

**Standard BAL-502-RF-03**

Deleted: RFC-02 12/04/08

**A. Introduction**

**1. Title:** Planning Resource Adequacy Analysis, Assessment and Documentation

Style Definition: Section

**2. Number:** BAL-502-RF-03

Style Definition: Requirement

**3. Purpose:** To establish common criteria, based on "one day in ten year" loss of Load expectation principles, for the analysis, assessment and documentation of Resource Adequacy for Load in the ReliabilityFirst Corporation (RF) region.

Style Definition: List Number: Outline numbered + Level: 1 + Numbering Style: 1, 2, 3, ... + Start at: 1 + Alignment: Left + Aligned at: 0" + Tab after: 0.4" + Indent at: 0.4"

**4. Applicability**

Style Definition: Measure

**4.1 Functional Entities**

Style Definition: Style1

**4.1.1** Planning Coordinator

Deleted: RFC-02

**5. Effective Date:**

Formatted: Indent: Hanging: 0.15", Outline numbered + Level: 1 + Numbering Style: 1, 2, 3, ... + Start at: 1 + Alignment: Left + Aligned at: 0" + Tab after: 0.4" + Indent at: 0.4", Tab stops: 1.25", Left

**5.1** BAL-502-RF-03 shall become effective on the first day of the first calendar quarter that is after the date that this standard is approved by applicable regulatory authorities or as otherwise provided for in a jurisdiction where approval by an applicable governmental authority is required for a standard to go into effect.

Deleted: ¶

Formatted: Font: Not Italic

Deleted: RFC

Formatted: Font: Bold

Deleted: ¶

Formatted: Tab stops: 0.38", Left + Not at 0.5"

Formatted

Deleted:

Formatted: Font: Bold

Deleted: ¶

Formatted: Indent: Left: 0.25", Tab stops: 0.44", Left + Not at 0.5"

Deleted: 5.1 . Upon RFC Board approval ¶

¶

Formatted: Font: Italic, Font color: Auto

Deleted: R1

**B. Requirements and Measures**

**R1** The Planning Coordinator shall perform and document a Resource Adequacy analysis annually. The Resource Adequacy analysis shall [Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]:

**1.1** Calculate a planning reserve margin that will result in the sum of the probabilities for loss of Load for the integrated peak hour for all days of each planning year<sup>1</sup> analyzed (per R1.2) being equal to 0.1. (This is comparable to a "one day in 10 year" criterion).

Deleted: R1

**1.1.1** The utilization of Direct Control Load Management or curtailment of Interruptible Demand shall not contribute to the loss of Load probability.

Deleted: R1

**1.1.2** The planning reserve margin developed from R1.1 shall be expressed as a percentage of the median<sup>2</sup> forecast peak Net Internal Demand (planning reserve margin).

Deleted: R1

**1.2** Be performed or verified separately for each of the following planning years:

<sup>1</sup> The annual period over which the LOLE is measured, and the resulting resource requirements are established (June 1<sup>st</sup> through the following May 31<sup>st</sup>).

<sup>2</sup> The median forecast is expected to have a 50% probability of being too high and 50% probability of being too low (50:50).

Deleted: December 4<sup>th</sup>, 2008

**Standard BAL-502-RF-03**

Deleted: RFC-02 . 12/04/08

**1.2.1** Perform an analysis for Year One.

Deleted: R1

**1.2.2** Perform an analysis or verification at a minimum for one year in the 2 through 5 year period and at a minimum one year in the 6 through 10 year period.

Deleted: R1

**1.2.2.1** If the analysis is verified, the verification must be supported by current or past studies for the same planning year.

Deleted: R1

**1.3** Include the following subject matter and documentation of its use:

Deleted: R1

**1.3.1** Load forecast characteristics:

Deleted: R1

**1.3.1.1** Median (50:50) forecast peak Load.

Formatted: Indent: Left: 1.5", No bullets or numbering

**1.3.1.2** Load forecast uncertainty (reflects variability in the Load forecast due to weather and regional economic forecasts).

Formatted: Indent: Left: 1.5", Hanging: 0.5", No bullets or numbering

**1.3.1.3** Load diversity.

Formatted: Indent: Left: 1.5", No bullets or numbering

**1.3.1.4** Seasonal Load variations.

**1.3.1.5** Daily demand modeling assumptions (firm, interruptible).

**1.3.1.6** Contractual arrangements concerning curtailable/Interruptible Demand.

Formatted: Indent: Left: 1.5", Hanging: 0.5", No bullets or numbering

**1.3.2** Resource characteristics:

Deleted: R1

**1.3.2.1** Historic resource performance and any projected changes

Formatted: Indent: Left: 1.5", No bullets or numbering

**1.3.2.2** Seasonal resource ratings

**1.3.2.3** Modeling assumptions of firm capacity purchases from and sales to entities outside the Planning Coordinator area.

Formatted: Indent: Left: 1.5", Hanging: 0.5", No bullets or numbering

**1.3.2.4** Resource planned outage schedules, deratings, and retirements.

Formatted: Indent: Left: 1.5", No bullets or numbering

**1.3.2.5** Modeling assumptions of intermittent and energy limited resource such as wind and cogeneration.

Formatted: Indent: Left: 1.5", Hanging: 0.5", No bullets or numbering, Tab stops: Not at 2"

**1.3.2.6** Criteria for including planned resource additions in the analysis

**1.3.3** Transmission limitations that prevent the delivery of generation reserves

Deleted: R1

**1.3.3.1** Criteria for including planned Transmission Facility additions in the analysis

Deleted: R1

Deleted: December 4<sup>th</sup>, 2008

**Standard BAL-502-RF-03**

Deleted: RFC-02 . 12/04/08

**1.3.4** Assistance from other interconnected systems including multi-area assessment considering Transmission limitations into the study area.

Deleted: R1

**1.4** Consider the following resource availability characteristics and document how and why they were included in the analysis or why they were not included:

Deleted: R1

**1.4.1** Availability and deliverability of fuel.

Formatted: Indent: Left: 1", No bullets or numbering

**1.4.2** Common mode outages that affect resource availability

**1.4.3** Environmental or regulatory restrictions of resource availability.

**1.4.4** Any other demand (Load) response programs not included in R1.3.1.

**1.4.5** Sensitivity to resource outage rates.

**1.4.6** Impacts of extreme weather/drought conditions that affect unit availability.

Formatted: Indent: Left: 1", Hanging: 0.5", No bullets or numbering

**1.4.7** Modeling assumptions for emergency operation procedures used to make reserves available.

**1.4.8** Market resources not committed to serving Load (uncommitted resources) within the Planning Coordinator area.

**1.5** Consider Transmission maintenance outage schedules and document how and why they were included in the Resource Adequacy analysis or why they were not included

Deleted: R1

**1.6** Document that capacity resources are appropriately accounted for in its Resource Adequacy analysis

Deleted: R1

**1.7** Document that all Load in the Planning Coordinator area is accounted for in its Resource Adequacy analysis

Deleted: R1

**M1** Each Planning Coordinator shall possess the documentation that a valid Resource Adequacy analysis was performed or verified in accordance with R1

Deleted: ¶

Formatted: Normal, Indent: Left: 0", Right: 0.5", Space Before: 6 pt, Don't adjust space between Latin and Asian text, Don't adjust space between Asian text and numbers

Moved (insertion) [1]

**R2** The Planning Coordinator shall annually document the projected Load and resource capability, for each area or Transmission constrained sub-area identified in the Resource Adequacy analysis [*Violation Risk Factor: Lower*] [*Time Horizon: Long-term Planning*].

Formatted: Normal, Indent: Left: 0", Right: 0.5", Space Before: 6 pt, Don't adjust space between Latin and Asian text, Don't adjust space between Asian text and numbers

**2.1** This documentation shall cover each of the years in Year One through ten.

Deleted: R2

**2.2** This documentation shall include the Planning Reserve margin calculated per requirement R1.1 for each of the three years in the analysis.

Deleted: R2

Deleted: December 4<sup>th</sup>, 2008

**Standard BAL-502-RF-03**

Deleted: RFC-02 . 12/04/08

**2.3** The documentation as specified per requirement R2.1 and R2.2 shall be publicly posted no later than 30 calendar days prior to the beginning of Year One.

Deleted: R2

**M2** Each Planning Coordinator shall possess the documentation of its projected Load and resource capability, for each area or Transmission constrained sub-area identified in the Resource Adequacy analysis on an annual basis in accordance with R2.

Formatted: Indent: Left: 0.25", Hanging: 0.25"

Deleted: <#>Measures¶

Moved up [1]: <#>¶  
M1 . Each Planning Coordinator shall possess the documentation that a valid Resource Adequacy analysis was performed or verified in accordance with R1¶

**R3** The Planning Coordinator shall identify any gaps between the needed amount of planning reserves defined in Requirement R1, Part 1.1 and the projected planning reserves documented in Requirement R2 [Violation Risk Factor: Lower] [Time Horizon: Long-term Planning].

Formatted: Font: Not Bold

Formatted: Requirement, Indent: Left: 0.25", Hanging: 0.25", Tab stops: 0.63", Left

**M3** Each Planning Coordinator shall possess the documentation identifying any gaps between the needed amounts of planning reserves and projected planning reserves in accordance with R3.

**C. Compliance**

**1. Compliance Monitoring Process**

Formatted: Indent: Hanging: 0.09"

**1.1. Compliance Enforcement Authority**

Deleted: Monitoring Responsibility

As defined in the NERC Rules of Procedure, "Compliance Enforcement Authority" means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

Deleted: Compliance Monitor - ReliabilityFirst Corporation ¶  
¶  
Compliance Monitoring Period and Reset Timeframe¶  
¶  
One calendar year¶  
¶  
Data

**1.2. Evidence Retention**

The following evidence retention periods identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full time period since the last audit.

Formatted: Indent: Left: 0.56", Hanging: 0.31"

Deleted: . The Planning Coordinator shall retain information from the most current and prior two -years.¶

The Applicable Entity shall keep data or evidence to show compliance with Requirements R1 through R3, and Measures M1 through M3 from the most current and prior two years.

¶  
The Compliance Monitor shall retain any audit data for five years.¶

If an Applicable Entity is found non-compliant, it shall keep information related to the non-compliance until mitigation is complete and approved, or for the time specified above, whichever is longer.

¶  
Violation Severity Levels¶  
-¶

The Compliance Enforcement Authority shall keep the last audit records and all requested and submitted subsequent audit records.

**1.3. Compliance Monitoring and Assessment Processes**

Compliance Audit  
Self-Certification  
Spot Checking  
Compliance Investigation  
Self-Reporting  
Complaint

**1.4. Additional Compliance Information**

Deleted: December 4<sup>th</sup>, 2008

Standard BAL-502-RF-03

None

Deleted: RFC-02 . 12/04/08

Approved: xx xx, 2016

Page 5 of 11

Deleted: December 4<sup>th</sup>, 2008



			<p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Resource Characteristics subcomponents under <u>Requirement R1, Part 1.3.1</u> and documentation of their use</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 2 or more of the Resource Characteristics subcomponents under <u>Requirement R1, Part 1.3.2</u> and documentation of its use</p> <p><b>Or</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to document that all Load in the Planning Coordinator area is accounted for in its Resource Adequacy analysis per <u>Requirement R1, Part 1.7</u></p>	<p>more of the Load forecast Characteristics subcomponents under <u>Requirement R1, Part 1.3.1</u> and documentation of their use</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 2 or more of the Resource Characteristics subcomponents under <u>Requirement R1, Part 1.3.2</u> and documentation of their use</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include Transmission limitations and documentation of its use</p>	<p>The Planning Coordinator failed to perform an analysis for Year <del>0</del></p> <p><b>Deleted: R1</b></p> <p><b>Deleted: R1</b></p> <p><b>Deleted: R1</b></p> <p><b>Deleted: R1</b></p> <p><b>Deleted: R1</b></p> <p><b>Deleted: R1</b></p> <p><b>Deleted: R1</b></p>
--	--	--	---	--	---

Deleted: RFC-02 . 12/04/08

					<p>per <u>Requirement R1, Part 1.3.3</u></p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include assistance from other interconnected systems and documentation of its use per <u>Requirement R1, Part 1.3.4</u></p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider 3 or more Resource availability characteristics subcomponents under <u>Requirement R1, Part 1.4</u> and documentation of how and why they were included in the analysis or why they were not included</p>		
--	--	--	--	--	---	--	--

Deleted: R1

Deleted: R1

Deleted: R1

Deleted: December 4<sup>th</sup>, 2008



					<p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to document that capacity resources are appropriately accounted for in its Resource Adequacy analysis per <u>Requirement R1, Part 1.6</u></p>	
R2	<u>Long-term Planning</u>	<u>Lower</u>	<p>The Planning Coordinator failed to publicly post the documents as specified per requirement <u>Requirement R2, Part 2.1</u> and <u>Requirement R2, Part 2.2</u> later than 30 calendar days prior to the beginning of Year One per <u>Requirement R2, Part 2.3</u></p>	<p>The Planning Coordinator failed to document the projected Load and resource capability, for each area or Transmission constrained sub-area identified in the Resource Adequacy analysis for one of the years in the 2 through 10 year period per <u>Requirement R2, Part 2.1</u>.</p> <p><b>OR</b></p> <p>The Planning Coordinator failed to document the Planning</p>	<p>The Planning Coordinator failed to document the projected Load and resource capability, for each area or Transmission constrained sub-area identified in the Resource Adequacy analysis for year 1 of the 10 year period per <u>Requirement R2, Part 2.1</u>.</p> <p><b>OR</b></p> <p>The Planning Coordinator failed to document the projected Load and resource</p>	<p>The Planning Coordinator failed to document the projected Load and resource capability, for each area or Transmission constrained sub-area identified in the Resource Adequacy analysis per <u>Requirement R2, Part 2.1</u>.</p> <p>Deleted: R2</p> <p>Formatted: Font color: Black</p> <p>Deleted: R2</p> <p>Formatted: Font color: Black</p> <p>Deleted: R2</p> <p>Deleted: R2</p> <p>Deleted: R2</p> <p>Deleted: December 4, 2008</p>

				Reserve margin calculated per requirement R1.1 for each of the three years in the analysis per <u>Requirement R2, Part 2.2.</u>	capability, for each area or Transmission constrained sub-area identified in the Resource Adequacy analysis for two or more of the years in the 2 through 10 year period per <u>Requirement R2, Part 2.1.</u>
<u>R3</u>	<u>Long-term Planning</u>	<u>Lower</u>	<u>None</u>	<u>None</u>	<u>None</u>

Deleted: R2

Formatted: Font color: Black

Deleted: ¶  
 ¶  
 ¶  
**Definitions:**¶  
**Resource Adequacy** - the ability of supply-side and demand-side resources to meet the aggregate electrical demand (including losses).¶  
 ¶  
**Net Internal Demand** - Total of all end-use customer demand and electric system losses within specified metered boundaries, less Direct Control Load Management and Interruptible Demand.¶  
 ¶  
**Peak Period** - A period consisting of two (2) or more calendar months but less than seven (7) calendar months, which includes the period during which the responsible entity's annual peak demand is expected to occur.¶  
 ¶  
**Year One** - The planning year that begins with the upcoming annual Peak Period.¶  
 ¶  
**The following definitions were extracted from the February 12<sup>th</sup>, 2008 NERC Glossary of Terms:**¶  
 ¶  
**Direct Control Load Management** – Demand-Side Management that is under the direct control of the system operator. DCLM may control the electric supply to individual appliances or equipment on customer premises. DCLM as defined here does not include Interruptible Demand.¶  
 ¶  
**Facility** - A set of electrical equipment that operates as a single Bulk Electric System Element (e.g., a line, a generator, a shunt compensator, transformer, etc.)¶  
 ¶  
**Interruptible Demand** - Demand that the end-use customer makes available to its Load-Serving Entity via contract or agreement for curtailment.¶  
 ¶  
**Load** - An end-use device or customer that receives power from the electric system.¶  
**Transmission** - An interconnected group of lines and associated equipment for the movement or transfer of electric energy between points of supply and points at which it is transformed for delivery to customers or is delivered to other electric systems. ¶

Deleted: December 4<sup>th</sup>, 2008

**Standard BAL-502-RF-03**

Deleted: RFC-02 . 12/04/08

**D. Regional Variances**

None

**E. Interpretations**

None

**F. Associated Documents**

None

Formatted: Right: 4.29", Width: 11.79"

**Version History**

Version	Date	Action	Change Tracking
BAL-502-RFC-02	12/04/08	ReliabilityFirst Board Approved	Formatted Table
BAL-502-RFC-02	08/05/09	NERC BoT Approved	Deleted: 1 <sup>st</sup> Draft
BAL-502-RFC-02	03/17/11	FERC Approved	Deleted: 06/24/08 Through 07/23
			Moved (insertion) [2]
			Formatted: Font: Not Italic
			Deleted: Posted for 1 <sup>st</sup> Comment Period
			Deleted: 2 <sup>nd</sup> Draft
			Deleted: 18/08 Through
			Deleted: /16/08
			Deleted: Posted for 2 <sup>nd</sup> Comment Period
			Deleted: 3 <sup>rd</sup> Draft
			Deleted: 10/16/08 Through 10/30/08
			Deleted: Posted for 15-Day Category Ballot
			Deleted: BAL-502-RFC-02 3 <sup>rd</sup> Draft
			Deleted: 12/04/08
			Moved up [2]: ReliabilityFirst Board Approved
			Formatted: Font: Not Italic

Deleted: December 4<sup>th</sup>, 2008