

MRO

Projected Total Internal Demand	42,204	MW
Interruptible Demand & DSM	1,429	MW
Projected Net Internal Demand	40,775	MW
Last Winter's Peak Demand	41,323	MW
Change	1.5	%
All-Time Winter Peak Demand	41,323	MW
Deliverable Internal Capacity	51,432	MW
Projected Purchases	3,741	MW
Projected Sales	370	MW
Net Capacity Resources	54,803	MW
Capacity Margin	25.6	%
Reserve Margin	34.4	%
<i>With Uncommitted Resources (Plus Energy Only Resources)</i>		
Total Potential Resources	54,903	MW
Capacity Margin	25.7	%
Reserve Margin	34.6	%

Demand

1.a The Midwest Reliability Organization's (MRO) expected 2007/2008 Winter Non-Coincident Peak Total Internal Demand in the combined MRO US and MRO Canada is 42,204 MW assuming normal weather conditions. This forecast is 3.2% above last winter's peak total demand forecast of 40,873 MW and 2.1% above last winter's actual peak demand of 41,323 MW. The 41,323 MW actual peak value is not adjusted to exclude any additional Interruptible Demand & DSM that may not have been implemented. The actual 2006/2007 winter peak demand of 41,323 MW was 1.1% above the forecast, assuming no Interruptible Demand and DSM at the time of the winter peak.

1.c 1.d 1.e Interruptible Demand (1210 MW, 3.0%) and Demand Side Management DSM (219 MW, 0.5%) programs, amounting to 3.5% of the MRO's Projected Net Internal Peak Demand (40,775 MW), are utilized by a number of MRO members. A wide variety of programs, including direct load control (such as electric appliance cycling) and interruptible load, may be used to reduce peak demand during the winter season.

1.b 1.f Each MRO member uses its own forecasting methodology. In general, the peak demand forecast includes factors involving recent economic trends (industrial, commercial, agricultural, residential) and normal weather patterns. From a regional perspective, there were no significant changes in this year's forecast assumptions in comparison to last year.

Peak demand uncertainty and variability due to extreme weather and/or other conditions are accounted for within the determination of adequate generation reserve margin levels. Both the MAPP Generation Reserve Sharing Pool (GRSP) members and the former MAIN members within MRO¹ utilize a Load Forecast Uncertainty (LFU) factor within the calculation for the Loss of Load Expectation (LOLE) and/or the percentage reserve margin necessary to obtain a LOLE of 0.1 day per year or 1 day in 10 years. The load forecast uncertainty considers uncertainties attributable to weather and economic conditions.

¹ The former MAIN members are Alliant Energy, Wisconsin Public Service Corp., Upper Peninsula Power Co., Wisconsin Public Power Inc., and Madison Gas and Electric

High and low demand forecasts for the Saskatchewan system were simulated using a Monte Carlo method to reflect economic and weather uncertainties. This model considers each uncertainty independently from other variables and assumes a probability distribution around the expected demand forecast. Results are based on an 80 percent confidence interval, meaning there is an 80% probability of the demand falling within the bounds created by the high and low forecasts.

Generation

2.a 1173 MW of committed capacity and 0 MW of uncommitted capacity have been added (new units or up-rates of existing units) within the MRO between March 1 and November 30, 2007 for the 2007/2008 winter season.

2.b While reservoir water levels continue to remain low throughout the northern portion of the MRO US region (Montana, North Dakota, and South Dakota), they are sufficient to meet projected peak demand and energy requirements for the 2007/2008 winter season, as indicated in the various regional reserve margin calculations. The Saskatchewan water levels are projected to be above normal levels for the upcoming 2007/2008 winter season and Manitoba water levels are projected to be at normal levels for the upcoming 2007/2008 winter season.

Purchases and Sales

3.a 3.b 3.c For the 2007/2008 winter season, the MRO is projecting total firm purchases of 3741 MW. This capacity includes imports into the MRO region from other surrounding regions and purchases from Independent Power Producers (IPPs) within the MRO region. Purchases of 2661 MW are from municipals or other utilities with resources internal to the MRO. The remaining purchases of 1080 MW consist of external transactions. The MRO will be exporting approximately 370 MW of Projected Sales out of the MRO region. This net firm purchase of 3371 MW equates to 8% of the Projected Total Internal Demand.

3.c.i Throughout the MRO region, firm transmission service is required for all generation resources that are utilized to provide firm capacity; also meaning that these firm generation resources are fully deliverable to the load. The MRO is forecast to meet the various reserve margin targets without needing to include energy-only, uncommitted, or transmission-limited resources.

3.c.ii Different transmission providers within the MRO region treat Liquidated Damage Contracts (LDC) according to their tariff policies. Most MRO members are within non-retail access jurisdictions (except for Upper Michigan) and therefore liquidated damages products are not typically used.

Fuel

4.a.i The MRO has 5611 MW of generation that has dual fuel capability consisting primarily of gas/oil. This is 10.9% of the MRO winter 2007/2008 Internal Capacity.

4.a.ii For accreditation of a dual fuel capable unit within the MAPP group, annual generation capability tests must be provided using each fuel source. As a general rule, regardless of fuel, generation should have appropriate permitting to allow for 500 hrs per year, except for internal combustion engines, which should allow for 300 hrs per yr. The former MAIN members now in the MRO did not have any specific policies regarding generators with dual-fuel capability.

4.a.iii MAPP member generation owners must have fuel available in sufficient quantity to operate the unit for 4 hours for 5 consecutive days. The former MAIN members now in the MRO did not have any specific policies regarding generators with dual-fuel capability.

4.b The MRO considers known and anticipated fuel supply or delivery issues in its assessment. Because the MRO has a large diversity in fuel supply, inventory management, and delivery methods throughout the region, it does not have a specific mitigation procedure in place should fuel delivery problems occur. The MRO and its members closely monitor the delivery of Powder River Basin coal to ensure adequate supply. The MRO does not foresee any other significant fuel supply and/or fuel delivery issues for the upcoming 2007/2008 winter season. Therefore, there should be no apparent impact to the reliability of meeting peak electrical demand for the 2007/2008 winter season.

4.c 100% of gas fired generation in the MRO is under firm contract for 2007/2008 winter.

4.d Policies or practices for on-site coal vary within the MRO region. Specific practices are determined by the individual member companies and a region-wide policy of on-site coal inventory does not exist. However, inherent within the obligation to serve load is that adequate on-site coal inventory exists.

Transmission

5.a 5.b

Assessments for the individual transmission areas are provided below.

Iowa

Reliable operation of the system, without any significant operating problems, is expected in the state of Iowa during the winter 2007/2008 period. Two new flowgates were added to the transmission service and congestion management processes in 2007 to monitor potentially heavy east to west and south to north power transfers across Iowa.

The 790 MW Walter Scott Energy Center Unit-4, which became fully operational in June 2007, will help eliminate the majority of operational issues associated with the east to west system bias across Iowa. However, strong south to north system bias, typical for the winter season, across the transmission system in Iowa is expected to continue and will be managed with standing congestion procedures.

Control centers that operate the transmission system in Iowa will work closely with the MISO-St. Paul Reliability Coordinator on monitoring all Iowa critical facilities. Congestion management procedures and NERC TLR will be used, in accordance with approved operating guides, to operate the system within system operating limits.

Since Iowa is a summer peaking area, maintenance on transmission and generation facilities is scheduled to take place during the winter season. Detailed operational studies associated with these outages will be performed to make sure that these outages do not cause any operational problems. Temporary operating guides will be provided in cases where studies detect a potential violation of system operating limits.

Nebraska

No significant operational concerns are expected in Nebraska during winter 2007/2008. Where large transfers might occur, operating guides and operating procedures have been put into place to maintain the reliable operation of the Nebraska regional transmission system.

Operational studies have been performed and will be updated as necessary for scheduled transmission and generation outages during the winter peak and off-peak time periods. Temporary operating guides will be issued for those outages which require actions or limitations to protect system operating limits.

Five constrained interfaces are used in transmission service and congestion management processes which are impacted by north-to-south and west-to-east transfers across the MRO system. Transfer limits on these constrained interfaces are not typical during the winter season in Nebraska. In the past, the Nebraska/Iowa regional transmission system has experienced heavy south-to-north transfers due to drought conditions and winter peak load conditions in northern MRO. These south-to-north transfers across the MRO system have a more profound impact on the eastern Nebraska system than on the western Nebraska system. A flowgate in eastern Nebraska is used to manage potential post-contingent overloads during heavy south-to-north transfers. All of these interfaces have approved operating guides that have proven to be effective in dealing with system conditions throughout the year.

Winter season load distributions are considered worst case for western Nebraska area stability. Operating guides have been developed which adequately protect the western Nebraska region for winter season load levels and maximum transfer conditions.

Northern MRO

The Northern MRO region consists of the Dakotas, Minnesota, part of Montana, and the Canadian provinces of Manitoba and Saskatchewan. No significant operational issues are expected this winter for the Northern MRO region. Existing operating guides, and temporary operating guides that are developed as needed, are expected to maintain reliable system conditions throughout the upcoming winter season.

Reservoir water levels continue to remain low throughout the northern US MRO region (Montana, North Dakota, and South Dakota), and these will likely continue to reduce the magnitude and duration of exports out of northern MRO and also cause the recent significant imports of power into the MRO region to continue. Water conditions in Manitoba are normal, and normal Manitoba-US exports are likely. No internal or external transmission constraints are expected that will significantly impact reliability in Saskatchewan.

A number of bulk transmission outages are scheduled in the northern US MRO region for maintenance; however, no operating problems are expected. Temporary operating guides will be developed as necessary. Several large wind generation additions to the northern US MRO area are expected this winter. A number of other small generators have recently been installed.

The Arrowhead-Stone Lake 345 kV line, which will complete the Arrowhead-Stone Lake-Gardner Park (Weston) 345 kV line, is expected to be completed by February/March 2008. This will complete the installation of a significant new 345 kV interconnection from Minnesota into Wisconsin and will significantly improve the operational flexibility of the northern MRO system. Studies are underway to redefine and develop updated transfer limits, and proposed flowgate redefinitions for the Minnesota-Wisconsin interface. No other major transmission additions are expected in northern MRO during the upcoming winter season.

The 345kV transmission line from Nobles County to Lakefield Junction along with the series compensator at Fieldon is scheduled to be completed this winter. This will increase the wind generation outlet capability in Southwest Minnesota (Buffalo Ridge Area) from 425 MW to 825 MW.

Overall, the northern MRO system is expected to operate reliably under forecasted load and firm exchange levels.

Wisconsin - Upper Michigan System

The WUMS electric transmission system encompasses the service territories of five (5) Balancing Authorities - Alliant Energy-Wisconsin Power & Light, We Energies, Wisconsin Public Service Corporation, Madison Gas & Electric Company and Upper Peninsula Power Company. The WUMS system consists of 345, 230, 161, 138, 115 and 69 kV transmission facilities and is owned by American Transmission Company, LLC

(ATCLLC). The operation of WUMS is coordinated between ATCLLC and the Midwest Independent System Operator (Midwest ISO).

Reliable operation of the WUMS transmission system is expected during the winter 2007/2008 season. (References 1, 2, 3, 4)

Major transmission projects with expected in-service dates between September 2007 and February 2008 are listed below. These additions and upgrades strengthen the reliability of the WUMS system for the upcoming winter season and beyond.

- Increase ratings of Sunset Point – Ellinwood & Ellinwood – Fitzgerald 138 kV lines.
- Rebuild Morgan – White Clay 138 kV line.
- Increase ratings of North Appleton – Lawn Road – White Clay 138 kV lines.
- Install Plymouth #4 substation.
- Loop Holland – Howard’s Grove into Plymouth #4.
- Increase rating of Paris – St Martin 138 kV line.
- Install Cypress 345 kV substation.
- Loop Forest Junction – Arcadian 345 kV line into Cypress 345 kV substation.
- Build Rubicon – Hustisford 138 kV line.
- Increase rating of St Lawrence – Glacier 138 kV line.

For winter 2007/2008, WUMS Western and Southern interfaces continue to require close monitoring to ensure operation within limits when WUMS is a net importer.

Western interface

The WUMS system is susceptible to voltage instability during heavy imports from the west and outage of the Eau Claire – Arpin 345 kV line. This 345kV line is defined as an Interconnection Reliability Operating Limit (IROL) and is closely monitored and managed by the Midwest ISO to no more than 790 MW. In addition, the Midwest ISO conducts daily P-V analysis and establishes lower transfer limits when necessary to help prevent voltage instability. Completion of the Arrowhead to Stone Lake 345 kV line, which will complete the Arrowhead - Stone Lake - Gardner Park (Weston) 345 kV line, in February/March 2008 will alleviate the western interface issues.

Southern interface

With high imports into the WUMS system from the south and loss of the Wempletown – Rockdale 345 kV line, the Paddock 345/138 kV transformer could be overloaded. This constraint can be managed by increasing the generation at Townline Road, University and a few other alternative sites. Also with high imports or exports through southeast Wisconsin, the 138 kV lines Lakeview – Zion – Waukegan could be overloaded for loss of the 345 kV line Pleasant Prairie – Zion. This constraint is closely monitored and managed following an operating guide. The ATCLLC has filed an application with the Public Service Commission of Wisconsin to add a new 345 kV transmission line between the Rockdale and Paddock 345 kV substations that will help to alleviate southern interface constraints.

Other discussions

The eastern portion of the Upper Peninsula of Michigan (UP) is susceptible to abrupt Ludington pumping to generating cycle changes as well as the east to west flow bias. As a result, the eastern UP can experience flows in both directions from east to west and west to east. Heavy flows in either direction can cause potential thermal violations in the eastern UP. This constraint is currently managed by opening the 69 kV lines between the eastern UP and the rest of the WUMS system.

The pressure of power import into UP from northeast Wisconsin continues. The 138 kV corridor consisting of the three 138 kV lines south of the Morgan and Stiles substations continues to be a potential constraint that could lead to thermal and voltage violations under contingencies during periods of high flows towards UP. This constraint is closely monitored and managed following an operating guide.

Operating studies have been or will be performed for all scheduled transmission or generation outages during the 2007/2008 winter season. Temporary Operating Guides are or will be in place if necessary for managing the scheduled outages to ensure reliability.

Operational Issues

6.a There are no known major generating unit or transmission facility outages that could impact reliability during the winter 2007/2008 season. Operating guides are developed by the Transmission Operators on an ongoing basis to deal with facility outages.

6.b There are no known unusual operating conditions that could impact reliability during the winter 2007/2008 season.

6.c There are no known environmental or regulatory restrictions that could impact reliability during the winter 2007/2008 season.

Reliability Assessment Analysis

7.a 7.a.iv Reserve margins are typically used as criteria for a target level. The MRO's projected 2007/2008 Winter Reserve Margin is 34.6% without uncommitted resources. This is a 2.3% increase when compared to the projected 2006/2007 Winter Reserve Margin of 33.8%.

7.a For the MAPP GRSP, which includes all MRO members except the former MAIN members and Saskatchewan, resource adequacy is measured through the accreditation rules and procedures. The MAPP GRSP requires a 15% reserve margin, based on previously conducted LOLE studies. The projected MRO reserve margin of 34.6% for the 2007/2008 winter season is in excess of the minimum required Reserve Margin.

The former MAIN members now within MRO do not belong to the MAPP GRSP. Generation resource adequacy for the former MAIN members is assessed based on LOLE studies previously conducted by the MAIN region. Although conducted on a yearly basis, MAIN's LOLE studies consistently recommended a minimum short-term planning reserve margin of 14%. The projected MRO reserve margin of 34.6% for the 2007/2008 winter season is in excess of the minimum required Reserve Margin.

Saskatchewan's reliability criterion is based on annual expected unserved energy (EUE) analysis and equates to an approximate 15% reserve margin requirement. The projected MRO reserve margin of 34.6% for the 2007/2008 winter season is in excess of the minimum required Reserve Margin.

7.a.ii Because the net purchases of 3371 MW only comprises 8% of the total internal demand, none of these resource are required to meet the reserve margins on a regional basis (34.6% regional reserve margin exists).

7.a.iii Please refer to section 1.f.

7.b Please refer to 1.b and 1.f.

7.c.i Generation deliverability is performed by Transmission Providers within the MRO region. Links to deliverability criteria within the MRO region are:

- <http://www.midwestiso.org/page/Generator+Interconnection>
- <http://www.mappcor.org/content/policies.shtml>
- <https://www.oatioasis.com/spc/>

7.c.ii None.

7.c.iii No specific analysis is performed to ensure external resources are available and deliverable. However, to be counted as firm capacity the MAPP GRSP, former MAIN utilities and Saskatchewan require external purchases to have a firm contract and firm transmission service.

7.d Inter-Regional Assessment

The following discussion is based on the MRO/RFC/SPP/SERC-W 2007/2008 Winter Inter-regional Assessment (Reference 4).

Non-simultaneous Import Capabilities into MRO from RFC-W, SERC-W, and SPP Regions:

Transfer Direction	TIC (MW)	2007/2008 Winter Limiting Element (Outaged Element)	Owner
RFC_W-MRO	2750	Salem 345/161 kV transformer (Hills – Tiffin 345 kV and Tiffin 345/161 kV transformer)	ALTW (MEC)
SPP-MRO	3050	Paddock 345/138 kV transformer (Wempletown – Rockdale 345 kV)	ATCLLC (NI, ATCLLC)
SERCW-MRO	2150	Russellville East – Russellville South 161 kV (Ft. Smith – Arkansas Nuclear One 500 500 kV)	EES (OKGE, EES)

The Total Import Capability (TIC) is equal to the net import into MRO in the base case plus the First Contingency Incremental Transfer Capability (FCITC) obtained in the transfer analysis.

Also please refer to 7.c.iii for external resource availability.

7.e Transient, voltage and small signal stability studies are performed as part of the near-term/long-term transmission assessments (References 1, 10, 11, 12). Voltage stability is also evaluated in the Midwest ISO’s seasonal assessments (Reference 2). The results are not available prior to the due date of this regional assessment. No transient, voltage, or small signal stability issues are expected that impact reliability during the winter 2007/2008 season.

7.f Planning Coordinators and Transmission Planners are the applicable entity, and ultimately are accountable, for TPL-001 through 004. MRO Transmission Owners analyze their transmission system to make sure they meet standards TPL 001-004 either thru individual company analysis or through participation in sub-regional or RTO planning groups (References 1, 10, 11, 12).

7.g The Transmission Operators and Reliability Coordinators within the MRO region manage congestion during emergency conditions. Reliability Coordinators, Transmission Operators and Balancing Authorities are required to have emergency plans in place per NERC EOP Standards. The MRO itself is not directly involved with managing congestion in real-time operations.

7.h Please refer to section 4.b.

Reference Documents

1. 2007 – ATCLLC 10-Year Transmission System Assessment, <http://www.atc10yearplan.com>
2. Midwest ISO Winter 2007/8 Assessment Studies (on-going), <http://extranet.midwestiso.org/operations/seasonal.php>
3. Reliability First Corporation (RFC) Winter 2007/8 Transmission Assessment Studies (on-going), <http://www.maininc.org/>
4. Eastern Interconnection Reliability Assessment Group (ERAG) Winter 2007/8 Inter-regional Transmission Assessment, MRO-RFC-SERC West-SPP (MRSWS) sub-group study (on-going), <http://www.maininc.org/>
5. MEC Operational Studies conducted by System Operations Department, August 2007.
6. Winter Peak and Off-Peak Operational Studies performed by NPPD Transmission Planning Department, 2007.
7. 2007-2008 Winter Power Flow Study performed by LES System Protection Department, 2007.
8. NMORWG Winter Peak sensitivity reviews and voltage stability analysis, pre-winter 2007/08.
9. The MAPP GRSP Handbook http://www.mappcor.org/assets/pdf/GRSP_Handbook_20070116.pdf
10. 2007 MAPP System Performance Assessment
11. MAPP Small Signal Stability Analysis Project Report, June 2007
12. Midwest ISO 2007 Expansion Planning (on-going), <http://www.midwestiso.org/page/Expansion%20Planning>

The Midwest Reliability Organization (MRO) membership now totals 42 members which include Cooperative, Canadian Utility, Federal Power Marketing Agency, Generator and/or Power Marketer, Small Investor Owned Utility, Large Investor Owned Utility, Municipal Utility, Regulatory Participant and Transmission System Operator. The MRO Region covers all or portions of Iowa, Illinois, Minnesota, Nebraska, North and South Dakota, Michigan, Montana, Wisconsin, and the provinces of Manitoba and Saskatchewan. The total geographic area is approximately 1,000,000 square miles with an approximate population of 20 million.
