

## D2

This appendix contains all the Model on Demand projects and operational changes to the transmission system that have been included in the MISO Transmission Expansion Plan (MTEP). The changes applied to the models are listed with a matrix indicating which of the eight MTEP models the change applies to. A table of the models considered is shown below. Other information is provided as well such as project name, effective date, and submitting company.

Planning Year	Model Scenario	Case Type
2	Spring Light Load with 0% wind and 0% solar	Sensitivity
2	Summer Peak	Peak Year 2
5	Spring Light Load with 70% wind and 0% solar	Sensitivity
5	Summer shoulder with average wind	Off-peak Year 5
5	Summer shoulder with high wind	Sensitivity
5	Summer peak	Peak Year 5
5	Winter peak	MISO Sensitivity
10	Summer peak	Peak Year 10

### D3

This appendix supplies an overview of the Steady State portion of MISO’s annual Planning Assessment. It includes the current studies of the Near-Term and Long-Term Planning Horizons, Correct Action Plans or system adjustments to remediate initial deficiencies and meets the performance requirements of TPL-001 (as shown in the table below. This appendix also contains a complete set of steady state analysis results. BPM-020 describes how MISO performs the Planning Assessment in compliance with NERC TPL standards. Approximately 8 million Planning and Extreme Events are simulated for each of the eight models. This is done using PowerGem’s TARA program and Siemens PTI’s Power System Simulator for Engineering (PSSE).

Planning Year	Model Scenario	TPL Requirement
2	Spring Light Load with 0% wind and 0% solar	R2.1.3
2	Summer Peak	R2.1.1
5	Spring Light Load with 70% wind and 0% solar	R2.1.3
5	Summer shoulder with average wind	R2.1.2
5	Summer shoulder with high wind	R2.1.3
5	Summer peak	R2.1.1
5	Winter peak	Local Planning Criteria
10	Summer peak	R2.2.1

D4

This appendix is the annual voltage stability analysis. This is performed to measure the capability of each known voltage stability limited interfaces as well as potential new scenarios that could lead to more voltage stability issues. This assessment follows the established methodologies pursuant to FAC-010 and FAC-014. This analysis is performed using Powertech's VSAT powerflow software. System conditions of these locations are considered System Operating Limits (SOLs). Additional analysis is performed to determine if any SOLs are Interconnection Reliability Operating Limits (IROLs) which is pursuant to requirement R6 of PRC-023. Summary results are reviewed at the Planning Subcommittee (PSC).

D5

This appendix contains the results of MISO's transient stability analysis. The appendix describes system conditions that were modelled and used in the reliability assessment. The assessment is performed in compliance with NERC TPL standards. Disturbances are simulated for 30 seconds with a focus on monitoring first swing transient stability, angular oscillation, damping characteristic, and voltage recovery per local and regional planning criteria. The generic PRC-024 frequency and voltage ride-through capability are monitored for all MISO generators except for generating plants which have detailed frequency/voltage capabilities already specified. Results are peer reviewed by MISO stakeholder, primarily by Transmission Owner members through the MISO Sharefile site.

## D7

This appendix documents the contingencies that are simulated in MISO's steady state analysis as part of the assessment for compliance with NERC Transmission Planning standards. This documentation summarizes all single contingency event simulation and select multiple contingent events, along with the rational for any events that are not simulated. The focus of this analysis is on the 5-year Summer Peak model topology.

D8

This appendix describes the analyses and assessment performed by MISO in coordination with the Transmission Entities to ensure nuclear plant safe operation and shutdown. The analyses meet the requirements of the NERC NUC-001 standard as applicable to MISO in its role as the Planning Coordinator

D9

This appendix concerns the Transfer Capability Analysis that is performed annually in accordance with MISO's Transfer Capability Methodology outlined in BPM-020. This analysis assesses the transmission system to identify weaknesses and limiting facilities that could impact the Bulk Electric System's (BES) ability to reliably transfer energy in the Near-Term Transmission Planning Horizon. MISO presents a summary of the analysis at the Planning Subcommittee

D10

This appendix covers the short circuit analysis studies performed pursuant to NERC standard TPL-001. These studies are performed for the Near-Term Planning Horizon and corrective action plans are established for any breakers that do not meet the established performance criteria. This appendix provides an overview of the NERC short circuit requirements, methodology used by the Transmission Planners (TPs) within the MISO footprint, and the compiled results and corrective action plans derived from that analysis.