

### **Definitions of Terms Used in Standard**

*This section includes all newly defined or revised terms used in the proposed standard. Terms already defined in the NERC Reliability Standards Glossary of Terms or the MRO Reliability Standards Glossary of Terms are not repeated here. New or revised definitions listed below become approved when the proposed standard is approved. When the standard becomes effective, these defined terms will be removed from the individual standard and added to the Midwest Reliability Organization (“MRO”) Glossary. NERC and MRO defined terms are capitalized in the standard.*

**Resource Adequacy**<sup>1</sup> is defined as the ability of supply-side and demand-side resources to meet the aggregate electrical demand and energy requirements of the end-use customers with a specified degree of reliability.

**Planned Reserve Sharing Group** (“PRSG”) is defined as a group of Load Serving Entities (“LSEs”) that agree to study their collective resources to assess the planned Resource Adequacy for the load of the PRSG as a whole.

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<sup>1</sup> Historically, the Resource Adequacy requirement was referred to as the planning reserve margin in MAIN Guide #6 and the Reserve Capacity Obligation (“RCO”) in the MAPP Generation Reserve Sharing Pool Handbook.

**A. Introduction**

1. **Title:** Planned Resource Adequacy Assessment<sup>2</sup>
2. **Number:** RES-501-MRO-01
3. **Purpose:** To establish common criteria by which to assess Resource Adequacy in the MRO for the 10 year planning horizon.
4. **Applicability**
  - 4.1. LSEs or as delegated to:
    - 4.1.1 Planned Reserve Sharing Group
    - 4.1.2 Resource Planner

**(Proposed) Effective Date:** Upon MRO Board Approval compliance monitoring for RES-501-MRO-01\_R3 will begin. Upon Canadian provincial agency exercising regulatory authority over an MRO member and FERC approval, financial sanctions for RES-501-MRO-01\_R3 will become effective.

One year after MRO Board Approval, compliance monitoring for RES-501-MRO-01\_R1 and RES-501-MRO-01\_R2 will begin. Upon Canadian provincial agency exercising regulatory authority over an MRO member and FERC approval, financial sanctions for RES-501-MRO-01\_R1 and RES-501-MRO-01\_R2 will become effective.

**B. Requirements**

- R1.** *[Violation Risk Factor: Medium].* The LSE and/or its delegate(s) shall perform and possess the documentation of a planned Resource Adequacy assessment.

To be valid, the Resource Adequacy assessment shall:

- R1.1** Be performed annually unless a document summarizing a review of system data that concludes that changes to system data used in the assessment do not warrant such a study is provided to the MRO. A study is warranted if changes have occurred that require revisions in any key assumptions such as generation mix and transmission limitations that are not covered by a sensitivity study.

**R1.1.1** The planned Resource Adequacy assessment is to be conducted for Year One through Year Ten. Year One is defined as the year that begins with the upcoming annual peak season.

**R1.1.2** The annual peak season for Resource Adequacy assessment is to be determined by the LSE and/or its delegate. The peak season is defined as a period consisting of two (2) or more calendar

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<sup>2</sup> In accordance with the Energy Policy Act of 2005, this standard does not authorize the MRO, ERO or FERC to order the construction of additional generation or transmission capacity or to set and enforce compliance with standards for adequacy or safety of electric facilities or services. Nothing in this standard shall be construed to preempt any authority of any State/Province to take action to ensure the safety, adequacy, and reliability of electric service within that State, as long as such action is not inconsistent with any reliability standard, as long as such action does not result in lesser reliability outside the State/Province than that provided by the reliability standards.

months but less than seven (7) calendar months, which includes the period during which the LSE or its Planned Reserve Sharing Group annual peak demand is expected to occur.

R1.1.2.1. If the peak season is determined by the PRSG, then the peak season is to apply for the PRSG in the aggregate. If the peak season is determined by the LSE or Resource Planner, then the peak season is to apply for the LSE.

**R1.2** Perform the assessment with LOLP of no greater than 0.1 day in one (1) year which equals the sum of the LOLE for the integrated daily peak hours for each year. This is done for each year of the ten year period in R1.1 to ensure meeting one (1) day in ten (10) years. Analysis to:

**R1.2.1** Use loads developed from the expected 50:50 probability load forecast,

**R1.2.2** Include load forecast uncertainty such as uncertainty due to load diversity, seasonal load variation, load variability due to other region economic forecasts or other factors.

**R1.2.3** Be performed for every day of each year throughout the period in R1.1.

Expected Unserved Energy may be performed as the method to meet R1.2 provided the results of such an assessment is compared with an LOLP analysis and the comparison is documented.

**R1.3** Include, at a minimum, documentation of how and why the following were/were not included in the analysis:

**R1.3.1** Resource availabilities.

**R1.3.1.1** Historic resource performance and any projected changes

**R1.3.1.2** Seasonal resource ratings

**R1.3.1.3** Modeling assumptions of non-conventional resources such as wind and cogeneration.

**R1.3.1.4** Energy limitations of hydroelectric units.

**R1.3.1.5** Merchant plant availabilities.

**R1.3.1.6** Modeling assumptions of firm capacity purchases and sales of the LSE and/or its delegates.

**R1.3.1.7** Availability and deliverability of fuel.

**R1.3.1.8** Common mode outages that effect resource adequacy

**R1.3.1.9** Other environmental or regulatory restrictions of resource availability.

**R1.3.1.10** Available Demand-Side Management.

**R1.3.1.11** Resource maintenance outage schedules.

**R1.3.1.12** Sensitivity to resource outage rates and resource capabilities.

**R1.3.1.12.1.** Consider impacts of extreme weather/drought conditions.

**R1.3.2** Load Characteristics

**R1.3.2.1** Load forecasts.

**R1.3.2.2** Load forecast uncertainty.

**R1.3.2.3** Load diversity

**R1.3.2.4** Seasonal load variations.

**R1.3.2.5** Load variability due to weather, regional economic forecasts, etc.

**R1.3.2.6** Daily demand modeling assumptions (firm, interruptible).

**R1.3.3** Transmission limitations that prevent the delivery of generation reserves.

**R1.3.3.1** Transmission maintenance outage schedules.

**R1.3.3.2** Transmission forced outage rates

**R1.3.3.3** Transmission availability for emergency considering firm commitments

**R1.3.4** Modeling assumptions for emergency operation procedures used during unexpected resource outages.

**R1.3.5** Emergency assistance from other interconnected systems including multi-area assessment considering transmission limitations.

**R1.3.6** Document and justify the inclusion of market resources not committed to serving load (uncommitted resources) within the planned Resource Adequacy Assessment analysis.

**R1.4** Express the planning reserve developed from R1.2 as a percentage of the 50:50 probability forecast peak load (planning reserve margin).

**R1.5** Document that the resource capacity is not counted more than once as reserve by multiple Load Serving Entities, and/or Planned Reserve Sharing Groups.

**R2.** *[Violation Risk Factor: Lower].* On an annual basis, the LSE and/or its delegate(s) shall document an assessment of its Resource Adequacy by comparing its load and resource capability for the ten year period in R1.1 with the planning reserve margin benchmark in R1.4.

**R3.** *[Violation Risk Factor: Lower].* Each LSE shall report to the MRO within 90 days of the effective date of RES-501-MRO-01\_R3, for each portion of its load whether the LSE or its delegate will be performing the studies, providing the results, or reporting, as required, in order to meet Reliability Standards RES-501-MRO-01\_R1 and R2 for that portion of its load. If the LSE delegates the tasks

for RES-501-MRO-01\_R1 and R2 for a portion of its load, the LSE will also indicate which Planned Reserve Sharing Group, or Resource Planner is delegated the tasks for Reliability Standard RES-501-MRO-01\_R1 and R2 for that portion of its load. If a LSE changes the party to which the tasks were delegated, the LSE shall notify the MRO at least 90 days prior to the proposed change or 180 days prior to the planning period under review, whichever is greater. The LSE does not have to delegate all of the tasks in Reliability Standards RES-501-MRO-01\_R1 and R2 to the same party. The LSE shall provide the MRO with evidence of acceptance of the delegation by the applicable party. All delegations are subject to verification by the MRO.

A LSE can meet this requirement for a portion of its load by providing confirmation in accordance with the reporting time requirements outlined in RES-501-MRO-01\_R3 that, for that portion of its load, the LSE's load is in a Balancing Authority Area that accounts for the LSE's load in its planning process and that the Balancing Authority is a member of a Planned Reserve Sharing Group.

**C. Measures**

- M1.** The LSE and/or its delegate(s) shall have a valid planned Resource Adequacy assessment covering the 10 year planning horizon per RES-501-MRO-01\_R1.
- M2.** The LSE and/or its delegate(s) shall have evidence that it has completed all the reports as required in RES-501-MRO-01\_R2 and RES-501-MRO-01\_R3.

**D. Compliance**

**1. Compliance Monitoring Process**

- 1.1. Compliance Monitoring Responsibility.** Midwest Reliability Organization.
- 1.2. Compliance Monitoring Period and Reset Timeframe.** Annual.
- 1.3. Annual Data Retention Period.** The MRO and the LSE and/or its delegate(s) shall each retain the data necessary to conduct the analysis and documentation of the latest results from such analysis along with evidence of plan implementation for five (5) years. In addition, entities found non-compliant shall keep information related to non-compliance until found compliant.

The Compliance Monitor shall keep the last audit and all subsequent compliance records.

- 1.4. Additional Compliance Information.** None specified

**2. Violation Severity Levels**

- Lower** The reporting requirement of RES-501-MRO-01\_R3 was not met.
- Moderate** A valid assessment was not performed in accordance with RES-501-MRO-01\_R2.
- High** Not Applicable.

**Severe**      A valid assessment was not performed in accordance with RES-501-MRO-01\_R1.

**Version History**

Version	Date	Action	Change Tracking
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