A. Introduction

1. Title: **Power System Stabilizer Requirement**

2. Number: **MPRC-018-0**

3. Purpose:

To ensure that power stabilizers are installed, designed and tuned as required to dampen small signal oscillations in the Midwest Reliability Organization (MRO)

4. Applicability

4.1. Planning Authority

4.2. Transmission Planner

4.3. Generator Owner

5. (Proposed) Effective Date: January 1, 2006

B. Requirements

R1. Small signal stability assessments shall be performed by the Planning Authority, Transmission Planner and Generator Owner on all generating units larger than 70 MVA prior to the generator in-service date.

R1.1. The Planning Authority, the Transmission Planner, and the Generation Owner shall also at least every five years thereafter review system condition changes to determine if an additional small signal stability assessment is required.

R2. The Generator Owner shall install Power System Stabilizers on all generator units larger than 70 MVA, prior to the generator's in-service date or as required by changes in system conditions, when the following conditions exist:

R2.1. Small signal stability assessments performed by the Planning Authority, Transmission Planner and Generator Owner, as required in Reliability Standard MPRC-018-0_R1, provide evidence of high generator relative participation (relative participation factors greater than 10 %) in a range of local, inter-plant and inter-area modes (0.1 to 2.0 Hz).

R2.2. Automatic Voltage Regulator open circuit 2% and 5% step response field tests performed by the Generator Owner show instability or inadequate damping.

R2.3. System performance assessments performed by the Planning Authority and Transmission Planner for disturbances defined in Categories A, B, and C of Table 1 in Reliability Standard TPL-001-0, TPL-002-0, TPL-003-0 and the MRO Disturbance-Performance Table show instability or inadequate damping.

R3. The Planning Authority, Transmission Planner and Generator Owner shall demonstrate through valid assessment that any Power System Stabilizer required in accordance with MPRC-018-0_R2 has been designed and tuned to have a positive damping effect on local generator oscillations as well as inter-plant and inter-area oscillations without deteriorating turbine-generator shaft torsional oscillation damping. To be valid, the Planning Authority, Transmission Planner and Generator Owner assessments shall:

R3.1. Be made prior to the in-service date of the generator and as required by changes in system conditions.

R3.2. Ensure system performance as defined in Categories A, B, and C of Table 1 in Reliability Standard TPL-001-0, TPL-002-0, TPL-003-0 and the MRO Disturbance-Performance Table.

R3.3. Provide results from field tests as required by NERC and the MRO such as:

R3.3.1. Frequency response test to verify the linear characteristics of the Power System Stabilizer or equivalent device.

R3.4. Provide results from any small signal stability study assessments required in the design of the Power System Stabilizer.

R4. When System simulations indicate an inability of the Power System Stabilizer to respond as prescribed in Reliability Standard MRO-PRC-018-0_R3, the Planning Authority, Transmission Planner and Generator Owner shall provide a written summary of its plan (e.g. install an equivalent device (e.g. power system stabilizer) to an existing Transmission Control Device) to achieve the required system performance.

R5. The Planning Authority, Transmission Planner and Generator Owner shall document the results of Reliability Assessment and Power System Stabilizer or equivalent device plans and shall provide the results to the Midwest Reliability Organization within thirty (30) days upon completion of the assessment.

C. Measures

M1. The Planning Authority, Transmission Planner and Generator Owner shall have a valid small signal stability assessment as specified in Reliability Standard MRO-PRC-018-0_R1.

M2. The Generator Owner shall have evidence it has installed a Power System Stabilizer as specified in Reliability Standard MPRC-018-0_R2 or an assessment that demonstrates the Power System Stabilizer is not required.

M3. The Planning Authority, Transmission Planner and Generator Owner shall have a valid assessment and corrective plan as specified in Reliability Standard MPRC-018-0_R3 and MPRC-018-0_R4.

M4. The Transmission Planner, Planning Authority and Generator Owner shall have evidence it reported documentation of results of its reliability assessments and power system stabilizer plans per Reliability Standard MPRC-018-0_R5.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

Midwest Reliability Organization

1.2. Compliance Monitoring Period and Reset Timeframe

On request (within 30 calendar days)

1.3. Data Retention

None specified

1.4. Additional Compliance Information

None

2. Levels of Non-Compliance

2.1. Level 1: Not applicable

2.2. Level 2: A valid power system stabilizer assessment and corrective plan were not provided.

2.3. Level 3: Evidence that a power system stabilizer is installed was not provided.

2.4. Level 4: Not applicable

Version History

Version	Date	Action	Change Tracking