 345 kV line following the outage of the 345 kV bus section #1 to clear a 345/138 kV transformer #1 failure. This procedure is performed by supervisory

control.

Part II: The second part of the Racine operating guide consists of opening the Oak Creek 230 kV bus section 6-9 tie breaker to relieve an overload condition on the Arcadian 345/230 kV transformer caused by an outage of the Pleasant Prairie-Racine 345 kV line. This procedure is performed by supervisory control.

Part III: The third part of the operating guide is applicable for those instances when Oak Creek unit 5 is off line. The third part of the operating guide consists of opening the Arcadian 230 kV bus section 5-6 tie breaker to relieve an overload condition on the Arcadian 345/230 kV transformer caused by an outage of the Pleasant Prairie –Racine 345 kV line. This procedure is performed by supervisory control.

Rochester Emergency Operating Guide (DPC)

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.

The outage of the Prairie Island-Byron 345 kV line overloads the Alma-Wabaco 161 kV and Wabaco-Rochester 161 kV lines. To relieve loading, the Rochester-Adams 161 kV line would be opened by supervisory control, Alma generation would be reduced, and Rochester area generation would be increased to the extent possible. Dairyland and Northern States Power would adjust schedules and utilize the MAPP Line Loading Relief procedure.

A permanent fault on either the Byron-Adams 345 kV line or the Adams 345/161 kV transformer will result in an outage to both facilities and split the 161 kV bus at Adams. To prevent an overload of the Byron-Cascade Creek-Rochester-Adams 161 kV line, Northern States Power will leave the Adams 345/161 kV transformer out as long as the Byron-Adams 345 kV line is out or until transfers south and east from the Twin Cities area can be reduced.

Rockdale Operating Guide (ALTE)

The Rockdale transformer operating guide consists of switching a 345/138 kV transformer out of service after it trips a Rockdale 345 kV bus section and closing the 345 kV bus section breaker and reclosing the 345 kV line associated with that bus section. Depending on which bus section is tripped, the action could require switching the Rockdale 345/138 kV transformer T22 out of service and reclosing the Rockdale – Paddock 345 kV line or switching the Rockdale 345/138 kV transformer T21 out of service and reclosing the Rockdale – Columbia 345 kV line. This procedure is performed by supervisory control.

Santeetlah-Robbinsville Operating Guide (TVA/Duke)

The Santeetlah-Robbinsville 161 kV tie line (TVA/Duke) may overload under normal or contingency conditions for TVA exports. An operating guide is available to relieve loading on this line by opening the Robbinsville-Nantahala 161 kV line (Duke). TVA and Duke have agreed on this procedure.

State Line-Wolf Lake-Sheffield 138 kV Operating Guide (ComEd-NIPS)

The State Line-Wolf Lake-Sheffield 138 kV circuit is responsive to MAIN-ECAR and NI-ECAR transfers in either direction, especially for outages on the ECAR-MAIN interface.

This study indicates the State Line-Wolf Lake section could overload during ECAR imports from NI and MAIN for the outage of the Burnham-Sheffield 345 kV line (ComEd-NIPS) or the Wilton Center-Dumont 765 kV line (ComEd-AEP). To relieve potential overloads the State Line-Wolf Lake line may be opened from either end by supervisory control when local conditions permit, thereby eliminating this circuit as a potential FCITC limit for this outage.

The State Line-Wolf Lake-Sheffield line is rated at 160 MVA summer normal and emergency and 200 MVA winter normal and emergency. The circuit loading is strongly affected by the setting of the State Line station red phase shifter and generation level at the State Line station (ComEd). The circuit loading is affected to a lesser degree by generation levels at the Mitchell, Schahfer, and Dune Acres plants in NIPS.

Tazewell Operating Guide (CILC)

CILC has developed the following unconditional operating guide which will relieve overloads on the multi-terminal CILC Tazewell-Mason-Holland-Kickapoo-East Springfield 138 kV transmission line. The Holland-Mason section of this facility frequently appears as a limit for several transmission providers when generation into the 138 kV system in Central Illinois is at high levels. The most significant contingency is the loss of the CILC Duck Creek-Tazewell 345 kV line which forces the entire output of the Duck Creek plant to flow into the already heavily loaded 138 kV system. Other critical contingencies include the partial loss of generation at the ComEd Powerton station, Tazewell-Powerton 345 kV, and Tazewell-Lockport 345 kV.

When any of these contingencies occur and the loading on the Holland-Mason segment exceeds 90% of its seasonal emergency thermal rating, CILC will use supervisory control to open the Tazewell terminal of the line. This will mitigate the Holland-Mason limit. CILC will not implement this guide under normal system operating conditions because of its impact on the power flow in neighboring systems. It also places CILC load at increased risk due to a radial feed.

Big Rivers Electric Cooperation

Limiting Line	Critical Line Outage	LODF	PTDF/ OTDF	Sensitive To:
New Hardinsburg 138/161 kV Tr.	Coleman-National Aluminum 161 kV (or Nat'l Aluminum-Skillman 161 kV or New Hardinsburg-Skillman 161 kV)	.773	.041 .046	ECAR to TVA ECARW to TVA

Commonwealth Edison Company

Limiting Line	Critical Line Outage	LODF	PTDF/ OTDF	Sensitive To:
State Line-Wolf Lake 138 kV	Burnham-Sheffield 345 kV	.233	.038	NI to ECAR
			.033	NI to ECARE
			.034	MAIN to ECARW
			.045	NI to ECARW

Duquense Light Company

Limiting Line	Critical Line Outage	LODF	PTDF/ OTDF	Sensitive To:
Elrama 138 kV Bus Tie	None	----	.031	ECARE to MAIN
			.034	ECARE to TVA

East Kentucky Power Cooperative

Limiting Line	Critical Line Outage	LODF	PTDF/ OTDF	Sensitive To:
Summer Shade-Summer Shade T 161 kV	Summer Shade-Summer Shade 161 kV	.996	.037	TVA to ECAR
			.034	TVA to ECARE
			.041	TVA to ECARW
			.032	TVA to NI

First Energy

Limiting Line	Critical Line Outage	LODF	PTDF/ OTDF	Sensitive To:
Ashtabula 345/138 kV Tr.	None	----	.035	MAIN to ECARE
			.035	NI to ECARE
	Eastlake 345/138 kV Tr.	.138	.031	MAIN to ECAR
			.031	NI to ECAR
			.032	TVA to ECAR
			.040	MAIN to ECARE
			.040	NI to ECARE
			.042	TVA to ECARE
Eastlake 345/138 kV Tr.	None	----	.041	MAIN to ECARE
			.046	NI to ECARE
	Eastlake-Juniper 345 kV	.333	.031	MAIN to ECARE
			.031	NI to ECARE
			.032	TVA to ECARE

Louisville Gas & Electric Energy

Limiting Line	Critical Line Outage	LODF	PTDF/ OTDF	Sensitive To:
Lebanon-Marion County 138 kV	Alcade 345/138 kV Tr. N. Brown-Alcade 345 kV Alcade-Pineville 345 kV	.125 .119 .001	.030	ECARW to TVA
Marion County 161/138 kV Tr.	Alcade 345/161 kV Tr. N. Brown-Alcade 345 kV Alcade-Pineville 345 kV	.125 .119 .001	.030	ECARW to TVA

Northern Indiana Public Service Company

Limiting Line	Critical Line Outage	LODF	PTDF/ OTDF	Sensitive To:
State Line-Wolf Lake 138 kV	Burnham-Sheffield 345 kV	.233	.038	NI to ECAR
			.033	NI to ECARE
			.034	MAIN to ECARW
			.045	NI to ECARW

Tennessee Valley Authority

Limiting Line	Critical Line Outage	LODF	PTDF/ OTDF	Sensitive To:
Bull Run-Volunteer 500 kV	Watts Bar-Volunteer 500 kV	.755	.170	TVA to ECAR
			.178	TVA to ECARE
			.160	TVA to ECARW
			.115	TVA to MAIN
			.137	TVA to NI
Cumberland-Davidson 500 kV	Cumberland-Johnsonville 500 kV	.758	.116	ECAR to TVA
			.106	ECARE to TVA
			.123	ECARW to TVA
			.147	MAIN to TVA
Cumberland-Johnsonville 500 kV	Cumberland-Davidson 500 kV	.773	.109	ECAR to TVA
			.100	ECARE to TVA
			.115	ECARW to TVA
			.132	MAIN to TVA
Johnsonville-Davidson 500 kV	Cumberland-Davidson 500 kV	.609	.090	ECAR to TVA
			.137	MAIN to TVA
Norris-Lafollette 161 kV	Volunteer-Phipps Bend 500 kV	.062	.030	TVA to ECAW
Roane-Bull Run 500 kV	Watts Bar-Bull Run 500 kV	.609	.122	TVA to ECAR
			.129	TVA to ECARE
			.114	TVA to ECARW
Santeetlah-Robbinsville 161 kV	Sullivan-Broadford 500 kV	.044	.031	TVA to ECARE
Summer Shade-Summer Shade T 161 kV	Summer Shade-Summer Shade 161 kV	.996	.037	TVA to ECAR
			.034	TVA to ECARE
			.041	TVA to ECARW
			.032	TVA to NI

Tennessee Valley Authority

Limiting Line	Critical Line Outage	LODF	PTDF/ OTDF	Sensitive To:
Volunteer-Phipps Bend 500 kV	None	----	.175	TVA to ECAR
			.184	TVA to ECARE
			.165	TVA to ECARW
			.144	TVA to NI
Volunteer-Phipps Bend 500 kV	Volunteer 500/161 kV	.331	.178	TVA to ECAR
			.168	TVA to ECARW

SECTION F
GLOSSARY OF REGION, AREA, AND SYSTEM DESIGNATIONS

DOE	Department of Energy, Paducah, Kentucky
ECAR	East Central Area Reliability Coordination Agreement
ECAR EAST	Eastern ECAR
AP	Allegheny Power
AEP	American Electric Power System
AEP-APCO	AEP-Appalachian Power Company
AEP-CSP	AEP-Columbus Southern Power Company
AEP-KGPCO	AEP-Kingsport Power Company
AEP-KPCO	AEP-Kentucky Power Company
AEP-OPCO	AEP-Ohio Power Company
AEP-WPCO	AEP-Wheeling Power Company
DECO	Detroit Edison Company
DLCO	Duquesne Light Company
FE	FirstEnergy Corporation
CEI	The Cleveland Electric Illuminating Company
OE	Ohio Edison System
TE	The Toledo Edison Company
ECAR WEST	Western ECAR
AEP	American Electric Power System
AEP-I&M	AEP-Indiana Michigan Power Company
BREC	Big Rivers Electric Corporation
CIN	Cinergy
ENWC	Enron-Wheatland IPP Control Area
CONS	Consumers Power Company
ESE	Edison Sault Electric
DAYTON	Dayton Power and Light Company
EKPC	East Kentucky Power Cooperative
HE	Hoosier Energy Rural Electric Cooperative, Inc.
IMPA	Indiana Municipal Power Agency
IP&L	Indianapolis Power and Light Company
ENWI	Enron-Wheatland IPP Control Area
LGEE	Louisville Gas & Electric Energy
KU	Kentucky Utilities Company
LG&E	Louisville Gas and Electric Company
NIPS	Northern Indiana Public Service Company
OVEC	Ohio Valley Electric Corporation
SIGE	Southern Indiana Gas and Electric Company
WVPA	Wabash Valley Power Association
Virtual	ECAR Available Generation Pool
EC/NI/SM	ECAR/Northern Illinois/South MAIN Area
ERCOT	Electric Reliability Council of Texas
FRCC	Florida Reliability Coordinating Council

MAAC	Mid-Atlantic Area Coordination Group
AE	Atlantic Electric
BG&E	Baltimore Gas and Electric Company
DP&L	Delmarva Power and Light Company
JCP&L	Jersey Central Power and Light Company
Intra-PJM	PJM Available Generation Pool
METED	Metropolitan Edison Company
PECO	Philadelphia Electric Company
PENELEC	Pennsylvania Electric Company
PEPCO	Potomac Electric Power Company
PJM500	Pennsylvania-New Jersey-Maryland 500 kV Network
PP&L	Pennsylvania Power and Light Company
PSE&G	Public Service Electric and Gas Company
MAIN	Mid-America Interconnected Network
NI	Northern Illinois
ComEd	Commonwealth Edison Company
ENLC	Enron-Lincoln Energy Center IPP Control Area
SMAIN	Illinois & Missouri MAIN Systems excluding NI
AMRN	Ameren
CILC	Central Illinois Light Company
CWL	Columbia Water & Light
CWLP	City Water Light and Power, Springfield, Illinois
EEInc	Electric Energy, Incorporated
IMEA	Illinois Municipal Electric Agency
IP	Illinois Power Company
SIPC	Southern Illinois Power Cooperative
SYPC	Soyland Power Cooperative
WUMS	Wisconsin-Upper Michigan Systems
ALTE	Alliant East
MGE	Madison Gas and Electric Company
UPPC	Upper Peninsula Power Company
WE	Wisconsin Electric Power Company System
WPPI	Wisconsin Public Power, Inc. SYSTEM
WPS	Wisconsin Public Service Corporation
MPU	Manitowoc Public Utilities
MAPP	Mid-Continent Area Power Pool
DAK	Dakota Area
MBMPA	Missouri Basin Municipal Power Agency
MDU	Montana-Dakota Utilities Company
MPC	Minnkota Power Cooperative, Incorporated
NWPS	Northwestern Public Service Company
OTP	Otter Tail Power Company
SPC	Saskatchewan Power Corporation
WAPA	Western Area Power Administration
BEPC	Basin Electric Power Cooperative
Intra-MAPP	MAPP Available Generation Pool
IOWA	Iowa Area
ALTW	Alliant West
MEC	Mid-American Energy Company
MPW	Muscatine Power and Water Company

MINN	Minnesota Area
DPC	Dairyland Power Cooperative
GRE	Great River Energy
CP	Cooperative Power
UPA	United Power Association
MHEB	Manitoba Hydro-Electric Board
MP	Minnesota Power
NSP	Northern States Power Company
SMP	Southern Minnesota Power
MO	Missouri Area
SJLP	St. Joseph Light and Power Company
NEBR	Nebraska Area
LES	Lincoln Electric System
NPPD	Nebraska Public Power District
OPPD	Omaha Public Power District
MET	MAIN-ECAR-TVA
MMS	MAIN-MAPP-SPP
MSw	MAIN-SERC West
NPCC	Northeast Power Coordinating Council
CORNWALL	Cornwall
HQ	Hydro-Quebec
NB	New Brunswick Power
NS	Nova Scotia Power
NEPOOL	New England Power Pool
NYPP	New York Power Pool
OH	Ontario Hydro
SERC	Southeastern Electric Reliability Council
SERCW	SERC West
AECI	Associated Electric Cooperative, Incorporated
BCA	VP-Batesville IPP Control Area
ESI	Entergy Services, Inc
EAI	Entergy Arkansas, Inc
EGSI	Entergy Gulf States, Inc
ELI	Entergy Louisiana, Inc
EMI	Entergy Mississippi, Inc
ENOI	Entergy New Orleans, Inc
LAGN	Cajun Electric Power Cooperative, Incorporated
SOUTHERN	Southern Subregion of SERC
AEC	Alabama Electric Cooperative
SMEPA	South Mississippi Electric Power Association
SOCO	Southern Company
TVA	Tennessee Valley Authority
ENSE	Enron-Brownsville IPP Control Area
ENCA	Enron-Caledonia IPP Control Area
ENNA	Enron-New Albany IPP Control Area
ENGL	Enron-Gleason IPP Control Area

VACAR	Virginia - Carolinas Subregion of SERC
CPLE	Carolina Power & Light Company-East
CPLW	Carolina Power & Light Company-West
DUKE	Duke Energy
SCEG	South Carolina Electric & Gas Company
SC	South Carolina Public Service Authority
SEPA	Southeastern Power Administration
SEHA	Hartwell Power Plant
SETH	Thurmond Power Plant
SERU	Russell Power Plant
VP	Virginia Power
YAD	Yadkin, Inc.
SPP	Southwest Power Pool
SPP-N	North SPP (KS/MO)
EDE	Empire District Electric Company
INDN	City Power & Light, Independence, Missouri
KACY	Board of Public Utilities, Kansas City, KS
KCPL	Kansas City Power and Light Company
MIDW	Midwest Energy, Incorporated
MPS	Missouri Public Service Company
SECI	Sunflower Electric Cooperative
SPRM	City Utilities, Springfield, Missouri
WR	Western Resources, Incorporated
WPEK	West Plains Energy
SPP-S	South SPP (AR/LA/NM/OK/TX)
CLEC	Central Louisiana Electric Company, Incorporated
CSWS	Central & Southwest Services
AECC	Arkansas Electric Cooperative Corporation
GRDA	Grand River Dam Authority
LAFA	City of Lafayette
LEPA	Louisiana Energy & Power Authority
OKGE	Oklahoma Gas and Electric Company
OMPA	Oklahoma Municipal Power Authority
SPA	Southwestern Power Administration
SPS	Southwestern Public Service Company
WFEC	Western Farmers Electric Cooperative
WSCC	Western Systems Coordinating Council

MID-AMERICA INTERCONNECTED NETWORK, INC.

November, 2000

REGULAR MEMBERS

Alliant Energy Industrial Services, Inc.
Alliant Gas & Electric
Ameren
Central Illinois Light Company
City Water, Light and Power
Columbia (Missouri) Water & Light
Commonwealth Edison Company
Constellation Power Source, Inc.
Edison Mission Marketing and Trading
Electric Energy, Inc.
El Paso Merchant Energy
ENRON Power Marketing, Inc.
ENRON-SE Corp.
Illinois Municipal Electric Agency
Illinois Power Company
Kinder Morgan
LG&E Power Marketing Inc.
Madison Gas & Electric Company
Northern Indiana Public Service Co.
PECO Energy Company
PG&E Corp.
Reliant Energy Services
Southern Company Energy Marketing LP
Southern Illinois Power Co-operative
Soyland Power Cooperative, Inc.
UtiliCorp Power Services
Williams Energy Services Company
Wisconsin Electric Power Company
Wisconsin Public Power Inc., SYTEM
Wisconsin Public Service Corporation

ASSOCIATE MEMBERS

AES Power, Inc.
Amoco Energy Trading Corp.
Avista Energy, Inc.
Cargill-Alliant L.L.C.
Cinergy Corp.
Citizens Power, L.P.
CNG Power Services Corp.
Entergy Power Marketing Corp.
PacificCorp Power Marketing
Texaco Energy Services
TXU Energy Trading Company

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