Iron Range Option

Case File - C:\MP-MH-EHV\Work\Bison-Zion\Bison-Zion-PF\MH_SUPK_B_Y1A.sav
Sub File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV.sub
Mon File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH.mon
Con File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV-Y1A.con
Exc File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH-Exclude.exc

Transfer From: BisonGen
Transfer To: EAST_MISO
Transfer Level: 3000 MW
Transfer Goal: 2000 MW
System Intact DF 5.%
Contingency DF 5.%

Wed, 06 Jun 2012 17:03:56

Transfer MW	Limiting Facility	Outage	DF%	Remedy	Upgrade Estimate
750	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	38.5	Upgrade to 2475 Amps (2 x 795 ACSS) - $9.45M	9.45
775	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	56.6	Uprate to 2486 Amps (Conductor Rating) - $1M	1
860	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	28.3	Upgrade To 800 MVA - $9M	9
860	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	28.3	Upgrade To 800 MVA - $9M	9
900	Long Prairie-GRE Little Sauk 115 kV at 110% of 98 MVA (492 amps) Owner(s): MP ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	5.1	Upgrade to 825 Amps (336 ACSS) - $7.1M	7.1
1000	Quarry-St. Cloud 115 kV at 100% of 239 MVA (1200 amps) Owner(s): XCEL ~9 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	13.3	Upgrade to 1866 Amps (1192 ACSS) - $6.93M	6.93
1090	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV Open Maple River 345/230 kV tx 2 Open Maple River 345/230 kV tx 1	33.1	Reconductor to 2058 Amps (1272 ACSS) - $2.59M	2.59
1090	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV	33.1		
1100	Arpin 345/138 kV Tx at 113% of 336 MVA Owner(s): 691	Open Arpin-Rocky run 345 kV	6.1	Upgrade To 448 MVA - $6M	6
1140	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	19.6	Reconductor to 1246 Amps (795 ACSS) - $8.8M	8.8
1170	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	32.0		
1175	Douglas County-GRE Little Sauk Tap 115 kV at 110% of 113 MVA (567 amps) Owner(s): XCEL ~11 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	5.1	Upgrade to 836 Amps (336 ACSS) - $7.81M	7.81
1210	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	5.6	Reconductor to 954 ACSS - $5.6M	5.6
1210	Sigel-Arpin 138 kV at 100% of 287 MVA (1201 amps) Owner(s): 691 5.23 Miles	Open Arpin-Rocky run 345 kV	5.3	Upgrade to 1377 Amps (795 ACSS) - $4.18M	4.18
1235	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	46.4		
1305	Frontier-Maple River 230 kV at 136% of 265 MVA (665 amps) Owner(s): MPC ~11 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	19.6	Reconductor to 1246 Amps (795 ACSS) - $2.2M	2.2
1315	Fargo-Moorhead 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~11 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	11.5	Upgrade to 860 Amps (336 ACSS) - $13.86M	13.86
1325	Sheyenne-Audubon 230 kV at 110% of 350 MVA (879 amps) Owner(s): OTP, XCEL 43.88 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	14.8	Upgrade to 1218 Amps (556 ACSS) - $56.17M	56.17
1335	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	23.2		
1340	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	23.2		
1340	Quarry 345/115 kV Tx at 115% of 448 MVA Owner(s): XCEL	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	20.8	Upgrade To 672 MVA - $8M	8
1385	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	24.1		
1385	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	24.1		
1385	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 1	24.1		
1385	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 1	24.1		
1445	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	26.9		
1450	Sauk River-GRE West St Cloud 115 kV at 110% of 182 MVA (914 amps) Owner(s): XCEL ~2 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	7.5	Upgrade to 1215 Amps (556 ACSS) - $1.46M	1.46
1460	Moorhead-Morris 230 kV at 110% of 239 MVA (600 amps) Owner(s): WAPA ~96 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	12.1	Uprate to 824 Amps (Conductor Rating) - $10M	10

1465	Quarry-Sauk River 115 kV at 100% of 239 MVA (1200 amps) Owner(s): XCEL ~9 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	7.5	Upgrade to 1401 Amps (795 ACSS) - $6.75M	6.75
1475	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open Bison-Maple River 230 kV	41.4		
1490	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	39.4		
1505	Coon Creek-Kohlman Lake 345 kV at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~15 Miles	Open Coon Creek-Terminal 345 kV	14.0	Upgrade to 1316 Amps (Terminal Equipment) - $0.5M	0.5
1515	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Sheyenne-Maple River 230 Open Frontier-Maple River 230 kV	5.5		
1590	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Bison-Maple River 230 kV	20.7		
1590	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Bison-Maple River 230 kV	20.7		
1610	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	19.7		
1615	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	19.7		
1620	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	21.4		
1620	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 2	25.4		
1620	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	25.4		
1630	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	26.7		
1630	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Maple River-Red River 115 1	22.5		
1680	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	37.2		
1680	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 2	37.2		
1700	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	38.9		
1735	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.9	Upgrade to 2123 Amps (2 x795 ACSS) - $159.04M	159.04
1735	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.9		
1750	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1750	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1750	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Frontier-Maple River 230 kV	25.4		
1750	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Wahpeton-Frontier 230 kV	25.4		
1750	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Wahpeton-Fergus Falls 230 kV Open Wahpeton-Frontier 230 kV Open 620191 WAHPET1Y 230 620329 WAHPETN4 230 1 Open 620191 WAHPET1Y 230 620229 WAHPETN7 115 1 Open 620129 WAHPETN9 41.6 620191 WAHPET1Y 230 1	25.4		
1760	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Stanton-Square Butte 230 kV	6.1		
1760	Elm Creek-Monticello 345 kV at 100% of 1195 MVA (2000 amps) Owner(s): XCEL ~19 Miles	Open Sherco-Coon Creek 345 kV #1 Open 601011 SHERCO 3 345 615327 GRE-BUNKER 3 345 1 Open 601019 COON CK3 345 615327 GRE-BUNKER 3 345 1 Open Coon Creek 345/115 kV tx #10 Open 615327 GRE-BUNKER 3 345 BS0392 345/230 1.00 1 Open 615328 GRE-BUNKER 4 230 BS0392 345/230 1.00 1 Open 615330 GRE-BUNKER T13.8 BS0392 345/230 1.00 1	20.5	Upgrade to 2082 Amps (2 x 954 ACSS) - $53.77M	53.77
1770	Alexandria 345/115 kV Tx at 115% of 448 MVA Owner(s): XCEL	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	16.8	Upgrade To 672 MVA - $8M	8

1770	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1770	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1785	Maple River 345/230 kV tx 1 at 100% of 336 MVA Owner(s): OTP	System Intact	15.7		
1785	Maple River 345/230 kV tx 2 at 100% of 336 MVA Owner(s): OTP	System Intact	15.7		
1800	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV	12.6		
1810	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 2	18.6		
1810	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	18.6		
1810	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 2	18.6		
1810	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	18.6		
1815	Granite Falls-Morris 230 kV at 110% of 239 MVA (600 amps) Owner(s): WAPA ~62 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	10.5	Upgrade to 709 Amps (336 ACSS) - $78.12M	78.12
1820	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV	12.6		
1820	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	19.4		
1825	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	19.4		
1830	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Arrowhead-Stone Lake 345 kV	12.3		
1855	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Stone Lake-Gardner Park 345 kV	12.4		
1860	Coon Creek-Kohlman Lake 345 kV at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~15 Miles	Open Coon Creek-Terminal 345 kV Open 601024 TERMINL3 345 605585 TERMID1Y 110 10 Open 603110 TERMINL7 115 605585 TERMID1Y 110 10 Open 605516 TERTER19 34.5 605585 TERMID1Y 110 10	13.9		
1870	Sheyenne-Maple River 230 at 100% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	System Intact	21.6		
1905	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	14.7		
1925	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 1	34.4		
1930	Bismarck-Glenham 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~97 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	5.4	Upgrade to 672 Amps (336 ACSS) - $122.22M	122.22
1940	Bison-Maple River 345 kV at 100% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	System Intact	31.4		
1950	Fargo-Moorhead 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~11 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	9.2		
1960	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	33.8		
1960	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~3 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1	33.8		
1960	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Stanton-Leland Olds 230 kV	5.2		
1980	Sheyenne-Fargo 230 kV at 100% of 403.9 MVA (1014 amps) Owner(s): WAPA ~5 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	27.8	Upgrade to 1027 Amps (477 ACSS) - $6.35M	6.35

Case File -	C:\MP-MH-EHV\Work\Bison-Zion\Bison-Zion-PF\MH_SUPK_B_Y1AP.sav	Transfer From:	BisonGen	Wed, 06 Jun 2012 17:16:53
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Mon File -	C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH.mon	Transfer Level:	3000 MW	
Con File -	C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV-Y1AP.con	Transfer Goal:	2000 MW	
Exc File -	C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH-Exclude.exc	System Intact DF	5.%	
		Contingency DF	5.%	

Transfer MW	Limiting Facility	Outage	DF%	Remedy	Upgrade Estimate
745	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	38.5	Upgrade to 2479 Amps (2 x 795 ACSS) - $9.45M	9.45
765	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	56.7	Uprate to 2497 Amps (Conductor Rating) - $1M	1
850	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	28.3	Upgrade To 800 MVA - $9M	9
850	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	28.3	Upgrade To 800 MVA - $9M	9
855	Long Prairie-GRE Little Sauk 115 kV at 110% of 98 MVA (492 amps) Owner(s): MP ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	5.1	Upgrade to 836 Amps (336 ACSS) - $7.1M	7.1
945	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	5.7	Reconductor to 954 ACSS - $5.6M	5.6
965	Quarry-St. Cloud 115 kV at 100% of 239 MVA (1200 amps) Owner(s): XCEL ~9 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	13.3	Upgrade to 1888 Amps (1192 ACSS) - $6.93M	6.93
1100	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV Open Maple River 345/230 kV tx 2 Open Maple River 345/230 kV tx 1	33.1	Reconductor to 2054 Amps (1272 ACSS) - $2.59M	2.59
1100	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV	33.1		
1110	Arpin 345/138 kV Tx at 113% of 336 MVA Owner(s): 691	Open Arpin-Rocky run 345 kV	6.1	Upgrade To 448 MVA - $6M	6
1115	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	19.6	Reconductor to 1257 Amps (795 ACSS) - $8.8M	8.8
1130	Douglas County-GRE Little Sauk Tap 115 kV at 110% of 113 MVA (567 amps) Owner(s): XCEL ~11 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	5.1	Upgrade to 847 Amps (336 ACSS) - $7.81M	7.81
1175	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	32.0		
1220	Sigel-Arpin 138 kV at 100% of 287 MVA (1201 amps) Owner(s): 691 5.23 Miles	Open Arpin-Rocky run 345 kV	5.3	Upgrade to 1374 Amps (795 ACSS) - $4.18M	4.18
1225	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	46.4		
1260	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Sheyenne-Maple River 230 Open Frontier-Maple River 230 kV	5.5		
1270	Sheyenne-Audubon 230 kV at 110% of 350 MVA (879 amps) Owner(s): OTP, XCEL 43.88 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	14.8	Upgrade to 1239 Amps (636 ACSS) - $56.61M	56.61
1285	Frontier-Maple River 230 kV at 136% of 265 MVA (665 amps) Owner(s): MPC ~11 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	19.6	Reconductor to 1257 Amps (795 ACSS) - $2.2M	2.2
1285	Fargo-Moorhead 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~11 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	11.5	Upgrade to 868 Amps (336 ACSS) - $13.86M	13.86
1305	Quarry 345/115 kV Tx at 115% of 448 MVA Owner(s): XCEL	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	20.8	Upgrade To 672 MVA - $8M	8
1330	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	23.2		
1330	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	23.2		
1390	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	24.1		
1390	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	24.1		
1390	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 1	24.1		
1390	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 1	24.1		
1415	Sauk River-GRE West St Cloud 115 kV at 110% of 182 MVA (914 amps) Owner(s): XCEL ~2 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	7.5	Upgrade to 1230 Amps (636 ACSS) - $1.48M	1.48
1415	Coon Creek-Kohlman Lake 345 kV at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~15 Miles	Open Coon Creek-Terminal 345 kV	14.0	Upgrade to 1337 Amps (Terminal Equipment) - $0.5M	0.5

1425	Quarry-Sauk River 115 kV at 100% of 239 MVA (1200 amps) Owner(s): XCEL ~9 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	7.5	Upgrade to 1415 Amps (795 ACSS) - $6.75M	6.75
1430	Moorhead-Morris 230 kV at 110% of 239 MVA (600 amps) Owner(s): WAPA ~96 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	12.1	Uprate to 834 Amps (Conductor Rating) - $10M	10
1450	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	26.9		
1480	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open Bison-Maple River 230 kV	41.4		
1490	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	39.4		
1535	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Stanton-Leland Olds 230 kV	5.2		
1595	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Bison-Maple River 230 kV	20.7		
1595	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Bison-Maple River 230 kV	20.7		
1605	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	21.4		
1610	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	19.7		
1610	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	19.7		
1635	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	25.4		
1635	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 2	25.4		
1640	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	26.7		
1650	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Maple River-Red River 115 1	22.5		
1680	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	37.2		
1680	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 2	37.2		
1695	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	38.9		
1735	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.9	Upgrade to 2122 Amps (2 x795 ACSS) - $159.04M	159.04
1735	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.9		
1740	Alexandria 345/115 kV Tx at 115% of 448 MVA Owner(s): XCEL	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	16.8	Upgrade To 672 MVA - $8M	8
1750	Elm Creek-Monticello 345 kV at 100% of 1195 MVA (2000 amps) Owner(s): XCEL ~19 Miles	Open Sherco-Coon Creek 345 kV #1 Open 601011 SHERCO 3 345 615327 GRE-BUNKER 3 345 1 Open 601019 COON CK3 345 615327 GRE-BUNKER 3 345 1 Open Coon Creek 345/115 kV tx #10 Open 615327 GRE-BUNKER 3 345 BS0392 345/230 1.00 1 Open 615328 GRE-BUNKER 4 230 BS0392 345/230 1.00 1 Open 615330 GRE-BUNKER T13.8 BS0392 345/230 1.00 1	20.5	Upgrade to 2086 Amps (2 x 954 ACSS) - $53.77M	53.77
1755	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1755	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1765	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Frontier-Maple River 230 kV	25.4		
1765	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Wahpeton-Frontier 230 kV	25.4		

1765	Coon Creek-Kohlman Lake 345 kV at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~15 Miles	Open Coon Creek-Terminal 345 kV Open 601024 TERMINL3 345 605585 TERMID1Y 110 10 Open 603110 TERMINL7 115 605585 TERMID1Y 110 10 Open 605516 TERTER19 34.5 605585 TERMID1Y 110 10	14.0		
1765	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Wahpeton-Fergus Falls 230 kV Open Wahpeton-Frontier 230 kV Open 620191 WAHPET1Y 230 620329 WAHPETN4 230 1 Open 620191 WAHPET1Y 230 620229 WAHPETN7 115 1 Open 620129 WAHPETN9 41.6 620191 WAHPET1Y 230 1	25.4		
1770	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1770	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1790	Granite Falls-Morris 230 kV at 110% of 239 MVA (600 amps) Owner(s): WAPA ~62 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	10.5	Upgrade to 716 Amps (336 ACSS) - $78.12M	78.12
1790	Maple River 345/230 kV tx 1 at 100% of 336 MVA Owner(s): OTP	System Intact	15.7		
1790	Maple River 345/230 kV tx 2 at 100% of 336 MVA Owner(s): OTP	System Intact	15.7		
1800	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV	12.6		
1810	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 2	18.6		
1810	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	18.6		
1810	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	18.6		
1810	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 2	18.6		
1820	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	19.4		
1820	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	19.4		
1825	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV	12.6		
1825	Bismarck-Glenham 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~97 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	5.4	Upgrade to 686 Amps (336 ACSS) - $122.22M	122.22
1835	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Arrowhead-Stone Lake 345 kV	12.3		
1860	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Stone Lake-Gardner Park 345 kV	12.4		
1880	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Stanton-Square Butte 230 kV	6.1		
1885	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	14.7		
1890	Sheyenne-Maple River 230 at 100% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	System Intact	21.5		
1920	Fargo-Moorhead 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~11 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	9.2		
1925	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 1	34.4		
1945	Bison-Maple River 345 kV at 100% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	System Intact	31.4		
1965	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	33.8		
1965	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1	33.8		
2000	Sheyenne-Fargo 230 kV at 100% of 403.9 MVA (1014 amps) Owner(s): WAPA ~5 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	27.8	Upgrade to 1012 Amps (477 ACSS) - $6.35M	6.35

Case File - C:\MP-MH-EHV\Work\Bison-Zion\Bison-Zion-PF\MH_SUPK_B_Y1B.sav
Sub File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV.sub
Mon File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH.mon
Con File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV-Y1B.con
Exc File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH-Exclude.exc

Transfer From: BisonGen
Transfer To: EAST_MISO
Transfer Level: 3000 MW
Transfer Goal: 2000 MW
System Intact DF 5.%
Contingency DF 5.%

Wed, 06 Jun 2012 17:19:54

Transfer MW	Limiting Facility	Outage	DF%	Remedy	Upgrade Estimate
670	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV Open Maple River 345/230 kV tx 2 Open Maple River 345/230 kV tx 1	42.6	Upgrade to 2726 Amps (2 x 954 ACSS) - $15M	15
670	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV	42.6		
750	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	38.5	Upgrade to 2473 Amps (2 x 795 ACSS) - $9.45M	9.45
750	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	38.5		
780	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	56.6	Uprate to 2483 Amps (Conductor Rating) - $1M	1
780	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	56.4		
865	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	28.3	Upgrade To 800 MVA - $9M	9
865	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	28.2		
865	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	28.3	Upgrade To 800 MVA - $9M	9
865	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	28.2		
935	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	30.3		
935	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	30.3		
935	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 1	30.3		
935	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 1	30.3		
1005	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open Bison-Maple River 230 kV	51.9		
1005	Broadland 345/230 kV tx at 120% of 400 MVA Owner(s): 659	Open 652506 FTTHOMP3 345 659105 LELANDO3 345 1	5.2	Replace with 500 MVA tx - $4M	4
1020	Huron-Broadland 230 kV at 120% of 400 MVA (1004 amps) Owner(s): WAPA ~3 Miles	Open 652506 FTTHOMP3 345 659105 LELANDO3 345 1	5.2	(limited by transformer) - $0M	0
1050	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Sheyenne-Maple River 230 Open Frontier-Maple River 230 kV	6.9	Reconductor to 954 ACSS - $5.6M	5.6
1095	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Bison-Maple River 230 kV	26.0		
1095	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Bison-Maple River 230 kV	26.0		
1105	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1	32.8		
1110	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 1	32.8		
1140	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	19.6	Reconductor to 1242 Amps (795 ACSS) - $8.8M	8.8
1145	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Maple River-Red River 115 1	28.0		
1165	Arpin 345/138 kV Tx at 113% of 336 MVA Owner(s): 691	Open Arpin-Rocky run 345 kV	5.9	Upgrade To 448 MVA - $6M	6
1165	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1	47.7		
1165	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 1	47.7		
1170	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	19.1		

1205	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	5.7		
1210	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Frontier-Maple River 230 kV	32.2		
1210	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Wahpeton-Frontier 230 kV	32.2		
1210	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Wahpeton-Fergus Falls 230 kV Open Wahpeton-Frontier 230 kV Open 620191 WAHPET1Y 230 620329 WAHPETN4 230 1 Open 620191 WAHPET1Y 230 620229 WAHPETN7 115 1 Open 620129 WAHPETN9 41.6 620191 WAHPET1Y 230 1	32.2		
1215	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	5.6		
1265	Maple River 345/230 kV tx 1 at 100% of 336 MVA Owner(s): OTP	System Intact	19.6		
1265	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1	23.9		
1265	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 1	23.9		
1265	Maple River 345/230 kV tx 2 at 100% of 336 MVA Owner(s): OTP	System Intact	19.6		
1265	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1	23.9		
1265	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 1	23.9		
1270	Sigel-Arpin 138 kV at 100% of 287 MVA (1201 amps) Owner(s): 691 5.23 Miles	Open Arpin-Rocky run 345 kV	5.2	Upgrade to 1358 Amps (795 ACSS) - $4.18M	4.18
1300	Bismarck-Glenham 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~97 Miles	Open 652506 FTTHOMP3 345 659105 LELANDO3 345 1	5.1	Upgrade to 753 Amps (336 ACSS) - $122.22M	122.22
1310	Frontier-Maple River 230 kV at 136% of 265 MVA (665 amps) Owner(s): MPC ~11 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	19.6	Reconductor to 1243 Amps (795 ACSS) - $2.2M	2.2
1320	Fargo-Moorhead 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~11 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	11.4	Upgrade to 858 Amps (336 ACSS) - $13.86M	13.86
1320	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Maple River-Winger 230 kV	31.7		
1325	Sheyenne-Audubon 230 kV at 110% of 350 MVA (879 amps) Owner(s): OTP, XCEL 43.88 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	14.8	Upgrade to 1216 Amps (556 ACSS) - $56.17M	56.17
1330	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Stanton-Square Butte 230 kV	7.3		
1330	Fargo-Moorhead 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~11 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	11.4		
1340	Frontier-Maple River 230 kV at 136% of 265 MVA (665 amps) Owner(s): MPC ~11 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	19.1		
1340	Sheyenne-Maple River 230 at 100% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	System Intact	26.8		
1350	Sheyenne-Audubon 230 kV at 110% of 350 MVA (879 amps) Owner(s): OTP, XCEL 43.88 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	14.5		
1350	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Center-Heskett 230 kV	27.2		
1385	Bison-Maple River 345 kV at 100% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	System Intact	39.1		
1405	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Coyote 345/115 kv Tx	5.6		
1415	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open Prairie-Center 345 kV	39.4		
1415	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open Prairie-Center 345 kV	39.4		
1415	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Sheyenne-Maple River 230	5.5		

1420	Maple River-Red River 115 1 at 110% of 318 MVA (1596 amps) Owner(s): XCEL ~6 Miles	Open Sheyenne-Maple River 230 Open Frontier-Maple River 230 kV	13.4	Upgrade to 2148 Amps (1590 ACSS) - $4.74M	4.74
1425	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Bison-Maple River 345 kV	5.4		
1425	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Bison-Maple River 345 kV Open Maple River 345/230 kV tx 2 Open Maple River 345/230 kV tx 1	5.4		
1435	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601067 BISON 3 345 602050 BISON 4 230 1	42.7		
1435	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601067 BISON 3 345 602050 BISON 4 230 2	42.7		
1435	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1	42.7		
1450	Maple River 230/115 kv Tx #5 at 130% of 187 MVA Owner(s): XCEL	Open Sheyenne-Maple River 230 Open Frontier-Maple River 230 kV	8.9	Upgrade To 336 MVA - $4M	4
1450	Maple River 230/115kV Tx #5 at 130% of 187 MVA Owner(s): XCEL	Open Sheyenne-Maple River 230 Open Frontier-Maple River 230 kV	8.9	Upgrade To 336 MVA - $4M	4
1460	Moorhead-Morris 230 kV at 110% of 239 MVA (600 amps) Owner(s): WAPA ~96 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	12.1	Uprate to 824 Amps (Conductor Rating) - $10M	10
1475	Moorhead-Morris 230 kV at 110% of 239 MVA (600 amps) Owner(s): WAPA ~96 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	12.0		
1490	601067 BISON 3 345 602050 BISON 4 230 1 at 115% of 336 MVA Owner(s): XCEL	Open Bison-Maple River 345 kV Open Maple River 345/230 kV tx 2 Open Maple River 345/230 kV tx 1	21.3	Upgrade To 550 MVA - $7.5M	7.5
1490	601067 BISON 3 345 602050 BISON 4 230 1 at 115% of 336 MVA Owner(s): XCEL	Open Bison-Maple River 345 kV	21.3		
1490	601067 BISON 3 345 602050 BISON 4 230 2 at 115% of 336 MVA Owner(s): XCEL	Open Bison-Maple River 345 kV Open Maple River 345/230 kV tx 2 Open Maple River 345/230 kV tx 1	21.3	Upgrade To 550 MVA - $7.5M	7.5
1490	601067 BISON 3 345 602050 BISON 4 230 2 at 115% of 336 MVA Owner(s): XCEL	Open Bison-Maple River 345 kV	21.3		
1525	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1	5.0		
1530	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 1	5.0		
1535	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Prairie-Center 345 kV	19.7		
1535	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Prairie-Center 345 kV	19.7		
1540	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Prairie-Center 345 kV	19.7		
1540	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Prairie-Center 345 kV	19.7		
1545	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601067 BISON 3 345 602050 BISON 4 230 1	21.3		
1545	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601067 BISON 3 345 602050 BISON 4 230 2	21.3		
1570	Quarry-St. Cloud 115 kV at 100% of 239 MVA (1200 amps) Owner(s): XCEL ~9 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1	10.6	Upgrade to 1429 Amps (795 ACSS) - $6.75M	6.75
1580	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~3 Miles	Open 601035 BLCKBRY3 345 699449 ARROWHD 345 1 Open 601035 BLCKBRY3 345 699449 ARROWHD 345 2 Change bus 667033 DORSEYS4 230 load by 568.8 MW dispatch	39.0		
1605	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~3 Miles	Open Arrowhead-Stone Lake 345 kV Change bus 667033 DORSEYS4 230 load by 568.8 MW dispatch	38.8		
1620	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	21.4		
1625	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	21.3		
1645	Cass County-Red River 115 at 104% of 190.8 MVA (958 amps) Owner(s): XCEL ~3 Miles	Open Sheyenne-Maple River 230 Open Frontier-Maple River 230 kV	13.4	Upgrade to 1240 Amps (636 ACSS) - $2.22M	2.22
1670	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open Sheyenne-Maple River 230	16.5		
1725	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Arrowhead-Stone Lake 345 kV Change bus 667033 DORSEYS4 230 load by 568.8 MW dispatch	19.4		

1730	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Arrowhead-Stone Lake 345 kV Change bus 667033 DORSEYS4 230 load by 568.8 MW dispatch	19.4		
1740	Frontier-Maple River 230 kV at 100% of 265 MVA (665 amps) Owner(s): MPC ~11 Miles	System Intact	13.0		
1745	Wahpeton-Frontier 230 kV at 100% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	System Intact	13.0		
1755	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.8	Upgrade to 2118 Amps (2 x795 ACSS) - $159.04M	159.04
1755	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.8		
1770	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.6		
1770	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.6		
1775	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open Sheyenne-Audubon 230 kV	14.8		
1780	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 1	15.3		
1785	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1	15.3		
1790	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.6		
1790	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.6		
1800	Fargo-Moorhead 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~11 Miles	Open Fargo-Brookdale 115 kV	8.3		
1820	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Maple River 345/230 kV tx 1	21.0		
1820	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Maple River 345/230 kV tx 2	21.0		
1820	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Maple River 345/230 kV tx 2	21.0		
1820	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Maple River 345/230 kV tx 1	21.0		
1820	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV	12.5		
1830	Granite Falls-Morris 230 kV at 110% of 239 MVA (600 amps) Owner(s): WAPA ~62 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1	10.5	Upgrade to 706 Amps (336 ACSS) - $78.12M	78.12
1830	Granite Falls-Morris 230 kV at 110% of 239 MVA (600 amps) Owner(s): WAPA ~62 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 1	10.5		
1845	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV	12.5		
1845	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Arrowhead-Stone Lake 345 kV	12.2		
1850	Fargo-Moorhead 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~11 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1	9.5		
1855	Fargo-Moorhead 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~11 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 1	9.5		
1860	Fargo-Moorhead 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~11 Miles	Open Brookdale-South East 115 kV	8.3		

1870	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Stone Lake-Gardner Park 345 kV	12.4		
1870	Frontier-Maple River 230 kV at 136% of 265 MVA (665 amps) Owner(s): MPC ~11 Miles	Open Sheyenne-Maple River 230	16.5		
1875	Bismarck-Glenham 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~97 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	5.5		
1895	Antelope Valley-Broadland 345 kV at 110% of 478 MVA (800 amps) Owner(s): 659 ~198 Miles	Open 652506 FTTHOMP3 345 659105 LELANDO3 345 1	5.2	Uprate to 889 Amps (Terminal Equipment) - $1M	1
1895	Granite Falls-Morris 230 kV at 110% of 239 MVA (600 amps) Owner(s): WAPA ~62 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	10.2		
1910	Maple River-Red River 115 1 at 110% of 318 MVA (1596 amps) Owner(s): XCEL ~6 Miles	Open Sheyenne-Maple River 230	10.5		
1915	Bismarck-Glenham 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~97 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	5.4		
1930	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open Moorhead-Morris 230 kV	14.5		
1935	Maple River 230/115 kv Tx #6 at 130% of 187 MVA Owner(s): XCEL	Open Sheyenne-Maple River 230	7.0		
1935	Maple River 230/115kV Tx #5 at 130% of 187 MVA Owner(s): XCEL	Open Sheyenne-Maple River 230	7.0		
1950	Fargo-Moorhead 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~11 Miles	Open Sheyenne-Audubon 230 kV	8.8		
1960	Sheyenne-Fargo 230 kV at 100% of 403.9 MVA (1014 amps) Owner(s): WAPA ~5 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	28.1	Upgrade to 1040 Amps (477 ACSS) - $6.35M	6.35
1960	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open Granite Falls-Morris 230 kV Open Morris 230/115 kV tx Open Moorhead-Morris 230 kV	14.3		
1975	Fargo-Moorhead 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~11 Miles	Open Frontier-Maple River 230 kV	9.2		
1975	Fargo-Moorhead 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~11 Miles	Open Wahpeton-Frontier 230 kV	9.2		
1980	Sheyenne-Fargo 230 kV at 100% of 403.9 MVA (1014 amps) Owner(s): WAPA ~5 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	27.8		
1985	Fargo-Moorhead 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~11 Miles	Open Wahpeton-Fergus Falls 230 kV Open Wahpeton-Frontier 230 kV Open 620191 WAHPET1Y 230 620329 WAHPETN4 230 1 Open 620191 WAHPET1Y 230 620229 WAHPETN7 115 1 Open 620129 WAHPETN9 41.6 620191 WAHPET1Y 230 1	9.3		
1995	Frontier-Maple River 230 kV at 136% of 265 MVA (665 amps) Owner(s): MPC ~11 Miles	Open Sheyenne-Audubon 230 kV	14.8		
1995	Frontier-Maple River 230 kV at 136% of 265 MVA (665 amps) Owner(s): MPC ~11 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 1	15.3		
1995	Frontier-Maple River 230 kV at 136% of 265 MVA (665 amps) Owner(s): MPC ~11 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1	15.3		

Case File - C:\MP-MH-EHV\Work\Bison-Zion\Bison-Zion-PF\MH_SUPK_B_Y1B60.sav
Sub File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV.sub
Mon File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH.mon
Con File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV-Y1B.con
Exc File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH-Exclude.exc

Transfer From: BisonGen
Transfer To: EAST_MISO
Transfer Level: 3000 MW
Transfer Goal: 2000 MW
System Intact DF 5.%
Contingency DF 5.%

Tue, 13 Nov 2012 09:57:48

MW*DF as % of Line Rating Cutoff: 9999.%

Transfer MW	Limiting Facility	Outage	DF%	Remedy	$M
670	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV	42.6	Upgrade to 2727 Amps (2 x 795 ACSS)	$14.00M
755	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601045 ALEXSS3 345 601067 BISON 3 345 1	38.5	Upgrade to (2-795 ACSS)	$9.45M
865	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601045 ALEXSS3 345 601067 BISON 3 345 1	28.3	Upgrade To 800 MVA	$9.00M
865	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601045 ALEXSS3 345 601067 BISON 3 345 1	28.3	Upgrade To 800 MVA	$9.00M
930	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	30.3		
930	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	30.3		
935	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 1	30.3		
965	Chisago County 500/345/34.5 kV Tx #10 at 115% of 1203 MVA Owner(s): XCEL	Open Chisago County 500/345/34.5 kV Tx #9	9.5	Add Third Tx	$25.00M
970	Chisago County 500/345/34.5 kV Tx #9 at 115% of 1203 MVA Owner(s): XCEL	Open Chisago County 500/345/34.5 kV Tx #10	9.5	Add Third Tx	$25.00M
1040	Broadland 345/230 kV tx at 120% of 400 MVA Owner(s): 659	Open 652506 FTTHOMP3 345 659105 LELANDO3 345 1	5.2	Upgrade To 550 MVA	$7.50M
1055	Huron-Broadland 230 kV at 120% of 400 MVA (1004 amps) Owner(s): WAPA ~3 Miles	Open 652506 FTTHOMP3 345 659105 LELANDO3 345 1	5.2	Upgrade to 1328 Amps (636 ACSS)	$3.87M
1080	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Sheyenne-Maple River 230 Open Frontier-Maple River 230 kV	6.9	Reconductor to 954 ACSS (1729 amp)	$5.60M
1095	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Bison-Maple River 230 kV	26.0		
1095	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Bison-Maple River 230 kV	26.0		
1105	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601045 ALEXSS3 345 601047 QUARRY3 345 1	32.8		
1140	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Maple River-Red River 115 1	28.0		
1150	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open 601045 ALEXSS3 345 601067 BISON 3 345 1	19.6	Reconductor to (795 ACSS)	$8.80M
1190	Arpin 345/138 kV Tx at 113% of 336 MVA Owner(s): 691	Open Arpin-Rocky run 345 kV	5.9	Upgrade To 448 MVA	$6.00M
1210	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Frontier-Maple River 230 kV	32.2		
1210	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Wahpeton-Frontier 230 kV	32.2		
1255	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open 601045 ALEXSS3 345 601067 BISON 3 345 1	5.6		
1265	Maple River 345/230 kV tx 1 at 100% of 336 MVA Owner(s): OTP	System Intact	19.6		
1265	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601045 ALEXSS3 345 601047 QUARRY3 345 1	23.9		
1265	Maple River 345/230 kV tx 2 at 100% of 336 MVA Owner(s): OTP	System Intact	19.6		
1265	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601045 ALEXSS3 345 601047 QUARRY3 345 1	23.9		
1285	Sigel-Arpin 138 kV at 100% of 287 MVA (1201 amps) Owner(s): 691 5.23 Miles	Open Arpin-Rocky run 345 kV	5.2	Upgrade to 1354 Amps (795 ACSS)	$4.18M
1320	Frontier-Maple River 230 kV at 136% of 265 MVA (665 amps) Owner(s): MPC ~11 Miles	Open 601045 ALEXSS3 345 601067 BISON 3 345 1	19.6	Reconductor to (795 ACSS)	$2.20M
1325	Bismarck-Glenham 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~97 Miles	Open 652506 FTTHOMP3 345 659105 LELANDO3 345 1	5.1	Upgrade to 749 Amps (336 ACSS)	$122.22M

1330	Fargo-Moorhead 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~11 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	11.4	Upgrade to 856 Amps (336 ACSS)	$13.86M
1340	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Stanton-Square Butte 230 kV	7.3		
1340	Sheyenne-Maple River 230 at 100% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	System Intact	26.8		
1345	Sheyenne-Audubon 230 kV at 110% of 350 MVA (879 amps) Owner(s): OTP, XCEL 43.88 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	14.8	Upgrade to 1210 Amps (556 ACSS)	$56.17M
1385	Bison-Maple River 345 kV at 100% of 720 MVA (1205 amps) Owner(s): MPC ~3 Miles	System Intact	39.1	Uprate to 2500 Amps (Conductor Rating)	$1.00M
1415	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~3 Miles	Open Prairie-Center 345 kV	39.4		
1415	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~3 Miles	Open Prairie-Center 345 kV	39.4		
1420	Maple River-Red River 115 1 at 110% of 318 MVA (1596 amps) Owner(s): XCEL ~6 Miles	Open Sheyenne-Maple River 230 Open Frontier-Maple River 230 kV	13.4	Upgrade to 2148 Amps (1590 ACSS)	$4.74M
1445	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Coyote 345/115 kv Tx	5.6		
1450	Maple River 230/115 kv Tx #6 at 130% of 187 MVA Owner(s): XCEL	Open Sheyenne-Maple River 230 Open Frontier-Maple River 230 kV	8.9	Upgrade To 336 MVA	$4.00M
1450	Maple River 230/115kV Tx #5 at 130% of 187 MVA Owner(s): XCEL	Open Sheyenne-Maple River 230 Open Frontier-Maple River 230 kV	8.9	Upgrade To 336 MVA	$4.00M
1455	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Sheyenne-Maple River 230	5.5		
1470	Moorhead-Morris 230 kV at 110% of 239 MVA (600 amps) Owner(s): WAPA ~96 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	12.1	Uprate to 853 Amps (Conductor Rating)	$10.00M
1490	Bison 345/230 kV TX #1 at 115% of 336 MVA Owner(s): XCEL	Open Bison-Maple River 345 kV	21.3	Upgrade To 550 MVA	$7.50M
1490	Bison 345/230 kV TX #2 at 115% of 336 MVA Owner(s): XCEL	Open Bison-Maple River 345 kV	21.3	Upgrade To 550 MVA	$7.50M
1575	Quarry-St. Cloud 115 kV at 100% of 239 MVA (1200 amps) Owner(s): XCEL ~9 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1	10.6	Upgrade to 1425 Amps (795 ACSS)	$6.75M
1580	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~3 Miles	Open 601035 BLCKBRY3 345 699449 ARROWHD 345 1 Open 601035 BLCKBRY3 345 699449 ARROWHD 345 2 Change bus 667033 DORSEYS4 230 load by 568.8 MW dispatch	39.0		
1605	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~3 Miles	Open Arrowhead-Stone Lake 345 kV Change bus 667033 DORSEYS4 230 load by 568.8 MW dispatch	38.8		
1620	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	21.4		
1645	Cass County-Red River 115 at 104% of 190.8 MVA (958 amps) Owner(s): XCEL ~3 Miles	Open Sheyenne-Maple River 230 Open Frontier-Maple River 230 kV	13.4	Upgrade to 1240 Amps (636 ACSS)	$2.22M
1680	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open Sheyenne-Maple River 230	16.5		
1725	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Arrowhead-Stone Lake 345 kV Change bus 667033 DORSEYS4 230 load by 568.8 MW dispatch	19.4		
1725	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Arrowhead-Stone Lake 345 kV Change bus 667033 DORSEYS4 230 load by 568.8 MW dispatch	19.4		
1750	Frontier-Maple River 230 kV at 100% of 265 MVA (665 amps) Owner(s): MPC ~11 Miles	System Intact	13.0		
1750	Wahpeton-Frontier 230 kV at 100% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	System Intact	13.0		
1760	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.8	Upgrade to (2-795 ACSS)	$159.04M
1760	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.8		

1775	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.6		
1785	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open Sheyenne-Audubon 230 kV	14.8		
1790	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open 601045 ALEXSS3 345 601047 QUARRY3 345 1	15.3		
1795	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.6		
1815	Fargo-Moorhead 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~11 Miles	Open Fargo-Brookdale 115 kV	8.3		
1820	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Maple River 345/230 kV tx 1	21.0		
1820	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Maple River 345/230 kV tx 2	21.0		
1820	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Maple River 345/230 kV tx 2	21.0		
1835	Granite Falls-Morris 230 kV at 110% of 239 MVA (600 amps) Owner(s): WAPA ~52 Miles	Open 601045 ALEXSS3 345 601047 QUARRY3 345 1	10.5	Upgrade to 703 Amps (336 ACSS)	$78.12M
1840	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Arrowhead-Stone Lake 345 kV	12.2		
1860	Fargo-Moorhead 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~11 Miles	Open 601045 ALEXSS3 345 601047 QUARRY3 345 1	9.5		
1870	Fargo-Moorhead 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~11 Miles	Open Brookdale-South East 115 kV	8.3		
1880	Frontier-Maple River 230 kV at 136% of 265 MVA (665 amps) Owner(s): MPC ~11 Miles	Open Sheyenne-Maple River 230	16.5		
1910	Maple River-Red River 115 1 at 110% of 318 MVA (1596 amps) Owner(s): XCEL ~6 Miles	Open Sheyenne-Maple River 230	10.5		
1930	Antelope Valley-Broadland 345 kV at 110% of 478 MVA (800 amps) Owner(s): 659 ~198 Miles	Open 652506 FTTHOMP3 345 659105 LELANDO3 345 1	5.2	Upgrade to 1200 Amp (Terminal Equipment)	$1.00M
1935	Maple River 230/115 kv Tx #6 at 130% of 187 MVA Owner(s): XCEL	Open Sheyenne-Maple River 230	7.0		
1935	Maple River 230/115kV Tx #5 at 130% of 187 MVA Owner(s): XCEL	Open Sheyenne-Maple River 230	7.0		
1940	Bismarck-Glenham 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~97 Miles	Open 601045 ALEXSS3 345 601067 BISON 3 345 1	5.4		
1940	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open Moorhead-Morris 230 kV	14.5		
1960	Fargo-Moorhead 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~11 Miles	Open Sheyenne-Audubon 230 kV	8.8		
1975	Sheyenne-Fargo 230 kV at 100% of 403.9 MVA (1014 amps) Owner(s): WAPA ~5 Miles	Open 601045 ALEXSS3 345 601067 BISON 3 345 1	27.8	Upgrade to 1031 Amps (477 ACSS)	$6.35M

Case File - C:\MP-MH-EHV\Work\Bison-Zion\Bison-Zion-PF\MH_SUPK_B_Y1C.sav
Sub File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV.sub
Mon File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH.mon
Con File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV-Y1C.con
Exc File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH-Exclude.exc

Transfer From: BisonGen
Transfer To: EAST_MISO
Transfer Level: 3000 MW
Transfer Goal: 2000 MW
System Intact DF 5.%
Contingency DF 5.%

Wed, 06 Jun 2012 17:22:45

Transfer MW	Limiting Facility	Outage	DF%	Remedy	Upgrade Estimate
775	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	38.0	Upgrade to 2437 Amps (2 x 795 ACSS) - $9.38M	9.38
775	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	56.7	Uprate to 2485 Amps (Conductor Rating) - $1M	1
860	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	28.3	Upgrade To 800 MVA - $9M	9
860	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	28.3	Upgrade To 800 MVA - $9M	9
915	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	6.2	Reconductor to 954 ACSS - $5.6M	5.6
975	Long Prairie-GRE Little Sauk 115 kV at 110% of 98 MVA (492 amps) Owner(s): MP ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	5.0	Upgrade to 799 Amps (336 ACSS) - $7.1M	7.1
1030	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	20.5	Reconductor to 1321 Amps (795 ACSS) - $8.8M	8.8
1050	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV Open Maple River 345/230 kV tx 2 Open Maple River 345/230 kV tx 1	33.5	Upgrade to 2102 Amps (2 x 795 ACSS) - $13.9M	13.9
1050	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV	33.5		
1075	Quarry-St. Cloud 115 kV at 100% of 239 MVA (1200 amps) Owner(s): XCEL ~9 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	12.9	Upgrade to 1800 Amps (1192 ACSS) - $6.93M	6.93
1190	Frontier-Maple River 230 kV at 136% of 265 MVA (665 amps) Owner(s): MPC ~11 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	20.5	Reconductor to 1321 Amps (795 ACSS) - $2.2M	2.2
1200	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	31.6		
1220	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	5.5		
1225	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	46.5		
1230	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Sheyenne-Maple River 230 Open Frontier-Maple River 230 kV	5.9		
1255	Douglas County-GRE Little Sauk Tap 115 kV at 110% of 113 MVA (567 amps) Owner(s): XCEL ~11 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	5.0	Upgrade to 809 Amps (336 ACSS) - $7.81M	7.81
1330	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	23.3		
1330	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	23.3		
1340	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	24.4		
1340	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	24.4		
1340	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 1	24.4		
1340	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 1	24.4		
1350	Fargo-Moorhead 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~11 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	11.3	Upgrade to 847 Amps (336 ACSS) - $13.86M	13.86
1405	Sheyenne-Audubon 230 kV at 110% of 350 MVA (879 amps) Owner(s): OTP, XCEL 43.88 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	14.5	Upgrade to 1184 Amps (556 ACSS) - $56.17M	56.17
1425	Quarry 345/115 kV Tx at 115% of 448 MVA Owner(s): XCEL	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	20.2	Upgrade To 672 MVA - $8M	8
1425	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open Bison-Maple River 230 kV	41.9		
1450	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	26.8		
1460	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	39.8		

1475	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Coyote 345/115 kv Tx	5.1		
1500	Moorhead-Morris 230 kV at 110% of 239 MVA (600 amps) Owner(s): WAPA ~96 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	12.0	Uprate to 811 Amps (Conductor Rating) - $10M	10
1540	Sauk River-GRE West St Cloud 115 kV at 110% of 182 MVA (914 amps) Owner(s): XCEL ~2 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	7.3	Upgrade to 1178 Amps (556 ACSS) - $1.46M	1.46
1540	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Bison-Maple River 230 kV	21.0		
1540	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Bison-Maple River 230 kV	21.0		
1555	Quarry-Sauk River 115 kV at 100% of 239 MVA (1200 amps) Owner(s): XCEL ~9 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	7.3	Upgrade to 1364 Amps (795 ACSS) - $6.75M	6.75
1580	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	19.9		
1580	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	19.9		
1580	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Stanton-Square Butte 230 kV	6.4		
1620	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	21.4		
1625	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Maple River-Red River 115 1	22.5		
1630	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 2	25.3		
1630	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	25.3		
1645	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	26.5		
1645	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 2	37.5		
1645	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	37.5		
1660	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Stanton-Leland Olds 230 kV	5.5		
1670	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	39.2		
1700	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	15.7		
1710	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Frontier-Maple River 230 kV	25.6		
1710	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Wahpeton-Frontier 230 kV	25.6		
1710	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Wahpeton-Fergus Falls 230 kV Open Wahpeton-Frontier 230 kV Open 620191 WAHPET1Y 230 620329 WAHPETN4 230 1 Open 620191 WAHPET1Y 230 620229 WAHPETN7 115 1 Open 620129 WAHPETN9 41.6 620191 WAHPET1Y 230 1	25.6		
1735	Maple River 345/230 kV tx 1 at 100% of 336 MVA Owner(s): OTP	System Intact	15.9		
1735	Maple River 345/230 kV tx 2 at 100% of 336 MVA Owner(s): OTP	System Intact	15.9		
1765	Coon Creek-Kohlman Lake 345 kV at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~15 Miles	Open Coon Creek-Terminal 345 kV	13.3	Upgrade to 1252 Amps (Terminal Equipment) - $0.5M	0.5
1775	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	18.8		
1775	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 2	18.8		
1775	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	18.8		
1775	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 2	18.8		
1790	Arpin 345/138 kV Tx at 113% of 336 MVA Owner(s): 691	Open Arpin-Rocky run 345 kV	5.3	Upgrade To 448 MVA - $6M	6

1795	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	19.6		
1795	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	19.6		
1805	Alexandria 345/115 kV Tx at 115% of 448 MVA Owner(s): XCEL	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	16.7	Upgrade To 550 MVA - $7.5M	7.5
1815	Elm Creek-Monticello 345 kV at 100% of 1195 MVA (2000 amps) Owner(s): XCEL ~19 Miles	Open Sherco-Coon Creek 345 kV #1 Open 601011 SHERCO 3 345 615327 GRE-BUNKER 3 345 1 Open 601019 COON CK3 345 615327 GRE-BUNKER 3 345 1 Open Coon Creek 345/115 kV tx #10 Open 615327 GRE-BUNKER 3 345 BS0396 345/230 1.00 1 Open 615328 GRE-BUNKER 4 230 BS0396 345/230 1.00 1 Open 615330 GRE-BUNKER T13.8 BS0396 345/230 1.00 1	20.2	Upgrade to 2061 Amps (2 x 954 ACSS) - $53.77M	53.77
1820	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Sheyenne-Fargo 230 kV	5.4		
1835	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	14.1		
1870	Sheyenne-Maple River 230 at 100% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	System Intact	21.5		
1880	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 1	34.8		
1885	Bison-Maple River 345 kV at 100% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	System Intact	31.8		
1910	Frontier-Maple River 230 kV at 136% of 265 MVA (665 amps) Owner(s): MPC ~11 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	15.7		
1915	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1	34.2		
1915	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	34.2		
1980	Fargo-Moorhead 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~11 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	9.1		
1990	Sheyenne-Fargo 230 kV at 100% of 403.9 MVA (1014 amps) Owner(s): WAPA ~5 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	27.6	Upgrade to 1020 Amps (477 ACSS) - $6.35M	6.35

Case File - C:\MP-MH-EHV\Work\Bison-Zion\Bison-Zion-PF\MH_SUPK_B_Y2A.sav
Sub File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV.sub
Mon File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH.mon
Con File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV-Y2A.con
Exc File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH-Exclude.exc

Transfer From: BisonGen
Transfer To: EAST_MISO
Transfer Level: 3000 MW
Transfer Goal: 2000 MW
System Intact DF 5.%
Contingency DF 5.%

Wed, 06 Jun 2012 17:24:00

Transfer MW	Limiting Facility	Outage	DF%	Remedy	Upgrade Estimate
1225	Arpin 345/138 kV Tx at 113% of 336 MVA Owner(s): 691	Open Arpin-Rocky run 345 kV	5.7	Upgrade To 448 MVA - $6M	6
1405	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV Open Maple River 345/230 kV tx 2 Open Maple River 345/230 kV tx 1	22.0	Reconductor to 1630 Amps (1272 ACSS) - $2.59M	2.59
1405	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV	22.0		
1495	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601031 BRKNGCO3 345 601048 LYON CO 3 345 1	25.0	Uprate to 1412 Amps (Terminal Equipment) - $0.5M	0.5
1510	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Bison 500/345 kV Tx #1	26.8	Upgrade to 1597 Amps (954 ACSS) - $9.17M	9.17
1570	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open Bison 500/345 kV Tx #1	39.1	Uprate to 1608 Amps (Conductor Rating) - $1M	1
1630	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 1 Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 2	24.2		
1690	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Bison 500/345 kV Tx #1	19.6	Upgrade To 550 MVA - $7.5M	7.5
1690	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Bison 500/345 kV Tx #1	19.6	Upgrade To 550 MVA - $7.5M	7.5
1705	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 1 Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 2	24.2		
1750	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.8	Upgrade to 2119 Amps (2 x 795 ACSS) - $159.04M	159.04
1750	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.8		
1765	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1765	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1770	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	16.5		
1770	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	16.5		
1770	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 1	16.5		
1770	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 1	16.5		
1785	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1785	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1810	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV	12.6		
1835	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV	12.6		
1840	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Arrowhead-Stone Lake 345 kV	12.2		
1870	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Stone Lake-Gardner Park 345 kV	12.4		
1885	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	18.6		

1895	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open Bison-Maple River 230 kV	28.5	
1905	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	18.4	
1920	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	27.5	
1945	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	27.1	
1990	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	23.7	

Case File - C:\MP-MH-EHV\Work\Bison-Zion\Bison-Zion-PF\MH_SUPK_B_Y2B.sav
Sub File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV.sub
Mon File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH.mon
Con File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV-Y2B.con
Exc File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH-Exclude.exc

Transfer From: BisonGen
Transfer To: EAST_MISO
Transfer Level: 3000 MW
Transfer Goal: 2000 MW
System Intact DF 5.%
Contingency DF 5.%

Wed, 06 Jun 2012 17:26:08

Transfer MW	Limiting Facility	Outage	DF%	Remedy	Upgrade Estimate
955	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV Open Maple River 345/230 kV tx 2 Open Maple River 345/230 kV tx 1	31.2	Upgrade to 2124 Amps (2 x 795 ACSS) - $13.9M	13.9
955	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV	31.2		
1190	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	27.1	Upgrade to 1819 Amps (2 x 795 ACSS) - $9.24M	9.24
1195	Arpin 345/138 kV Tx at 113% of 336 MVA Owner(s): 691	Open Arpin-Rocky run 345 kV	5.8	Upgrade To 448 MVA - $6M	6
1195	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	27.0		
1220	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	40.1	Uprate to 1847 Amps (Conductor Rating) - $1M	1
1230	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	39.7		
1260	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	22.9	Upgrade To 672 MVA - $8M	8
1260	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	22.9		
1260	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 1	22.9	Upgrade To 672 MVA - $8M	8
1260	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 1	22.9		
1305	Sigel-Arpin 138 kV at 100% of 287 MVA (1201 amps) Owner(s): 691 5.23 Miles	Open Arpin-Rocky run 345 kV	5.0	Upgrade to 1346 Amps (795 ACSS) - $4.18M	4.18
1340	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	20.0		
1340	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	20.0		
1350	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open Bison-Maple River 230 kV	39.3		
1355	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	19.9		
1355	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	19.9		
1470	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Bison-Maple River 230 kV	19.6		
1475	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Bison-Maple River 230 kV	19.6		
1510	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601031 BRKNGCO3 345 601067 BISON 3 345 1	26.8		
1530	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Maple River-Red River 115 1	21.3		
1570	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601031 BRKNGCO3 345 601067 BISON 3 345 1	39.1		
1600	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 1	23.7		
1600	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1	23.7		
1655	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Wahpeton-Fergus Falls 230 kV Open Wahpeton-Frontier 230 kV Open 620191 WAHPET1Y 230 620329 WAHPETN4 230 1 Open 620191 WAHPET1Y 230 620229 WAHPETN7 115 1 Open 620129 WAHPETN9 41.6 620191 WAHPET1Y 230 1	23.8		
1660	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Frontier-Maple River 230 kV	23.8		
1660	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Wahpeton-Frontier 230 kV	23.8		
1670	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 1	34.6		

1670	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1	34.6		
1675	Maple River 345/230 kV tx 1 at 100% of 336 MVA Owner(s): OTP	System Intact	14.9		
1680	Maple River 345/230 kV tx 2 at 100% of 336 MVA Owner(s): OTP	System Intact	14.9		
1690	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601031 BRKNGCO3 345 601067 BISON 3 345 1	19.6		
1690	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601031 BRKNGCO3 345 601067 BISON 3 345 1	19.6		
1750	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.8	Upgrade to 2119 Amps (2 x 795 ACSS) - $159.04M	159.04
1750	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.8		
1765	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1765	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1770	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Maple River-Winger 230 kV	23.8		
1770	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	13.6	Reconductor to 899 Amps (795 ACSS) - $8.8M	8.8
1785	Sheyenne-Maple River 230 at 100% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	System Intact	20.4		
1785	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.6		
1785	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.6		
1810	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 1	17.3		
1810	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1	17.3		
1810	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 1	17.3		
1810	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1	17.3		
1815	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV	12.6		
1825	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	13.2		
1835	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV	12.5		
1840	Bison-Maple River 345 kV at 100% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	System Intact	29.8		
1840	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Arrowhead-Stone Lake 345 kV	12.2		
1860	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Stanton-Square Butte 230 kV	5.4	Reconductor to 954 ACSS - $5.6M	5.6
1870	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Stone Lake-Gardner Park 345 kV	12.4		
1880	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open Prairie-Center 345 kV	30.1		
1880	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open Prairie-Center 345 kV	30.1		

1905	Sheyenne-Audubon 230 kV at 110% of 350 MVA (879 amps) Owner(s): OTP, XCEL 43.88 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	10.9	Upgrade to 993 Amps (477 ACSS) - $55.73M	55.73
1905	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601067 BISON 3 345 602050 BISON 4 230 2	32.4		
1905	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601067 BISON 3 345 602050 BISON 4 230 1	32.4		
1945	Sheyenne-Audubon 230 kV at 110% of 350 MVA (879 amps) Owner(s): OTP, XCEL 43.88 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	10.6		
1950	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601031 BRKNGCO3 345 601048 LYON CO 3 345 1	18.1	Uprate to 1215 Amps (Terminal Equipment) - $0.5M	0.5

Case File - C:\MP-MH-EHV\Work\Bison-Zion\Bison-Zion-PF\MH_SUPK_B_Y5A.sav
Sub File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV.sub
Mon File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH.mon
Con File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV-Y5A.con
Exc File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH-Exclude.exc

Transfer From: BisonGen
Transfer To: EAST_MISO
Transfer Level: 3000 MW
Transfer Goal: 2000 MW
System Intact DF 5.%
Contingency DF 5.%

Wed, 06 Jun 2012 17:28:31

Transfer MW	Limiting Facility	Outage	DF%	Remedy	Upgrade Estimate
1115	Arpin 345/138 kV Tx at 113% of 336 MVA Owner(s): 691	Open Arpin-Rocky run 345 kV	5.7	Upgrade To 448 MVA - $6M	6
1705	Bison 500/345 kV Tx #1 at 100% of 1200 MVA Owner(s): MPC	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	55.8	Add Third Tx - $25M	25
1705	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.9	Upgrade to 2128 Amps (2-795 ACSS) - $159.04M	159.04
1710	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.9		
1725	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1725	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1740	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1740	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1770	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV	12.7		
1795	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV	12.6		
1810	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Arrowhead-Stone Lake 345 kV	12.3		
1835	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Stone Lake-Gardner Park 345 kV	12.4		
1935	Bison 500/345 kV Tx #1 at 100% of 1200 MVA Owner(s): MPC	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	53.3		

Case File - C:\MP-MH-EHV\Work\Bison-Zion\Bison-Zion-PF\MH_SUPK_B_Y5B.sav
Sub File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV.sub
Mon File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH.mon
Con File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV-Y5B.con
Exc File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH-Exclude.exc

Transfer From: BisonGen
Transfer To: EAST_MISO
Transfer Level: 3000 MW
Transfer Goal: 2000 MW
System Intact DF 5.%
Contingency DF 5.%

Wed, 06 Jun 2012 17:30:50

Transfer MW	Limiting Facility	Outage	DF%	Remedy	Upgrade Estimate
745	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	38.5	Upgrade to 2479 Amps (2 x 795 ACSS) - $9.45M	9.45
780	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	56.6	Uprate to 2483 Amps (Conductor Rating) - $1M	1
865	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	28.3	Upgrade To 800 MVA - $9M	9
865	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	28.3	Upgrade To 800 MVA - $9M	9
980	Long Prairie-GRE Little Sauk 115 kV at 110% of 98 MVA (492 amps) Owner(s): MP ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	5.1	Upgrade to 802 Amps (336 ACSS) - $7.1M	7.1
1030	Arpin 345/138 kV Tx at 113% of 336 MVA Owner(s): 691	Open Arpin-Rocky run 345 kV	6.1	Upgrade To 448 MVA - $6M	6
1055	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV Open Maple River 345/230 kV tx 2 Open Maple River 345/230 kV tx 1	33.0	Upgrade to 2088 Amps (2 x 795 ACSS) - $13.9M	13.9
1055	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV	33.0		
1070	Quarry-St. Cloud 115 kV at 100% of 239 MVA (1200 amps) Owner(s): XCEL ~9 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	13.2	Upgrade to 1819 Amps (1192 ACSS) - $6.93M	6.93
1125	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	19.6	Reconductor to 1252 Amps (795 ACSS) - $8.8M	8.8
1140	Sigel-Arpin 138 kV at 100% of 287 MVA (1201 amps) Owner(s): 691 5.23 Miles	Open Arpin-Rocky run 345 kV	5.3	Upgrade to 1391 Amps (795 ACSS) - $4.18M	4.18
1145	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	5.7	Reconductor to (954 ACSS) - $5.6M	5.6
1160	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	32.0		
1230	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	46.4		
1255	Douglas County-GRE Little Sauk Tap 115 kV at 110% of 113 MVA (567 amps) Owner(s): XCEL ~11 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	5.1	Upgrade to 813 Amps (336 ACSS) - $7.81M	7.81
1270	Fargo-Moorhead 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~11 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	11.5	Upgrade to 874 Amps (336 ACSS) - $13.86M	13.86
1295	Frontier-Maple River 230 kV at 136% of 265 MVA (665 amps) Owner(s): MPC ~11 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	19.6	Reconductor to 1252 Amps (795 ACSS) - $2.2M	2.2
1335	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	23.2		
1335	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	23.2		
1350	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	24.1		
1350	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	24.1		
1350	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 1	24.1		
1350	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 1	24.1		
1385	Sheyenne-Audubon 230 kV at 110% of 350 MVA (879 amps) Owner(s): OTP, XCEL 43.88 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	14.7	Upgrade to 1195 Amps (556 ACSS) - $56.17M	56.17
1410	Quarry 345/115 kV Tx at 115% of 448 MVA Owner(s): XCEL	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	20.7	Upgrade To 672 MVA - $8M	8
1410	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	27.0		
1415	Moorhead-Morris 230 kV at 110% of 239 MVA (600 amps) Owner(s): WAPA ~96 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	12.2	Uprate to 839 Amps (Conductor Rating) - $10M	10
1425	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Sheyenne-Maple River 230 Open Frontier-Maple River 230 kV	5.5		

1435	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open Bison-Maple River 230 kV	41.4		
1465	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	39.4		
1495	Coon Creek-Kohlman Lake 345 kV at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~15 Miles	Open Coon Creek-Terminal 345 kV	13.8	Upgrade to 1317 Amps (Terminal Equipment) - $0.5M	0.5
1525	Sauk River-GRE West St Cloud 115 kV at 110% of 182 MVA (914 amps) Owner(s): XCEL ~2 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	7.5	Upgrade to 1187 Amps (556 ACSS) - $1.46M	1.46
1540	Quarry-Sauk River 115 kV at 100% of 239 MVA (1200 amps) Owner(s): XCEL ~9 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	7.5	Upgrade to 1372 Amps (795 ACSS) - $6.75M	6.75
1550	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Bison-Maple River 230 kV	20.7		
1550	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Bison-Maple River 230 kV	20.7		
1585	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Maple River-Red River 115 1	22.5		
1585	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	19.7		
1590	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	19.7		
1590	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 2	25.4		
1590	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	25.4		
1605	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	26.8		
1620	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	21.4		
1655	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 2	37.2		
1655	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	37.2		
1680	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	38.9		
1685	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Stanton-Square Butte 230 kV	6.1		
1700	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Frontier-Maple River 230 kV	25.4		
1700	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Wahpeton-Frontier 230 kV	25.4		
1700	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Wahpeton-Fergus Falls 230 kV Open Wahpeton-Frontier 230 kV Open 620191 WAHPET1Y 230 620329 WAHPETN4 230 1 Open 620191 WAHPET1Y 230 620229 WAHPETN7 115 1 Open 620129 WAHPETN9 41.6 620191 WAHPET1Y 230 1	25.4		
1710	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.9	Upgrade to 2128 Amps (2-795 ACSS) - $159.04M	159.04
1710	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.9		
1725	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1725	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1730	Granite Falls-Morris 230 kV at 110% of 239 MVA (600 amps) Owner(s): WAPA ~62 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	10.6	Upgrade to 731 Amps (336 ACSS) - $78.12M	78.12

1745	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1745	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1750	Maple River 345/230 kV tx 1 at 100% of 336 MVA Owner(s): OTP	System Intact	15.7		
1750	Maple River 345/230 kV tx 2 at 100% of 336 MVA Owner(s): OTP	System Intact	15.7		
1775	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV	12.6		
1785	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	18.6		
1785	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 2	18.6		
1785	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 2	18.6		
1785	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	18.6		
1795	Alexandria 345/115 kV Tx at 115% of 448 MVA Owner(s): XCEL	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	16.8	Upgrade To 550 MVA - $7.5M	7.5
1800	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV	12.6		
1805	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	19.4		
1805	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	19.4		
1810	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Arrowhead-Stone Lake 345 kV	12.3	DC Runback	
1825	Sheyenne-Maple River 230 at 100% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	System Intact	21.6		
1830	Center-Heskett 230 kV at 110% of 428 MVA (1074 amps) Owner(s): MPC 22.5 Miles	Open Stanton-Leland Olds 230 kV	5.2		
1835	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Stone Lake-Gardner Park 345 kV	12.4		
1845	Coon Creek-Kohlman Lake 345 kV at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~15 Miles	Open Coon Creek-Terminal 345 kV Open 601024 TERMINL3 345 605585 TERMID1Y 110 10 Open 603110 TERMINL7 115 605585 TERMID1Y 110 10 Open 605516 TERTER19 34.5 605585 TERMID1Y 110 10	13.8		
1870	Elm Creek-Monticello 345 kV at 100% of 1195 MVA (2000 amps) Owner(s): XCEL ~19 Miles	Open Sherco-Coon Creek 345 kV #1 Open 601011 SHERCO 3 345 615327 GRE-BUNKER 3 345 1 Open 601019 COON CK3 345 615327 GRE-BUNKER 3 345 1 Open Coon Creek 345/115 kV tx #10 Open 615327 GRE-BUNKER 3 345 B50392 345/230 1.00 1 Open 615328 GRE-BUNKER 4 230 B50392 345/230 1.00 1 Open 615330 GRE-BUNKER T13.8 B50392 345/230 1.00 1	20.4	Upgrade to 2044 Amps (2 x 954 ACSS) - $53.77M	53.77
1875	Wahpeton-Frontier 230 kV at 123% of 265 MVA (665 amps) Owner(s): MPC ~44 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	14.8		
1875	Bismarck-Glenham 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~97 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	5.4	Upgrade to 679 Amps (336 ACSS) - $122.22M	122.22
1880	Fargo-Moorhead 230 kV at 110% of 240 MVA (602 amps) Owner(s): WAPA ~11 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	9.3		
1895	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 1	34.5		
1900	Bison-Maple River 345 kV at 100% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	System Intact	31.4		
1930	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	33.8		
1930	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1	33.8		
1945	Sheyenne-Fargo 230 kV at 100% of 403.9 MVA (1014 amps) Owner(s): WAPA ~5 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	27.9	Upgrade to 1053 Amps (477 ACSS) - $6.35M	6.35
1955	Granite Falls-Morris 230 kV at 110% of 239 MVA (600 amps) Owner(s): WAPA ~62 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	9.4		

Appendix B Fargo/Brookings Co. Wind Injection

Fargo Option

BisonBrookGe

Case File - C:\MP-MH-EHV\Work\Bison-Zion\Bison-Zion-PF\MH_SUPK_B_W1A.sav
Sub File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV.sub
Mon File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH.mon
Con File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV-W1A.con
Exc File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH-Exclude.exc

Transfer From: n
Transfer To: EAST_MISO
Transfer Level: 3000 MW
Transfer Goal: 2000 MW
System Intact DF 5.%
Contingency DF 5.%

Wed, 06 Jun 2012 16:57:35

Transfer MW	Limiting Facility	Outage	DF%	Remedy	Upgrade Estimate
-255	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601045 ALEXSS3 345 601067 BISON 3 345 1 Open 601045 ALEXSS3 345 601067 BISON 3 345 2	19.0	DC Runback	
215	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601045 ALEXSS3 345 601047 QUARRY3 345 1 Open 601045 ALEXSS3 345 601047 QUARRY3 345 2	18.1	DC Runback	
280	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601045 ALEXSS3 345 601067 BISON 3 345 1 Open 601045 ALEXSS3 345 601067 BISON 3 345 2	11.5	DC Runback	
300	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601045 ALEXSS3 345 601067 BISON 3 345 1 Open 601045 ALEXSS3 345 601067 BISON 3 345 2	16.8	DC Runback	
410	Quarry-St. Cloud 115 kV at 100% of 239 MVA (1200 amps) Owner(s): XCEL ~9 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	5.3	DC Runback	
425	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV	10.2	Reconductor to 2044 Amps (1272 ACSS) -$ 2.59M	2.59
425	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV Open Maple River 345/230 kV tx 2 Open Maple River 345/230 kV tx 1	10.2		
510	Roseau N-Roseau S Series Caps 500 kV at 100% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	System Intact	12.8	Construct Bison-Brookings 345 kV line (to get 545.1 MW transfer) $270M	$270.00M
620	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601045 ALEXSS3 345 601047 QUARRY3 345 1 Open 601045 ALEXSS3 345 601047 QUARRY3 345 2	16.8	DC Runback	
740	Roseau N-Roseau S Series Caps 500 kV at 100% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	System Intact	12.4	Roseau Series Cap 2000 A Limit	
855	Arpin 345/138 kV Tx at 113% of 336 MVA Owner(s): 691	Open Arpin-Rocky run 345 kV	6.0	Upgrade To 550 MVA	$7.50M
905	Coon Creek-Kohlman Lake 345 kV at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~15 Miles	Open Coon Creek-Terminal 345 kV	7.4	Upgrade (Terminal Equipment)	$.50M
995	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open Brookings Co - Lyon Co 345 kV	28.1	Upgrade to 1673 Amps (954 ACSS)	$11.24M
1060	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601045 ALEXSS3 345 601067 BISON 3 345 1 Open 601045 ALEXSS3 345 601067 BISON 3 345 2	10.1	DC Runback	0
1075	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~3 Miles	Open 601045 ALEXSS3 345 601067 BISON 3 345 1 Open 601045 ALEXSS3 345 601067 BISON 3 345 2	14.7	DC Runback	0
1100	Sigel-Arpin 138 kV at 100% of 287 MVA (1201 amps) Owner(s): 691 5.23 Miles	Open Arpin-Rocky run 345 kV	5.1	Upgrade to 1393 Amps (795 ACSS)	$7.85M
1185	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 1 Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 2	26.4		
1245	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open Ridgeway-Richer 230 kV	12.9	DC Runback	
1270	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 1 Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 2	26.3		
1280	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open Shannon-Running 230 kV	12.9	DC Runback	
1285	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601045 ALEXSS3 345 601047 QUARRY3 345 1 Open 601045 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	14.3		
1400	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601045 ALEXSS3 345 601067 BISON 3 345 1 Open 601045 ALEXSS3 345 601067 BISON 3 345 2	7.4	DC Runback	$.00M
1400	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601045 ALEXSS3 345 601067 BISON 3 345 1 Open 601045 ALEXSS3 345 601067 BISON 3 345 2	7.4	DC Runback	0
1485	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~3 Miles	Open 601045 ALEXSS3 345 601067 BISON 3 345 1 Open 601045 ALEXSS3 345 601067 BISON 3 345 2 Change bus 667033 DORSEYS4 230 load by 486.5 MW dispatch	14.7	Uprate to 2500 Amps (Conductor Rating)	$1.00M
1500	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601045 ALEXSS3 345 601067 BISON 3 345 1 Open 601045 ALEXSS3 345 601067 BISON 3 345 2 Change bus 667033 DORSEYS4 230 load by 486.5 MW dispatch	10.1	Upgrade to (2-795 ACSS)	$9.45M

1525	Coon Creek-Kohlman Lake 345 kV at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~15 Miles	Open Coon Creek-Terminal 345 kV Open 601024 TERMINL3 345 605585 TERMID1Y 110 10 Open 603110 TERMINL7 115 605585 TERMID1Y 110 10 Open 605516 TERTER19 34.5 605585 TERMID1Y 110 10	7.4		
1570	Quarry 345/115 kV Tx at 115% of 448 MVA Owner(s): XCEL	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	7.7	DC Runback	0
1635	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open T-Corners-Wien 115 kV Open Council Creek-Timberwolf 69 kV Open Mauston-Hilltop 69 kV	13.0	Upgrade to (2-795 ACSS)	$159.04M
1640	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open T-Corners-Wien 115 kV Open Council Creek-Timberwolf 69 kV Open Mauston-Hilltop 69 kV	13.0		
1655	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open Council Creek-Timberwolf 69 kV Open Mauston-Hilltop 69 kV Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.8		
1655	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open Council Creek-Timberwolf 69 kV Open Mauston-Hilltop 69 kV Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.8		
1655	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	7.2	Upgrade To 550 MVA	$7.50M
1655	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 1	7.2	Upgrade To 550 MVA	$7.50M
1675	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	24.0		
1680	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open Council Creek-Timberwolf 69 kV Open Mauston-Hilltop 69 kV Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.8		
1700	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 1 Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 1	24.1		
1810	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2 Change bus 667033 DORSEYS4 230 load by 486.5 MW dispatch	7.4		
1815	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2 Change bus 667033 DORSEYS4 230 load by 486.5 MW dispatch	7.4		
1940	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~3 Miles	Open Bison-Maple River 230 kV	12.4		
1970	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	System Intact	22.9		

BisonBrookGe

Case File - C:\MP-MH-EHV\Work\Bison-Zion\Bison-Zion-PF\MH_SUPK_B_W1AP.sav
Sub File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV.sub
Mon File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH.mon
Con File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV-W1AP.con
Exc File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH-Exclude.exc

Transfer From: n
Transfer To: EAST_MISO
Transfer Level: 3000 MW
Transfer Goal: 2000 MW
System Intact DF 5.%
Contingency DF 5.%

Tue, 05 Jun 2012 15:41:36

Transfer MW	Limiting Facility	Outage	DF%	Remedy	Upgrade Estimate
-55	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	19.0	DC Runback	
420	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	18.1	DC Runback	
445	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	16.8	DC Runback	
445	Quarry-St. Cloud 115 kV at 100% of 239 MVA (1200 amps) Owner(s): XCEL ~9 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	5.3	DC Runback	
450	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	11.5	DC Runback	
635	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV Open Maple River 345/230 kV tx 2 Open Maple River 345/230 kV tx 1	10.2	Reconductor to 2044 Amps (1272 ACSS) -$ 2.59M	2.59
635	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV	10.2		
730	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	8.4	DC Runback	
730	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	8.4	DC Runback	
785	Roseau N-Roseau S Series Caps 500 kV at 100% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	System Intact	12.8	Construct Bison-Brookings 345 kV line (to get 545.1 MW transfer) $270M	$270.00M
835	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601047 QUARRY3 345 2	16.8	DC Runback	
845	Coon Creek-Kohlman Lake 345 kV at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~15 Miles	Open Coon Creek-Terminal 345 kV	7.4	Upgrade (Terminal Equipment)	$.50M
875	Arpin 345/138 kV Tx at 113% of 336 MVA Owner(s): 691	Open Arpin-Rocky run 345 kV	6.0	Upgrade To 550 MVA	$7.50M
995	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open Brookings Co - Lyon Co 345 kV	28.1	Upgrade to 1673 Amps (954 ACSS)	$11.24M
1030	Roseau N-Roseau S Series Caps 500 kV at 100% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	System Intact	12.4	Roseau Series Cap 2000 A Limit	
1120	Sigel-Arpin 138 kV at 100% of 287 MVA (1201 amps) Owner(s): 691 5.23 Miles	Open Arpin-Rocky run 345 kV	5.1	Upgrade to 1388 Amps (795 ACSS)	$7.85M
1190	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 1 Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 2	26.4		
1215	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~3 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	14.7	DC Runback	$1.00M
1230	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	10.1	DC Runback	$9.45M
1270	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 1 Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 2	26.3		
1465	Coon Creek-Kohlman Lake 345 kV at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~15 Miles	Open Coon Creek-Terminal 345 kV Open 601024 TERMINL3 345 605585 TERMID1Y 110 10 Open 603110 TERMINL7 115 605585 TERMID1Y 110 10 Open 605516 TERTER19 34.5 605585 TERMID1Y 110 10	7.4		
1540	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	7.4	DC Runback	
1540	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	7.4	DC Runback	0
1540	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open Ridgeway-Richer 230 kV	12.9	DC Runback	
1540	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	14.3	DC Runback	
1565	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	15.1	DC Runback	

1585	Quarry 345/115 kV Tx at 115% of 448 MVA Owner(s): XCEL	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	7.7	DC Runback	0
1625	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~3 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2 Change bus 667033 DORSEYS4 230 load by 486.5 MW dispatch	14.7	Uprate to 2500 Amps (Conductor Rating)	$1.00M
1645	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open T-Corners-Wien 115 kV Open Council Creek-Timberwolf 69 kV Open Mauston-Hilltop 69 kV	13.0	Upgrade to (2-795 ACSS)	$159.04M
1650	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open T-Corners-Wien 115 kV Open Council Creek-Timberwolf 69 kV Open Mauston-Hilltop 69 kV	13.0		
1665	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open Council Creek-Timberwolf 69 kV Open Mauston-Hilltop 69 kV Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.8		
1665	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open Council Creek-Timberwolf 69 kV Open Mauston-Hilltop 69 kV Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.8		
1675	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2 Change bus 667033 DORSEYS4 230 load by 486.5 MW dispatch	10.1	Upgrade to (2-795 ACSS)	$9.45M
1685	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	24.0		
1690	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open Council Creek-Timberwolf 69 kV Open Mauston-Hilltop 69 kV Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.8		
1705	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 1 Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 1	24.1		
1860	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	7.2	Upgrade To 550 MVA	$7.50M
1860	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 1	7.2	Upgrade To 550 MVA	$7.50M
1950	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2 Change bus 667033 DORSEYS4 230 load by 486.5 MW dispatch	7.4		
1955	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2 Change bus 667033 DORSEYS4 230 load by 486.5 MW dispatch	7.4		
1980	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	System Intact	22.9		

BisonBrookGe

Case File - C:\MP-MH-EHV\Work\Bison-Zion\Bison-Zion-PF\MH_SUPK_B_W1B.sav
Sub File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV.sub
Mon File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH.mon
Con File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV-W1B.con
Exc File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH-Exclude.exc

Transfer From: n
Transfer To: EAST_MISO
Transfer Level: 3000 MW
Transfer Goal: 2000 MW
System Intact DF 5.%
Contingency DF 5.%

Tue, 04 Sep 2012 13:22:54

Transfer MW	Limiting Facility	Outage	DF%	Remedy	$M
-530	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV	12.6	Upgrade to 2106 Amps (1590 ACSS)	$13.90M
-530	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV Open Maple River 345/230 kV tx 2 Open Maple River 345/230 kV tx 1	12.6		
-270	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601045 ALEXSS3 345 601047 QUARRY3 345 1 Open 601045 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	19.5		
-250	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601045 ALEXSS3 345 601067 BISON 3 345 1	19.0		
-235	Roseau N-Roseau S Series Caps 500 kV at 100% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	System Intact	15.2	Construct Bison-Brookings 345 kV line (to get 545.1 MW transfer) $270M	$270.00M
75	Roseau N-Roseau S Series Caps 500 kV at 100% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	System Intact	14.4	Roseau Series Cap 2000 A Limit	
210	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601045 ALEXSS3 345 601047 QUARRY3 345 1 Open 601045 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	17.8		
230	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601045 ALEXSS3 345 601067 BISON 3 345 1	17.4		
490	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open Ridgeway-Richer 230 kV	15.0		
515	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open Shannon-Running 230 kV	15.0		
565	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601045 ALEXSS3 345 601047 QUARRY3 345 1	16.9		
695	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	8.6	Upgrade To 550 MVA	$7.50M
695	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 1	8.6	Upgrade To 550 MVA	$7.50M
855	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open Brookings Co - Lyon Co 345 kV	29.0	Upgrade to 1755 Amps (1192 ACSS)	$11.28M
930	Arpin 345/138 kV Tx at 113% of 336 MVA Owner(s): 691	Open Arpin-Rocky run 345 kV	5.9	Upgrade To 448 MVA	$6.00M
930	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~3 Miles	Open Bison-Maple River 230 kV	14.8	Uprate to 2500 Amps (Conductor Rating)	$1.00M
1040	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 1 Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 2	27.2		
1065	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601045 ALEXSS3 345 601067 BISON 3 345 1	10.0		
1070	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~3 Miles	Open 601045 ALEXSS3 345 601067 BISON 3 345 1	14.7		
1100	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601045 ALEXSS3 345 601047 QUARRY3 345 1 Open 601045 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	9.9		
1120	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~3 Miles	Open 601045 ALEXSS3 345 601047 QUARRY3 345 1 Open 601045 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	14.3		
1120	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 1 Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 2	27.1		
1175	Sigel-Arpin 138 kV at 100% of 287 MVA (1201 amps) Owner(s): 691 5.23 Miles	Open Arpin-Rocky run 345 kV	5.0	Upgrade to 1375 Amps (795 ACSS)	$7.85M
1255	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Bison-Maple River 230 kV	7.4		
1260	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Bison-Maple River 230 kV	7.4		
1395	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601045 ALEXSS3 345 601067 BISON 3 345 1	7.3		

1400	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601045 ALEXSS3 345 601067 BISON 3 345 1	7.3		
1450	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601045 ALEXSS3 345 601047 QUARRY3 345 1 Open 601045 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	7.2		
1455	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601045 ALEXSS3 345 601047 QUARRY3 345 1 Open 601045 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	7.2		
1500	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Maple River-Red River 115 1	8.2	Upgrade to (2-795 ACSS)	$9.45M
1570	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 1 Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 1	24.6		
1605	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 652506 FTTHOMP3 345 659105 LELANDO3 345 1	23.8		
1665	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open T-Corners-Wien 115 kV Open Council Creek-Timberwolf 69 kV Open Mauston-Hilltop 69 kV	13.0	Upgrade to (2-795 ACSS)	$159.04M
1675	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open T-Corners-Wien 115 kV Open Council Creek-Timberwolf 69 kV Open Mauston-Hilltop 69 kV	13.0		
1685	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open Council Creek-Timberwolf 69 kV Open Mauston-Hilltop 69 kV Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.8		
1685	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open Council Creek-Timberwolf 69 kV Open Mauston-Hilltop 69 kV Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.8		
1710	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open Council Creek-Timberwolf 69 kV Open Mauston-Hilltop 69 kV Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.8		
1730	Chisago County 500/345/34.5 kV Tx #10 at 115% of 1203 MVA Owner(s): XCEL	Open Chisago County 500/345/34.5 kV Tx #9	11.9	Upgrade To Beyond Single Tx	$25.00M
1735	Chisago County 500/345/34.5 kV Tx #9 at 115% of 1203 MVA Owner(s): XCEL	Open Chisago County 500/345/34.5 kV Tx #10	11.9	Upgrade To Beyond Single Tx	$25.00M
1755	Maple River 345/230 kV tx 1 at 100% of 336 MVA Owner(s): OTP	System Intact	5.6		
1755	Maple River 345/230 kV tx 2 at 100% of 336 MVA Owner(s): OTP	System Intact	5.6		
1855	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	System Intact	23.4		
1910	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Wahpeton-Fergus Falls 230 kV Open Wahpeton-Frontier 230 kV Open Wahpeton 230/115 kV tx #1	9.0		
1920	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Frontier-Maple River 230 kV	9.0		
1990	Watertown 230/115 k V Tx at 200% of 250 MVA Owner(s): WAPA	Open Brookings Co - Lyon Co 345 kV	11.2	Upgrade To 550 MVA	$7.50M

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Case File -	C:\MP-MH-EHV\Work\Bison-Zion\Bison-Zion-PF\MH_SUPK_B_W2A.sav	Transfer From:	n	Tue, 05 Jun 2012 15:54:43
Sub File -	C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV.sub	Transfer To:	EAST_MISO	
Mon File -	C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH.mon	Transfer Level:	3000 MW	
Con File -	C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV-W2A.con	Transfer Goal:	2000 MW	
Exc File -	C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH-Exclude.exc	System Intact DF	5.%	
		Contingency DF	5.%	

Transfer MW	Limiting Facility	Outage	DF%	Remedy	Upgrade Estimate
465	Roseau N-Roseau S Series Caps 500 kV at 100% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	System Intact	13.4	Roseau Series Cap 2000 A Limit	5.00M
685	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~60 Miles	Open 601031 BRKNGCO3 345 601048 LYON CO 3 345 1	28.8	Increase conductor temperature - $6.0	6
785	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10 Miles	Open Bison-Maple River 345 kV Open Maple River 345/230 kV tx 2 Open Maple River 345/230 kV tx 1	10.7		
785	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV	10.7	Reconductor to 2044 Amps (1272 ACSS) -$ 2.59M	2.59
830	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	16.0		
835	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601057 MIDCOMP-N 500 601060 BISON 500 1	14.9		
840	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601057 MIDCOMP-N 500 601059 MIDCOMP-S 500 1	14.9		
840	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601058 BRKNGCO2 500 601059 MIDCOMP-S 500 1	14.9		
850	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 1 Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 2	27.4		
855	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	15.7		
920	Arpin 345/138 kV Tx at 113% of 336 MVA Owner(s): 691	Open Arpin-Rocky run 345 kV	5.9	Upgrade To 448 MVA - $6M	6
920	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 1 Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 2	27.3		
940	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 667039 RIDGEWY4 230 667046 RICHER 4 230 1	14.0		
965	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 608527 SHANNON4 230 657753 RUNNING4 230 1	14.0		
995	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 1 Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 2	15.4		
1020	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 1 Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 2	15.5		
1060	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601031 BRKNGCO3 345 601048 LYON CO 3 345 1	15.4		
1175	Sigel-Arpin 138 kV at 100% of 287 MVA (1201 amps) Owner(s): 691 5.23 Miles	Open Arpin-Rocky run 345 kV	5.0	Upgrade to 1374 Amps (795 ACSS) - $4.18M	4.18
1280	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	25.3		
1290	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 652506 FTTHOMP3 345 659105 LELANDO3 345 1	24.6		
1300	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	25.1		
1305	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 1 Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 1	25.2		
1335	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 652523 SIOUXFL4 230 652606 LETCHER4 230 1 Open 652513 HANLON 4 230 652523 SIOUXFL4 230 1	24.2		

1340	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	25.0		
1345	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	24.9		
1450	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	8.2	Upgrade To 550 MVA - $7.5M	7.5
1450	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 1	8.2	Upgrade To 550 MVA - $7.5M	7.5
1550	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	System Intact	24.0		
1635	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Change bus 667033 DORSEYS4 230 load by 501.5 MW dispatch	25.1		
1640	Watertown 230/115 k V Tx at 110% of 250 MVA Owner(s): WAPA	Open 601031 BRKNGCO3 345 601048 LYON CO 3 345 1	11.1	Upgrade To 550 MVA - $7.5M	8.8
1640	Watertown 345/230 kV Tx at 125% of 400 MVA Owner(s): WAPA	Open 601031 BRKNGCO3 345 601048 LYON CO 3 345 1	11.1	Upgrade To 550 MVA - $7.5M	7.5
1650	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	13.0	Upgrade to 2144 Amps (2 x 795 ACSS) - $159.04M	159.04
1655	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	13.0		
1670	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.8		
1670	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.8		
1695	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.8		
1695	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.8		
1700	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~3 Miles	Open Bison-Maple River 230 kV	14.1	Upgrade to 2500 Amps (Conductor Ratings) - $1M	1
1700	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Change bus 667033 DORSEYS4 230 load by 501.5 MW dispatch	25.0		
1720	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV	12.7		
1745	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV	12.7		
1820	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Change bus 667033 DORSEYS4 230 load by 501.5 MW dispatch	24.6		
1830	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Close 601061 DBCOMPN 500 601062 DBCOMP5 500 2 Open 601061 DBCOMPN 500 601062 DBCOMP5 500 1 Change bus 667033 DORSEYS4 230 load by 501.5 MW dispatch	24.5		
1835	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open Bison 500/345 kV Tx #1 Change bus 667033 DORSEYS4 230 load by 501.5 MW dispatch	21.3		
1840	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Arpin-Rocky run 345 kV Open 699241 POE 138 138 699939 SAL 138 138 1 Open 698948 HOLYWOOD 138 699241 POE 138 138 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 699706 WIEN 115 699710 STRATFRD 115 1	12.7		
1840	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open 348915 4E GALESBG N 138 636672 GALESBR5 161 1 Open 348915 4E GALESBG N 138 636672 GALESBR5 161 2 Open 636636 OAKGROV5 161 636672 GALESBR5 161 1	12.5		
2000	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~3 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	13.6		

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Case File - C:\MP-MH-EHV\Work\Bison-Zion\Bison-Zion-PF\MH_SUPK_B_W2B.sav
Sub File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV.sub
Mon File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH.mon
Con File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV-W2B.con
Exc File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH-Exclude.exc

Transfer From: n
Transfer To: EAST_MISO
Transfer Level: 3000 MW
Transfer Goal: 2000 MW
System Intact DF 5.%
Contingency DF 5.%

Tue, 05 Jun 2012 16:06:04

Transfer MW	Limiting Facility	Outage	DF%	Remedy	Upgrade Estimate
-30	Roseau N-Roseau S Series Caps 500 kV at 100% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	System Intact	14.2	Roseau Series Cap 2000 A Limit	$.00M
90	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV	11.5	Reconductor to 2044 Amps (1272 ACSS) -$ 2.59M	2.59
90	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV Open Maple River 345/230 kV tx 2 Open Maple River 345/230 kV tx 1	11.5		
145	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	17.5		
165	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	17.2		
385	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 667039 RIDGEWY4 230 667046 RICHER 4 230 1	14.8		
420	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 608627 SHANNON4 230 657753 RUNNING4 230 1	14.8		
495	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1	16.7		
515	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 1	16.7		
570	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 602013 ROSEAU 4 230 667046 RICHER 4 230 1	14.8		
570	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 602013 ROSEAU 4 230 657757 MORANVI4 230 1 Open 602013 ROSEAU 4 230 667046 RICHER 4 230 1	14.8		
580	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 602013 ROSEAU 4 230 657757 MORANVI4 230 1	14.8		
680	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 657757 MORANVI4 230 657760 LUND 4 230 1	14.8		
770	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	8.7	Upgrade To 550 MVA - $7.5M	7.5
770	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	8.7		
770	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 1	8.7	Upgrade To 550 MVA - $7.5M	7.5
775	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 1	8.7		
870	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~60Miles	Open 601031 BRKNGCO3 345 601048 LYON CO 3 345 1	29.0	Increase conductor temperature - $6.0	6
890	Arpin 345/138 kV Tx at 113% of 336 MVA Owner(s): 691	Open Arpin-Rocky run 345 kV	5.9	Upgrade To 448 MVA - $6M	6
1005	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open Bison-Maple River 230 kV	14.9	Upgrade to 2500 Amps (Conductor Ratings) - $1M	1
1055	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 1 Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 2	27.2		
1105	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	10.2	DC Runback	
1115	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~3 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	14.9		
1135	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 1 Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 2	27.1		
1140	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	10.0	DC Runback	
1140	Sigel-Arpin 138 kV at 100% of 287 MVA (1201 amps) Owner(s): 691 5.23 Miles	Open Arpin-Rocky run 345 kV	5.0	Upgrade to 1382 Amps (795 ACSS) - $4.18M	4.18

1165	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~3 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	14.5		
1325	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Bison-Maple River 230 kV	7.5		
1325	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Bison-Maple River 230 kV	7.5		
1385	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Change bus 667033 DORSEYS4 230 load by 454.5 MW dispatch	17.2		
1440	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	7.4		
1440	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	7.4		
1485	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~3 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Change bus 667033 DORSEYS4 230 load by 454.5 MW dispatch	14.9		
1495	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	7.3		8.8
1500	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	7.3		
1505	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Change bus 667033 DORSEYS4 230 load by 454.5 MW dispatch	10.2	Upgrade to (2-795 ACSS)	$9.45M
1565	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Maple River-Red River 115 1	8.3		
1585	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 1 Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 1	24.7		
1625	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 652506 FTTHOMP3 345 659105 LELANDO3 345 1	23.9		
1645	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 652523 SIOUXFL4 230 652606 LETCHER4 230 1 Open 652513 HANLON 4 230 652523 SIOUXFL4 230 1	23.5		
1650	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	13.0	Upgrade to 2144 Amps (2 x 795 ACSS) - $159.04M	159.04
1650	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	13.0		
1665	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	24.2		
1665	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 2 Open 601049 FRANKLN 3 345 603028 FRANKLN7 115 1	24.3		
1670	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	24.1		
1670	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	24.1		
1675	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.8		
1675	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.8		
1700	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.8		
1700	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.8		
1725	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV	12.7		

1735	Roseau N-Roseau S Series Caps 500 kV at 110% of 1732 MVA (2000 amps) Owner(s): XCEL Zero Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Change bus 667033 DORSEYS4 230 load by 454.5 MW dispatch	16.7		
1750	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV	12.7		
1805	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Change bus 667033 DORSEYS4 230 load by 454.5 MW dispatch	7.4		
1810	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Change bus 667033 DORSEYS4 230 load by 454.5 MW dispatch	7.4		
1815	Maple River 345/230 kV tx 1 at 100% of 336 MVA Owner(s): OTP	System Intact	5.7		
1820	Maple River 345/230 kV tx 2 at 100% of 336 MVA Owner(s): OTP	System Intact	5.7		
1845	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Arpin-Rocky run 345 kV Open 699241 POE 138 138 699939 SAL 138 138 1 Open 698948 HOLYWOOD 138 699241 POE 138 138 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 699706 WIEN 115 699710 STRATFRD 115 1	12.7		
1850	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open 601028 EAU CL 3 345 602021 EAU CLA5 161 9	12.3		
1870	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	System Intact	23.4		
1935	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Change bus 667033 DORSEYS4 230 load by 454.5 MW dispatch	24.0		
1960	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Wahpeton-Fergus Falls 230 kV Open Wahpeton-Frontier 230 kV Open 620191 WAHPET1Y 230 620329 WAHPETN4 230 1 Open 620191 WAHPET1Y 230 620229 WAHPETN7 115 1 Open 620129 WAHPETN9 41.6 620191 WAHPET1Y 230 1	9.1		
1965	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Change bus 667033 DORSEYS4 230 load by 454.5 MW dispatch	24.1		
1970	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Frontier-Maple River 230 kV	9.1		
1980	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open Wahpeton-Frontier 230 kV	9.1		
1980	Watertown 230/115 k V Tx at 110% of 250 MVA Owner(s): WAPA	Open 601031 BRKNGCO3 345 601048 LYON CO 3 345 1	11.2	Upgrade To 550 MVA - $7.5M	7.5
1980	Watertown 345/230 kV Tx at 125% of 400 MVA Owner(s): WAPA	Open 601031 BRKNGCO3 345 601048 LYON CO 3 345 1	11.2	Upgrade To 550 MVA - $7.5M	7.5

Iron Range Option

BisonBrookGe

Case File - C:\MP-MH-EHV\Work\Bison-Zion\Bison-Zion-PF\MH_SUPK_B_Y1A.sav
Sub File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV.sub
Mon File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH.mon
Con File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV-Y1A.con
Exc File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH-Exclude.exc

Transfer From: n
Transfer To: EAST_MISO
Transfer Level: 3000 MW
Transfer Goal: 2000 MW
System Intact DF 5.%
Contingency DF 5.%

Wed, 06 Jun 2012 17:12:52

Transfer MW	Limiting Facility	Outage	DF%	Remedy	Upgrade Estimate
1175	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~60 Miles	Open 601031 BRKNGCO3 345 601048 LYON CO 3 345 1	28.6	Increase conductor temperature - $6.0	6
1175	Arpin 345/138 kV Tx at 113% of 336 MVA Owner(s): 691	Open Arpin-Rocky run 345 kV	5.7	Upgrade To 448 MVA - $6M	6
1435	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 1 Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 2	26.6		
1510	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	19.1	Upgrade to 1504 Amps (795 ACSS) - $9.1M	9.1
1535	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 1 Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 2	26.5		
1550	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	28.4	Upgrade to 2500 Amps (Conductor Ratings) - $1M	1
1720	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	14.2	Upgrade To 550 MVA - $7.5M	7.5
1720	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	14.2	Upgrade To 550 MVA - $7.5M	7.5
1730	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.9	Upgrade to 2144 Amps (2 x 795 ACSS) - $159.04M	159.04
1735	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.9		
1750	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1750	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1765	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1765	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1795	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV	12.6		
1820	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV	12.6		
1830	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Arrowhead-Stone Lake 345 kV	12.3		
1860	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Stone Lake-Gardner Park 345 kV	12.4		
1860	Quarry-St. Cloud 115 kV at 100% of 239 MVA (1200 amps) Owner(s): XCEL ~9 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	7.1	Upgrade to 1250 Amps (636 ACSS) - $6.66M	

BisonBrookGe

Case File - C:\MP-MH-EHV\Work\Bison-Zion\Bison-Zion-PF\MH_SUPK_B_Y1AP.sav
Sub File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV.sub
Mon File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH.mon
Con File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV-Y1AP.con
Exc File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH-Exclude.exc

Transfer From: n
Transfer To: EAST_MISO
Transfer Level: 3000 MW
Transfer Goal: 2000 MW
System Intact DF 5.%
Contingency DF 5.%

Wed, 06 Jun 2012 17:18:19

Transfer MW	Limiting Facility	Outage	DF%	Remedy	Upgrade Estimate
1160	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~60 Miles	Open 601031 BRKNGCO3 345 601048 LYON CO 3 345 1	28.6	Upgrade to 1603 Amps (954 ACSS) - $11.24M	11.24
1190	Arpin 345/138 kV Tx at 113% of 336 MVA Owner(s): 691	Open Arpin-Rocky run 345 kV	5.7	Upgrade To 448 MVA - $6M	6
1415	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 1 Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 2	26.6		
1500	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	19.1	Upgrade to 1507 Amps (795 ACSS) - $9.1M	9.1
1520	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 1 Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 2	26.5		
1525	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~10 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	28.4	Upgrade to 2500 Amps (Conductor Ratings) - $1M	1
1695	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	14.2	Upgrade To 550 MVA - $7.5M	7.5
1695	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 2	14.2	Upgrade To 550 MVA - $7.5M	7.5
1735	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.9	Upgrade to 2144 Amps (2 x 795 ACSS) - $159.04M	159.04
1735	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.9		
1750	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1750	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1770	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1770	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1800	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV	12.6		
1800	Quarry-St. Cloud 115 kV at 100% of 239 MVA (1200 amps) Owner(s): XCEL ~9 Miles	Open 601010 MNTCELO3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 2	7.1	Upgrade to 1272 Amps (636 ACSS) - $6.66M	6.66
1820	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV	12.6		
1835	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Arrowhead-Stone Lake 345 kV	12.3		
1860	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Stone Lake-Gardner Park 345 kV	12.4		
1905	Coon Creek-Kohlman Lake 345 kV at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~15 Miles	Open Coon Creek-Terminal 345 kV	10.4	Upgrade to 1385 Amps (Terminal Equipment) - $0.5M	0.5
2000	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 1 Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 1	23.8		

Case File - C:\MP-MH-EHV\Work\Bison-Zion\Bison-Zion-PF\MH_SUPK_B_Y1B.sav
Sub File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV.sub
Mon File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH.mon
Con File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV-Y1B.con
Exc File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH-Exclude.exc

BisonBrookGe
Transfer From: n
Transfer To: EAST_MISO
Transfer Level: 3000 MW
Transfer Goal: 2000 MW
System Intact DF 5.%
Contingency DF 5.%

Fri, 08 Jun 2012 14:38:51

Transfer MW	Limiting Facility	Outage	DF%	Remedy	Upgrade Estimate
1130	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~60 Miles	Open Brookings Co - Lyon Co 345 kV	29.1	Increase conductor temperature - $6.0	6
1230	Arpin 345/138 kV Tx at 113% of 336 MVA Owner(s): 691	Open Arpin-Rocky run 345 kV	5.6	Upgrade To 448 MVA - $6M	6
1370	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~60 Miles	Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 1 Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 2	27.2		
1375	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10 Miles	Open Bison-Maple River 345 kV Open Maple River 345/230 kV tx 2 Open Maple River 345/230 kV tx 1	20.8	Upgrade to 1631 Amps (954 ACSS) - $13.1M	13.1
1375	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10 Miles	Open Bison-Maple River 345 kV	20.8		
1470	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~60 Miles	Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 1 Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 2	27.1		
1515	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	19.1	Upgrade to 1501 Amps (795 ACSS) - $9.1M	9.1
1515	Sheyenne-Maple River 230 at 110% of 459 MVA (1152 amps) Owner(s): XCEL ~7 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	19.1		
1555	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~3 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	28.4	Upgrade to 1537 Amps (795 ACSS) - $8.4M	8.4
1560	Bison-Maple River 345 kV at 110% of 720 MVA (1205 amps) Owner(s): MPC ~3 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	28.2		
1725	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	14.2	Upgrade To 550 MVA - $7.5M	7.5
1725	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	14.2	Upgrade To 550 MVA - $7.5M	7.5
1730	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	14.1		
1730	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	14.1		
1750	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.9	Upgrade to 2119 Amps (1590 ACSS) - $159.04M	159.04
1750	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.9		
1765	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1765	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1785	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1785	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1815	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Claire 345 kV Open Eau Claire-Arpin 345 kV	12.6		
1835	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Claire-Arpin 345 kV	12.6		
1840	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Arrowhead-Stone Lake 345 kV	12.2		

1870	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Stone Lake-Gardner Park 345 kV	12.4	
1915	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	14.8	
1915	Maple River 345/230 kV tx 1 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 2	14.8	
1915	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 1	14.8	
1915	Maple River 345/230 kV tx 2 at 125% of 336 MVA Owner(s): OTP	Open Maple River 345/230 kV tx 1	14.8	
1960	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 1 Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 1	24.2	

BisonBrookGe

Case File - C:\MP-MH-EHV\Work\Bison-Zion\Bison-Zion-PF\MH_SUPK_B_Y2A.sav
Sub File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV.sub
Mon File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH.mon
Con File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV-Y2A.con
Exc File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH-Exclude.exc

Transfer From: n
Transfer To: EAST_MISO
Transfer Level: 3000 MW
Transfer Goal: 2000 MW
System Intact DF 5.%
Contingency DF 5.%

Wed, 06 Jun 2012 17:24:55

Transfer MW	Limiting Facility	Outage	DF%	Remedy	Upgrade Estimate
1190	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~60 Miles	Open 601031 BRKNGCO3 345 601048 LYON CO 3 345 1	31.3	Increase conductor temperature - $6.0	6
1245	Arpin 345/138 kV Tx at 113% of 336 MVA Owner(s): 691	Open Arpin-Rocky run 345 kV	5.5	Upgrade To 448 MVA - $6M	6
1335	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 1 Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 2	29.6		
1400	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 1 Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 2	29.5		
1720	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	27.4		
1725	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open Arrowhead-Stone Lake 345 kV	26.2		
1730	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601046 ALEXSS3 345 601067 BISON 3 345 1	27.2		
1745	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.9	Upgrade to 2144 Amps (2 x 795 ACSS) - $159.04M	159.04
1745	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.9		
1750	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 652506 FTTHOMP3 345 659105 LELANDO3 345 1	26.0		
1760	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1760	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1760	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 1 Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 1	26.9		
1780	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1780	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1805	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1	27.0		
1810	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV	12.6		
1815	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601010 MNTCELO3 345 601047 QUARRY3 345 1	27.0		
1830	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV	12.6		
1840	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Arrowhead-Stone Lake 345 kV	12.2		
1870	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Stone Lake-Gardner Park 345 kV	12.4		
1980	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open Arrowhead-Stone Lake 345 kV Change bus 667033 DORSEYS4 230 load by 567.8 MW dispatch	26.2		

BisonBrookGe

Case File - C:\MP-MH-EHV\Work\Bison-Zion\Bison-Zion-PF\MH_SUPK_B_Y2B.sav
Sub File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV.sub
Mon File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH.mon
Con File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP_MH_EHV-Y2B.con
Exc File - C:\MP-MH-EHV\Work\Bison-Zion\MUST-Input\MP-MH-Exclude.exc

Transfer From: n
Transfer To: EAST_MISO
Transfer Level: 3000 MW
Transfer Goal: 2000 MW
System Intact DF 5.%
Contingency DF 5.%

Wed, 06 Jun 2012 17:27:03

Transfer MW	Limiting Facility	Outage	DF%	Remedy	Upgrade Estimate
1165	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~60 Miles	Open 601031 BRKNGCO3 345 601048 LYON CO 3 345 1	30.3	Increase conductor temperature - $6.0	6
1235	Arpin 345/138 kV Tx at 113% of 336 MVA Owner(s): 691	Open Arpin-Rocky run 345 kV	5.6	Upgrade To 448 MVA - $6M	6
1350	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 1 Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 2	28.5		
1430	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 1 Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 2	28.4		
1710	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10 Miles	Open Bison-Maple River 345 kV Open Maple River 345/230 kV tx 2 Open Maple River 345/230 kV tx 1	17.4	Reconductor to 2044 Amps (1272 ACSS) -$ 2.59M	2.59
1710	Bison-Maple River 230 kV at 100% of 520 MVA (1305 amps) Owner(s): MPC 10.37 Miles	Open Bison-Maple River 345 kV	17.4		
1745	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.9	Upgrade to 2144 Amps (2 x 795 ACSS) - $159.04M	159.04
1750	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV Open 603152 T-CRNRS7 115 699706 WIEN 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1	12.9		
1760	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1760	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1780	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1780	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV Open 699706 WIEN 115 699710 STRATFRD 115 1 Open 698342 COC 69 69.0 699901 TIMBERWOLF 69.0 1 Open 680121 MAUSTON 69.0 698333 HLT 69 69.0 1 Open 680242 LUBLIN 69.0 680505 LAKEHEAD 69.0 1	12.7		
1810	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open AS King-Eau Clairee 345 kV Open Eau Clairee-Arpin 345 kV	12.6		
1830	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Eau Clairee-Arpin 345 kV	12.6		
1840	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Arrowhead-Stone Lake 345 kV	12.2		
1845	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 1 Open 601048 LYON CO 3 345 601049 FRANKLN 3 345 1	25.6		
1870	Electric Jct-Nelson 345 kV at 100% of 1234 MVA (2065 amps) Owner(s): N/A ~56 Miles	Open Stone Lake-Gardner Park 345 kV	12.4		
1870	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open Arrowhead-Stone Lake 345 kV	24.8		
1880	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 652506 FTTHOMP3 345 659105 LELANDO3 345 1	24.7		
1905	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601046 ALEXSS3 345 601047 QUARRY3 345 1 Open 601046 ALEXSS3 345 601067 BISON 3 345 1 Open Alexandria 345/115 kV Tx	25.6		
1905	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 652523 SIOUXFL4 230 652606 LETCHER4 230 1 Open 652513 HANLON 4 230 652523 SIOUXFL4 230 1	24.4		
1910	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open Watertown 345/230 kV Tx Open Watertown 230/115 k V Tx Open 652237 WATERT19 13.8 BS1671 WT2 KU1A 1.00 1	25.6		
1915	Split Rock-White 345 kV line 1 at 100% of 717 MVA (1200 amps) Owner(s): XCEL ~4 Miles	Open 601049 FRANKLN 3 345 601050 HELENAS 3 345 2 Open 601049 FRANKLN 3 345 603028 FRANKLN7 115 1	25.2		