

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 Adequacy¹ 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 contractually commit to use their shared resources to meet the planned Resource Adequacy requirements for the load of the PRSG as a whole.

¹ 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 Requirement²
2. **Number:** RES-501-MRO-01
3. **Purpose:** To establish common criteria by which to assess Resource Adequacy in the MRO for the short term and long term planning horizon.
4. **Applicability**
 - 4.1. LSEs or as delegated to:
 - 4.1.1 Planned Reserve Sharing Group
 - 4.1.2 Resource Planner
 - 4.1.3 Planning Coordinator

(Proposed) Effective Date: Upon MRO Board Approval for RES-501-MRO-01_R4.

One year after MRO Board Approval for RES-501-MRO-01_R1 through RES-501-MRO-01_R3.

B. Requirements

- R1. *[Violation Risk Factor: Medium]*. The Load Serving Entity 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.
 - R1.1.1 The minimum planned Resource Adequacy requirements are to be determined for the short-term planning horizon (defined as the first year beginning exactly one (1) year prior to the end of the upcoming peak season of the year that the analysis is performed) and long-term planning horizon (defined as the second year immediately following the first year through the tenth year).
 - R1.1.2 The peak season for Resource Adequacy assessment is to be determined. The peak season is defined as a period consisting of two (2) or more calendar 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.

² 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.

- R1.2** Employ a Loss of Load Expectation (“LOLE”) methodology that combines the generation capacity outage probability with the expected demand to give an expected risk of load exceeding available capacity. This calculation shall be performed for every hour of each year throughout the short-term and long-term planning horizons in R1.1. The LOLE shall be accumulated for each year and for the ten years throughout the short-term and long-term planning horizons in R1.1.
- R1.3** Meet a LOLE of no greater than 0.1 day in one (1) year or one (1) day in ten (10) years throughout the short-term and long-term planning horizons in R1.1.
- R1.4** Include, at a minimum, documentation of how and why the following were/were not included in the analysis:
 - R1.4.1** Resource availabilities.
 - R1.4.1.1** Historic resource performance and any projected changes
 - R1.4.1.2** Seasonal resource ratings
 - R1.4.1.3** Modeling assumptions of non-conventional resources such as wind and cogeneration.
 - R1.4.1.4** Energy limitations of hydroelectric units.
 - R1.4.1.5** Merchant plant availabilities.
 - R1.4.1.6** Modeling assumptions of firm capacity purchases and sales of the LSE and/or its delegates.
 - R1.4.1.7** Availability and deliverability of fuel.
 - R1.4.1.8** Common mode outages that effect resource adequacy
 - R1.4.1.9** Other environmental or regulatory restrictions of resource availability.
 - R1.4.1.10** Uncertainty in unit forced outage rates.
 - R1.4.1.11** Available Demand-Side Management.
 - R1.4.1.12** Resource maintenance outage schedules.
 - R1.4.1.13** Sensitivity to resource outage rates and resource capabilities.
 - R1.4.13.1.** Consider impacts of extreme weather/drought conditions.
 - R1.4.2** Load characteristics
 - R1.4.2.1** Load forecasts.
 - R1.4.2.2** Load forecast uncertainty.
 - R1.4.2.3** Load diversity.
 - R1.4.2.4** Hourly demand modeling assumptions (firm, interruptible).

R1.4.3 Transmission limitations that prevent the delivery of generation reserves.

R1.4.3.1 Transmission maintenance outage schedules.

R1.4.3.2 Transmission forced outage rates

R1.4.3.3 Transmission availability for emergency considering firm commitments

R1.4.4 Modeling assumptions for emergency operation procedures used during unexpected resource outages.

R1.4.5 Emergency assistance from other interconnected systems including multi-area assessment considering transmission limitations.

R1.4.6 Document and justify the inclusion of market resources not committed to serving load (uncommitted resources) within the planned Resource Adequacy requirements analysis.

R1.5 Express the planned Resource Adequacy requirements as a percentage of the 50:50 probability forecast peak load (planning reserve margin).

R1.6 Document that the resource capacity is not counted more than once as reserve by multiple Load Serving Entities, Reserve Sharing Groups and/or Planning Reserve Sharing Groups.

R2. *[Violation Risk Factor: Lower].* The LSE and/or its delegate(s) shall annually provide the results of the planned Resource Adequacy assessment or the justification that such study need not be conducted and provide the results 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.

R3. *[Violation Risk Factor: Lower].* On an annual basis, the LSE and/or its delegate(s) shall submit an assessment of its Resource Adequacy by comparing its load and resource capability for the short-term and long-term planning horizons with the planned Resource Adequacy requirements in R1.

R4. *[Violation Risk Factor: Lower].* Each LSE shall report to the MRO within 90 days of the effective date of RES-501-MRO-01_R4, 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 through R3 for that portion of its load. If the LSE delegates its responsibility for meeting RES-501-MRO-01_R1 through R3 for a portion of its load, the LSE will also indicate which Planned Reserve Sharing Group, Resource Planner or Planning Coordinator is responsible for meeting the Reliability Standard RES-501-MRO-01_R1 through R3 for that portion of its load. If a LSE changes the party that is responsible, 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 requirements in Reliability Standards RES-501-MRO-01_R1 through R3 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_R4 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 short-term and long-term planning horizons 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 through R4.

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** One of the reporting requirements of RES-501-MRO-01_R2 through R4 was not met.
- Moderate** A valid analysis was not performed in accordance with RES-501-MRO-01_R3.
- High** Not Applicable.
- Severe** A valid analysis was not performed in accordance with RES-501-MRO-01_R1.

Version History

Version	Date	Action	Change Tracking
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