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**UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION**

North American Electric Reliability        )  
Corporation                                     )

Docket No. \_\_\_\_\_

**JOINT PETITION OF THE  
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION AND  
RELIABILITYFIRST CORPORATION FOR APPROVAL OF PROPOSED REGIONAL  
RELIABILITY STANDARD BAL-502-RF-03**

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and (iii) the retirement of regional Reliability Standard BAL-502-RFC-02. The NERC Board of Trustees adopted proposed regional Reliability Standard BAL-502-RF-03 on August 10, 2017.

As required by Section 39.5(a)<sup>5</sup> of the Commission’s regulations, this petition presents the technical basis and purpose of proposed regional Reliability Standard BAL-502-RF-03; a demonstration that the proposed regional Reliability Standard meets the criteria identified by the Commission in Order No. 672<sup>6</sup> (**Exhibit C**); and a summary of the development history (**Exhibit D**).

## **I. EXECUTIVE SUMMARY**

Proposed regional Reliability Standard BAL-502-RF-03 addresses directives from FERC to (1) add time horizons applicable to the requirements and (2) consider including a requirement that the Planning Coordinators identify any gap between the needed amount of planning reserves and the documented projected planning reserves determined from the Resource Adequacy analysis. The proposed revisions resulted from a periodic review of BAL-502-RFC-02.

The purpose of proposed regional Reliability Standard BAL-502-RF-03 is 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 region. The requirements address the following: (1) annually performing and documenting a Resource Adequacy analysis; (2) annually documenting and posting projected Load and resource capability to demonstrate the sufficiency of planning reserves over a ten-year period for certain areas identified in the Resource Adequacy analysis; and (3) identifying any gaps between the

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<sup>5</sup> 18 C.F.R. § 39.5(a).

<sup>6</sup> The Commission specified in Order No. 672 certain general factors it would consider when assessing whether a particular Reliability Standard is just and reasonable. *See* Order No. 672, *Rules Concerning Certification of the Electric Reliability Organization; and Procedures for the Establishment, Approval, and Enforcement of Electric Reliability Standards*, FERC Stats. & Regs. ¶ 31,204, at PP 262, 321-37, *order on reh’g*, Order No. 672-A, FERC Stats. & Regs. ¶ 31,212 (2006) (“Order No. 672”).

needed planning reserves and the projected planning reserves documented in the Resource Adequacy analysis.

For the reasons discussed below, NERC and ReliabilityFirst respectfully request the Commission approve proposed regional Reliability Standard BAL-502-RF-03, the associated VRFs and VSLs, the associated Implementation Plan, and the retirement of the existing regional Reliability Standard BAL-502-RFC-02 as just, reasonable, not unduly discriminatory or preferential, and in the public interest. The following petition presents the justification for approval and supporting documentation.

## **II. NOTICES AND COMMUNICATIONS**

Notices and communications with respect to this filing may be addressed to the following:<sup>7</sup>

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## **III. BACKGROUND**

The following background information is provided below: (a) an explanation of the regulatory framework for NERC and regional Reliability Standards; (b) an explanation of the ReliabilityFirst regional Reliability Standards development process; (c) the FERC directives addressed by the revisions; and (d) the development of proposed regional Reliability Standard BAL-502-RF-03.

### **A. Regulatory Framework**

By enacting the Energy Policy Act of 2005,<sup>8</sup> Congress entrusted the Commission with the duties of approving and enforcing rules to ensure the reliability of the Nation's Bulk-Power

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<sup>7</sup> Persons to be included on the Commission's service list are identified by an asterisk. NERC respectfully requests a waiver of Rule 203 of the Commission's regulations, 18 C.F.R. § 385.203, to allow the inclusion of more than two persons on the service list in this proceeding.

<sup>8</sup> 16 U.S.C. § 824o (2012).

System, and with the duties of certifying an ERO that would be charged with developing and enforcing mandatory Reliability Standards, subject to Commission approval. Section 215(b)(1)<sup>9</sup> of the FPA states that all users, owners, and operators of the Bulk-Power System in the United States will be subject to Commission-approved Reliability Standards. Section 215(d)(5)<sup>10</sup> of the FPA authorizes the Commission to order the ERO to submit a new or modified Reliability Standard. Section 39.5(a)<sup>11</sup> of the Commission's regulations requires the ERO to file with the Commission for its approval each Reliability Standard that the ERO proposes should become mandatory and enforceable in the United States, and each modification to a Reliability Standard that the ERO proposes should be made effective.

The Commission has the regulatory responsibility to approve Reliability Standards that protect the reliability of the Bulk-Power System and to ensure that such Reliability Standards are just, reasonable, not unduly discriminatory or preferential, and in the public interest. Pursuant to Section 215(d)(2) of the FPA<sup>12</sup> and Section 39.5(c)<sup>13</sup> of the Commission's regulations, the Commission will give due weight to the technical expertise of the ERO with respect to the content of a Reliability Standard.

Similarly, the Commission approves regional Reliability Standards proposed by Regional Entities if the regional Reliability Standard is just, reasonable, not unduly discriminatory or preferential, and in the public interest.<sup>14</sup> In addition, Order No. 672 sets forth additional criteria for regional Reliability Standards. A regional difference from a continent-wide Reliability

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<sup>9</sup> *Id.* § 824o(b)(1).

<sup>10</sup> *Id.* § 824o(d)(5).

<sup>11</sup> 18 C.F.R. § 39.5(a).

<sup>12</sup> 16 U.S.C. § 824o(d)(2).

<sup>13</sup> 18 C.F.R. § 39.5(c)(1).

<sup>14</sup> Section 215(d)(2) of the FPA and 18 C.F.R. § 39.5(a).

Standard must either be: (1) more stringent than the continent-wide Reliability Standard, or (2) necessitated by a physical difference in the Bulk-Power System.<sup>15</sup>

### **B. ReliabilityFirst Regional Reliability Standards Development Procedure**

The proposed regional Reliability Standard was developed in an open and fair manner and in accordance with the Commission-approved ReliabilityFirst Reliability Standards Development Procedure.<sup>16</sup> In accepting NERC's delegation agreements with the Regional Entities, the Commission found that NERC's proposed common attributes for regional Reliability Standard development and ReliabilityFirst's Reliability Standards development process provide for reasonable notice and opportunity for public comment, due process, openness, and a balance of interests in developing Reliability Standards.<sup>17</sup> ReliabilityFirst considers the comments of all stakeholders, and a vote of stakeholders and adoption by the ReliabilityFirst Board of Directors is required to approve a regional Reliability Standard. Once the regional Reliability Standard is approved by the ReliabilityFirst Board of Directors, NERC posts the approved regional Reliability Standard for an additional comment period. Then the NERC Board of Trustees must adopt the regional Reliability Standard before it is submitted to the Commission for approval.

### **C. FERC Directives Addressed by BAL-502-RF-03**

In addition to approving regional Reliability Standard BAL-502-RFC-02 in Order No. 747, the Commission also directed ReliabilityFirst to: (1) add time horizons to the two main requirements, and (2) consider including a requirement that the Planning Coordinators identify any

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<sup>15</sup> Order No. 672 at P 291.

<sup>16</sup> *Amendments to Delegation Agreement with ReliabilityFirst Corp.*, Letter Order, Docket No. RR12-12-000 (Oct. 24, 2012) (approving revised ReliabilityFirst Reliability Standards Development Procedure). The ReliabilityFirst Reliability Standards Development Procedure is available at <https://rfirst.org/standards/Documents/Reliability%20Standards%20Developmental%20Procedure.pdf> (effective Oct. 24, 2012).

<sup>17</sup> *Order Accepting ERO Compliance Filing, Accepting ERO/Regional Entity Delegation Agreements, and Accepting Regional Entity 2007 Business Plans*, 119 FERC ¶ 61,060, at P 17 (2007).



gap between the needed amount of planning reserves determined in Requirement R1, Part 1.1 and the planning reserves documented in Requirement R2 as determined from the Resource Adequacy analysis.<sup>18</sup> The Commission directed ReliabilityFirst to address these directives during its scheduled five-year review of BAL-502-RFC-02.

When BAL-502-RFC-02 was submitted to FERC, it did not include time horizons, which NERC noted in its petition to approve the regional Reliability Standard and the Commission mentioned in the Notice of Proposed Rulemaking.<sup>19</sup> NERC and the Regional Entities use time horizons as a factor in determining the size of a sanction. As noted in the Sanction Guidelines in Appendix 4B of the NERC Rules of Procedure, “Reliability Standards involving longer and broader time horizons, such as long-term planning activities, may have a lesser immediate impact and pose less immediate risk to the reliability of the Bulk Power System than Reliability Standards involving shorter and narrower timeframes, such as Registered Entities’ conduct in real time. Similarly, Reliability Standards involving longer and broader time horizons typically will provide a longer time period over which to discover and remedy a violation when compared to Reliability Standards involving more immediate activities such as next-day planning, same-day operations or real-time operations.”<sup>20</sup>

In the Notice of Proposed Rulemaking, the Commission stated that time horizons are important for NERC penalty determination but also acknowledged that time horizons were not

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<sup>18</sup> Order No. 747, *Planning Resource Adequacy Assessment Reliability Standard*, 134 FERC ¶ 61,212, at PP 53, 65 (2011) (“Order No. 747”).

<sup>19</sup> *NERC Petition for Approval of Proposed RFC Regional Reliability Standard BAL-502-RFC-02*, Docket No. RM10-10-000 (Dec. 14, 2009) (“Petition”); *Planning Resource Adequacy Assessment Reliability Standard*, Notice of Proposed Rulemaking, 133 FERC ¶ 61,066, at P 21 (2010).

<sup>20</sup> NERC, Rules of Procedure, Sanction Guidelines of the North American Electric Reliability Corporation, Appendix 4B, Section 2.7 (effective July 1, 2014), [http://www.nerc.com/FilingsOrders/us/RuleOfProcedureDL/Appendix\\_4B\\_SanctionGuidelines\\_20140701.pdf](http://www.nerc.com/FilingsOrders/us/RuleOfProcedureDL/Appendix_4B_SanctionGuidelines_20140701.pdf).

critical in its determination to approve BAL-502-RFC-02.<sup>21</sup> ReliabilityFirst informed NERC that its standards development process did not include development of time horizons, but it was moving towards requiring the assignment of time horizons for its regional Reliability Standards.<sup>22</sup> Moreover, ReliabilityFirst noted that the requirements of the regional Reliability Standard are planning-oriented for one year and beyond.<sup>23</sup>

Additionally, in the Notice of Proposed Rulemaking, the Commission noted that BAL-502-RFC-02 did not include a requirement to document any gap between the planning reserve margin calculated pursuant to Requirement R1, Part 1.1 and the actual planning reserve documented in Requirement R2 as determined by the Resource Adequacy analysis.<sup>24</sup> The Commission further noted that it would be useful for Planning Coordinators to identify and document any deficiencies in planning reserves to help ensure that entities are aware of potential risks regarding the capability to balance resources and demand in a planning timeframe.<sup>25</sup> In its comments to the Notice of Proposed Rulemaking, ReliabilityFirst agreed this would be appropriate to consider during the five-year review.<sup>26</sup> As such, the Commission accepted this commitment in Order No. 747, noting that the requirement is for documentation and would not require entities to install additional generation or transmission capacity.<sup>27</sup>

#### **D. Development of Proposed Regional Reliability Standard**

As further described in Exhibit D hereto, proposed regional Reliability Standard BAL-502-RF-03 was developed by the Planning Resource Adequacy Analysis, Assessment and

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<sup>21</sup> NOPR, 133 FERC ¶ 61,066, at P 23.

<sup>22</sup> Petition, Appendix C-8.

<sup>23</sup> *Id.*

<sup>24</sup> NOPR, 133 FERC ¶ 61,066, at P 32.

<sup>25</sup> *Id.* at P 33.

<sup>26</sup> Comments of ReliabilityFirst Corporation to Notice of Proposed Rulemaking Issued Oct. 21, 2010, *Planning Resource Adequacy Assessment Reliability Standard*, Docket No. RM10-10-000 at pg. 6.

<sup>27</sup> Order No. 747 at PP 63, 65.

Documentation Standard Drafting Team in accordance with the ReliabilityFirst Reliability Standards Development Procedure. On February 1, 2017, BAL-502-RF-03 received the requisite approval from the registered ballot body in its initial ballot, with an affirmative majority of votes greater than two-thirds determined for each category. However, because ReliabilityFirst received at least one negative vote with comment during the initial ballot, ReliabilityFirst posted BAL-502-RF-03 for a 10-Day recirculation ballot beginning February 6, 2017. On February 15, 2017, BAL-502-RF-03 received the requisite number of affirmative votes to pass on recirculation ballot. The ReliabilityFirst Board of Directors approved BAL-502-RF-03 on June 1, 2017 and subsequently approved the regional Reliability Standard to be submitted to the NERC Board of Trustees for adoption. NERC posted the regional Reliability Standard for a 45-day comment period concluding on June 12, 2017. There were no additional changes after this comment period. The NERC Board of Trustees adopted BAL-502-RF-03 on August 10, 2017.

#### **IV. JUSTIFICATION FOR APPROVAL**

As discussed in detail in Exhibit C, proposed regional Reliability Standard BAL-502-RF-03 is just, reasonable, not unduly discriminatory or preferential, and in the public interest. As described more fully herein and in Exhibit C, the proposed regional Reliability Standard provides reliability benefits for the Bulk-Power System in the ReliabilityFirst region.

The purpose of proposed regional Reliability Standard BAL-502-RF-03 is 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 region. The provisions of the proposed regional Reliability Standard provide requirements for Planning Coordinators in the ReliabilityFirst region regarding resource adequacy assessment, which is not currently addressed in NERC’s continent-wide Reliability Standards. In approving BAL-502-RFC-02, the Commission stated that, “like other planning standards, BAL-502-RFC-02

provides for the reliable operation of the Bulk-Power System as it will help identify areas of concern that, if left unresolved, could result in future instability, uncontrolled separation, or cascading failures of the Bulk-Power System.”<sup>28</sup> Proposed BAL-502-RF-03 provides this same benefit with additional proposed enhancements. Therefore, the proposed regional Reliability Standard meets a reliability need for the ReliabilityFirst region, and as discussed below, the proposed modifications provide additional support for the reliable operation of the Bulk-Power System.

The proposed regional Reliability Standard includes requirements for annually performing and documenting a Resource Adequacy analysis (Requirement R1), annually documenting the projected Load and resource capability for certain areas identified in the Resource Adequacy analysis (Requirement R2), and identifying any gaps between the needed amount of planning reserves determined pursuant to Requirement R1, Part 1.1 and the projected planning reserves documented pursuant to Requirement R2 (Requirement R3).

This section of the petition addresses: (i) the justification of the need for the proposed regional Reliability Standard; (ii) the description and technical basis of the proposed revisions; and (iii) the enforceability of the proposed regional Reliability Standard.

**A. Justification for the Need for the Proposed Regional Reliability Standard**

Proposed regional Reliability Standard BAL-502-RF-03 meets the criteria to justify the need for a regional Reliability Standard as it is more stringent than the related continent-wide NERC Reliability Standards, which do not presently address assessment of resource adequacy in the planning horizon covered in the proposed regional Reliability Standard. As noted above, the Commission previously recognized that the analysis required by this proposed regional Reliability

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<sup>28</sup> Order No. 747 at P 25.

Standard may help identify issues that could cause future instability, uncontrolled separation, or cascading failures of the Bulk-Power System.<sup>29</sup> Therefore, the proposed regional Reliability Standard BAL-502-RF-03 is justified because it meets the criteria in Order No. 672 to be more stringent than continent-wide Reliability Standards. Entities that perform the functions to which the continent-wide standards and the proposed regional Reliability Standard apply need to comply with all applicable standards, so the proposed regional Reliability Standard provides a level of support to the ReliabilityFirst region in addition to the continent-wide standards.

## **B. Description and Technical Basis of Proposed Revisions**

The proposed revisions add in time horizons to Requirements R1 and R2; add Requirement R3 to identify any gaps between the needed amount of planning reserves defined in Requirement R1, Part 1.1 and the projected planning reserves document in Requirement R2; and add other corresponding changes to the measures. In addition, the proposed revisions include minor clarifications and updates to conform to the current Reliability Standards template.

To address the time horizons directive, the standard drafting team selected “long-term planning” for the time horizons for Requirements R1, R2, and R3 of proposed BAL-502-RF-03. As noted above in Section III.C, ReliabilityFirst stated that the requirements address a planning horizon of one year or more. In the context of determining violations, NERC defines “long-term planning” as a planning horizon of one year or longer. Therefore, the “long-term planning” time horizon is most appropriate for the BAL-502-RF-03 requirements.<sup>30</sup>

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<sup>29</sup> *Id.*

<sup>30</sup> NERC Reliability Standards requirements fall into one of five time horizon categories: (1) long-term planning – a planning horizon of one year or longer; (2) operations planning – operating and resource plans from day-ahead up to and including seasonal; (3) same-day operations – routine actions required within the timeframe of a day, but not real-time; (4) Real-time operations – actions required within one hour or less to preserve the reliability of the Bulk Electric System; and (5) operations assessment – follow-up evaluations and reporting of Real-time operations.

BAL-502-RF-03, Requirement R1 requires a Planning Coordinator to perform a Resource Adequacy analysis annually for the planning year. Requirement R2 requires a Planning Coordinator to annually document the projected Load and resource capability for certain areas identified in the Resource Adequacy analysis for each year through year ten. Finally, proposed Requirement R3 requires a Planning Coordinator to identify gaps in planning reserves identified in Requirement R1, Part 1.1 and documented in Requirement R2. As each of these requirements address a planning horizon of at least a year, the “long-term planning” time horizon is justified for the requirements in BAL-502-RF-03.

As noted in Section III.C above, ReliabilityFirst committed to considering a requirement to identify and document any gaps between the planning reserves identified under Requirement R1, Part 1.1 and the projected planning reserves documented under Requirement R2 during its five-year review of BAL-502-RFC-02. The standard drafting team reviewed the 2015 Long-term Reliability Assessment<sup>31</sup> and the 2014 Probabilistic Assessment<sup>32</sup> reports to determine if this gap analysis was addressed by non-standards activities. Although the reports both included identification of gaps, the standard drafting team noted that the reports were not required to include this analysis. Therefore, the standard drafting team concluded that a requirement to document these gaps should be developed for the ReliabilityFirst region. As a result, the standard drafting team added proposed Requirement R3 to BAL-502-RF-03 in response to the FERC directive. This change is justified because it codifies the documentation of this gap for the ReliabilityFirst region.

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<sup>31</sup> NERC, 2015 Long-Term Reliability Assessment (Dec. 2015)  
<http://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/2015LTRA%20-%20Final%20Report.pdf>.

<sup>32</sup> NERC, 2014 Probabilistic Assessment (Apr. 2015)  
[http://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/2014ProbA%20April%20Report%20Final\\_Final.pdf](http://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/2014ProbA%20April%20Report%20Final_Final.pdf).

The standard drafting team also proposed several non-substantive changes to BAL-502-RF-03 to align the regional Reliability Standard with the updated format of other NERC Reliability Standards. The non-substantive changes include the following:

- (1) Changed name from BAL-502-RFC-02 to BAL-502-RF-03;
- (2) Updated the formatting of Section A (Introduction);
- (3) Updated Effective Date Section;
- (4) Added the term “and Measures” to Section B heading;
- (5) Placed Measures immediately following the associated Requirements;
- (6) Removed the “R” from all sub-requirements making them sub-parts;
- (7) Updated section C (Compliance) to be consistent with NERC Reliability Standard template language;
- (8) Renamed “Violation Severity Levels” Section to “Table of Compliance Elements”;
- (9) Updated “Table of Compliance Elements” to include “Time Horizons” and “VRFs”;
- (10) Added Sections D (Regional Variances), E (Interpretations), and F (Associated Documents) to the end of regional Reliability Standard;
- (11) Changed bulleted items in R1.3.1, R1.3.2 and R1.4 to sub-parts to conform to standard practice; and
- (12) Updated Version History to include ReliabilityFirst Board of Directors, NERC Board of Trustees, and FERC approval dates.

### **C. Enforceability of Proposed Regional Reliability Standard BAL-502-RF-03**

The proposed regional Reliability Standard includes VRFs and VSLs. The VSLs provide guidance on the way that NERC will enforce the requirements of the proposed regional Reliability Standard. The VRFs are one of several elements used to determine an appropriate sanction when the associated requirement is violated. The VRFs assess the impact to reliability of violating a specific requirement. The VRFs and VSLs for the proposed regional Reliability Standard comport with NERC and Commission guidelines related to their assignment.

The proposed regional Reliability Standard also includes measures that support each requirement by clearly identifying what is required and how the requirement will be enforced. These measures help ensure that the requirements will be enforced in a clear, consistent, and non-preferential manner and without prejudice to any party.<sup>33</sup>

## **V. EFFECTIVE DATE**

NERC respectfully requests that the Commission approve the proposed regional Reliability Standard BAL-502-RF-03 and the retirement of BAL-502-RFC-02 to become effective as set forth in the proposed Implementation Plan, provided in Exhibit B hereto. The proposed effective date of the proposed regional Reliability Standard BAL-502-RF-03 is the first day of the first calendar quarter that is after the date that this regional Reliability 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 Reliability Standard to go into effect.

## **VI. CONCLUSION**

For the reasons set forth above, NERC respectfully requests that the Commission approve:

- the proposed regional Reliability Standard BAL-502-RF-03 in **Exhibit A**;
- the other associated elements in the regional Reliability Standard in **Exhibit A**, including the VRFs and VSLs (**Exhibits A and C**);
- the retirement of existing regional Reliability Standard BAL-502-RFC-02; and

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<sup>33</sup> Order No. 672 at P 327 (“There should be a clear criterion or measure of whether an entity is in compliance with a proposed Reliability Standard. It should contain or be accompanied by an objective measure of compliance so that it can be enforced and so that enforcement can be applied in a consistent and non-preferential manner.”).



- the Implementation Plan, included in **Exhibit B**.

Respectfully submitted,

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Date: September 7, 2017

**Exhibit A**

**Proposed Regional Reliability Standard,**

**BAL-502-RF-03 – Planning Resource Adequacy Analysis, Assessment and Documentation**

**Exhibit A**

**Proposed Regional Reliability Standard,**

**BAL-502-RF-03 – Planning Resource Adequacy Analysis, Assessment and Documentation**

**Clean**

**A. Introduction**

- 1. Title:** Planning Resource Adequacy Analysis, Assessment and Documentation
- 2. Number:** BAL-502-RF-03
- 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
- 4. Applicability**
  - 4.1** Functional Entities
    - 4.1.1** Planning Coordinator
- 5. Effective Date:**
  - 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.

**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).
  - 1.1.1** The utilization of Direct Control Load Management or curtailment of Interruptible Demand shall not contribute to the loss of Load probability.
  - 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).
- 1.2** Be performed or verified separately for each of the following planning years:

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<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).

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

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

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

- 1.3.1** Load forecast characteristics:

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

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

- 1.3.1.3 Load diversity.

- 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.

- 1.3.2** Resource characteristics:

- 1.3.2.1 Historic resource performance and any projected changes

- 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.

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

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

- 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

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

- 1.3.4 Assistance from other interconnected systems including multi-area assessment considering Transmission limitations into the study area.
- 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:
  - 1.4.1 Availability and deliverability of fuel.
  - 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.
  - 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
- 1.6 Document that capacity resources are appropriately accounted for in its Resource Adequacy analysis
- 1.7 Document that all Load in the Planning Coordinator area is accounted for in its Resource Adequacy analysis

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

**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*].

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

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

**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.

**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*].

**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**

#### **1.1. Compliance Enforcement Authority**

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.

#### **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.

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.

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.

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**

None



Table of Compliance Elements

R #	Time Horizon	VRF	VIOLATION SEVERITY LEVEL			
			Lower VSL	Moderate VSL	High VSL	Severe VSL
R1	Long-term Planning	Medium	<p>The Planning Coordinator Resource Adequacy analysis failed to consider 1 or 2 of the Resource availability characteristics subcomponents under Requirement R1, Part 1.4 and documentation of how and why they were included in the analysis or why they were not included</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider Transmission maintenance outage schedules and document how and why they were included in the analysis or why they were not included per Requirement R1, Part 1.5</p>	<p>The Planning Coordinator Resource Adequacy analysis failed to express the planning reserve margin developed from Requirement R1, Part 1.1 as a percentage of the net Median forecast peak Load per Requirement R1, Part 1.1.2</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Load forecast Characteristics subcomponents under Requirement R1, Part 1.3.1 and documentation of its use</p> <p><b>OR</b></p>	<p>The Planning Coordinator Resource Adequacy analysis failed to be performed or verified separately for individual years of Year One through Year Ten per Requirement R1, Part 1.2</p> <p><b>OR</b></p> <p>The Planning Coordinator failed to perform an analysis or verification for one year in the 2 through 5 year period or one year in the 6 through 10 year period or both per Requirement R1, Part 1.2.2</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 2 or</p>	<p>The Planning Coordinator failed to perform and document a Resource Adequacy analysis annually per R1.</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to 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 analyzed for each planning period being equal to 0.1 per Requirement R1, Part 1.1</p> <p><b>OR</b></p>

				<p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Resource Characteristics subcomponents under Requirement R1, Part 1.3.2 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 Requirement R1, Part 1.7</p>	<p>more of the Load forecast Characteristics subcomponents under Requirement R1, Part 1.3.1 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 Requirement R1, Part 1.3.2 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 One per Requirement R1, Part 1.2.1</p>
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					<p>per Requirement R1, Part 1.3.3</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 Requirement R1, Part 1.3.4</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider 3 or more Resource availability characteristics subcomponents under Requirement R1, Part 1.4 and documentation of how and why they were included in the analysis or why they were not included</p>	
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					<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 Requirement R1, Part 1.6</p>	
R2	Long-term Planning	Lower	<p>The Planning Coordinator failed to publicly post the documents as specified per requirement Requirement R2, Part 2.1 and Requirement R2, Part 2.2 later than 30 calendar days prior to the beginning of Year One per Requirement R2, Part 2.3</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 Requirement R2, Part 2.1.</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 Requirement R2, Part 2.1.</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 Requirement R2, Part 2.</p>

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				Reserve margin calculated per requirement R1.1 for each of the three years in the analysis per Requirement R2, Part 2.2.	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 Requirement R2, Part 2.1.	
R3	Long-term Planning	Lower	None	None	None	The Planning Coordinator failed to identify any gaps between the needed amount of planning reserves and the projected planning reserves, per R3

**D. Regional Variances**

None

**E. Interpretations**

None

**F. Associated Documents**

None

**Version History**

<b>Version</b>	<b>Date</b>	<b>Action</b>	<b>Change Tracking</b>
BAL-502-RFC-02	12/04/08	ReliabilityFirst Board Approved	
BAL-502-RFC-02	08/05/09	NERC BoT Approved	
BAL-502-RFC-02	03/17/11	FERC Approved	
BAL-502-RFC-03	06/01/17	ReliabilityFirst Board Approved	
BAL-502-RF-03	08/10/17	NERC BOT Approved	

**Exhibit A**

**Proposed Regional Reliability Standard,**

**BAL-502-RF-03 – Planning Resource Adequacy Analysis, Assessment and Documentation**

**Redline**

## A. Introduction

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

2. Number: BAL-502-~~RFC-02RF-03~~

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 (RFC) region

## 4. Applicability

### 4.1 Functional Entities

4.1.1 Planning Coordinator

## 5. Effective Date:

~~5.1 Upon RFC Board approval~~

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.

## 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*]:

**R1.1** 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).

**R1.1.1** The utilization of Direct Control Load Management or curtailment of Interruptible Demand shall not contribute to the loss of Load probability.

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<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>).



**R1.1.2** 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).

**R1.2** Be performed or verified separately for each of the following planning years:

**R1.2.1** Perform an analysis for Year One.

**R1.2.2** 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.

**R1.2.2.1** If the analysis is verified, the verification must be supported by current or past studies for the same planning year.

**R1.3** Include the following subject matter and documentation of its use:

**R1.3.1** Load forecast characteristics:

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

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

**1.3.1.3** Load diversity.

**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.

**R1.3.2** Resource characteristics:

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

**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.

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

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<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).

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

1.3.2.6 Criteria for including planned resource additions in the analysis

**R11.3.3** Transmission limitations that prevent the delivery of generation reserves

**R11.3.3.1** Criteria for including planned Transmission Facility additions in the analysis

**R11.3.4** Assistance from other interconnected systems including multi-area assessment considering Transmission limitations into the study area.

**R11.4** Consider the following resource availability characteristics and document how and why they were included in the analysis or why they were not included:

1.4.1 Availability and deliverability of fuel.

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.

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.

**R11.5** Consider Transmission maintenance outage schedules and document how and why they were included in the Resource Adequacy analysis or why they were not included

**R11.6** Document that capacity resources are appropriately accounted for in its Resource Adequacy analysis

**R11.7** Document that all Load in the Planning Coordinator area is accounted for in its Resource Adequacy analysis

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

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*].

~~R22.1~~ This documentation shall cover each of the years in Year One through ten.

~~R22.2~~ This documentation shall include the Planning Reserve margin calculated per requirement R1.1 for each of the three years in the analysis.

~~R22.3~~ 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.

### ~~C. Measures~~

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

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.

~~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*].~~

~~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.~~

### ~~D.C. Compliance~~

#### ~~1. Compliance Monitoring Process~~

##### ~~1.1. Compliance **Monitoring Responsibility Enforcement Authority**~~

~~Compliance Monitor—ReliabilityFirst Corporation~~

##### ~~1.2. **Compliance Monitoring Period and Reset Timeframe**~~

~~One calendar year~~

~~Data~~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.

**1.3.1.2. Evidence Retention**

~~The Planning Coordinator shall retain information from the most current and prior two years.~~

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

**2. Violation Severity Levels**

~~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.~~

~~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.~~

~~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.~~

~~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**

None

Table of Compliance Elements

Req. Number R #	Time Horizon	VRF	VIOLATION SEVERITY LEVEL			
	LOWER	MODERATE	HIGH Lower VSL	SEVERE Moderate VSL	High VSL	Severe VSL
R1	<u>Long-term Planning</u>	<u>Medium</u>	<p>The Planning Coordinator Resource Adequacy analysis failed to consider 1 or 2 of the Resource availability characteristics subcomponents under <u>R+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> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider Transmission maintenance outage schedules and document how and why they were included in the analysis or why they were not included per <u>R+Requirement R1, Part 1.5</u></p>	<p>The Planning Coordinator Resource Adequacy analysis failed to express the planning reserve margin developed from <u>Requirement R1, Part 1.1</u> as a percentage of the net Median forecast peak Load per <u>R+Requirement R1, Part 1.1.2</u></p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Load forecast Characteristics subcomponents under <u>R+Requirement R1, Part 1.3.1</u> and documentation of its use</p> <p><b>OR</b></p>	<p>The Planning Coordinator Resource Adequacy analysis failed to be performed or verified separately for individual years of Year One through Year Ten per <u>R+Requirement R1, Part 1.2</u></p> <p><b>OR</b></p> <p>The Planning Coordinator failed to perform an analysis or verification for one year in the 2 through 5 year period or one year in the 6 through 10 year period or both per <u>Requirement R1, Part 1.2.2</u></p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 2 or</p>	<p>The Planning Coordinator failed to perform and document a Resource Adequacy analysis annually per R1.</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to 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 analyzed for each planning period being equal to 0.1 per <u>R+Requirement R1, Part 1.1</u></p> <p><b>OR</b></p>

				<p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Resource Characteristics subcomponents under <del>R+Requirement R1, Part 1.3.2</del> 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 <del>R+Requirement R1, Part 1.7</del></p>	<p>more of the Load forecast Characteristics subcomponents under <del>R+Requirement R1, Part 1.3.1</del> 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 <del>R+Requirement R1, Part 1.3.2</del> 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 One per <del>R+Requirement R1, Part 1.2.1</del></p>
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					<p>per <del>R1</del><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 <del>R1</del><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 <del>R1</del><u>Requirement R1, Part 1.4</u> and documentation of how and why they were included in the analysis</p>	
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					<p>or why they were not included</p> <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 <del>R2</del><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 <del>R2</del><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 capability, for each area or Transmission constrained sub-area identified in the Resource Adequacy analysis for year 1 of the 10 year period per <del>R2</del><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 capability, for each area or Transmission constrained sub-area identified in the Resource Adequacy analysis per <u>Requirement R2, Part 2</u>.</p>



				The Planning Coordinator failed to document the Planning Reserve margin calculated per requirement R1.1 for each of the three years in the analysis per <del>R2</del> <u>Requirement R2, Part 2.2.</u>	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 two or more of the years in the 2 through 10 year period per <del>Requirement R2,</del> <u>Part 2.1.</u>	
<u>R3</u>	<u>Long-term Planning</u>	<u>Lower</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>The Planning Coordinator failed to identify any gaps between the needed amount of planning reserves and the projected planning reserves, per R3</u>

**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.~~

**D. Regional Variances**

None

**E. Interpretations**

None

**F. Associated Documents**

None

**Version History**

Version	Date	Action	Change Tracking
<del>BAL-502-RFC-02</del> 1 <sup>st</sup> -Draft	06/24/08 Through 07/23/08	Posted for 1 <sup>st</sup> -Comment Period	
<del>BAL-502-RFC-02</del> 2 <sup>nd</sup> -Draft	08/18/08 Through 09/16/08	Posted for 2 <sup>nd</sup> -Comment Period	
<del>BAL-502-RFC-02</del> 3 <sup>rd</sup> -Draft	10/16/08 Through 10/30/08	Posted for 15-Day Category Ballot	
BAL-502-RFC-02 3 <sup>rd</sup> -Draft	12/04/08	ReliabilityFirst Board Approved	
<del>BAL-502-RFC-02</del>	06/08/09	“Planning Reserve” changed to “planning reserve” in R2.2.	Errata
BAL-502-RFC-02	08/05/09	<u>NERC BoT Approved by NERC Board of Trustees</u>	
BAL-502-RFC-02	03/17/11	<u>Order issued by FERC approving BAL-502-RFC-02 (approval effective 5/23/11) FERC Approved</u>	
<u>BAL-502-RFC-03</u>	<u>06/01/17</u>	<u>ReliabilityFirst Board Approved</u>	
<u>BAL-502-RF-03</u>	<u>08/10/17</u>	<u>NERC BOT Approved</u>	

**Exhibit B**

**Implementation Plan for Proposed Regional Reliability Standard BAL-502-RF-03 -**

**Planning Resource Adequacy Analysis, Assessment and Documentation**



**RELIABILITY FIRST**

## **Planning Resource Adequacy Analysis, Assessment and Documentation (BAL-502-RF-03) Implementation Plan**

### **Requested Approvals**

- None

### **Requested Retirements**

- BAL-502-RFC-02

### **Prerequisite Approval**

- None

### **Revisions to Defined Terms in the NERC Glossary**

- None

### **Effective Date**

- 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.

**Exhibit C**

**Order No. 672 Criteria for Proposed Regional Reliability Standard BAL-502-RF-03 –  
Planning Resource Adequacy Analysis, Assessment and Documentation**

## EXHIBIT C

### Order No. 672 Criteria for Proposed BAL-502-RF-03

In Order No. 672,<sup>1</sup> the Commission identified a number of criteria it will use to analyze Reliability Standards proposed for approval to ensure they are just, reasonable, not unduly discriminatory or preferential, and in the public interest. The discussion below identifies these factors and explains how the proposed regional Reliability Standard has met or exceeded the criteria:

- 1. Proposed Reliability Standards must be designed to achieve a specified reliability goal and must contain a technically sound means to achieve that goal.<sup>2</sup>**

The purpose of BAL-502-RF-03 is 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 region. The proposed BAL-502-RF-03 regional Reliability Standard is technically sound as it continues to meet the same performance of regional Reliability Standard BAL-502-RFC-

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<sup>1</sup> *Rules Concerning Certification of the Electric Reliability Organization; and Procedures for the Establishment, Approval, and Enforcement of Electric Reliability Standards*, Order No. 672, FERC Stats. & Regs. ¶ 31,204, *order on reh’g*, Order No. 672-A, FERC Stats. & Regs. ¶ 31,212 (2006).

<sup>2</sup> Order No. 672 at P 321. The proposed Reliability Standard must address a reliability concern that falls within the requirements of section 215 of the FPA. That is, it must provide for the reliable operation of Bulk-Power System facilities. It may not extend beyond reliable operation of such facilities or apply to other facilities. Such facilities include all those necessary for operating an interconnected electric energy transmission network, or any portion of that network, including control systems. The proposed Reliability Standard may apply to any design of planned additions or modifications of such facilities that is necessary to provide for reliable operation. It may also apply to Cybersecurity protection.

Order No. 672 at P 324. The proposed Reliability Standard must be designed to achieve a specified reliability goal and must contain a technically sound means to achieve this goal. Although any person may propose a topic for a Reliability Standard to the ERO, in the ERO’s process, the specific proposed Reliability Standard should be developed initially by persons within the electric power industry and community with a high level of technical expertise and be based on sound technical and engineering criteria. It should be based on actual data and lessons learned from past operating incidents, where appropriate. The process for ERO approval of a proposed Reliability Standard should be fair and open to all interested persons.

02.<sup>3</sup> Proposed BAL-502-RF-03 is more stringent than continent-wide Reliability Standards because the NERC Reliability Standards do not presently address assessment of resource adequacy in the planning horizon.

**2. Proposed Reliability Standards must be applicable only to users, owners and operators of the bulk power system, and must be clear and unambiguous as to what is required and who is required to comply.<sup>4</sup>**

Proposed BAL-502-RF-03 is only applicable to Planning Coordinators within the ReliabilityFirst region. As explained in greater detail in the petition, the proposed regional Reliability Standard includes three requirements that specify what the Planning Coordinators need to do in order to comply.

**3. A proposed Reliability Standard must include clear and understandable consequences and a range of penalties (monetary and/or non-monetary) for a violation.<sup>5</sup>**

Proposed BAL-502-RF-03 does not have any substantive changes to the VRFs and VSLs approved in BAL-502-RFC-02, with the exception of the addition of the VRF and VSL for Requirement R3. The proposed regional Reliability Standard continues to comport with NERC and Commission guidelines. The assignment of the severity level for each VSL is consistent with the corresponding Requirement and the VSLs should ensure uniformity and consistency in the determination of penalties. The VSLs do not use any ambiguous terminology, thereby supporting uniformity and consistency in the determination of similar penalties for similar violations. For these reasons, the proposed

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<sup>3</sup> BAL-502-RFC-02 was approved by the Commission on March 17, 2011. *See Planning Resource Adequacy Assessment Reliability Standard*, Order No. 747, 134 FERC ¶ 61,212 (2011).

<sup>4</sup> Order No. 672 at P 322. The proposed Reliability Standard may impose a requirement on any user, owner, or operator of such facilities, but not on others.

Order No. 672 at P 325. The proposed Reliability Standard should be clear and unambiguous regarding what is required and who is required to comply. Users, owners, and operators of the Bulk-Power System must know what they are required to do to maintain reliability.

<sup>5</sup> Order No. 672 at P 326. The possible consequences, including range of possible penalties, for violating a proposed Reliability Standard should be clear and understandable by those who must comply.



regional Reliability Standard includes clear and understandable consequences in accordance with Order No. 672. Upon approval by the Commission, the ranges of penalties for violations will continue to be based on the applicable VRF and VSL in accordance with the sanctions table and the supporting penalty determination process described in the Commission-approved NERC Sanction Guidelines, Appendix 4B to the NERC Rules of Procedure.

**4. A proposed Reliability Standard must identify clear and objective criterion or measure for compliance, so that it can be enforced in a consistent and non-preferential manner.<sup>6</sup>**

Proposed BAL-502-RF-03 identifies clear and objective criterion or Measures for compliance so that it can be enforced in a consistent and non-preferential manner. The regional Reliability Standard contains individual Measures that support the regional difference's Requirements by plainly identifying how the Requirements will be assessed and enforced. These Measures continue to ensure that the Requirements will be assessed and enforced in a clear, consistent, and non-preferential manner, without prejudice to any party.

**5. Proposed Reliability Standards should achieve a reliability goal effectively and efficiently — but do not necessarily have to reflect “best practices” without regard to implementation cost or historical regional infrastructure design.<sup>7</sup>**

Proposed BAL-502-RF-03 achieves its reliability goals effectively and efficiently.

The proposed standard adds a requirement to document any identified gaps between

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<sup>6</sup> Order No. 672 at P 327. There should be a clear criterion or measure of whether an entity is in compliance with a proposed Reliability Standard. It should contain or be accompanied by an objective measure of compliance so that it can be enforced and so that enforcement can be applied in a consistent and non-preferential manner.

<sup>7</sup> Order No. 672 at P 328. The proposed Reliability Standard does not necessarily have to reflect the optimal method, or “best practice,” for achieving its reliability goal without regard to implementation cost or historical regional infrastructure design. It should however achieve its reliability goal effectively and efficiently.

needed planning reserves and projected planning but does not require a registered entity to install additional generation or transmission capacity.

- 6. Proposed Reliability Standards cannot be “lowest common denominator,” *i.e.*, cannot reflect a compromise that does not adequately protect Bulk-Power System reliability. Proposed Reliability Standards can consider costs to implement for smaller entities, but not at consequences of less than excellence in operating system reliability.<sup>8</sup>**

Proposed BAL-502-RF-03 does not reflect a compromise that does not adequately protect Bulk-Power System reliability.

- 7. Proposed Reliability Standards must be designed to apply throughout North America to the maximum extent achievable with a single Reliability Standard while not favoring one geographic area or regional model. It should take into account regional variations in the organization and corporate structures of transmission owners and operators, variations in generation fuel type and ownership patterns, and regional variations in market design if these affect the proposed Reliability Standard.<sup>9</sup>**

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<sup>8</sup> Order No. 672 at P 329. The proposed Reliability Standard must not simply reflect a compromise in the ERO’s Reliability Standard development process based on the least effective North American practice — the so-called “lowest common denominator” — if such practice does not adequately protect Bulk-Power System reliability. Although FERC will give due weight to the technical expertise of the ERO, we will not hesitate to remand a proposed Reliability Standard if we are convinced it is not adequate to protect reliability.

Order No. 672 at P 330. A proposed Reliability Standard may take into account the size of the entity that must comply with the Reliability Standard and the cost to those entities of implementing the proposed Reliability Standard. However, the ERO should not propose a “lowest common denominator” Reliability Standard that would achieve less than excellence in operating system reliability solely to protect against reasonable expenses for supporting this vital national infrastructure. For example, a small owner or operator of the Bulk-Power System must bear the cost of complying with each Reliability Standard that applies to it.

<sup>9</sup> Order No. 672 at P 331. A proposed Reliability Standard should be designed to apply throughout the interconnected North American Bulk-Power System, to the maximum extent this is achievable with a single Reliability Standard. The proposed Reliability Standard should not be based on a single geographic or regional model but should take into account geographic variations in grid characteristics, terrain, weather, and other such factors; it should also take into account regional variations in the organizational and corporate structures of transmission owners and operators, variations in generation fuel type and ownership patterns, and regional variations in market design if these affect the proposed Reliability Standard.

As a regional Reliability Standard, proposed BAL-502-RF-03 meets the requirements for regional Reliability Standards as discussed in the petition and will be enforceable for registered entities within the ReliabilityFirst region.

**8. Proposed Reliability Standards should cause no undue negative effect on competition or restriction of the grid beyond any restriction necessary for reliability.<sup>10</sup>**

The proposed regional Reliability Standard does not make any substantive changes to the existing Commission-approved regional Reliability Standard other than the addition of a Requirement.

**9. The implementation time for the proposed Reliability Standard is reasonable.<sup>11</sup>**

The implementation time for the proposed regional Reliability Standard is reasonable. Historically, the two Planning Coordinators within the ReliabilityFirst region have already been identifying this gap via a number of public reports. As a result, an effective date of 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 is appropriate.

**10. The Reliability Standard was developed in an open and fair manner and in accordance with the Commission-approved Reliability Standard**

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<sup>10</sup> Order No. 672 at P 332. As directed by section 215 of the FPA, FERC itself will give special attention to the effect of a proposed Reliability Standard on competition. The ERO should attempt to develop a proposed Reliability Standard that has no undue negative effect on competition. Among other possible considerations, a proposed Reliability Standard should not unreasonably restrict available transmission capability on the Bulk-Power System beyond any restriction necessary for reliability and should not limit use of the Bulk-Power System in an unduly preferential manner. It should not create an undue advantage for one competitor over another.

<sup>11</sup> Order No. 672 at P 333. In considering whether a proposed Reliability Standard is just and reasonable, FERC will consider also the timetable for implementation of the new requirements, including how the proposal balances any urgency in the need to implement it against the reasonableness of the time allowed for those who must comply to develop the necessary procedures, software, facilities, staffing or other relevant capability.

**development process.**<sup>12</sup>

The proposed regional Reliability Standard was developed in accordance with NERC's and ReliabilityFirst's Commission-approved processes for developing and approving Reliability Standards. ReliabilityFirst develops regional Reliability Standards in accordance with the ReliabilityFirst Reliability Standards Development Procedure. For more detail, please see the complete development history included as Exhibit D.

**11. NERC must explain any balancing of vital public interests in the development of proposed Reliability Standards.**<sup>13</sup>

NERC and ReliabilityFirst have not identified competing vital public interests with respect to the request for approval of the regional Reliability Standard, and no comments were received during the development of the regional Reliability Standard indicating conflicts with other vital public interests.

**12. Proposed Reliability Standards must consider any other appropriate factors.**<sup>14</sup>

No other factors relevant to whether the proposed regional Reliability Standard is just and reasonable were identified.

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<sup>12</sup> Order No. 672 at P 334. Further, in considering whether a proposed Reliability Standard meets the legal standard of review, we will entertain comments about whether the ERO implemented its Commission-approved Reliability Standard development process for the development of the particular proposed Reliability Standard in a proper manner, especially whether the process was open and fair. However, we caution that we will not be sympathetic to arguments by interested parties that choose, for whatever reason, not to participate in the ERO's Reliability Standard development process if it is conducted in good faith in accordance with the procedures approved by FERC.

<sup>13</sup> Order No. 672 at P 335. Finally, we understand that at times development of a proposed Reliability Standard may require that a particular reliability goal must be balanced against other vital public interests, such as environmental, social and other goals. We expect the ERO to explain any such balancing in its application for approval of a proposed Reliability Standard.

<sup>14</sup> Order No. 672 at P 323. In considering whether a proposed Reliability Standard is just and reasonable, we will consider the following general factors, as well as other factors that are appropriate for the particular Reliability Standard proposed.

## **Exhibit D**

### **Summary of Development History and Complete Record of Development**

**Exhibit D**  
**Summary of Development**

## **Summary of Development History**

The development record for proposed regional Reliability Standard BAL-502-RF-03 is summarized below.<sup>1</sup>

### **I. Overview of the Standard Drafting Team**

When evaluating a proposed Reliability Standard, the Commission is expected to give “due weight” to the technical expertise of the ERO.<sup>2</sup> The technical expertise of the ERO is derived from the standard drafting team approved by the ReliabilityFirst Standards Committee to lead each project in accordance with Step 2 of the ReliabilityFirst Reliability Standards Development Procedure.<sup>3</sup> For this project, the standard drafting team consisted of industry experts, all with a diverse set of experiences. A roster of the Planning Resource Adequacy Analysis, Assessment, and Documentation standard drafting team members is included in Exhibit E.

### **II. Standard Development History**

#### **A. Five-year Periodic Review**

ReliabilityFirst conducted a five-year review comment posting period from February 29, 2016 through March 9, 2016, to which six individuals responded. All six individual provided responses suggesting that the regional Reliability Standard BAL-502-RFC-02 be reaffirmed. The reaffirmation includes addressing two FERC directives from FERC Order No. 747.

#### **B. Standard Authorization Request Development**

Revisions to BAL-502-RFC-02 were initiated on March 31, 2016 with the receipt of a draft Standard Authorization Request (“SAR”). The ReliabilityFirst Standards Committee authorized

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<sup>1</sup> The development web page for BAL-502-RF-03 is available at <https://rfirst.org/standards/BAL502RFC03/Pages/BAL-502-RFC-03.aspx>.

<sup>2</sup> Section 215(d)(2) of the Federal Power Act; 16 U.S.C. §824(d) (2) (2012).

<sup>3</sup> The ReliabilityFirst Reliability Standards Development Procedure is available at <https://rfirst.org/standards/Documents/Reliability%20Standards%20Developmental%20Procedure.pdf>.

BAL-502-RF-03 for development on April 12, 2016. The draft SAR was posted for a 30-day comment period from April 11, 2016 through May 10, 2016. The final SAR was posted on May 12, 2016.

### **C. First Posting – Comment Period**

On August 29, 2016, the ReliabilityFirst Standards Committee approved posting proposed regional Reliability Standard BAL-502-RF-03 for a 30-day public comment period. Proposed regional Reliability Standard BAL-502-RF-03 was posted for a 30-day public comment period from September 12, 2016 through October 11, 2016. ReliabilityFirst received comments from two individuals. Based on the comments received, the standard drafting team determined to make non-substantive changes to the proposed standard.<sup>4</sup>

### **D. Pre-Ballot Posting and Category Ballot**

Proposed regional Reliability Standard was posted for 15 days from January 3, 2017 through January 17, 2017 prior to category ballot. Thirty-one individuals joined the ballot pool, which was formed from September 12, 2016 through January 9, 2017. A 15-day Category Ballot was conducted from January 18, 2017 through February 1, 2017. Twenty-eight individuals cast votes, reaching quorum at 93 percent. The standard received requisite approval of two-thirds or greater affirmative majority of votes for each category. Because at least one negative vote with comment during the initial ballot was cast, draft BAL-502-RF-03 standard was posted for a 10-day Recirculation Ballot.<sup>5</sup>

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<sup>4</sup> The Consideration of Comments for Posting 1 is available at [https://www.rfirst.org/standards/BAL502RFC03/SupportingDocuments/BAL-502-RF-03\\_First\\_Comment\\_and\\_Responses\\_102016\\_v2.pdf](https://www.rfirst.org/standards/BAL502RFC03/SupportingDocuments/BAL-502-RF-03_First_Comment_and_Responses_102016_v2.pdf).

<sup>5</sup> The Initial Category Ballot Results are available at [https://rfirst.org/standards/BAL502RFC03/SupportingDocuments/BAL-502-RF-03\\_Category\\_Ballot\\_Results\\_020117.pdf](https://rfirst.org/standards/BAL502RFC03/SupportingDocuments/BAL-502-RF-03_Category_Ballot_Results_020117.pdf).



### **E. Recirculation Ballot**

ReliabilityFirst conducted a 10-day Recirculation Ballot from February 6, 2017 through February 15, 2017. Twenty-eight individuals cast votes, reaching quorum at 93 percent. The standard received requisite approval of two-thirds or greater affirmative majority of votes for each category.<sup>6</sup>

### **F. ReliabilityFirst Board of Directors Approval**

ReliabilityFirst posted the standard for 30 days from February 22, 2017 through March 23, 2017 prior to approval by the ReliabilityFirst Board of Directors. The ReliabilityFirst Board of Directors approved the standard on June 1, 2017.

### **G. NERC Comment Period and Board of Trustees Approval**

NERC posted proposed regional Reliability Standard BAL-502-RF-03 for a 45-day public comment period from April 28, 2017 to June 12, 2017.<sup>7</sup> The NERC Board of Trustees adopted proposed regional Reliability Standard BAL-502-RF-03 on August 10, 2017.<sup>8</sup>

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<sup>6</sup> The Recirculation Ballot results are available at [https://rfirst.org/standards/BAL502RFC03/SupportingDocuments/BAL-502-RF-03\\_Recirculation\\_Ballot\\_Results\\_021517.pdf](https://rfirst.org/standards/BAL502RFC03/SupportingDocuments/BAL-502-RF-03_Recirculation_Ballot_Results_021517.pdf).

<sup>7</sup> The NERC web page for regional Reliability Standards Under Development is available at <http://www.nerc.com/pa/Stand/Pages/RegionalReliabilityStandardsUnderDevelopment.aspx>.

<sup>8</sup> NERC, *Board of Trustees Agenda Package*, Agenda Item 9c (BAL-502-RF-03 Planning Resource Adequacy Analysis, Assessment, and Documentation), available at [http://www.nerc.com/gov/bot/Agenda%20highlights%20and%20Mintues%202013/Board\\_Open\\_Meeting\\_August\\_10\\_2017\\_Agenda\\_Package\\_v2%20\(002\).pdf](http://www.nerc.com/gov/bot/Agenda%20highlights%20and%20Mintues%202013/Board_Open_Meeting_August_10_2017_Agenda_Package_v2%20(002).pdf).

**Exhibit D**

**Complete Record of Development**

Reliability First (RF)				
BAL-502-RF-03	Planning Resource Adequacy Analysis, Assessment and Documentation	Standard Under Development	04/28/17 - 06/12/17	BAL-502-RF-03 Clean (39)   Redline (40)  Info (41)  Submit Comments  Unofficial Comment Form (Word) (42)  Comments Received (43)

**Detailed Information**

Posted Document	Supporting Documents	Industry Comments	Comments
<a href="#">BAL-502-RF-03</a> (37)  08/10/2017	<ul style="list-style-type: none"> <li><a href="#">Implementation Plan</a> (38)</li> </ul>		NERC BoT Approved: 08/10/17.
<a href="#">BAL-502-RF-03</a> (35)  06/01/2017	<ul style="list-style-type: none"> <li><a href="#">Implementation Plan</a> (36)</li> </ul>		RF Board Approved: 06/01/17.
<a href="#">Draft BAL-Draft BAL-502-RF-03</a> (32)  02/22/2017	<ul style="list-style-type: none"> <li><a href="#">Draft Implementation Plan</a> (33)</li> <li><a href="#">BAL-502-RF-03 Recirculation Ballot Results and Comments</a> (34)</li> </ul>		Posted for 30-Days Prior to Board Action. 02/22/17 thru 03/23/17.
<a href="#">Draft BAL-502-RF-03</a> (28)  02/06/2017	<ul style="list-style-type: none"> <li><a href="#">Draft Implementation Plan</a> (29)</li> <li><a href="#">BAL-502-RF-03 Initial Ballot Results and Comments</a> (30)</li> </ul>	02/06/17 thru 02/15/17  <a href="#">Recirculation Ballot Announcement</a> (31)	Posted for 10-Day Recirculation Ballot. 02/06/17 thru 02/15/17.
<a href="#">Draft BAL-502-RF-03</a> (24)  01/18/2017	<ul style="list-style-type: none"> <li><a href="#">Draft Implementation Plan</a> (25)</li> </ul>	01/18/2017 thru 02/01/2017	Posted for 15-Days Category Ballot. 01/18/17 thru 02/01/17.

		<a href="#">Category Ballot Announcement</a> (26)  <a href="#">BAL-502-RF-03 Ballot Pool</a> (27)	
<a href="#">Draft BAL-502-RF-03</a> (18)  01/03/2017	<ul style="list-style-type: none"> <li>• <a href="#">Draft BAL-502-RF-03 (Redline)</a> (19)</li> <li>• <a href="#">BAL-502-RFC-02 Compared to Draft BAL-502-RFC-03 (Redline)</a> (20)</li> <li>• <a href="#">Draft Implementation Plan</a> (21)</li> </ul>	01/03/2017 thru 01/17/2017  <a href="#">Join BAL-502-RF-03 Ballot Pool</a> (22)  <a href="#">15-Day Pre-Ballot Announcement</a> (23)	Posted for 15-Days prior to Category Ballot. 01/03/17 thru 01/17/17. (Ballot Pool closes on 01/09/17.)
<a href="#">Draft BAL-502-RF-03</a> (9)  09/12/2016	<ul style="list-style-type: none"> <li>• <a href="#">Draft BAL-502-RF-03 (Redline)</a> (10)</li> <li>• <a href="#">Draft Implementation Plan</a> (11)</li> <li>• <a href="#">Perceived Reliability Impact</a> (12)</li> <li>• <a href="#">Impact on Neighboring Regions</a> (13)</li> <li>• <a href="#">Changes Between Draft BAL-502-RFC-03 and BAL-502-RFC-02 Standards</a> (14)</li> <li>• <a href="#">1<sup>st</sup> Posting Questions</a> (15)</li> </ul>	09/12/2016 thru 10/11/2016  <a href="#">Review Comments and Responses</a> (16)  <a href="#">Join BAL-502-RF-03 Ballot Pool</a> (17)	Posted for 1st 30-Day Comment Period. 09/12/2016 thru 10/11/2016.
<a href="#">Roster</a> (8)  06/15/2016			Drafting Team Formed
<a href="#">Final SAR</a> (6) 05/12/2016	<ul style="list-style-type: none"> <li>• <a href="#">Drafting Team Nomination Form</a> (7)</li> </ul>		Request for Standard Drafting Team Nominations: 05/16/2016 thru 06/06/2016.
<a href="#">Draft SAR</a> (1) 04/11/2016	<ul style="list-style-type: none"> <li>• <a href="#">Announcement</a> (2)</li> <li>• <a href="#">Stakeholder Comment Question</a> (3)</li> <li>• <a href="#">BAL-502-RFC-02 Standard</a> (4)</li> </ul>	04/11/16 thru 05/10/16  <a href="#">Consideration of Comments</a> (5)	The BAL-502-RFC-03 SAR is currently posted for a 30-day comment period. 04/11/16 thru 05/10/16.

\*The numbers in red correspond to the documents included in this exhibit.

## Standard Authorization Request

The SC shall be responsible for implementing and maintaining this form as needed to support the information requirements of the standards development process in this Procedure. Changes to this form are considered minor, and therefore subject to only the approval of the SC.

### ReliabilityFirst Standard Authorization Request Form

**ReliabilityFirst  
will complete**

Title of Proposed Standard: Planning Resource Adequacy Analysis, Assessment and Documentation
Request Date: 03/31/16

ID - BAL-503-RFC-03
Authorized for Posting - 03/31/16
Authorized for Development - TBD

#### *SAR Originator Information*

Name: Anthony Jablonski	<b>SAR Type</b> (Check box for one of these selections.)	
Company: ReliabilityFirst	<input type="checkbox"/>	New Standard
Telephone: 216-503-0693	<input checked="" type="checkbox"/>	Revision to Existing Standard
Fax:	<input type="checkbox"/>	Withdrawal of Existing Standard
E-mail: Anthony.Jablonski@rfist.org	<input type="checkbox"/>	Urgent Action

#### **Purpose** (Provide one or two sentences.)

The purpose of this SAR is to initiate actions to revise the existing ReliabilityFirst Planning Resource Adequacy Analysis, Assessment and Documentation (BAL-502-RFC-02) Standard to address two FERC Directives as noted in FERC Order No 747 (FERC Order initially approving the Standard). Miscellaneous non-substantive format changes such as, but not limited to, reclassifying “sub-requirements” to “parts” will be considered as well.

#### **Industry Need** (Provide one or two sentences.)

The ReliabilityFirst Planning Resource Adequacy Analysis, Assessment and Documentation (BAL-502-RFC-02) Standard was approved as a Regional Reliability Standard by the Commission in Order No 747 on March 17, 2011 and became enforceable on May 23, 2011. The BAL-502-RFC-02 Standard establishes requirements for Planning Authorities/Coordinators in the

ReliabilityFirst region regarding resource adequacy assessment, which subject matter is not currently addressed in NERC’s continent-wide Reliability Standards. The Commission also approves four regional reliability definitions related to the approved regional Reliability Standard and the violation risk factors and violation severity levels assigned to the BAL-502-RFC-02 Requirements.

The BAL-502-RFC-02 Standard contains the following two main requirements. Requirement R1 requires each Planning Coordinator in the ReliabilityFirst footprint to perform and document an annual resource adequacy analysis. The sub-requirements of Requirement R1 set forth the criteria to be used for the resource adequacy analysis. Requirement R2 requires each Planning Coordinator to annually document the projected load and resource capability for each area and transmission constrained sub-area identified in the analysis. The sub-requirements of Requirement R2 set forth the specific documentation requirements.

At the time of approval, the Commission directed ReliabilityFirst, at the time it conducts its scheduled five year review, to (1) add time horizons to the two main requirements, and (2) consider modifying the regional Reliability Standard to include a requirement that the planning coordinators identify any gap between the needed amount of planning reserves defined in Requirement R1.1 and the planning reserves determined from the resource adequacy analysis.

ReliabilityFirst conducted a five year review comment posting period (February 29, 2016 through March 9, 2016) in which six individuals responded. All six individual provided responses indicating that they believe the BAL-502-RFC-02 should be reaffirmed (which includes a process to respond to the FERC directives).

**Brief Description** (A few sentences or a paragraph.)

The Standard Drafting Team (SDT) will review the two main requirements and shall add Time Horizons to each of the Requirements.

The SDT will consider modifying the BAL-502-RFC-02 Standard to include a requirement that the Planning Coordinators identify any gap between the needed amount of planning reserves defined in Requirement R1.1 and the planning reserves determined from the resource adequacy analysis.

The SDT will also consider miscellaneous non-substantive formatting changes such as, but not limited to, reclassifying “sub-requirements” to “parts”.

***Reliability Functions***

***The Standard will Apply to the Following Functions*** (Check box for each one that applies.)

<input type="checkbox"/>	Reliability Authority	Ensures the reliability of the bulk transmission system within its Reliability Authority area. This is the highest reliability authority.
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<input type="checkbox"/>	Balancing Authority	Integrates resource plans ahead of time, and maintains load-interchange-resource balance within its metered boundary and supports system frequency in real time
<input type="checkbox"/>	Generator Owner	Owns and maintains generating units
<input type="checkbox"/>	Interchange Authority	Authorizes valid and balanced Interchange Schedules
<input checked="" type="checkbox"/>	Planning Authority/Planning Coordinator	Plans the BPS
<input type="checkbox"/>	Resource Planner	Develops a long-term (generally one year and beyond) plan for the resource adequacy of specific loads (customer demand and energy requirements) within a Planning Authority Area
<input type="checkbox"/>	Transmission Planner	Develops a long-term (generally one year and beyond) plan for the reliability (adequacy) of the interconnected bulk electric transmission systems within its portion of the Planning Authority Area
<input type="checkbox"/>	Transmission Service Provider	Provides transmission services to qualified market participants under applicable transmission service agreements
<input type="checkbox"/>	Transmission Owner	Owns transmission facilities
<input type="checkbox"/>	Transmission Operator	Operates and maintains the transmission facilities, and executes switching orders
<input type="checkbox"/>	Distribution Provider	Provides and operates the “wires” between the transmission system and the customer
<input type="checkbox"/>	Generator Operator	Operates generating unit(s) and performs the functions of supplying energy and Interconnected Operations Services
<input type="checkbox"/>	Purchasing-Selling Entity	The function of purchasing or selling energy, capacity and all necessary Interconnected Operations Services as required
<input type="checkbox"/>	Load-Serving Entity	Secures energy and transmission (and related generation services) to serve the end user
<input type="checkbox"/>	Market Operator	Integrates energy, capacity, balancing, and transmission resources to achieve an economic, reliability-constrained dispatch of resources. The dispatch may be either cost-based or bid-based
<input type="checkbox"/>	Regional Reliability Organizations	An entity that ensures that a defined area of the BPS is reliable, adequate and secure. A member of the North American Electric Reliability Council. The Regional

		Reliability Organization can serve as the Compliance Monitor
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NOTE: The SDT may find it necessary to modify the initial reliability function responsibility assignment as a result of the standards development and comments received.

*Reliability Principles*

<b><i>Applicable Reliability Principles (Check box for all that apply.)</i></b>	
<input checked="" type="checkbox"/>	1. Interconnected BPS shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards.
<input checked="" type="checkbox"/>	2. The frequency and voltage of interconnected BPS shall be controlled within defined limits through the balancing of real and reactive power supply and demand.
<input checked="" type="checkbox"/>	3. Information necessary for the planning and operation of interconnected BPS shall be made available to those entities responsible for planning and operating the systems reliably.
<input type="checkbox"/>	4. Plans for emergency operation and system restoration of interconnected BPS shall be developed, coordinated, maintained, and implemented.
<input type="checkbox"/>	5. Facilities for communication, monitoring, and control shall be provided, used, and maintained for the reliability of interconnected BPS.
<input type="checkbox"/>	6. Personnel responsible for planning and operating interconnected BPS shall be trained, qualified, and have the responsibility and authority to implement actions.
<input type="checkbox"/>	7. The security of the interconnected BPS shall be assessed, monitored, and maintained on a wide-area basis.

*Market Interface Principles*

<b><i>Does the proposed Standard comply with all of the following Market Interface Principles?</i></b>	
Recognizing that reliability is an essential requirement of a robust North American economy:	
<input checked="" type="checkbox"/> yes or <input type="checkbox"/> no	1. A reliability standard shall not give any market participant an unfair competitive advantage.
<input checked="" type="checkbox"/> yes or <input type="checkbox"/> no	2. A reliability standard shall neither mandate nor prohibit any specific market structure.



<input checked="" type="checkbox"/> yes or <input type="checkbox"/> no	3. A reliability standard shall not preclude market solutions to achieving compliance with that standard.
<input checked="" type="checkbox"/> yes or <input type="checkbox"/> no	4. A reliability standard shall not require the public disclosure of commercially sensitive information. All market participants shall have equal opportunity to access commercially non-sensitive information that is required for compliance with reliability standards.

***Detailed Description*** (Provide enough detail so that an independent entity familiar with the industry could draft a Standard based on this description.)

The SDT will review the two main requirements and shall add Time Horizons to each of the Requirements. The SDT shall review the five Time Horizons listed below and determine which Time Horizon is appropriate for each Requirement:

1. Long-term Planning – a planning horizon of one year or longer.
2. Operations Planning – operating and resource plans from day-ahead up to and including seasonal.
3. Same-day Operations – routine actions required within the timeframe of a day, but not real-time.
4. Real-time Operations – actions required within one hour or less to preserve the reliability of the bulk electric system.
5. Operations Assessment – follow-up evaluations and reporting of real-time operations.

The STD will consider modifying the BAL-502-RFC-02 Standard to include a requirement that the planning coordinators identify any gap between the needed amount of planning reserves defined in Requirement R1.1 and the planning reserves determined from the resource adequacy analysis. This new requirement will be a documentation requirement only and will not require entities to install additional generation or transmission capacity.

- If the SDT decides to not include a new requirement after their consideration, the SDT shall develop a technical justification as to why a new requirement was not included.
- If the SDT decides to include a new requirement after their consideration, the Standards Drafting Team shall also develop associated Measures, Violation Risk Factors, Violation Severity Levels and Time Horizons.

The SDT will also review the Standard and consider miscellaneous non-substantive formatting changes such as, but not limited to, reclassifying “sub-requirements” to “parts”.

**Related Standards (NERC and Regional)**

Standard No.	Explanation
BAL-502-RFC-02	This Standard was approved by the FERC on March 23, 2011

***Related SARs***

SAR ID	Explanation

**Implementation Plan**

<p><b>Description</b> (<i>Provide plans for the implementation of the proposed standard, including any known systems or training requirements. Include the reliability risk(s) associated with the violation that the standard will mitigate, and the costs associated with implementation.</i>)</p>	
<p><b>Proposed Implementation</b></p>	<p><b>days after Board adoption or</b></p>
<p>_____</p> <p><b>on (date):</b></p>	

**Assignments**

	<i>Assignment</i>
<b>Team Members</b>	
<b>ReliabilityFirst Staff</b>	

**Announcement: Planning Resource Adequacy Analysis, Assessment and Documentation SAR Posted for 30-Day Comment Period Beginning April 11, 2016**

On March 31, 2016, the ReliabilityFirst Standards Committee (SC) unanimously agreed to post the Planning Resource Adequacy Analysis, Assessment and Documentation Standards Authorization Request (SAR) for the required 30-Day comment period. Per the Standards Development Procedure, the SAR is publically noticed and posted for the required 30-Day comment period beginning **April 11, 2016 through May 10, 2016**. Following the 30-Day comment period, the ReliabilityFirst Standards Committee will review all comments and take action to move the SAR into the developmental stage.

The purpose of this SAR is to initiate actions to revise the existing ReliabilityFirst Planning Resource Adequacy Analysis, Assessment and Documentation (BAL-502-RFC-02) Standard to address two FERC Directives as noted in [FERC Order No 747](#) (FERC Order initially approving the Standard). The two FERC directives include (1) add time horizons to the two main requirements, and (2) consider modifying the regional Reliability Standard to include a requirement that the planning coordinators identify any gap between the needed amount of planning reserves defined in Requirement R1.1 and the planning reserves determined from the resource adequacy analysis. Miscellaneous non-substantive format changes such as, but not limited to, reclassifying “sub-requirements” to “parts” will be considered as well.

The three main actions noted within the SAR include the following:

1. The Standard Drafting Team (SDT) will review the two main requirements and shall add Time Horizons to each of the Requirements
2. The STD will consider modifying the BAL-502-RFC-02 Standard to include a requirement that the planning coordinators identify any gap between the needed amount of planning reserves defined in Requirement R1.1 and the planning reserves determined from the resource adequacy analysis.
3. The SDT will also review the Standard and consider miscellaneous non-substantive formatting changes such as, but not limited to, reclassifying “sub-requirements” to “parts”.

To view the SAR and provide comments, please navigate to the [Planning Resource Adequacy Analysis, Assessment and Documentation](#) webpage and select the [Submit Comments](#) link.

Once again, we would like to thank you for your participation in the ReliabilityFirst Regional Standards process. If you have any questions, please contact Anthony Jablonski [anthony.jablonski@rfirst.org](mailto:anthony.jablonski@rfirst.org) at 216-503-0693. Thank you and have a great day.

## **Planning Resource Adequacy Analysis, Assessment and Documentation 30-Day SAR Comment Posting Question**

1. Do you agree with the scope of the Planning Resource Adequacy Analysis, Assessment and Documentation SAR? If not, please provide specific suggestions/comments.

NOTE: This is posted for informational purposes only. Please supply all comments via [comment form](#) on the ReliabilityFirst [Planning Resource Adequacy Analysis, Assessment and Documentation](#) website.

**A. Introduction**

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

**2. Number:** BAL-502-RFC-02

**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 (RFC) region

**4. Applicability**

**4.1** Planning Coordinator

**5. Effective Date:**

**5.1** Upon RFC Board approval

**B. Requirements**

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

**R1.1** 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).

**R1.1.1** The utilization of Direct Control Load Management or curtailment of Interruptible Demand shall not contribute to the loss of Load probability.

**R1.1.2** 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).

**R1.2** Be performed or verified separately for each of the following planning years:

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<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).

**R1.2.1** Perform an analysis for Year One.

**R1.2.2** 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.

**R1.2.2.1** If the analysis is verified, the verification must be supported by current or past studies for the same planning year.

**R1.3** Include the following subject matter and documentation of its use:

**R1.3.1** Load forecast characteristics:

- Median (50:50) forecast peak Load.
- Load forecast uncertainty (reflects variability in the Load forecast due to weather and regional economic forecasts).
- Load diversity.
- Seasonal Load variations.
- Daily demand modeling assumptions (firm, interruptible).
- Contractual arrangements concerning curtailable/Interruptible Demand.

**R1.3.2** Resource characteristics:

- Historic resource performance and any projected changes
- Seasonal resource ratings
- Modeling assumptions of firm capacity purchases from and sales to entities outside the Planning Coordinator area.
- Resource planned outage schedules, deratings, and retirements.
- Modeling assumptions of intermittent and energy limited resource such as wind and cogeneration.
- Criteria for including planned resource additions in the analysis

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

**R1.3.3.1** Criteria for including planned Transmission Facility additions in the analysis



**R1.3.4** Assistance from other interconnected systems including multi-area assessment considering Transmission limitations into the study area.

**R1.4** Consider the following resource availability characteristics and document how and why they were included in the analysis or why they were not included:

- Availability and deliverability of fuel.
- Common mode outages that affect resource availability
- Environmental or regulatory restrictions of resource availability.
- Any other demand (Load) response programs not included in R1.3.1.
- Sensitivity to resource outage rates.
- Impacts of extreme weather/drought conditions that affect unit availability.
- Modeling assumptions for emergency operation procedures used to make reserves available.
- Market resources not committed to serving Load (uncommitted resources) within the Planning Coordinator area.

**R1.5** Consider Transmission maintenance outage schedules and document how and why they were included in the Resource Adequacy analysis or why they were not included

**R1.6** Document that capacity resources are appropriately accounted for in its Resource Adequacy analysis

**R1.7** Document that all Load in the Planning Coordinator area is accounted for in its Resource Adequacy analysis

**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*].

**R2.1** This documentation shall cover each of the years in Year One through ten.

**R2.2** This documentation shall include the planning reserve margin calculated per requirement R1.1 for each of the three years in the analysis.

**R2.3** 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.

**C. Measures**

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

**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.

**D. Compliance**

**1. Compliance Monitoring Process**

**1.1. Compliance Monitoring Responsibility**

Compliance Monitor - Reliability *First* Corporation

**1.2. Compliance Monitoring Period and Reset Timeframe**

One calendar year

**1.3. Data Retention**

The Planning Coordinator shall retain information from the most current and prior two years.

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

**2. Violation Severity Levels**

Req. Number	VIOLATION SEVERITY LEVEL			
	LOWER	MODERATE	HIGH	SEVERE
R1	The Planning Coordinator Resource Adequacy analysis failed to consider 1 or 2 of the Resource availability characteristics subcomponents under R1.4 and documentation of how and why they were included in the analysis or why they	The Planning Coordinator Resource Adequacy analysis failed to express the planning reserve margin developed from R1.1 as a percentage of the net Median forecast peak Load per R1.1.2  <b>OR</b>	The Planning Coordinator Resource Adequacy analysis failed to be performed or verified separately for individual years of Year One through Year Ten per R1.2  <b>OR</b>	The Planning Coordinator failed to perform and document a Resource Adequacy analysis annually per R1.  <b>OR</b>  The Planning Coordinator Resource

	<p>were not included</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider Transmission maintenance outage schedules and document how and why they were included in the analysis or why they were not included per R1.5</p>	<p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Load forecast Characteristics subcomponents under R1.3.1 and documentation of its use</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Resource Characteristics subcomponents under R1.3.2 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 R1.7</p>	<p>The Planning Coordinator failed to perform an analysis or verification for one year in the 2 through 5 year period or one year in the 6 through 10 year period or both per R1.2.2</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 2 or more of the Load forecast Characteristics subcomponents under R1.3.1 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 R1.3.2 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>Adequacy analysis failed to 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 analyzed for each planning period being equal to 0.1 per R1.1</p> <p><b>OR</b></p> <p>The Planning Coordinator failed to perform an analysis for Year One per R1.2.1</p>
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			<p>per R1.3.3</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 R1.3.4</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider 3 or more Resource availability characteristics subcomponents under R1.4 and documentation of how and why they were included in the analysis or why they were not included</p> <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 R1.6</p>	
R2	The Planning Coordinator failed to publicly post the documents as specified	The Planning Coordinator failed to document the projected Load and resource	The Planning Coordinator failed to document the projected Load and resource	The Planning Coordinator failed to document the projected Load and resource

	<p>per requirement R2.1 and R2.2 later than 30 calendar days prior to the beginning of Year One per R2.3</p>	<p>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 R2.1.</p> <p><b>OR</b></p> <p>The Planning Coordinator failed to document the Planning Reserve margin calculated per requirement R1.1 for each of the three years in the analysis per R2.2.</p>	<p>capability, for each area or Transmission constrained sub-area identified in the Resource Adequacy analysis for year 1 of the 10 year period per R2.1.</p> <p><b>OR</b></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 two or more of the years in the 2 through 10 year period per R2.1.</p>	<p>capability, for each area or Transmission constrained sub-area identified in the Resource Adequacy analysis per R2.</p>
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**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.

### Version History

Version	Date	Action	Change Tracking
BAL-502-RFC-02 1 <sup>st</sup> Draft	06/24/08 Through 07/23/08	Posted for 1 <sup>st</sup> Comment Period	
BAL-502-RFC-02 2 <sup>nd</sup> Draft	08/18/08 Through 09/16/08	Posted for 2 <sup>nd</sup> Comment Period	
BAL-502-RFC-02 3 <sup>rd</sup> Draft	10/16/08 Through 10/30/08	Posted for 15-Day Category Ballot	
BAL-502-RFC-02 3 <sup>rd</sup> Draft	12/04/08	Reliability <i>First</i> Board Approved	
BAL-502-RFC-02	06/08/09	“Planning Reserve” changed to “planning reserve” in R2.2.	Errata
BAL-502-RFC-02	08/05/09	Approved by NERC Board of Trustees	
BAL-502-RFC-02	03/17/11	Order issued by FERC approving BAL-502-RFC-02 (approval effective 5/23/11)	

**ReliabilityFirst Planning Resource Adequacy Analysis, Assessment and Documentation (BAL-502-RFC-03) – Standards Authorization Request Comment Period - 04/01/16 – 05/10/16**

<b>Question</b>	Do you agree with the scope of the Planning Resource Adequacy Analysis, Assessment, and Documentation Standard SAR? If not, please provide specific suggestions or comments.
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<b>Consideration of Comments</b>	All commenters agreed with the scope of the BAL-502-RFC-03 Standards Authorization Request.
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<b>Answers</b>	<b>Frequency</b>
Yes	3
No	0

<b>Commenter</b>	<b>Company</b>	<b>Answer</b>	<b>Comment</b>
Jeffery Beattie	Consumers Energy	Yes	
Greg Milosek	ITC Holdings Corp.	Yes	ITC, on behalf of ITC Transmission, METC and Michigan Electric Coordinated Systems, is not registered as a Planning Coordinator which applies to BAL-502-RFC, but would like to state that BAL-502-RFC should be reaffirmed and will defer the final decision to MISO who is ITC's Planning Coordinator.
Chris Scanlon	Exelon	Yes	Exelon believes that the Standard is appropriate as is, with the limited exception of addressing the two directives that FERC noted in its Order 747 for initial approval

## Standard Authorization Request

The SC shall be responsible for implementing and maintaining this form as needed to support the information requirements of the standards development process in this Procedure. Changes to this form are considered minor, and therefore subject to only the approval of the SC.

### ReliabilityFirst Standard Authorization Request Form

**ReliabilityFirst  
will complete**

Title of Proposed Standard: Planning Resource Adequacy Analysis, Assessment and Documentation
Request Date: 03/31/16

ID - BAL-503-RFC-03
Authorized for Posting - 03/31/16
Authorized for Development – 04/12/16

#### *SAR Originator Information*

Name: Anthony Jablonski	<b>SAR Type</b> (Check box for one of these selections.)	
Company: ReliabilityFirst	<input type="checkbox"/>	New Standard
Telephone: 216-503-0693	<input checked="" type="checkbox"/>	Revision to Existing Standard
Fax:	<input type="checkbox"/>	Withdrawal of Existing Standard
E-mail: Anthony.Jablonski@rfist.org	<input type="checkbox"/>	Urgent Action

#### **Purpose** (Provide one or two sentences.)

The purpose of this SAR is to initiate actions to revise the existing ReliabilityFirst Planning Resource Adequacy Analysis, Assessment and Documentation (BAL-502-RFC-02) Standard to address two FERC Directives as noted in FERC Order No 747 (FERC Order initially approving the Standard). Miscellaneous non-substantive format changes such as, but not limited to, reclassifying “sub-requirements” to “parts” will be considered as well.

#### **Industry Need** (Provide one or two sentences.)

The ReliabilityFirst Planning Resource Adequacy Analysis, Assessment and Documentation (BAL-502-RFC-02) Standard was approved as a Regional Reliability Standard by the Commission in Order No 747 on March 17, 2011 and became enforceable on May 23, 2011. The BAL-502-RFC-02 Standard establishes requirements for Planning Authorities/Coordinators in the



ReliabilityFirst region regarding resource adequacy assessment, which subject matter is not currently addressed in NERC’s continent-wide Reliability Standards. The Commission also approves four regional reliability definitions related to the approved regional Reliability Standard and the violation risk factors and violation severity levels assigned to the BAL-502-RFC-02 Requirements.

The BAL-502-RFC-02 Standard contains the following two main requirements. Requirement R1 requires each Planning Coordinator in the ReliabilityFirst footprint to perform and document an annual resource adequacy analysis. The sub-requirements of Requirement R1 set forth the criteria to be used for the resource adequacy analysis. Requirement R2 requires each Planning Coordinator to annually document the projected load and resource capability for each area and transmission constrained sub-area identified in the analysis. The sub-requirements of Requirement R2 set forth the specific documentation requirements.

At the time of approval, the Commission directed ReliabilityFirst, at the time it conducts its scheduled five year review, to (1) add time horizons to the two main requirements, and (2) consider modifying the regional Reliability Standard to include a requirement that the planning coordinators identify any gap between the needed amount of planning reserves defined in Requirement R1.1 and the planning reserves determined from the resource adequacy analysis.

ReliabilityFirst conducted a five year review comment posting period (February 29, 2016 through March 9, 2016) in which six individuals responded. All six individual provided responses indicating that they believe the BAL-502-RFC-02 should be reaffirmed (which includes a process to respond to the FERC directives).

**Brief Description** (A few sentences or a paragraph.)

The Standard Drafting Team (SDT) will review the two main requirements and shall add Time Horizons to each of the Requirements.

The SDT will consider modifying the BAL-502-RFC-02 Standard to include a requirement that the Planning Coordinators identify any gap between the needed amount of planning reserves defined in Requirement R1.1 and the planning reserves determined from the resource adequacy analysis.

The SDT will also consider miscellaneous non-substantive formatting changes such as, but not limited to, reclassifying “sub-requirements” to “parts”.

***Reliability Functions***

***The Standard will Apply to the Following Functions*** (Check box for each one that applies.)

<input type="checkbox"/>	Reliability Authority	Ensures the reliability of the bulk transmission system within its Reliability Authority area. This is the highest reliability authority.
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<input type="checkbox"/>	Balancing Authority	Integrates resource plans ahead of time, and maintains load-interchange-resource balance within its metered boundary and supports system frequency in real time
<input type="checkbox"/>	Generator Owner	Owns and maintains generating units
<input type="checkbox"/>	Interchange Authority	Authorizes valid and balanced Interchange Schedules
<input checked="" type="checkbox"/>	Planning Authority/Planning Coordinator	Plans the BPS
<input type="checkbox"/>	Resource Planner	Develops a long-term (generally one year and beyond) plan for the resource adequacy of specific loads (customer demand and energy requirements) within a Planning Authority Area
<input type="checkbox"/>	Transmission Planner	Develops a long-term (generally one year and beyond) plan for the reliability (adequacy) of the interconnected bulk electric transmission systems within its portion of the Planning Authority Area
<input type="checkbox"/>	Transmission Service Provider	Provides transmission services to qualified market participants under applicable transmission service agreements
<input type="checkbox"/>	Transmission Owner	Owns transmission facilities
<input type="checkbox"/>	Transmission Operator	Operates and maintains the transmission facilities, and executes switching orders
<input type="checkbox"/>	Distribution Provider	Provides and operates the “wires” between the transmission system and the customer
<input type="checkbox"/>	Generator Operator	Operates generating unit(s) and performs the functions of supplying energy and Interconnected Operations Services
<input type="checkbox"/>	Purchasing-Selling Entity	The function of purchasing or selling energy, capacity and all necessary Interconnected Operations Services as required
<input type="checkbox"/>	Load-Serving Entity	Secures energy and transmission (and related generation services) to serve the end user
<input type="checkbox"/>	Market Operator	Integrates energy, capacity, balancing, and transmission resources to achieve an economic, reliability-constrained dispatch of resources. The dispatch may be either cost-based or bid-based
<input type="checkbox"/>	Regional Reliability Organizations	An entity that ensures that a defined area of the BPS is reliable, adequate and secure. A member of the North American Electric Reliability Council. The Regional

		Reliability Organization can serve as the Compliance Monitor
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NOTE: The SDT may find it necessary to modify the initial reliability function responsibility assignment as a result of the standards development and comments received.

*Reliability Principles*

<b><i>Applicable Reliability Principles (Check box for all that apply.)</i></b>	
<input checked="" type="checkbox"/>	1. Interconnected BPS shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards.
<input checked="" type="checkbox"/>	2. The frequency and voltage of interconnected BPS shall be controlled within defined limits through the balancing of real and reactive power supply and demand.
<input checked="" type="checkbox"/>	3. Information necessary for the planning and operation of interconnected BPS shall be made available to those entities responsible for planning and operating the systems reliably.
<input type="checkbox"/>	4. Plans for emergency operation and system restoration of interconnected BPS shall be developed, coordinated, maintained, and implemented.
<input type="checkbox"/>	5. Facilities for communication, monitoring, and control shall be provided, used, and maintained for the reliability of interconnected BPS.
<input type="checkbox"/>	6. Personnel responsible for planning and operating interconnected BPS shall be trained, qualified, and have the responsibility and authority to implement actions.
<input type="checkbox"/>	7. The security of the interconnected BPS shall be assessed, monitored, and maintained on a wide-area basis.

*Market Interface Principles*

<b><i>Does the proposed Standard comply with all of the following Market Interface Principles?</i></b>	
Recognizing that reliability is an essential requirement of a robust North American economy:	
<input checked="" type="checkbox"/> yes or <input type="checkbox"/> no	1. A reliability standard shall not give any market participant an unfair competitive advantage.
<input checked="" type="checkbox"/> yes or <input type="checkbox"/> no	2. A reliability standard shall neither mandate nor prohibit any specific market structure.

<input checked="" type="checkbox"/> yes or <input type="checkbox"/> no	3. A reliability standard shall not preclude market solutions to achieving compliance with that standard.
<input checked="" type="checkbox"/> yes or <input type="checkbox"/> no	4. A reliability standard shall not require the public disclosure of commercially sensitive information. All market participants shall have equal opportunity to access commercially non-sensitive information that is required for compliance with reliability standards.

***Detailed Description*** (Provide enough detail so that an independent entity familiar with the industry could draft a Standard based on this description.)

The SDT will review the two main requirements and shall add Time Horizons to each of the Requirements. The SDT shall review the five Time Horizons listed below and determine which Time Horizon is appropriate for each Requirement:

1. Long-term Planning – a planning horizon of one year or longer.
2. Operations Planning – operating and resource plans from day-ahead up to and including seasonal.
3. Same-day Operations – routine actions required within the timeframe of a day, but not real-time.
4. Real-time Operations – actions required within one hour or less to preserve the reliability of the bulk electric system.
5. Operations Assessment – follow-up evaluations and reporting of real-time operations.

The STD will consider modifying the BAL-502-RFC-02 Standard to include a requirement that the planning coordinators identify any gap between the needed amount of planning reserves defined in Requirement R1.1 and the planning reserves determined from the resource adequacy analysis. This new requirement will be a documentation requirement only and will not require entities to install additional generation or transmission capacity.

- If the SDT decides to not include a new requirement after their consideration, the SDT shall develop a technical justification as to why a new requirement was not included.
- If the SDT decides to include a new requirement after their consideration, the Standards Drafting Team shall also develop associated Measures, Violation Risk Factors, Violation Severity Levels and Time Horizons.

The SDT will also review the Standard and consider miscellaneous non-substantive formatting changes such as, but not limited to, reclassifying “sub-requirements” to “parts”.

**Related Standards (NERC and Regional)**

Standard No.	Explanation
BAL-502-RFC-02	This Standard was approved by the FERC on March 23, 2011

***Related SARs***

SAR ID	Explanation

**Implementation Plan**

<p><b>Description</b> (<i>Provide plans for the implementation of the proposed standard, including any known systems or training requirements. Include the reliability risk(s) associated with the violation that the standard will mitigate, and the costs associated with implementation.</i>)</p>	
<p><b>Proposed Implementation</b></p>	<p><b>days after Board adoption or</b></p>
<p>_____</p> <p><b>on (date):</b></p>	

**Assignments**

	<i>Assignment</i>
<b>Team Members</b>	
<b>ReliabilityFirst Staff</b>	

## Planning Resource Adequacy Analysis, Assessment and Documentation Standard Drafting Team Nomination Form

Please return this form to [anthony.jablonski@rfirst.org](mailto:anthony.jablonski@rfirst.org) by June 6, 2016. For questions, please contact Anthony Jablonski at 216-503-0693.

Please note this drafting team will probably meet initially in the June, 2016 timeframe to review the [Planning Resource Adequacy Analysis, Assessment and Documentation SAR](#) posted on the ReliabilityFirst website. The detailed meeting schedule has not been determined as of yet. It is anticipated the team will conduct a number of conference calls as part of this effort. The purpose of this effort is to revise the existing ReliabilityFirst Planning Resource Adequacy Analysis, Assessment and Documentation (BAL-502-RFC-02) Standard to address two FERC Directives as noted in FERC Order No 747 (FERC Order initially approving the Standard). Miscellaneous non-substantive format changes such as, but not limited to, reclassifying “sub-requirements” to “parts” will be considered as well. **All candidates should be prepared to participate actively at these meetings.**

**Proposed Regional Reliability Standard:** Planning Resource Adequacy Analysis, Assessment and Documentation

Name:

Organization:

Address:

Office Telephone:

Mobile Telephone:

Fax:

Email:

Please briefly describe your experience and qualifications to serve on the Standard Drafting Team. Previous experience working on or applying standards/criteria and/or SARs is very beneficial, but not a requirement.

NERC Reliability  
Region(s) your

My company can be categorized by one or more of the following. (check



<b>company resides in (check all that apply):</b>	<b>all that apply):</b>
<input type="checkbox"/> ERCOT	<input type="checkbox"/> 1 - Transmission Owners
<input type="checkbox"/> FRCC	<input type="checkbox"/> 2 - RTOs, ISOs, Regional Reliability Councils
<input type="checkbox"/> RF	<input type="checkbox"/> 3 - Small Load-serving Entities (Region of 10,000 GWh or less)
<input type="checkbox"/> MRO	<input type="checkbox"/> 4 - Medium Load-serving Entities (Region between 10,000 GWh and 50,000 GWh)
<input type="checkbox"/> NPCC	<input type="checkbox"/> 5 - Large Load-serving Entities (Region of 50,000 GWh or greater)
<input type="checkbox"/> SERC	<input type="checkbox"/> 6 - Transmission-dependent Utilities
<input type="checkbox"/> SPP	<input type="checkbox"/> 7 - Electric Generators
<input type="checkbox"/> WECC	<input type="checkbox"/> 8 - Electricity Brokers, Aggregators, and Marketers
<input type="checkbox"/> Not Applicable	<input type="checkbox"/> 9 - Large Electricity End Users
	<input type="checkbox"/> 10 - Small Electricity End Users
	<input type="checkbox"/> 11 - Federal, State, and Provincial Regulatory or other Government Entities
<b>Which of the following Function(s) do you have expertise or responsibilities:</b>	
<input type="checkbox"/> Reliability Coordinator	<input type="checkbox"/> Transmission Service Provider
<input type="checkbox"/> Balancing Authority	<input type="checkbox"/> Transmission Owner
<input type="checkbox"/> Interchange Authority	<input type="checkbox"/> Load Serving Entity
<input type="checkbox"/> Planning Coordinator	<input type="checkbox"/> Distribution Provider
<input type="checkbox"/> Transmission Operator	<input type="checkbox"/> Purchasing-selling Entity
<input type="checkbox"/> Generator Operator	<input type="checkbox"/> Generator Owner
<input type="checkbox"/> Transmission Planner	<input type="checkbox"/> Resource Planner
	<input type="checkbox"/> Market Operator



**RELIABILITY FIRST**

**Planning Resource Adequacy Analysis, Assessment and Documentation (PRAA)  
Standard Drafting Team Roster (06/15/16)**

<b>Contact</b>	<b>Company</b>	<b>Email</b>	<b>Phone</b>
Joe O'Brien	NIPSCO	<a href="mailto:jnobrien@nisource.com">jnobrien@nisource.com</a>	219-853-5470
Jeffery W. Beattie	Consumers Energy	<a href="mailto:jwbeattie@cmsenergy.com">jwbeattie@cmsenergy.com</a>	517-788-7220
Tom Falin	PJM	<a href="mailto:thomas.falin@pjm.com">thomas.falin@pjm.com</a>	610-666-4683
Jordan Cole	MISO	<a href="mailto:jcole@misoenergy.org">jcole@misoenergy.org</a>	651-632-8573
Anthony Jablonski	ReliabilityFirst Staff	<a href="mailto:anthony.jablonski@rfirst.org">anthony.jablonski@rfirst.org</a>	216-503-0693

## A. Introduction

- 1. Title:** Planning Resource Adequacy Analysis, Assessment and Documentation
- 2. Number:** BAL-502-RF-03
- 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
- 4. Applicability**
  - 4.1** Functional Entities
    - 4.1.1** Planning Coordinator
- 5. Effective Date:**
  - 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.

## 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).
  - 1.1.1** The utilization of Direct Control Load Management or curtailment of Interruptible Demand shall not contribute to the loss of Load probability.
  - 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).
- 1.2** Be performed or verified separately for each of the following planning years:

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<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).

- 1.2.1 Perform an analysis for Year One.
- 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.
  - 1.2.2.1 If the analysis is verified, the verification must be supported by current or past studies for the same planning year.

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

- 1.3.1 Load forecast characteristics:
  - 1.3.1.1 Median (50:50) forecast peak Load.
  - 1.3.1.2 Load forecast uncertainty (reflects variability in the Load forecast due to weather and regional economic forecasts).
  - 1.3.1.3 Load diversity.
  - 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.
- 1.3.2 Resource characteristics:
  - 1.3.2.1 Historic resource performance and any projected changes
  - 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.
  - 1.3.2.4 Resource planned outage schedules, deratings, and retirements.
  - 1.3.2.5 Modeling assumptions of intermittent and energy limited resource such as wind and cogeneration.
  - 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
  - 1.3.3.1 Criteria for including planned Transmission Facility additions in the analysis

- 1.3.4 Assistance from other interconnected systems including multi-area assessment considering Transmission limitations into the study area.
  
  - 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:
    - 1.4.1 Availability and deliverability of fuel.
    - 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.
    - 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
  
  - 1.6 Document that capacity resources are appropriately accounted for in its Resource Adequacy analysis
  
  - 1.7 Document that all Load in the Planning Coordinator area is accounted for in its Resource Adequacy analysis
- M1** Each Planning Coordinator shall possess the documentation that a valid Resource Adequacy analysis was performed or verified in accordance with R1
- 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*].
- 2.1 This documentation shall cover each of the years in Year One through ten.
  
  - 2.2 This documentation shall include the Planning Reserve margin calculated per requirement R1.1 for each of the three years in the analysis.

**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.

**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.

**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*].

**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**

### **5. Compliance Monitoring Process**

#### **5.1. Compliance Monitoring Authority**

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.

#### **5.2. 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.

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.

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.

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

#### **5.3. Compliance Monitoring and Assessment Processes**

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

#### **5.4. Additional Compliance Information**

None

Table of Compliance Elements

R #	Time Horizon	VRF	VIOLATION SEVERITY LEVEL			
			Lower VSL	Moderate VSL	High VSL	Severe VSL
R1	Long-term Planning	Medium	<p>The Planning Coordinator Resource Adequacy analysis failed to consider 1 or 2 of the Resource availability characteristics subcomponents under Requirement R1, Part 1.4 and documentation of how and why they were included in the analysis or why they were not included</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider Transmission maintenance outage schedules and document how and why they were included in the analysis or why they were not included per Requirement R1, Part 1.5</p>	<p>The Planning Coordinator Resource Adequacy analysis failed to express the planning reserve margin developed from Requirement R1, Part 1.1 as a percentage of the net Median forecast peak Load per Requirement R1, Part 1.1.2</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Load forecast Characteristics subcomponents under Requirement R1, Part 1.3.1 and documentation of its use</p> <p><b>OR</b></p>	<p>The Planning Coordinator Resource Adequacy analysis failed to be performed or verified separately for individual years of Year One through Year Ten per Requirement R1, Part 1.2</p> <p><b>OR</b></p> <p>The Planning Coordinator failed to perform an analysis or verification for one year in the 2 through 5 year period or one year in the 6 through 10 year period or both per Requirement R1, Part 1.2.2</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 2 or</p>	<p>The Planning Coordinator failed to perform and document a Resource Adequacy analysis annually per R1.</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to 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 analyzed for each planning period being equal to 0.1 per Requirement R1, Part 1.1</p> <p><b>OR</b></p>

				<p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Resource Characteristics subcomponents under Requirement R1, Part 1.3.2 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 Requirement R1, Part 1.7</p>	<p>more of the Load forecast Characteristics subcomponents under Requirement R1, Part 1.3.1 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 Requirement R1, Part 1.3.2 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 One per Requirement R1, Part 1.2.1</p>
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					<p>per Requirement R1, Part 1.3.3</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 Requirement R1, Part 1.3.4</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider 3 or more Resource availability characteristics subcomponents under Requirement R1, Part 1.4 and documentation of how and why they were included in the analysis or why they were not included</p>	
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					<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 Requirement R1, Part 1.6</p>	
R2	Long-term Planning	Lower	<p>The Planning Coordinator failed to publicly post the documents as specified per requirement Requirement R2, Part 2.1 and Requirement R2, Part 2.2 later than 30 calendar days prior to the beginning of Year One per Requirement R2, Part 2.3</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 Requirement R2, Part 2.1.</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 Requirement R2, Part 2.1.</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 Requirement R2, Part 2.</p>

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				Reserve margin calculated per requirement R1.1 for each of the three years in the analysis per Requirement R2, Part 2.2.	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 Requirement R2, Part 2.1.	
R3	Long-term Planning	Lower	None	None	None	The Planning Coordinator failed to identify any gaps between the needed amount of planning reserves and the projected planning reserves, per R3

**D. Regional Variances**

None

**E. Interpretations**

None

**F. Associated Documents**

None

**Version History**

Version	Date	Action	Change Tracking
BAL-502-RFC-02	12/04/08	ReliabilityFirst Board Approved	
BAL-502-RFC-02	08/05/09	NERC BoT Approved	
BAL-502-RFC-02	03/17/11	FERC Approved	

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

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**A. Introduction**

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

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

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**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

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**4. Applicability**

**4.1 Functional Entities**

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**4.1.1 Planning Coordinator**

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**5. Effective Date:**

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**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.

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**B. Requirements and Measures**

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**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]:

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**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).

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

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**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).

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

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<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).

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

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

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**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.

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

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

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**1.3.1** Load forecast characteristics:

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

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

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**1.3.1.3** Load diversity.

**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.

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**1.3.2** Resource characteristics:

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

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**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.

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

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

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

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

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

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

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

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**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:

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**1.4.1** Availability and deliverability of fuel.

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**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.

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**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

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

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

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

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**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].

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

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

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

**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.

**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.

**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].

**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**

**5. Compliance Monitoring Process**

**5.1. Compliance Monitoring Authority**

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.

**5.2. 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.

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.

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.

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

**5.3. Compliance Monitoring and Assessment Processes**

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

**5.4. Additional Compliance Information**

None

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M1 . Each Planning Coordinator shall possess the documentation that a valid Resource Adequacy analysis was performed or verified in accordance with R1¶  
¶  
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.¶  
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				<p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Resource Characteristics subcomponents under <a href="#">Requirement R1, Part 1.3.1</a> and <a href="#">1.3.2</a> 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 <a href="#">Requirement R1, Part 1.7</a></p>	<p>more of the Load forecast Characteristics subcomponents under <a href="#">Requirement R1, Part 1.3.1</a> 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 <a href="#">Requirement R1, Part 1.3.2</a> 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 One per <a href="#">Requirement 1.2.1</a></p>
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					<p>per <a href="#">Requirement R1, Part 1.3.3</a></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 <a href="#">Requirement R1, Part 1.3.4</a></p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider 3 or more Resource availability characteristics subcomponents under <a href="#">Requirement R1, Part 1.4</a> and documentation of how and why they were included in the analysis or why they were not included</p>		
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Standard BAL-502-RF-03

				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>	<u>The Planning Coordinator failed to identify any gaps between the needed amount of planning reserves and the projected planning reserves, per R3</u>

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

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**D. Regional Variances**

None

Deleted: None

**E. Interpretations**

None

Deleted: Interpretations

**F. Associated Documents**

None

Deleted: Associated Documents

Deleted: None

**Version History**

Version	Date	Action	Change Tracking
BAL-502-RFC-02	12/04/08	ReliabilityFirst Board Approved	
BAL-502-RFC-02	08/05/09	NERC BoT Approved	
BAL-502-RFC-02	03/17/11	FERC Approved	

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.

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Deleted: 08/18/08 Through 09/16/08  
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  
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**RELIABILITY FIRST**

**Draft Planning Resource Adequacy Analysis, Assessment and Documentation  
(BAL-502-RF-03) Implementation Plan**

**Requested Approvals**

- None

**Requested Retirements**

- BAL-502-RFC-02

**Prerequisite Approval**

- None

**Revisions to Defined Terms in the NERC Glossary**

- None

**Effective Date**

- 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.



**RELIABILITY FIRST**

**Draft Planning Resource Adequacy Analysis, Assessment and Documentation  
(BAL-502-RF-03) Perceived Reliability Impact**

The Planning Resource Adequacy and Assessment (PRAA) Standard Drafting Team (SDT) believes the additions of Time Horizons and non-substantive changes will have no reliability impact as these are more administrative in nature.

The Planning Resource Adequacy and Assessment (PRAA) Standard Drafting Team (SDT) believes the new Requirement R3 will have a perceived reliability impact of ensuring the Planning Coordinators within the ReliabilityFirst footprint identify any gaps between the needed amount of planning reserves defined in Requirement R1, Part 1.1 and the projected planning reserves determined from the resource adequacy analysis. By identifying these gaps, the Planning Coordinator will document any deficiencies in planning reserves to help ensure that entities within their footprint are aware of potential risks regarding the capability to balance resources and demand in a planning timeframe.





**RELIABILITY FIRST**

**Draft Planning Resource Adequacy Analysis, Assessment and Documentation  
(BAL-502-RF-03) Assessment of Impact on Neighboring Regions**

The Planning Resource Adequacy and Assessment (PRAA) Standard Drafting Team (SDT) believes there is no impact on neighboring regions as a result of the recommended non-substantive changes, addition of “Time Horizons” and addition of a new Requirement R3. Requirement R3, requires the Planning Coordinator to 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. Historically, the two Planning Coordinators within the ReliabilityFirst region have already been identifying this gap via a number of public reports, thus this change will result in no change for neighboring Regions which also include these two Planning coordinators.

Since there is no impact on neighboring regions, there was no need for the PRAA SDT to solicit appropriate input from the neighboring regions.



## **Substantive Changes within Draft BAL-502-RF-03 standard**

1. Included a new Requirement R3 to address the Directive in FERC Order No 747 to include a requirement that the Planning Coordinators identify any gap between the needed amount of planning reserves defined in Requirement R1.1 and the planning reserves determined from the resource adequacy analysis.
2. Included a new Measure M3 as a result of the newly added Requirement R3.
3. Included new Violation Severity Levels as a result of the newly added Requirement R3.
4. Included time horizons to the Requirement R1, R2 and the newly included R3 to address the Directive in FERC Order No 747 to add time horizons to the two main requirements.

## **Non-Substantive Changes within Draft BAL-502-RF-03 standard**

1. Changed name from BAL-502-RFC-02 to BAL-502-RF-03
2. Updated the formatting of Section A (Introduction)
3. Updated Effective date section for the Standards to 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.
4. Added the term “and Measures” to section B heading
5. Placed Measures immediately following the associate Requirement
6. Removed the “R” from all sub-requirements making them sub-parts
7. Updated section C (Compliance) to be consistent with NERC Standard Boilerplate language
8. Renamed “Violation Severity Levels” section to “Table of Compliance Elements”
9. Updated “Table of Compliance Elements” to include “Time Horizons” and “VRFs”
10. Added sections D (Regional Variances), E (Interpretations) and F (Associated Documents) to end of Standard.
11. Changed bulleted items in R1.3.1, R1.3.2 and R1.4 to sub-parts. Bullets in Standards are meant to be “OR” statements. The intent of these bulleted items was not to be “OR” statements, rather be “AND” statements.
12. Updated Version History to include RF Board, NERC BoT and FERC approval dates.



**RELIABILITY FIRST**

**Draft Planning Resource Adequacy Analysis, Assessment and Documentation  
(BAL-502-RF-03) 1<sup>st</sup> 30-Day Comment Posting Questions**

1. [OPTION 1] - Do you agree that the modifications made to the BAL-502-RF-03 draft standard are consistent with the scope of the BAL-502-RF-03 Standard Authorization Request (SAR)? If not, please provide specific comments why you do not agree that the BAL-502-RF-03 draft standard is consistent with the scope of the BAL-502-RF-03 SAR.
2. [OPTION 2a] Do you agree with the newly added Time Horizons for each Requirement? If not, please provide specific comments why you do not agree the newly designated Time Horizons.
3. [OPTION 2b] Do you agree with the non-substantive changes made throughout the standard? If not, please provide specific comments why you do not agree with the non-substantive changes made throughout the standard.
4. [OPTION 2c] Do you agree that the newly added Requirement R3 is responsive to the Directive noted in FERC Order No 747, to include a requirement requiring the Planning Coordinator to identify any gap between the needed amount of planning reserves defined in Requirement R1.1 and the planning reserves determined from the resource adequacy analysis? If not, please provide specific comments why you do not agree the newly added Requirement R3 is responsive to the FERC Directive
5. Do you agree with the newly included Measure M3? If not, please provide specific comments why you do not agree with the newly included Measure M3.
6. Do you agree with the newly included Violation Severity Levels (VSLs) for Requirement R3? If not, please provide specific comments why you do not agree with the newly included VSLs for Requirement R3.
7. Do you agree with the BAL-502-RF-03 Implementation Plan? If not, please provide specific comments why you do not agree with the Implementation Plan.

**NOTE:** This is posted for informational purposes only. Please supply all comments via the ReliabilityFirst site located at: [123](#)

**ReliabilityFirst Planning Resource Adequacy Analysis, Assessment and Documentation (BAL-502-RF-03) 30-Day Comment Period - 09/12/2016 - 10/11/2016**

<b>Question 1</b>	Do you agree with the newly added Time Horizons for each Requirement? If not, please provide specific comments on why you do not agree with the newly designated Time Horizons.
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<b>Consideration of Comments</b>	One commenter agreed with the newly designated Time Horizons. One commenter indicated that the BAL-502-RF-03 Standard should be retired. The SDT disagreed as it is outside the scope of the SAR to determine if the BAL-502-RF-03 Standards should be retired. No changes made.
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<b>Answers</b>	<b>Frequency</b>
Yes	1
No	1
Abstain	0

<b>Commenter</b>	<b>Answer</b>	<b>Comment</b>	<b>Response</b>
Scott Cunningham (OVEC)	No	The standard should be retired as it does not address a reliability need. There are adequate market incentives to fill the planning reserve requirement.	<p>It is outside of the Standards Authorization Request (SAR) to determine whether the standards should be retired. During the SAR comment period (conducted 04/01/16 – 05/10/16), all individuals whom provided comments agreed with the scope of the SAR. Furthermore during the “five year review” comment period (conducted 02/29/16 – 03/09/16), all individuals who provided comments indicated the Standard should be re-affirmed.</p> <p>Also, the BAL-502-RF-03 standards does not require the Planning Coordinator to “fill the planning reserve requirement”, rather it establishes common criteria, based on “one day in ten year” loss of Load expectation principles, for the analysis, assessment</p>

			and documentation of Resource Adequacy for Load in the ReliabilityFirst Corporation region.
Sean Bodkin (Dominion)	Yes		Thank you.

<b>Question 2</b>	Do you agree with the non-substantive changes made throughout the Standard? If not, please provide specific comments on why you do not agree with the non-substantive changes made throughout the Standard.
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<b>Consideration of Comments</b>	Both commenters agreed with the non-substantive changes. It was noted, outside of the comment period, that there was two non-substantive formatting in Section C (Compliance). The first issue was the numbering started with a five and it should have started with a one. The second issue was the heading for 1.1 was incorrectly labeled as “Compliance Monitoring Authority” when it should have been labeled as “Compliance Enforcement Authority”. Both non-substantive issues have been addressed and reflected in the posted redline version.
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Answers	Frequency
Yes	2
No	0
Abstain	0

Commenter	Answer	Comment	Response
Scott Cunningham (OVEC)	Yes		Thank you.
Sean Bodkin (Dominion)	Yes		Thank you.

<b>Question 3</b>	Do you agree that the newly added Requirement R3 is responsive to the Directive noted in FERC Order No 747, to include a requirement requiring the Planning Coordinator to identify any gap between the needed amount of planning reserves defined in Requirement R1.1 and the planning reserves determined from the resource adequacy analysis? If not, please provide specific comments on why you do not agree that the newly added Requirement R3 is responsive to the FERC Directive.
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<b>Consideration of Comments</b>	One commenter agreed with the newly added Requirement R3. One commenter indicated that there is no requirement in any standard to address the gap. The SDT agreed as NERC’s ability to require the building or acquisition of new generating capacity, is prohibited by section 215(a)(3) of the FPA. No changes made.
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Answers	Frequency
Yes	1
No	1
Abstain	0

Commenter	Answer	Comment	Response
Scott Cunningham (OVEC)	No	Even if the PC identifies a gap, there is no requirement in any standard to address the gap. There are market incentives for resource owners to address the planning reserve requirement.	You are correct, if the PC identifies a gap, there is no requirement in any standard to address the gap. NERC's ability to require the building or acquisition of new generating capacity, is prohibited by section 215(a)(3) of the FPA and thus no corresponding requirement is proposed.  Furthermore, the addition of the new requirement R3 was a result of a Directive noted in FERC Order No 747.
Sean Bodkin (Dominion)	Yes		Thank you.

<b>Question 4</b>	Do you agree with the newly included Measure M3? If not, please provide specific comments on why you do not agree with the newly included Measure M3.
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<b>Consideration of Comments</b>	One commenter agreed with the newly added Measure M3. One commenter indicated that there is no requirement in any standard to address the gap. The SDT agreed as NERC's ability to require the building or acquisition of new generating capacity, is prohibited by section 215(a)(3) of the FPA. No changes made.
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Answers	Frequency
Yes	1
No	1
Abstain	0

Commenter	Answer	Comment	Response
Scott Cunningham (OVEC)	No	Similar to the above question, the PC may document load and	You are correct, if the PC identifies a gap, there is no requirement in any

		resources, but there is no requirement in the standards to address any gaps.	standard to address the gap. NERC's ability to require the building or acquisition of new generating capacity, is prohibited by section 215(a)(3) of the FPA and thus no corresponding requirement is proposed.  Furthermore, the addition of the new requirement R3 was a result of a Directive noted in FERC Order No 747.
Sean Bodkin (Dominion)	Yes		Thank you.

<b>Question 5</b>	Do you agree with the newly included Violation Severity Levels (VSLs) for Requirement R3? If not, please provide specific comments on why you do not agree with the newly included VSLs for Requirement R3.
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<b>Consideration of Comments</b>	One commenter agreed with the newly added VSLs. One commenter indicated these standards must function in a market environment, market incentives should address the requirements. The SDT noted that the BAL-502-RF-03 standards does not require the Planning Coordinator to "fill the planning reserve requirement", rather it establishes 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 region. The SDT also noted NERC's ability to require the building or acquisition of new generating capacity, is prohibited by section 215(a)(3) of the FPA. No changes made.
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Answers	Frequency
Yes	1
No	1
Abstain	0

Commenter	Answer	Comment	Response
Scott Cunningham (OVEC)	No	Given that these standards must function in a market environment, market incentives should address the requirements. If they do not, we should not be fostering a market-driven system.	Thank you for your comment.  The BAL-502-RF-03 standards does not require the Planning Coordinator to "fill the planning reserve requirement", rather it establishes common criteria,

			<p>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 region.</p> <p>NERC’s ability to require the building or acquisition of new generating capacity, is prohibited by section 215(a)(3) of the FPA and thus no corresponding requirement is proposed.</p>
Sean Bodkin (Dominion)	Yes		Thank you.

<b>Question 6</b>	Do you agree with the BAL-502-RF-03 Implementation Plan? If not, please provide specific comments on why you do not agree with the BAL-502-RF-03 Implementation Plan.
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<b>Consideration of Comments</b>	One commenter agreed with the Implementation Plan. One commenter reiterated comments submitted for question 1 and 5. No changes made.
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Answers	Frequency
Yes	1
No	1
Abstain	0

Commenter	Answer	Comment	Response
Scott Cunningham (OVEC)	No	See responses to questions 1 and 5.	See responses to questions 1 and 5.
Sean Bodkin (Dominion)	Yes		





**RELIABILITY FIRST**

**Draft Planning Resource Adequacy Analysis, Assessment and Documentation  
(BAL-502-RF-03) Ballot Pool Registration Form**

Individuals registered in the ReliabilityFirst [Ballot Body](#) are allowed to join the Planning Resource Adequacy Analysis, Assessment and Documentation Ballot Pool beginning September 12, 2016 through the close of business of the seventh day of the 15-Day pre-ballot posting period.

**Individuals whom are not currently registered in the ReliabilityFirst Ballot Body must first submit a [Ballot Body registration form](#), and be approved as a Ballot Body member prior to joining the associated Planning Resource Adequacy Analysis, Assessment and Documentation Ballot Pool.**

Please complete this Ballot Pool registration form and send it to the [Standards Process Manager](#). Upon review of your registration, you will receive a confirmation email. Confirmation may take up to 24 hours. If you have any questions, please contact Anthony Jablonski [anthony.jablonski@rfirst.org](mailto:anthony.jablonski@rfirst.org) at 216-503-0693.

Name:
Company:
Email:
Phone:

## A. Introduction

- 1. Title:** Planning Resource Adequacy Analysis, Assessment and Documentation
- 2. Number:** BAL-502-RF-03
- 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
- 4. Applicability**
  - 4.1** Functional Entities
    - 4.1.1** Planning Coordinator
- 5. Effective Date:**
  - 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.

## 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).
  - 1.1.1** The utilization of Direct Control Load Management or curtailment of Interruptible Demand shall not contribute to the loss of Load probability.
  - 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).
- 1.2** Be performed or verified separately for each of the following planning years:

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<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).

- 1.2.1 Perform an analysis for Year One.
- 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.
  - 1.2.2.1 If the analysis is verified, the verification must be supported by current or past studies for the same planning year.

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

- 1.3.1 Load forecast characteristics:
  - 1.3.1.1 Median (50:50) forecast peak Load.
  - 1.3.1.2 Load forecast uncertainty (reflects variability in the Load forecast due to weather and regional economic forecasts).
  - 1.3.1.3 Load diversity.
  - 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.
- 1.3.2 Resource characteristics:
  - 1.3.2.1 Historic resource performance and any projected changes
  - 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.
  - 1.3.2.4 Resource planned outage schedules, deratings, and retirements.
  - 1.3.2.5 Modeling assumptions of intermittent and energy limited resource such as wind and cogeneration.
  - 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
  - 1.3.3.1 Criteria for including planned Transmission Facility additions in the analysis

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

**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:

1.4.1 Availability and deliverability of fuel.

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.

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

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

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

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

**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*].

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

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

**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.

**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.

**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*].

**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**

#### **1.1. Compliance Enforcement Authority**

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.

#### **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.

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.

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.

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**

None

Table of Compliance Elements

R #	Time Horizon	VRF	VIOLATION SEVERITY LEVEL			
			Lower VSL	Moderate VSL	High VSL	Severe VSL
R1	Long-term Planning	Medium	<p>The Planning Coordinator Resource Adequacy analysis failed to consider 1 or 2 of the Resource availability characteristics subcomponents under Requirement R1, Part 1.4 and documentation of how and why they were included in the analysis or why they were not included</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider Transmission maintenance outage schedules and document how and why they were included in the analysis or why they were not included per Requirement R1, Part 1.5</p>	<p>The Planning Coordinator Resource Adequacy analysis failed to express the planning reserve margin developed from Requirement R1, Part 1.1 as a percentage of the net Median forecast peak Load per Requirement R1, Part 1.1.2</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Load forecast Characteristics subcomponents under Requirement R1, Part 1.3.1 and documentation of its use</p> <p><b>OR</b></p>	<p>The Planning Coordinator Resource Adequacy analysis failed to be performed or verified separately for individual years of Year One through Year Ten per Requirement R1, Part 1.2</p> <p><b>OR</b></p> <p>The Planning Coordinator failed to perform an analysis or verification for one year in the 2 through 5 year period or one year in the 6 through 10 year period or both per Requirement R1, Part 1.2.2</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 2 or</p>	<p>The Planning Coordinator failed to perform and document a Resource Adequacy analysis annually per R1.</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to 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 analyzed for each planning period being equal to 0.1 per Requirement R1, Part 1.1</p> <p><b>OR</b></p>

				<p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Resource Characteristics subcomponents under Requirement R1, Part 1.3.2 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 Requirement R1, Part 1.7</p>	<p>more of the Load forecast Characteristics subcomponents under Requirement R1, Part 1.3.1 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 Requirement R1, Part 1.3.2 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 One per Requirement R1, Part 1.2.1</p>
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					<p>per Requirement R1, Part 1.3.3</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 Requirement R1, Part 1.3.4</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider 3 or more Resource availability characteristics subcomponents under Requirement R1, Part 1.4 and documentation of how and why they were included in the analysis or why they were not included</p>	
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					<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 Requirement R1, Part 1.6</p>	
R2	Long-term Planning	Lower	<p>The Planning Coordinator failed to publicly post the documents as specified per requirement Requirement R2, Part 2.1 and Requirement R2, Part 2.2 later than 30 calendar days prior to the beginning of Year One per Requirement R2, Part 2.3</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 Requirement R2, Part 2.1.</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 Requirement R2, Part 2.1.</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 Requirement R2, Part 2.</p>

				Reserve margin calculated per requirement R1.1 for each of the three years in the analysis per Requirement R2, Part 2.2.	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 Requirement R2, Part 2.1.	
R3	Long-term Planning	Lower	None	None	None	The Planning Coordinator failed to identify any gaps between the needed amount of planning reserves and the projected planning reserves, per R3

**D. Regional Variances**

None

**E. Interpretations**

None

**F. Associated Documents**

None

**Version History**

Version	Date	Action	Change Tracking
BAL-502-RFC-02	12/04/08	ReliabilityFirst Board Approved	
BAL-502-RFC-02	08/05/09	NERC BoT Approved	
BAL-502-RFC-02	03/17/11	FERC Approved	

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

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**A. Introduction**

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

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

**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

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**4. Applicability**

**4.1 Functional Entities**

**4.1.1 Planning Coordinator**

**5. Effective Date:**

**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.

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**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]:

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**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).

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

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**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).

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

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<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).

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

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

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**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.

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

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

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**1.3.1** Load forecast characteristics:

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

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

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**1.3.1.3** Load diversity.

**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.

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**1.3.2** Resource characteristics:

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

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**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.

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

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

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

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

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

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

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

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**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:

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**1.4.1** Availability and deliverability of fuel.

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**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.

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**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

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

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

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

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**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].

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

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

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

**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.

**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.

**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].

**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**

**5. Compliance Monitoring Process**

**5.1. Compliance Monitoring Authority**

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.

**5.2. 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.

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.

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.

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

**5.3. Compliance Monitoring and Assessment Processes**

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

**5.4. Additional Compliance Information**

None

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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.¶  
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				<p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Resource Characteristics subcomponents under <u>Requirement R1, Part 1.3.1 and 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 and 1.2.1</u> 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 One per <u>Requirement 1.2.1</u></p>
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					<p>per <a href="#">Requirement R1, Part 1.3.3</a></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 <a href="#">Requirement R1, Part 1.3.4</a></p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider 3 or more Resource availability characteristics subcomponents under <a href="#">Requirement R1, Part 1.4</a> and documentation of how and why they were included in the analysis or why they were not included</p>		
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Standard BAL-502-RF-03

				Reserve margin calculated per requirement R1.1 for each of the three years in the analysis per <a href="#">Requirement R2, Part 2.2</a> .	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 <a href="#">Requirement R2, Part 2.1</a> .	
<a href="#">R3</a>	<a href="#">Long-term Planning</a>	<a href="#">Lower</a>	<a href="#">None</a>	<a href="#">None</a>	<a href="#">None</a>	<a href="#">The Planning Coordinator failed to identify any gaps between the needed amount of planning reserves and the projected planning reserves, per R3</a>

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

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**D. Regional Variances**

None

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**E. Interpretations**

None

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**F. Associated Documents**

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**Version History**

Version	Date	Action	Change Tracking
BAL-502-RFC-02	12/04/08	ReliabilityFirst Board Approved	
BAL-502-RFC-02	08/05/09	NERC BoT Approved	
BAL-502-RFC-02	03/17/11	FERC Approved	

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.

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

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**A. Introduction**

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

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

**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

**4. Applicability**

**4.1 Functional Entities**

**4.1.1** Planning Coordinator

**5. Effective Date:**

**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.

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**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).

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

**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).

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

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<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).

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

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

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**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.

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

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

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**1.3.1** Load forecast characteristics:

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

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

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**1.3.1.3** Load diversity.

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**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.

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**1.3.2** Resource characteristics:

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

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**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.

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

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

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**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

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

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

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

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**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:

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**1.4.1** Availability and deliverability of fuel.

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**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.

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**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

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

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

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

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**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*].

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

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

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

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**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.

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**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.

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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].

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**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**

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**1.1. Compliance Enforcement Authority**

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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.

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**1.2. Evidence Retention**

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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.

Deleted: . The Planning Coordinator shall retain information from the most current and prior two -years.¶  
¶  
The Compliance Monitor shall retain any audit data for five years.¶  
¶  
Violation Severity Levels¶  
-¶

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.

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.

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

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Approved: xx xx, 2016

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



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				<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>Deleted: R1</p> <p>Deleted: R1</p> <p>Deleted: R1</p> <p>Deleted: R1</p> <p>Deleted: R1</p> <p>Deleted: R1</p> <p>Deleted: R1</p>
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Deleted: December 4<sup>th</sup>, 2008

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>		
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					<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 <a href="#">Requirement R1, Part 1.6</a></p>	
R2	<a href="#">Long-term Planning</a>	<a href="#">Lower</a>	<p>The Planning Coordinator failed to publicly post the documents as specified per requirement <a href="#">Requirement R2, Part 2.1</a> and <a href="#">Requirement R2, Part 2.2</a> later than 30 calendar days prior to the beginning of Year One per <a href="#">Requirement R2, Part 2.3</a></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 <a href="#">Requirement R2, Part 2.1</a>.</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 <a href="#">Requirement R2, Part 2.1</a>.</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 <a href="#">Requirement R2, Part 2.1</a>.</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>

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 ¶  
 ¶  
**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. ¶

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

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**D. Regional Variances**

None

**E. Interpretations**

None

**F. Associated Documents**

None

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**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
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**RELIABILITY FIRST**

**Draft Planning Resource Adequacy Analysis, Assessment and Documentation  
(BAL-502-RF-03) Implementation Plan**

**Requested Approvals**

- None

**Requested Retirements**

- BAL-502-RFC-02

**Prerequisite Approval**

- None

**Revisions to Defined Terms in the NERC Glossary**

- None

**Effective Date**

- 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.



**RELIABILITY FIRST**

**Draft Planning Resource Adequacy Analysis, Assessment and Documentation  
(BAL-502-RF-03) Ballot Pool Registration Form**

Individuals registered in the ReliabilityFirst [Ballot Body](#) are allowed to join the Planning Resource Adequacy Analysis, Assessment and Documentation Ballot Pool beginning September 12, 2016 through the close of business of the seventh day of the 15-Day pre-ballot posting period.

**Individuals whom are not currently registered in the ReliabilityFirst Ballot Body must first submit a [Ballot Body registration form](#), and be approved as a Ballot Body member prior to joining the associated Planning Resource Adequacy Analysis, Assessment and Documentation Ballot Pool.**

Please complete this Ballot Pool registration form and send it to the [Standards Process Manager](#). Upon review of your registration, you will receive a confirmation email. Confirmation may take up to 24 hours. If you have any questions, please contact Anthony Jablonski [anthony.jablonski@rfirst.org](mailto:anthony.jablonski@rfirst.org) at 216-503-0693.

Name:
Company:
Email:
Phone:



**Announcement: Planning Resource Adequacy Analysis, Assessment and Documentation (BAL-502-RF-03) Posted for 15-Days Prior to Category Ballot (January 3, 2017 thru January 17, 2017)**

**The ReliabilityFirst Standards Committee announces that the draft Planning Resource Adequacy Analysis, Assessment and Documentation (BAL-502-RF-03) standards and the supporting documents are currently posted for the required 15-days prior to Category Ballot beginning January 3, 2017.** The main purpose of the drafting effort was revise the existing FERC approved ReliabilityFirst Planning Resource Adequacy Analysis, Assessment and Documentation (BAL-502-RFC-02) Standard to address two FERC Directives as noted in [FERC Order No 747](#) (FERC Order initially approving the Standard). The two FERC directives include (1) add time horizons to the two main requirements, and (2) consider modifying the regional Reliability Standard to include a requirement that the planning coordinators identify any gap between the needed amount of planning reserves defined in Requirement R1.1 and the planning reserves determined from the resource adequacy analysis. The Standard Drafting Team also made miscellaneous non-substantive formatting changes to better align with the format of NERC Reliability Standards.

The draft ReliabilityFirst BAL-502-RF-03 standard, draft Implementation Plan, responses to comments, redline of changes compared original Standards and associated supporting documents can be found on the [BAL-502-RF-03 website](#). Once the 15-day pre-ballot posting is completed, the 15-day Category Ballot for the ReliabilityFirst BAL-502-RF-03 drafting effort is expected to begin on January 18, 2017.

**Also, per the ReliabilityFirst Reliability Standards Development Procedure, entities may [join the Ballot Pool](#) for BAL-502-RF-03 effort through the close of business of the seventh day of the 15-Day pre-ballot posting period (Ballot Pool closes at 11:59 PM Central Time (CT) on January 9, 2017). Please note that individuals must be registered in the ReliabilityFirst [Ballot Body](#) first in order to join the BAL-502-RF-03 Ballot Pool. If you need to register in the ReliabilityFirst Ballot Body, please navigate to the [Registered Ballot Body webpage](#) and submit the [Ballot Body registration form](#).**

Once again we would like to thank you for your participation in the ReliabilityFirst Regional Standards drafting process. If you have any questions, please contact Anthony Jablonski [anthony.jablonski@rfirst.org](mailto:anthony.jablonski@rfirst.org) at 216-503-0693. Thank you and have a great day.

## A. Introduction

- 1. Title:** Planning Resource Adequacy Analysis, Assessment and Documentation
- 2. Number:** BAL-502-RF-03
- 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
- 4. Applicability**
  - 4.1** Functional Entities
    - 4.1.1** Planning Coordinator
- 5. Effective Date:**
  - 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.

## 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).
  - 1.1.1** The utilization of Direct Control Load Management or curtailment of Interruptible Demand shall not contribute to the loss of Load probability.
  - 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).
- 1.2** Be performed or verified separately for each of the following planning years:

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<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).

- 1.2.1 Perform an analysis for Year One.
- 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.

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

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

- 1.3.1 Load forecast characteristics:

- 1.3.1.1 Median (50:50) forecast peak Load.
    - 1.3.1.2 Load forecast uncertainty (reflects variability in the Load forecast due to weather and regional economic forecasts).
    - 1.3.1.3 Load diversity.
    - 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.

- 1.3.2 Resource characteristics:

- 1.3.2.1 Historic resource performance and any projected changes
    - 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.
    - 1.3.2.4 Resource planned outage schedules, deratings, and retirements.
    - 1.3.2.5 Modeling assumptions of intermittent and energy limited resource such as wind and cogeneration.
    - 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

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

- 1.3.4 Assistance from other interconnected systems including multi-area assessment considering Transmission limitations into the study area.
  
  - 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:
    - 1.4.1 Availability and deliverability of fuel.
    - 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.
    - 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
  
  - 1.6 Document that capacity resources are appropriately accounted for in its Resource Adequacy analysis
  
  - 1.7 Document that all Load in the Planning Coordinator area is accounted for in its Resource Adequacy analysis
- M1** Each Planning Coordinator shall possess the documentation that a valid Resource Adequacy analysis was performed or verified in accordance with R1
- 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*].
- 2.1 This documentation shall cover each of the years in Year One through ten.
  
  - 2.2 This documentation shall include the Planning Reserve margin calculated per requirement R1.1 for each of the three years in the analysis.

**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.

**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.

**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*].

**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**

#### **1.1. Compliance Enforcement Authority**

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.

#### **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.

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.

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.

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**



None

Table of Compliance Elements

R #	Time Horizon	VRF	VIOLATION SEVERITY LEVEL			
			Lower VSL	Moderate VSL	High VSL	Severe VSL
R1	Long-term Planning	Medium	<p>The Planning Coordinator Resource Adequacy analysis failed to consider 1 or 2 of the Resource availability characteristics subcomponents under Requirement R1, Part 1.4 and documentation of how and why they were included in the analysis or why they were not included</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider Transmission maintenance outage schedules and document how and why they were included in the analysis or why they were not included per Requirement R1, Part 1.5</p>	<p>The Planning Coordinator Resource Adequacy analysis failed to express the planning reserve margin developed from Requirement R1, Part 1.1 as a percentage of the net Median forecast peak Load per Requirement R1, Part 1.1.2</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Load forecast Characteristics subcomponents under Requirement R1, Part 1.3.1 and documentation of its use</p> <p><b>OR</b></p>	<p>The Planning Coordinator Resource Adequacy analysis failed to be performed or verified separately for individual years of Year One through Year Ten per Requirement R1, Part 1.2</p> <p><b>OR</b></p> <p>The Planning Coordinator failed to perform an analysis or verification for one year in the 2 through 5 year period or one year in the 6 through 10 year period or both per Requirement R1, Part 1.2.2</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 2 or</p>	<p>The Planning Coordinator failed to perform and document a Resource Adequacy analysis annually per R1.</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to 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 analyzed for each planning period being equal to 0.1 per Requirement R1, Part 1.1</p> <p><b>OR</b></p>

				<p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Resource Characteristics subcomponents under Requirement R1, Part 1.3.2 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 Requirement R1, Part 1.7</p>	<p>more of the Load forecast Characteristics subcomponents under Requirement R1, Part 1.3.1 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 Requirement R1, Part 1.3.2 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 One per Requirement R1, Part 1.2.1</p>
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					<p>per Requirement R1, Part 1.3.3</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 Requirement R1, Part 1.3.4</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider 3 or more Resource availability characteristics subcomponents under Requirement R1, Part 1.4 and documentation of how and why they were included in the analysis or why they were not included</p>	
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					<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 Requirement R1, Part 1.6</p>	
R2	Long-term Planning	Lower	<p>The Planning Coordinator failed to publicly post the documents as specified per requirement Requirement R2, Part 2.1 and Requirement R2, Part 2.2 later than 30 calendar days prior to the beginning of Year One per Requirement R2, Part 2.3</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 Requirement R2, Part 2.1.</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 Requirement R2, Part 2.1.</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 Requirement R2, Part 2.</p>

				Reserve margin calculated per requirement R1.1 for each of the three years in the analysis per Requirement R2, Part 2.2.	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 Requirement R2, Part 2.1.	
R3	Long-term Planning	Lower	None	None	None	The Planning Coordinator failed to identify any gaps between the needed amount of planning reserves and the projected planning reserves, per R3

**D. Regional Variances**

None

**E. Interpretations**

None

**F. Associated Documents**

None

**Version History**

Version	Date	Action	Change Tracking
BAL-502-RFC-02	12/04/08	ReliabilityFirst Board Approved	
BAL-502-RFC-02	08/05/09	NERC BoT Approved	
BAL-502-RFC-02	03/17/11	FERC Approved	



**RELIABILITY FIRST**

**Draft Planning Resource Adequacy Analysis, Assessment and Documentation  
(BAL-502-RF-03) Implementation Plan**

**Requested Approvals**

- None

**Requested Retirements**

- BAL-502-RFC-02

**Prerequisite Approval**

- None

**Revisions to Defined Terms in the NERC Glossary**

- None

**Effective Date**

- 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.





**Announcement: ReliabilityFirst Planning Resource Adequacy Analysis, Assessment and Documentation (BAL-502-RF-03) Posted for 15-Day Category Ballot (January 18, 2017 thru February 1, 2017)**

The ReliabilityFirst Standards Committee announces that the draft [ReliabilityFirst Planning Resource Adequacy Analysis, Assessment and Documentation](#) (BAL-502-RF-03) standard and the supporting documents are currently posted for the 15-Day Category Ballot beginning January 18, 2017.

**Only individuals whom had previously joined the [BAL-502-RF-03 Ballot Pool](#) will be eligible to cast a ballot at this time. BAL-502-RF-03 Ballot Pool members will receive a separate email with instructions on how to cast their ballot.** If you have joined the BAL-502-RF-03 Ballot Pool and have not received an individual email with voting instructions or have any questions, please contact Anthony Jablonski [anthony.jablonski@rfirst.org](mailto:anthony.jablonski@rfirst.org) at 216-503-0693. Thank you and have a great day.



## ReliabilityFirst Planning Resource Adequacy Analysis, Assessment and Documentation (BAL-502-RF-03) Ballot Pool

**01/09/17**

Name	Organization Name	Voter Status	Category
James Anderson	Consumers Energy Company	Primary Voter	Category 1
Scott Cunningham	Ohio Valley Electric Corporation	Primary Voter	Category 1
Chris Scanlon	Baltimore Gas and Electric Company	Primary Voter	Category 1
William J Smith	FirstEnergy Utilities	Primary Voter	Category 1
Greg Milosek	ITC Transmission	Secondary Voter	Category 1
Brenda Lyn Truhe	PPL Electric Utilities Corporation	Primary Voter	Category 1
Joseph A. Smith	Public Service Electric & Gas Company	Primary Voter	Category 1
Jeff DePriest	DTE Electric	Primary Voter	Category 2
David Greyerbiehl	Consumers Energy Company	Primary Voter	Category 2
Ruth Miller	Exelon Generation Company, LLC	Primary Voter	Category 2
Mark Koziel	FirstEnergy Utilities	Primary Voter	Category 2
Scott Hoggatt	WEC Energy Group	Primary Voter	Category 2
Sean Bodikin	Dominion Energy	Primary Voter	Category 2

<b>John Bee</b>	<b>Commonwealth Edison Company</b>	<b>Primary Voter</b>	<b>Category 3</b>
<b>Jeff Beattie</b>	<b>Consumers Energy Company</b>	<b>Primary Voter</b>	<b>Category 3</b>
<b>Theresa Ciancio</b>	<b>FirstEnergy Utilities</b>	<b>Primary Voter</b>	<b>Category 3</b>
<b>Bob Thomas</b>	<b>Illinois Municipal Electric Agency</b>	<b>Primary Voter</b>	<b>Category 3</b>
<b>Joe O'Brien</b>	<b>Northern Indiana Public Service Company</b>	<b>Primary Voter</b>	<b>Category 3</b>
<b>William Watson</b>	<b>Old Dominion Electric Cooperative</b>	<b>Primary Voter</b>	<b>Category 3</b>
<b>Karla Jara</b>	<b>PSEG Energy Resources &amp; Trade LLC</b>	<b>Primary Voter</b>	<b>Category 3</b>
<b>Linda Horn</b>	<b>WEC Energy Group</b>	<b>Primary Voter</b>	<b>Category 3</b>
<b>Terry Bilke</b>	<b>MISO</b>	<b>Secondary Voter</b>	<b>Category 4</b>
<b>Mark Holman</b>	<b>PJM Interconnection</b>	<b>Primary Voter</b>	<b>Category 4</b>
<b>Karl Blasowski</b>	<b>Consumers Energy Company</b>	<b>Primary Voter</b>	<b>Category 4</b>
<b>Tony Jankowski</b>	<b>WEC Energy Group</b>	<b>Primary Voter</b>	<b>Category 4</b>
<b>Karie L. Barczak</b>	<b>DTE Electric</b>	<b>Primary Voter</b>	<b>Category 5</b>
<b>Douglas G Hohlbaugh</b>	<b>FirstEnergy Utilities</b>	<b>Primary Voter</b>	<b>Category 5</b>
<b>Jeffrey C. Mueller</b>	<b>Public Service Electric &amp; Gas Company</b>	<b>Primary Voter</b>	<b>Category 5</b>

<b>Margaret Powell</b>	<b>PECO Energy Company</b>	<b>Primary Voter</b>	<b>Category 5</b>
<b>Tom Breene</b>	<b>WEC Energy Group</b>	<b>Primary Voter</b>	<b>Category 5</b>
<b>Julie Hegedus</b>	<b>Consumers Energy Company</b>	<b>Primary Voter</b>	<b>Category 5</b>

## A. Introduction

- 1. Title:** Planning Resource Adequacy Analysis, Assessment and Documentation
- 2. Number:** BAL-502-RF-03
- 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
- 4. Applicability**
  - 4.1** Functional Entities
    - 4.1.1** Planning Coordinator
- 5. Effective Date:**
  - 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.

## 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).
  - 1.1.1** The utilization of Direct Control Load Management or curtailment of Interruptible Demand shall not contribute to the loss of Load probability.
  - 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).
- 1.2** Be performed or verified separately for each of the following planning years:

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<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).

- 1.2.1 Perform an analysis for Year One.
  
- 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.
  - 1.2.2.1 If the analysis is verified, the verification must be supported by current or past studies for the same planning year.

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

- 1.3.1 Load forecast characteristics:
  - 1.3.1.1 Median (50:50) forecast peak Load.
  - 1.3.1.2 Load forecast uncertainty (reflects variability in the Load forecast due to weather and regional economic forecasts).
  - 1.3.1.3 Load diversity.
  - 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.
  
- 1.3.2 Resource characteristics:
  - 1.3.2.1 Historic resource performance and any projected changes
  - 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.
  - 1.3.2.4 Resource planned outage schedules, deratings, and retirements.
  - 1.3.2.5 Modeling assumptions of intermittent and energy limited resource such as wind and cogeneration.
  - 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
  - 1.3.3.1 Criteria for including planned Transmission Facility additions in the analysis

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

    - 1.4.1 Availability and deliverability of fuel.
    - 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.
    - 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
  - 1.6** Document that capacity resources are appropriately accounted for in its Resource Adequacy analysis
  - 1.7** Document that all Load in the Planning Coordinator area is accounted for in its Resource Adequacy analysis
- M1** Each Planning Coordinator shall possess the documentation that a valid Resource Adequacy analysis was performed or verified in accordance with R1
- 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*].
- 2.1** This documentation shall cover each of the years in Year One through ten.
  - 2.2** This documentation shall include the Planning Reserve margin calculated per requirement R1.1 for each of the three years in the analysis.

**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.

**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.

**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*].

**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**

#### **1.1. Compliance Enforcement Authority**

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.

#### **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.

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.

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.

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**



None

Table of Compliance Elements

R #	Time Horizon	VRF	VIOLATION SEVERITY LEVEL			
			Lower VSL	Moderate VSL	High VSL	Severe VSL
R1	Long-term Planning	Medium	<p>The Planning Coordinator Resource Adequacy analysis failed to consider 1 or 2 of the Resource availability characteristics subcomponents under Requirement R1, Part 1.4 and documentation of how and why they were included in the analysis or why they were not included</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider Transmission maintenance outage schedules and document how and why they were included in the analysis or why they were not included per Requirement R1, Part 1.5</p>	<p>The Planning Coordinator Resource Adequacy analysis failed to express the planning reserve margin developed from Requirement R1, Part 1.1 as a percentage of the net Median forecast peak Load per Requirement R1, Part 1.1.2</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Load forecast Characteristics subcomponents under Requirement R1, Part 1.3.1 and documentation of its use</p> <p><b>OR</b></p>	<p>The Planning Coordinator Resource Adequacy analysis failed to be performed or verified separately for individual years of Year One through Year Ten per Requirement R1, Part 1.2</p> <p><b>OR</b></p> <p>The Planning Coordinator failed to perform an analysis or verification for one year in the 2 through 5 year period or one year in the 6 through 10 year period or both per Requirement R1, Part 1.2.2</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 2 or</p>	<p>The Planning Coordinator failed to perform and document a Resource Adequacy analysis annually per R1.</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to 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 analyzed for each planning period being equal to 0.1 per Requirement R1, Part 1.1</p> <p><b>OR</b></p>

				<p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Resource Characteristics subcomponents under Requirement R1, Part 1.3.2 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 Requirement R1, Part 1.7</p>	<p>more of the Load forecast Characteristics subcomponents under Requirement R1, Part 1.3.1 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 Requirement R1, Part 1.3.2 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 One per Requirement R1, Part 1.2.1</p>
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					<p>per Requirement R1, Part 1.3.3</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 Requirement R1, Part 1.3.4</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider 3 or more Resource availability characteristics subcomponents under Requirement R1, Part 1.4 and documentation of how and why they were included in the analysis or why they were not included</p>	
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					<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 Requirement R1, Part 1.6</p>	
R2	Long-term Planning	Lower	<p>The Planning Coordinator failed to publicly post the documents as specified per requirement Requirement R2, Part 2.1 and Requirement R2, Part 2.2 later than 30 calendar days prior to the beginning of Year One per Requirement R2, Part 2.3</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 Requirement R2, Part 2.1.</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 Requirement R2, Part 2.1.</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 Requirement R2, Part 2.</p>

				Reserve margin calculated per requirement R1.1 for each of the three years in the analysis per Requirement R2, Part 2.2.	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 Requirement R2, Part 2.1.	
R3	Long-term Planning	Lower	None	None	None	The Planning Coordinator failed to identify any gaps between the needed amount of planning reserves and the projected planning reserves, per R3

**D. Regional Variances**

None

**E. Interpretations**

None

**F. Associated Documents**

None

**Version History**

<b>Version</b>	<b>Date</b>	<b>Action</b>	<b>Change Tracking</b>
BAL-502-RFC-02	12/04/08	ReliabilityFirst Board Approved	
BAL-502-RFC-02	08/05/09	NERC BoT Approved	
BAL-502-RFC-02	03/17/11	FERC Approved	



**RELIABILITY FIRST**

**Draft Planning Resource Adequacy Analysis, Assessment and Documentation  
(BAL-502-RF-03) Implementation Plan**

**Requested Approvals**

- None

**Requested Retirements**

- BAL-502-RFC-02

**Prerequisite Approval**

- None

**Revisions to Defined Terms in the NERC Glossary**

- None

**Effective Date**

- 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.



**ReliabilityFirst Reliability Standards Voting Process Initial Category Ballot Results**  
**Planning Resource Adequacy Analysis, Assessment and Documentation (BAL-502-RF-03)**  
**01/18/17 through 02/01/17**

Total Affirmative: 27 Total Negative: 1 Total Abstentions: 0 Total Votes Cast: 28

Total Pool Members: 30

Quorum: 93%

Vote Result: **Pass**

Category	Affirmative	Negative	Abstentions	Pool Members	Votes Cast	Votes Counted	Approval	Result
Category 1	6	1	0	7	7	7	85.71 %	Pass
Category 2	5	0	0	6	5	5	100.00 %	Pass
Category 3	7	0	0	7	7	7	100.00 %	Pass
Category 4	3	0	0	4	3	3	100.00 %	Pass
Category 5	6	0	0	6	6	6	100.00 %	Pass

Category	Vote	Member	Entity
Category 1	Affirmative	James Anderson	Consumers Energy Company
	Negative	Scott Cunningham	Ohio Valley Electric Corporation
	Affirmative	Chris Scanlon	Baltimore Gas and Electric Company
	Affirmative	William J Smith	FirstEnergy Utilities
	Affirmative	Greg Milosek	ITC Transmission
	Affirmative	Brenda Lyn Truhe	PPL Electric Utilities Corporation
Category 2	Affirmative	Joseph A. Smith	Public Service Electric & Gas Company
	Affirmative	Jeff DePriest	DTE Electric
	Affirmative	David Greyerbiehl	Consumers Energy Company
	Affirmative	Ruth Miller	Exelon Generation Company, LLC
	Affirmative	Mark Koziel	FirstEnergy Utilities
	Affirmative	Scott Hoggatt	WEC Energy Group
Category 3	No Vote	Sean Bodikin	Dominion Energy
	Affirmative	John Bee	Commonwealth Edison Company
	Affirmative	Jeff Beattie	Consumers Energy Company
	Affirmative	Theresa Ciancio	FirstEnergy Utilities
	Affirmative	Bob Thomas	Illinois Municipal Electric Agency

	Affirmative	Joe O'Brien	Northern Indiana Public Service Company
	Affirmative	William Watson	Old Dominion Electric Cooperative
	Affirmative	Karla Jara	PSEG Energy Resources & Trade LLC
Category 4	Affirmative	Terry Bilke	MISO
	Affirmative	Mark Holman	PJM Interconnection
	No Vote	Karl Blasowski	Consumers Energy Company
	Affirmative	Tony Jankowski	WEC Energy Group
Category 5	Affirmative	Karie L. Barczak	DTE Electric
	Affirmative	Douglas G Hohlbaugh	FirstEnergy Utilities
	Affirmative	Jeffrey C. Mueller	Public Service Electric & Gas Company
	Affirmative	Margaret Powell	PECO Energy Company
	Affirmative	Tom Breene	WEC Energy Group
	Affirmative	Julie Hegedus	Consumers Energy Company

## Voter Comments

Voted	Name	Entity
Negative	Scott Cunningham	Ohio Valley Electric Corporation

Comment	Response
<p>See comments from initial posting. (The comments from the initial posting included:</p> <ol style="list-style-type: none"> <li>1. Comment 1 - "The standard should be retired as it does not address a reliability need. There are adequate market incentives to fill the planning reserve requirement.)</li> <li>2. Comment 2 - "Even if the PC identifies a gap, there is no requirement in any standard to address the gap. There are market incentives for resource owners to address the planning reserve requirement."</li> <li>3. Comment 3 - Similar to the above question, the PC may document load and resources, but there is no requirement in the standards to address any gaps.</li> <li>4. Comment 4 - Given that these standards must function in a market environment, market incentives should address the requirements. If they do not, we should not be fostering a market-driven system.</li> </ol>	<ol style="list-style-type: none"> <li>1. Response 1 - It is outside of the Standards Authorization Request (SAR) to determine whether the standards should be retired. During the SAR comment period (conducted 04/01/16 – 05/10/16), all individuals whom provided comments agreed with the scope of the SAR. Furthermore during the "five year review" comment period (conducted 02/29/16 – 03/09/16), all individuals who provided comments indicated the Standard should be re-affirmed.  Also, the BAL-502-RF-03 standards does not require the Planning Coordinator to "fill the planning reserve requirement", rather it establishes 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 region.</li> <li>2. Response 2 - You are correct, if the PC identifies a gap, there is no requirement in any standard to address the gap. NERC's ability to require the building or acquisition of new generating capacity, is prohibited by section 215(a)(3) of the FPA and thus no corresponding requirement is proposed. Furthermore, the addition of the new</li> </ol>

	<p>requirement R3 was a result of a Directive noted in FERC Order No 747.</p> <p>3. Response 3 - You are correct, if the PC identifies a gap, there is no requirement in any standard to address the gap. NERC's ability to require the building or acquisition of new generating capacity, is prohibited by section 215(a)(3) of the FPA and thus no corresponding requirement is proposed. Furthermore, the addition of the new requirement R3 was a result of a Directive noted in FERC Order No 747.</p> <p>4. Response 4 - Thank you for your comment.</p> <p>The BAL-502-RF-03 standards does not require the Planning Coordinator to "fill the planning reserve requirement", rather it establishes 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 region.</p> <p>NERC's ability to require the building or acquisition of new generating capacity, is prohibited by section 215(a)(3) of the FPA and thus no corresponding requirement is proposed.</p>
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<b>Voted</b>	<b>Name</b>	<b>Entity</b>
Affirmative	Greg Milosek	ITC

Comment	Response
ITC, on behalf of ITC Transmission, METC and Michigan Electric Coordinated Systems, is not registered as a Planning Coordinator which applies to BAL-502-RF-3, but would like to state the final recommendation should be deferred to MISO who is ITC's Planning Coordinator in the RF region.	Thank you for your comment.



**Announcement: ReliabilityFirst Planning Resource Adequacy Analysis, Assessment and Documentation (BAL-502-RF-03) Category Ballot Results and 10-Day Recirculation Ballot (February 6, 2017 thru February 15, 2017)**

The draft [ReliabilityFirst Planning Resource Adequacy Analysis, Assessment and Documentation](#) (BAL-502-RF-03) standard has overwhelmingly PASSED the 15-Day Category Vote (conducted January 18, 2017 through February 1, 2017) with two-thirds or greater affirmative majority of votes determined for each category along with establishing a quorum of 93%.

The Category Ballot results are listed below with the detailed results located on the ReliabilityFirst [BAL-502-RF-03](#) website.

Category	Affirmative	Negative	Abstentions	Pool Members	Votes Cast	Votes Counted	Approval	Result
Category 1	6	1	0	7	7	7	85.71 %	Pass
Category 2	5	0	0	6	5	5	100.00 %	Pass
Category 3	7	0	0	7	7	7	100.00 %	Pass
Category 4	3	0	0	4	3	3	100.00 %	Pass
Category 5	6	0	0	6	6	6	100.00 %	Pass

Since at least one (1) Negative vote with comment during the initial ballot was cast, draft BAL-502-RF-03 standard and the supporting documents will be posted for the 10-Day Recirculation Ballot beginning February 6, 2017.

**Only individuals whom had previously joined the [BAL-502-RF-03 Ballot Pool](#) will be eligible to provide a vote.** In the Recirculation ballot, Ballot Pool members may indicate a revision to their [original vote](#) otherwise their vote shall remain the same as in their prior ballot (e.g. voting is done by exception, if a Ballot Pool Member is comfortable with their initial Ballot, there is no need to provide a Recirculation Ballot). **BAL-502-RF-03 Ballot Pool members will receive a separate email with instructions on how to cast their Recirculation Ballot.** If you have joined the BAL-502-RF-03 Ballot Pool and have not received an individual email with voting instructions or have any questions, please contact Anthony Jablonski [anthony.jablonski@rfirst.org](mailto:anthony.jablonski@rfirst.org) at 216-503-0693.

## A. Introduction

- 1. Title:** Planning Resource Adequacy Analysis, Assessment and Documentation
- 2. Number:** BAL-502-RF-03
- 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
- 4. Applicability**
  - 4.1** Functional Entities
    - 4.1.1** Planning Coordinator
- 5. Effective Date:**
  - 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.

## 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).
  - 1.1.1** The utilization of Direct Control Load Management or curtailment of Interruptible Demand shall not contribute to the loss of Load probability.
  - 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).
- 1.2** Be performed or verified separately for each of the following planning years:

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<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).

- 1.2.1 Perform an analysis for Year One.
- 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.
  - 1.2.2.1 If the analysis is verified, the verification must be supported by current or past studies for the same planning year.

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

- 1.3.1 Load forecast characteristics:
  - 1.3.1.1 Median (50:50) forecast peak Load.
  - 1.3.1.2 Load forecast uncertainty (reflects variability in the Load forecast due to weather and regional economic forecasts).
  - 1.3.1.3 Load diversity.
  - 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.
- 1.3.2 Resource characteristics:
  - 1.3.2.1 Historic resource performance and any projected changes
  - 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.
  - 1.3.2.4 Resource planned outage schedules, deratings, and retirements.
  - 1.3.2.5 Modeling assumptions of intermittent and energy limited resource such as wind and cogeneration.
  - 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
  - 1.3.3.1 Criteria for including planned Transmission Facility additions in the analysis

- 1.3.4 Assistance from other interconnected systems including multi-area assessment considering Transmission limitations into the study area.
  
  - 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:
    - 1.4.1 Availability and deliverability of fuel.
    - 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.
    - 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
  
  - 1.6 Document that capacity resources are appropriately accounted for in its Resource Adequacy analysis
  
  - 1.7 Document that all Load in the Planning Coordinator area is accounted for in its Resource Adequacy analysis
- M1** Each Planning Coordinator shall possess the documentation that a valid Resource Adequacy analysis was performed or verified in accordance with R1
- 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*].
- 2.1 This documentation shall cover each of the years in Year One through ten.
  
  - 2.2 This documentation shall include the Planning Reserve margin calculated per requirement R1.1 for each of the three years in the analysis.

**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.

**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.

**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*].

**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**

#### **1.1. Compliance Enforcement Authority**

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.

#### **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.

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.

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.

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**



None

Table of Compliance Elements

R #	Time Horizon	VRF	VIOLATION SEVERITY LEVEL			
			Lower VSL	Moderate VSL	High VSL	Severe VSL
R1	Long-term Planning	Medium	<p>The Planning Coordinator Resource Adequacy analysis failed to consider 1 or 2 of the Resource availability characteristics subcomponents under Requirement R1, Part 1.4 and documentation of how and why they were included in the analysis or why they were not included</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider Transmission maintenance outage schedules and document how and why they were included in the analysis or why they were not included per Requirement R1, Part 1.5</p>	<p>The Planning Coordinator Resource Adequacy analysis failed to express the planning reserve margin developed from Requirement R1, Part 1.1 as a percentage of the net Median forecast peak Load per Requirement R1, Part 1.1.2</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Load forecast Characteristics subcomponents under Requirement R1, Part 1.3.1 and documentation of its use</p> <p><b>OR</b></p>	<p>The Planning Coordinator Resource Adequacy analysis failed to be performed or verified separately for individual years of Year One through Year Ten per Requirement R1, Part 1.2</p> <p><b>OR</b></p> <p>The Planning Coordinator failed to perform an analysis or verification for one year in the 2 through 5 year period or one year in the 6 through 10 year period or both per Requirement R1, Part 1.2.2</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 2 or</p>	<p>The Planning Coordinator failed to perform and document a Resource Adequacy analysis annually per R1.</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to 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 analyzed for each planning period being equal to 0.1 per Requirement R1, Part 1.1</p> <p><b>OR</b></p>

				<p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Resource Characteristics subcomponents under Requirement R1, Part 1.3.2 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 Requirement R1, Part 1.7</p>	<p>more of the Load forecast Characteristics subcomponents under Requirement R1, Part 1.3.1 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 Requirement R1, Part 1.3.2 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 One per Requirement R1, Part 1.2.1</p>
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					<p>per Requirement R1, Part 1.3.3</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 Requirement R1, Part 1.3.4</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider 3 or more Resource availability characteristics subcomponents under Requirement R1, Part 1.4 and documentation of how and why they were included in the analysis or why they were not included</p>	
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					<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 Requirement R1, Part 1.6</p>	
R2	Long-term Planning	Lower	<p>The Planning Coordinator failed to publicly post the documents as specified per requirement Requirement R2, Part 2.1 and Requirement R2, Part 2.2 later than 30 calendar days prior to the beginning of Year One per Requirement R2, Part 2.3</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 Requirement R2, Part 2.1.</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 Requirement R2, Part 2.1.</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 Requirement R2, Part 2.</p>

				Reserve margin calculated per requirement R1.1 for each of the three years in the analysis per Requirement R2, Part 2.2.	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 Requirement R2, Part 2.1.	
R3	Long-term Planning	Lower	None	None	None	The Planning Coordinator failed to identify any gaps between the needed amount of planning reserves and the projected planning reserves, per R3

**D. Regional Variances**

None

**E. Interpretations**

None

**F. Associated Documents**

None

**Version History**

Version	Date	Action	Change Tracking
BAL-502-RFC-02	12/04/08	ReliabilityFirst Board Approved	
BAL-502-RFC-02	08/05/09	NERC BoT Approved	
BAL-502-RFC-02	03/17/11	FERC Approved	



**RELIABILITY FIRST**

**Draft Planning Resource Adequacy Analysis, Assessment and Documentation  
(BAL-502-RF-03) Implementation Plan**

**Requested Approvals**

- None

**Requested Retirements**

- BAL-502-RFC-02

**Prerequisite Approval**

- None

**Revisions to Defined Terms in the NERC Glossary**

- None

**Effective Date**

- 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.



**ReliabilityFirst Reliability Standards Voting Process Recirculation Ballot Results**  
**Planning Resource Adequacy Analysis, Assessment and Documentation (BAL-502-RF-03)**  
**02/06/17 through 02/15/17**

Total Affirmative: 27 Total Negative: 1 Total Abstentions: 0 Total Votes Cast: 28

Total Pool Members: 30

Quorum: 93%

Vote Result: **Pass**

Category	Affirmative	Negative	Abstentions	Pool Members	Votes Cast	Votes Counted	Approval	Result
Category 1	6	1	0	7	7	7	85.71 %	Pass
Category 2	5	0	0	6	5	5	100.00 %	Pass
Category 3	7	0	0	7	7	7	100.00 %	Pass
Category 4	3	0	0	4	3	3	100.00 %	Pass
Category 5	6	0	0	6	6	6	100.00 %	Pass

Category	Vote	Member	Entity
Category 1	Affirmative	James Anderson	Consumers Energy Company
	Negative	Scott Cunningham	Ohio Valley Electric Corporation
	Affirmative	Chris Scanlon	Baltimore Gas and Electric Company
	Affirmative	William J Smith	FirstEnergy Utilities
	Affirmative	Greg Milosek	ITC Transmission
	Affirmative	Brenda Lyn Truhe	PPL Electric Utilities Corporation
	Affirmative	Joseph A. Smith	Public Service Electric & Gas Company
Category 2	Affirmative	Jeff DePriest	DTE Electric
	Affirmative	David Greyerbiehl	Consumers Energy Company
	Affirmative	Ruth Miller	Exelon Generation Company, LLC
	Affirmative	Mark Koziel	FirstEnergy Utilities
	Affirmative	Scott Hoggatt	WEC Energy Group
	No Vote	Sean Bodikin	Dominion Energy
Category 3	Affirmative	John Bee	Commonwealth Edison Company

	Affirmative	Jeff Beattie	Consumers Energy Company
	Affirmative	Theresa Ciancio	FirstEnergy Utilities
	Affirmative	Bob Thomas	Illinois Municipal Electric Agency
	Affirmative	Joe O'Brien	Northern Indiana Public Service Company
	Affirmative	William Watson	Old Dominion Electric Cooperative
	Affirmative	Karla Jara	PSEG Energy Resources & Trade LLC
Category 4	Affirmative	Terry Bilke	MISO
	Affirmative	Mark Holman	PJM Interconnection
	No Vote	Karl Blaszkowski	Consumers Energy Company
	Affirmative	Tony Jankowski	WEC Energy Group
Category 5	Affirmative	Karie L. Barczak	DTE Electric
	Affirmative	Douglas G Hohlbaugh	FirstEnergy Utilities
	Affirmative	Jeffrey C. Mueller	Public Service Electric & Gas Company
	Affirmative	Margaret Powell	PECO Energy Company
	Affirmative	Tom Breene	WEC Energy Group
	Affirmative	Julie Hegedus	Consumers Energy Company

## A. Introduction

- 1. Title:** Planning Resource Adequacy Analysis, Assessment and Documentation
- 2. Number:** BAL-502-RF-03
- 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
- 4. Applicability**
  - 4.1** Functional Entities
    - 4.1.1** Planning Coordinator
- 5. Effective Date:**
  - 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.

## 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).
  - 1.1.1** The utilization of Direct Control Load Management or curtailment of Interruptible Demand shall not contribute to the loss of Load probability.
  - 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).
- 1.2** Be performed or verified separately for each of the following planning years:

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<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).

- 1.2.1 Perform an analysis for Year One.
  
- 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.

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

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

- 1.3.1 Load forecast characteristics:

- 1.3.1.1 Median (50:50) forecast peak Load.
    - 1.3.1.2 Load forecast uncertainty (reflects variability in the Load forecast due to weather and regional economic forecasts).
    - 1.3.1.3 Load diversity.
    - 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.

- 1.3.2 Resource characteristics:

- 1.3.2.1 Historic resource performance and any projected changes
    - 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.
    - 1.3.2.4 Resource planned outage schedules, deratings, and retirements.
    - 1.3.2.5 Modeling assumptions of intermittent and energy limited resource such as wind and cogeneration.
    - 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

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



**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.

**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.

**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*].

**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**

#### **1.1. Compliance Enforcement Authority**

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.

#### **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.

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.

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.

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**

None

Table of Compliance Elements

R #	Time Horizon	VRF	VIOLATION SEVERITY LEVEL			
			Lower VSL	Moderate VSL	High VSL	Severe VSL
R1	Long-term Planning	Medium	<p>The Planning Coordinator Resource Adequacy analysis failed to consider 1 or 2 of the Resource availability characteristics subcomponents under Requirement R1, Part 1.4 and documentation of how and why they were included in the analysis or why they were not included</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider Transmission maintenance outage schedules and document how and why they were included in the analysis or why they were not included per Requirement R1, Part 1.5</p>	<p>The Planning Coordinator Resource Adequacy analysis failed to express the planning reserve margin developed from Requirement R1, Part 1.1 as a percentage of the net Median forecast peak Load per Requirement R1, Part 1.1.2</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Load forecast Characteristics subcomponents under Requirement R1, Part 1.3.1 and documentation of its use</p> <p><b>OR</b></p>	<p>The Planning Coordinator Resource Adequacy analysis failed to be performed or verified separately for individual years of Year One through Year Ten per Requirement R1, Part 1.2</p> <p><b>OR</b></p> <p>The Planning Coordinator failed to perform an analysis or verification for one year in the 2 through 5 year period or one year in the 6 through 10 year period or both per Requirement R1, Part 1.2.2</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 2 or</p>	<p>The Planning Coordinator failed to perform and document a Resource Adequacy analysis annually per R1.</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to 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 analyzed for each planning period being equal to 0.1 per Requirement R1, Part 1.1</p> <p><b>OR</b></p>



				<p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Resource Characteristics subcomponents under Requirement R1, Part 1.3.2 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 Requirement R1, Part 1.7</p>	<p>more of the Load forecast Characteristics subcomponents under Requirement R1, Part 1.3.1 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 Requirement R1, Part 1.3.2 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 One per Requirement R1, Part 1.2.1</p>
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					<p>per Requirement R1, Part 1.3.3</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 Requirement R1, Part 1.3.4</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider 3 or more Resource availability characteristics subcomponents under Requirement R1, Part 1.4 and documentation of how and why they were included in the analysis or why they were not included</p>	
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					<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 Requirement R1, Part 1.6</p>	
R2	Long-term Planning	Lower	<p>The Planning Coordinator failed to publicly post the documents as specified per requirement Requirement R2, Part 2.1 and Requirement R2, Part 2.2 later than 30 calendar days prior to the beginning of Year One per Requirement R2, Part 2.3</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 Requirement R2, Part 2.1.</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 Requirement R2, Part 2.1.</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 Requirement R2, Part 2.</p>

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				Reserve margin calculated per requirement R1.1 for each of the three years in the analysis per Requirement R2, Part 2.2.	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 Requirement R2, Part 2.1.	
R3	Long-term Planning	Lower	None	None	None	The Planning Coordinator failed to identify any gaps between the needed amount of planning reserves and the projected planning reserves, per R3

**D. Regional Variances**

None

**E. Interpretations**

None

**F. Associated Documents**

None

**Version History**

<b>Version</b>	<b>Date</b>	<b>Action</b>	<b>Change Tracking</b>
BAL-502-RFC-02	12/04/08	ReliabilityFirst Board Approved	
BAL-502-RFC-02	08/05/09	NERC BoT Approved	
BAL-502-RFC-02	03/17/11	FERC Approved	
BAL-502-RFC-03	06/01/17	ReliabilityFirst Board Approved	



**RELIABILITY FIRST**

## **Planning Resource Adequacy Analysis, Assessment and Documentation (BAL-502-RF-03) Implementation Plan**

### **Requested Approvals**

- None

### **Requested Retirements**

- BAL-502-RFC-02

### **Prerequisite Approval**

- None

### **Revisions to Defined Terms in the NERC Glossary**

- None

### **Effective Date**

- 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.

## A. Introduction

- 1. Title:** Planning Resource Adequacy Analysis, Assessment and Documentation
- 2. Number:** BAL-502-RF-03
- 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
- 4. Applicability**
  - 4.1** Functional Entities
    - 4.1.1** Planning Coordinator
- 5. Effective Date:**
  - 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.

## 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).
  - 1.1.1** The utilization of Direct Control Load Management or curtailment of Interruptible Demand shall not contribute to the loss of Load probability.
  - 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).
- 1.2** Be performed or verified separately for each of the following planning years:

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<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).

- 1.2.1 Perform an analysis for Year One.
- 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.

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

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

- 1.3.1 Load forecast characteristics:

- 1.3.1.1 Median (50:50) forecast peak Load.
    - 1.3.1.2 Load forecast uncertainty (reflects variability in the Load forecast due to weather and regional economic forecasts).
    - 1.3.1.3 Load diversity.
    - 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.

- 1.3.2 Resource characteristics:

- 1.3.2.1 Historic resource performance and any projected changes
    - 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.
    - 1.3.2.4 Resource planned outage schedules, deratings, and retirements.
    - 1.3.2.5 Modeling assumptions of intermittent and energy limited resource such as wind and cogeneration.
    - 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

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



- 1.3.4 Assistance from other interconnected systems including multi-area assessment considering Transmission limitations into the study area.
  
  - 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:
    - 1.4.1 Availability and deliverability of fuel.
    - 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.
    - 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
  
  - 1.6 Document that capacity resources are appropriately accounted for in its Resource Adequacy analysis
  
  - 1.7 Document that all Load in the Planning Coordinator area is accounted for in its Resource Adequacy analysis
- M1** Each Planning Coordinator shall possess the documentation that a valid Resource Adequacy analysis was performed or verified in accordance with R1
- 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*].
- 2.1 This documentation shall cover each of the years in Year One through ten.
  
  - 2.2 This documentation shall include the Planning Reserve margin calculated per requirement R1.1 for each of the three years in the analysis.

**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.

**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.

**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*].

**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**

#### **1.1. Compliance Enforcement Authority**

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.

#### **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.

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.

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.

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**

None

Table of Compliance Elements

R #	Time Horizon	VRF	VIOLATION SEVERITY LEVEL			
			Lower VSL	Moderate VSL	High VSL	Severe VSL
R1	Long-term Planning	Medium	<p>The Planning Coordinator Resource Adequacy analysis failed to consider 1 or 2 of the Resource availability characteristics subcomponents under Requirement R1, Part 1.4 and documentation of how and why they were included in the analysis or why they were not included</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider Transmission maintenance outage schedules and document how and why they were included in the analysis or why they were not included per Requirement R1, Part 1.5</p>	<p>The Planning Coordinator Resource Adequacy analysis failed to express the planning reserve margin developed from Requirement R1, Part 1.1 as a percentage of the net Median forecast peak Load per Requirement R1, Part 1.1.2</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Load forecast Characteristics subcomponents under Requirement R1, Part 1.3.1 and documentation of its use</p> <p><b>OR</b></p>	<p>The Planning Coordinator Resource Adequacy analysis failed to be performed or verified separately for individual years of Year One through Year Ten per Requirement R1, Part 1.2</p> <p><b>OR</b></p> <p>The Planning Coordinator failed to perform an analysis or verification for one year in the 2 through 5 year period or one year in the 6 through 10 year period or both per Requirement R1, Part 1.2.2</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 2 or</p>	<p>The Planning Coordinator failed to perform and document a Resource Adequacy analysis annually per R1.</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to 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 analyzed for each planning period being equal to 0.1 per Requirement R1, Part 1.1</p> <p><b>OR</b></p>

				<p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Resource Characteristics subcomponents under Requirement R1, Part 1.3.2 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 Requirement R1, Part 1.7</p>	<p>more of the Load forecast Characteristics subcomponents under Requirement R1, Part 1.3.1 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 Requirement R1, Part 1.3.2 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 One per Requirement R1, Part 1.2.1</p>
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					<p>per Requirement R1, Part 1.3.3</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 Requirement R1, Part 1.3.4</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider 3 or more Resource availability characteristics subcomponents under Requirement R1, Part 1.4 and documentation of how and why they were included in the analysis or why they were not included</p>	
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					<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 Requirement R1, Part 1.6</p>	
R2	Long-term Planning	Lower	<p>The Planning Coordinator failed to publicly post the documents as specified per requirement Requirement R2, Part 2.1 and Requirement R2, Part 2.2 later than 30 calendar days prior to the beginning of Year One per Requirement R2, Part 2.3</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 Requirement R2, Part 2.1.</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 Requirement R2, Part 2.1.</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 Requirement R2, Part 2.</p>

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				Reserve margin calculated per requirement R1.1 for each of the three years in the analysis per Requirement R2, Part 2.2.	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 Requirement R2, Part 2.1.	
R3	Long-term Planning	Lower	None	None	None	The Planning Coordinator failed to identify any gaps between the needed amount of planning reserves and the projected planning reserves, per R3



**D. Regional Variances**

None

**E. Interpretations**

None

**F. Associated Documents**

None

**Version History**

<b>Version</b>	<b>Date</b>	<b>Action</b>	<b>Change Tracking</b>
BAL-502-RFC-02	12/04/08	ReliabilityFirst Board Approved	
BAL-502-RFC-02	08/05/09	NERC BoT Approved	
BAL-502-RFC-02	03/17/11	FERC Approved	
BAL-502-RFC-03	06/01/17	ReliabilityFirst Board Approved	



**RELIABILITY FIRST**

## **Planning Resource Adequacy Analysis, Assessment and Documentation (BAL-502-RF-03) Implementation Plan**

### **Requested Approvals**

- None

### **Requested Retirements**

- BAL-502-RFC-02

### **Prerequisite Approval**

- None

### **Revisions to Defined Terms in the NERC Glossary**

- None

### **Effective Date**

- 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.

## A. Introduction

- 1. Title:** Planning Resource Adequacy Analysis, Assessment and Documentation
- 2. Number:** BAL-502-RF-03
- 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
- 4. Applicability**
  - 4.1** Functional Entities
    - 4.1.1** Planning Coordinator
- 5. Effective Date:**
  - 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.

## 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).
  - 1.1.1** The utilization of Direct Control Load Management or curtailment of Interruptible Demand shall not contribute to the loss of Load probability.
  - 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).
- 1.2** Be performed or verified separately for each of the following planning years:

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<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).

- 1.2.1 Perform an analysis for Year One.
- 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.
  - 1.2.2.1 If the analysis is verified, the verification must be supported by current or past studies for the same planning year.

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

- 1.3.1 Load forecast characteristics:
  - 1.3.1.1 Median (50:50) forecast peak Load.
  - 1.3.1.2 Load forecast uncertainty (reflects variability in the Load forecast due to weather and regional economic forecasts).
  - 1.3.1.3 Load diversity.
  - 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.
- 1.3.2 Resource characteristics:
  - 1.3.2.1 Historic resource performance and any projected changes
  - 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.
  - 1.3.2.4 Resource planned outage schedules, deratings, and retirements.
  - 1.3.2.5 Modeling assumptions of intermittent and energy limited resource such as wind and cogeneration.
  - 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
  - 1.3.3.1 Criteria for including planned Transmission Facility additions in the analysis

- 1.3.4 Assistance from other interconnected systems including multi-area assessment considering Transmission limitations into the study area.
  
  - 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:
    - 1.4.1 Availability and deliverability of fuel.
    - 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.
    - 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
  
  - 1.6 Document that capacity resources are appropriately accounted for in its Resource Adequacy analysis
  
  - 1.7 Document that all Load in the Planning Coordinator area is accounted for in its Resource Adequacy analysis
- M1** Each Planning Coordinator shall possess the documentation that a valid Resource Adequacy analysis was performed or verified in accordance with R1
- 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*].
- 2.1 This documentation shall cover each of the years in Year One through ten.
  
  - 2.2 This documentation shall include the Planning Reserve margin calculated per requirement R1.1 for each of the three years in the analysis.

**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.

**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.

**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*].

**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**

#### **1.1. Compliance Enforcement Authority**

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.

#### **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.

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.

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.

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**

None

Table of Compliance Elements

R #	Time Horizon	VRF	VIOLATION SEVERITY LEVEL			
			Lower VSL	Moderate VSL	High VSL	Severe VSL
R1	Long-term Planning	Medium	<p>The Planning Coordinator Resource Adequacy analysis failed to consider 1 or 2 of the Resource availability characteristics subcomponents under Requirement R1, Part 1.4 and documentation of how and why they were included in the analysis or why they were not included</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider Transmission maintenance outage schedules and document how and why they were included in the analysis or why they were not included per Requirement R1, Part 1.5</p>	<p>The Planning Coordinator Resource Adequacy analysis failed to express the planning reserve margin developed from Requirement R1, Part 1.1 as a percentage of the net Median forecast peak Load per Requirement R1, Part 1.1.2</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Load forecast Characteristics subcomponents under Requirement R1, Part 1.3.1 and documentation of its use</p> <p><b>OR</b></p>	<p>The Planning Coordinator Resource Adequacy analysis failed to be performed or verified separately for individual years of Year One through Year Ten per Requirement R1, Part 1.2</p> <p><b>OR</b></p> <p>The Planning Coordinator failed to perform an analysis or verification for one year in the 2 through 5 year period or one year in the 6 through 10 year period or both per Requirement R1, Part 1.2.2</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 2 or</p>	<p>The Planning Coordinator failed to perform and document a Resource Adequacy analysis annually per R1.</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to 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 analyzed for each planning period being equal to 0.1 per Requirement R1, Part 1.1</p> <p><b>OR</b></p>



				<p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Resource Characteristics subcomponents under Requirement R1, Part 1.3.2 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 Requirement R1, Part 1.7</p>	<p>more of the Load forecast Characteristics subcomponents under Requirement R1, Part 1.3.1 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 Requirement R1, Part 1.3.2 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 One per Requirement R1, Part 1.2.1</p>
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					<p>per Requirement R1, Part 1.3.3</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 Requirement R1, Part 1.3.4</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider 3 or more Resource availability characteristics subcomponents under Requirement R1, Part 1.4 and documentation of how and why they were included in the analysis or why they were not included</p>	
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					<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 Requirement R1, Part 1.6</p>	
R2	Long-term Planning	Lower	<p>The Planning Coordinator failed to publicly post the documents as specified per requirement Requirement R2, Part 2.1 and Requirement R2, Part 2.2 later than 30 calendar days prior to the beginning of Year One per Requirement R2, Part 2.3</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 Requirement R2, Part 2.1.</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 Requirement R2, Part 2.1.</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 Requirement R2, Part 2.</p>

				Reserve margin calculated per requirement R1.1 for each of the three years in the analysis per Requirement R2, Part 2.2.	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 Requirement R2, Part 2.1.	
R3	Long-term Planning	Lower	None	None	None	The Planning Coordinator failed to identify any gaps between the needed amount of planning reserves and the projected planning reserves, per R3

**D. Regional Variances**

None

**E. Interpretations**

None

**F. Associated Documents**

None

**Version History**

Version	Date	Action	Change Tracking
BAL-502-RFC-02	12/04/08	ReliabilityFirst Board Approved	
BAL-502-RFC-02	08/05/09	NERC BoT Approved	
BAL-502-RFC-02	03/17/11	FERC Approved	

## A. Introduction

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

2. Number: BAL-502-RFC-02~~RF-03~~

~~3. Purpose:~~

~~3.~~ 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 (~~RFCRF~~) region

## 4. Applicability

### ~~4.1~~ Functional Entities

~~4.1.1~~ Planning Coordinator

## 5. Effective Date:

~~5.1~~ Upon RFC Board approval

~~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.

## 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*]:

**~~R1.1~~** 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).

**~~R1.1.1~~** The utilization of Direct Control Load Management or curtailment of Interruptible Demand shall not contribute to the loss of Load probability.

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<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>).

**R1.1.2** 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).

**R1.2** Be performed or verified separately for each of the following planning years:

**R1.2.1** Perform an analysis for Year One.

**R1.2.2** 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.

**R1.2.2.1** If the analysis is verified, the verification must be supported by current or past studies for the same planning year.

**R1.3** Include the following subject matter and documentation of its use:

**R1.3.1** Load forecast characteristics:

- **1.3.1.1** Median (50:50) forecast peak Load.
- **1.3.1.2** Load forecast uncertainty (reflects variability in the Load forecast due to weather and regional economic forecasts).
- **1.3.1.3** Load diversity.
- **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.

**R1.3.2** Resource characteristics:

- **1.3.2.1** Historic resource performance and any projected changes
- **1.3.2.2** Seasonal resource ratings

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<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).

- [1.3.2.3](#) Modeling assumptions of firm capacity purchases from and sales to entities outside the Planning Coordinator area.
- [1.3.2.4](#) Resource planned outage schedules, deratings, and retirements.
- [1.3.2.5](#) Modeling assumptions of intermittent and energy limited resource such as wind and cogeneration.
- [1.3.2.6](#) Criteria for including planned resource additions in the analysis

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

**R1.3.3.1** Criteria for including planned Transmission Facility additions in the analysis

**R1.3.4** Assistance from other interconnected systems including multi-area assessment considering Transmission limitations into the study area.

**R1.4** Consider the following resource availability characteristics and document how and why they were included in the analysis or why they were not included:

- [1.4.1](#) Availability and deliverability of fuel.
- [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.
- [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.

**R1.5** Consider Transmission maintenance outage schedules and document how and why they were included in the Resource Adequacy analysis or why they were not included

**R1.6** Document that capacity resources are appropriately accounted for in its Resource Adequacy analysis



**R1.7** Document that all Load in the Planning Coordinator area is accounted for in its Resource Adequacy analysis

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

**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*].

**R2.1** This documentation shall cover each of the years in Year One through ten.

**R2.2** This documentation shall include the Planning Reserve margin calculated per requirement R1.1 for each of the three years in the analysis.

**R2.3** 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.

### **C. Measures**

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

**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.

**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*].

**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.

### **D.C. Compliance**

#### **1. Compliance Monitoring Process**

**1.1. Compliance ~~Monitoring Responsibility Enforcement Authority~~**

~~Compliance Monitor ReliabilityFirst Corporation~~

**1.2. ~~Compliance Monitoring Period and Reset Timeframe~~**

~~One calendar year~~

~~Data~~ 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.

**1.3.1.2. ~~Evidence Retention~~**

~~The Planning Coordinator shall retain information from the most current and prior two years.~~

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

**2. ~~Violation Severity Levels~~**

~~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.~~

~~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.~~

~~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.~~

~~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~~**

~~None~~

Table of Compliance Elements

Req. Number R #	Time Horizon	VRF	VIOLATION SEVERITY LEVEL			
	LOWER	MODERATE	HIGH Lower VSL	SEVERE Moderate VSL	High VSL	Severe VSL
R1	<u>Long-term Planning</u>	<u>Medium</u>	<p>The Planning Coordinator Resource Adequacy analysis failed to consider 1 or 2 of the Resource availability characteristics subcomponents under <del>R1</del><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> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider Transmission maintenance outage schedules and document how and why they were included in the analysis or why they were not included per <del>R1</del><u>Requirement R1, Part 1.5</u></p>	<p>The Planning Coordinator Resource Adequacy analysis failed to express the planning reserve margin developed from <del>R1</del><u>Requirement R1, Part 1.1</u> as a percentage of the net Median forecast peak Load per <del>R1</del><u>Requirement R1, Part 1.1.2</u></p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Load forecast Characteristics subcomponents under <del>R1</del><u>Requirement R1, Part 1.3.1</u> and documentation of its use</p> <p><b>OR</b></p>	<p>The Planning Coordinator Resource Adequacy analysis failed to be performed or verified separately for individual years of Year One through Year Ten per <del>R1</del><u>Requirement R1, Part 1.2</u></p> <p><b>OR</b></p> <p>The Planning Coordinator failed to perform an analysis or verification for one year in the 2 through 5 year period or one year in the 6 through 10 year period or both per <u>Requirement R1, Part 1.2.2</u></p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis</p>	<p>The Planning Coordinator failed to perform and document a Resource Adequacy analysis annually per R1.</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to 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 analyzed for each planning period being equal to 0.1 per <del>R1</del><u>Requirement R1, Part 1.1</u></p> <p><b>OR</b></p>

				<p>The Planning Coordinator Resource Adequacy analysis failed to include 1 of the Resource Characteristics subcomponents under <del>R1</del>Requirement R1, Part 1.3.2 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 <del>R1</del>Requirement R1, Part 1.7</p>	<p>failed to include 2 or more of the Load forecast Characteristics subcomponents under <del>R1</del>Requirement R1, Part 1.3.1 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 <del>R1</del>Requirement R1, Part 1.3.2 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 One per <del>R1</del>Requirement R1, Part 1.2.1</p>
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					<p>per <del>R1</del>Requirement R1, Part 1.3.3</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 <del>R1</del>Requirement R1, Part 1.3.4</p> <p><b>OR</b></p> <p>The Planning Coordinator Resource Adequacy analysis failed to consider 3 or more Resource availability characteristics subcomponents under <del>R1</del>Requirement R1, Part 1.4 and documentation of how and why they were included in the analysis</p>	
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					<p>or why they were not included</p> <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 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 capability, for each area or Transmission constrained sub-area identified in the Resource Adequacy analysis per <u>Requirement R2, Part 2</u>.</p>

				The Planning Coordinator failed to document the Planning Reserve margin calculated per requirement R1.1 for each of the three years in the analysis per <del>R2</del> Requirement R2, Part 2.2.	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 two or more of the years in the 2 through 10 year period per Requirement R2, Part 2.1.	
<u>R3</u>	<u>Long-term Planning</u>	<u>Lower</u>	<u>None</u>	<u>None</u>	<u>None</u>	<u>The Planning Coordinator failed to identify any gaps between the needed amount of planning reserves and the projected planning reserves, per R3</u>

**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.~~



**D. Regional Variances**

None

**E. Interpretations**

None

**F. Associated Documents**

None

**Version History**

Version	Date	Action	Change Tracking
BAL-502-RFC-02 <del>1<sup>st</sup> Draft</del>	<del>06/24/08</del> Through <del>07/23/08</del> 12/04/08	<del>Reliability First Board Approved</del> Posted for 1 <sup>st</sup> Comment Period	
BAL-502-RFC-02 <del>2<sup>nd</sup> Draft</del>	<del>08/18/08</del> Through <del>05/09/08</del> 16/08	<del>Posted for 2<sup>nd</sup> Comment Period</del> NERC BoT Approved	
BAL-502-RFC-02 <del>3<sup>rd</sup> Draft</del>	<del>10/16/08</del> Through <del>10/30/08</del> 03/17/11	<del>Posted for 15-Day Category Ballot</del> FERC Approved	
<del>BAL-502-RFC-02</del> <del>3<sup>rd</sup> Draft</del>	<del>12/04/08</del>	<del>Reliability First Board Approved</del>	

## Standards Announcement

ReliabilityFirst Corporation

BAL-502-RF-03

Comment period open through June 12, 2017

### [Now Available](#)

The ReliabilityFirst Corporation (RF) has requested NERC to post Regional Reliability Standard **BAL-502-RF-03 – Planning Resource Adequacy Analysis, Assessment and Documentation** for industry review and comment as permitted by the NERC Rules of Procedure.

### Commenting

Use the [electronic form](#) to submit comments. If you experience any difficulties in using the electronic form, contact [Mat Bunch](#). The form must be submitted by **8 p.m. Eastern, Monday, June 12, 2017**. An unofficial Word version of the comment form is posted on the [Regional Reliability Standards Under Development](#) page.

### Regional Reliability Standards Development Process

Section 300 of [NERC's Rules of Procedures of the Electric Reliability Organization](#) governs the regional reliability standards development process.

### Background

The main purpose of the drafting effort was to revise the existing FERC approved ReliabilityFirst Planning Resource Adequacy Analysis, Assessment and Documentation (BAL-502-RFC-02) Standard to address two FERC Directives as noted in FERC Order No 747 (FERC Order initially approving the Standard). The two FERC directives include (1) add time horizons to the two main requirements, and (2) consider modifying the regional Reliability Standard to include a requirement that the planning coordinators identify any gap between the needed amount of planning reserves defined in Requirement R1.1 and the planning reserves determined from the resource adequacy analysis. The Standard Drafting Team also made miscellaneous non-substantive formatting changes to better align with the format of NERC Reliability Standards.

Although the technical aspects of this Regional Reliability Standard have been vetted through RF's Regional Standards development process, the final approval process for a Regional Reliability Standard requires NERC publicly to notice and request comment on the criteria outlined in the comment form.

Documents and information about this project are available on the [ReliabilityFirst's Standards Under Development](#) page.

For more information or assistance, contact Standards Developer, [Mat Bunch](#) (via email) or at (404) 446-9785.

North American Electric Reliability Corporation  
3353 Peachtree Rd, NE  
Suite 600, North Tower  
Atlanta, GA 30326  
404-446-2560 | [www.nerc.com](http://www.nerc.com)

# Unofficial Comment Form

## Regional Reliability Standard

### BAL-502-RF-03

**DO NOT** use this form for submitting comments. Use the [electronic form](#) to submit comments on the proposed modifications to the Regional Reliability Standard **BAL-502-RF-03 Planning Resource Adequacy Analysis, Assessment and Documentation**. The electronic form must be submitted by **8 p.m. Eastern, Monday, June 12, 2017**.

Documents and information about this project are available on the [Reliability First's Standards Under Development](#) page. If you have questions, contact Standards Developer, [Mat Bunch](#) (via email) or at (404) 446-9785.

#### Background Information

The main purpose of the drafting effort was to revise the existing FERC approved ReliabilityFirst Planning Resource Adequacy Analysis, Assessment and Documentation (BAL-502-RFC-02) Standard to address two FERC Directives as noted in (FERC Order initially approving the Standard). The two FERC directives include (1) add time horizons to the two main requirements, and (2) consider modifying the regional Reliability Standard to include a requirement that the planning coordinators identify any gap between the needed amount of planning reserves defined in Requirement R1.1 and the planning reserves determined from the resource adequacy analysis. The Standard Drafting Team also made miscellaneous non-substantive formatting changes to better align with the format of NERC Reliability Standards.

#### NERC Criteria for Developing or Modifying a Regional Reliability Standard

Regional Reliability Standard shall be: (1) a regional reliability standard that is more stringent than the continent-wide reliability standard, including a regional standard that addresses matters that the continent-wide reliability standard does not; or (2) a regional reliability standard that is necessitated by a physical difference in the bulk power system. Regional reliability standards shall provide for as much uniformity as possible with reliability standards across the interconnected bulk power system of the North American continent. Regional reliability standards, when approved by FERC and applicable authorities in Mexico and Canada, shall be made part of the body of NERC reliability standards and shall be enforced upon all applicable bulk power system owners, operators, and users within the applicable area, regardless of membership in the region.

The approval process for a regional reliability standard requires NERC to publicly notice and request comment on the proposed standard. Comments shall be permitted only on the following criteria (technical aspects of the standard are vetted through the regional standards development process):

**Open** — Regional reliability standards shall provide that any person or entity that is directly and materially affected by the reliability of the bulk power system within the regional entity shall be

able to participate in the development and approval of reliability standards. There shall be no undue financial barriers to participation. Participation shall not be conditional upon membership in the regional entity, a regional entity or any organization, and shall not be unreasonably restricted on the basis of technical qualifications or other such requirements.

**Inclusive** — Regional reliability standards shall provide that any person with a direct and material interest has a right to participate by expressing an opinion and its basis, having that position considered, and appealing through an established appeals process, if adversely affected.

**Balanced** — Regional reliability standards shall have a balance of interests and shall not be dominated by any two-interest categories and no single-interest category shall be able to defeat a matter.

**Due Process** — Regional reliability standards shall provide for reasonable notice and opportunity for public comment. At a minimum, the standard shall include public notice of the intent to develop a standard, a public comment period on the proposed standard, due consideration of those public comments, and a ballot of interested stakeholders.

**Transparent** — All actions material to the development of regional reliability standards shall be transparent. All standards development meetings shall be open and publicly noticed on the regional entity's Web site.

Review the revised BAL-502-RF-03 regional standard and answer the following questions.

1. Do you agree the development of BAL-502-RF-03 met the "Open" criteria as outlined above? If "No", please explain in the comment area below.

Yes  
 No

Comments:

2. Do you agree the development of BAL-502-RF-03 met the "Inclusive" criteria as outlined above? If "No", please explain in the comment area below.

Yes  
 No

Comments:

3. Do you agree the development of BAL-502-RF-03 met the "Balanced" criteria as outlined above? If "No", please explain in the comment area below.

Yes  
 No

Comments:

4. Do you agree the development of BAL-502-RF-03 met the “Due Process” criteria as outlined above? If “No”, please explain in the comment area below.

Yes

No

Comments:

5. Do you agree the development of BAL-502-RF-03 met the “Transparent” criteria as outlined above? If “No”, please explain in the comment area below.

Yes

No

Comments:

## Comment Report

**Project Name:** Regional Reliability Standard (Reliability First) | BAL-502-RF-03  
Comment Period Start Date: 4/28/2017  
Comment Period End Date: 6/12/2017  
Associated Ballots:

There were 2 sets of responses, including comments from approximately 2 different people from approximately 2 companies representing 5 of the Industry Segments as shown in the table on the following pages.

## Questions

1. Do you agree the development of BAL-502-RF-03 met the “Open” criteria as outlined above? If “No”, please explain in the comment area below.
2. Do you agree the development of BAL-502-RF-03 met the “Inclusive” criteria as outlined above? If “No”, please explain in the comment area below.
3. Do you agree the development of BAL-502-RF-03 met the “Balanced” criteria as outlined above? If “No”, please explain in the comment area below.
4. Do you agree the development of BAL-502-RF-03 met the “Due Process” criteria as outlined above? If “No”, please explain in the comment area below.
5. Do you agree the development of BAL-502-RF-03 met the “Transparent” criteria as outlined above? If “No”, please explain in the comment area below.



<b>Organization Name</b>	<b>Name</b>	<b>Segment(s)</b>	<b>Region</b>	<b>Group Name</b>	<b>Group Member Name</b>	<b>Group Member Organization</b>	<b>Group Member Segment(s)</b>	<b>Group Member Region</b>
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1. Do you agree the development of BAL-502-RF-03 met the “Open” criteria as outlined above? If “No”, please explain in the comment area below.

**Chris Scanlon - Exelon - 1,3,5,6**

**Answer** Yes

**Document Name**

**Comment**

Likes 0

Dislikes 0

**Response**

**Candace Morakinyo - WEC Energy Group, Inc. - 3,4,5,6 - MRO,RF**

**Answer** Yes

**Document Name**

**Comment**

Likes 0

Dislikes 0

**Response**

2. Do you agree the development of BAL-502-RF-03 met the “Inclusive” criteria as outlined above? If “No”, please explain in the comment area below.

**Candace Morakinyo - WEC Energy Group, Inc. - 3,4,5,6 - MRO,RF**

**Answer** Yes

**Document Name**

**Comment**

Likes 0

Dislikes 0

**Response**

**Chris Scanlon - Exelon - 1,3,5,6**

**Answer** Yes

**Document Name**

**Comment**

Likes 0

Dislikes 0

**Response**

3. Do you agree the development of BAL-502-RF-03 met the “Balanced” criteria as outlined above? If “No”, please explain in the comment area below.

**Chris Scanlon - Exelon - 1,3,5,6**

**Answer** Yes

**Document Name**

**Comment**

Likes 0

Dislikes 0

**Response**

**Candace Morakinyo - WEC Energy Group, Inc. - 3,4,5,6 - MRO,RF**

**Answer** Yes

**Document Name**

**Comment**

Likes 0

Dislikes 0

**Response**

4. Do you agree the development of BAL-502-RF-03 met the “Due Process” criteria as outlined above? If “No”, please explain in the comment area below.

**Candace Morakinyo - WEC Energy Group, Inc. - 3,4,5,6 - MRO,RF**

**Answer** Yes

**Document Name**

**Comment**

Likes 0

Dislikes 0

**Response**

**Chris Scanlon - Exelon - 1,3,5,6**

**Answer** Yes

**Document Name**

**Comment**

Likes 0

Dislikes 0

**Response**

5. Do you agree the development of BAL-502-RF-03 met the “Transparent” criteria as outlined above? If “No”, please explain in the comment area below.

**Chris Scanlon - Exelon - 1,3,5,6**

**Answer** Yes

**Document Name**

**Comment**

Likes 0

Dislikes 0

**Response**

**Candace Morakinyo - WEC Energy Group, Inc. - 3,4,5,6 - MRO,RF**

**Answer** Yes

**Document Name**

**Comment**

Likes 0

Dislikes 0

**Response**

**Exhibit E**

**Planning Resource Adequacy, Analysis, Assessment and  
Documentation Standard Drafting Team Roster**



**Planning Resource Adequacy Analysis, Assessment and Documentation (PRAA)  
Standard Drafting Team Roster (06/15/16)**

<b>Contact</b>	<b>Company</b>	<b>Email</b>	<b>Phone</b>
Joe O'Brien	NIPSCO	<a href="mailto:jnobrien@nisource.com">jnobrien@nisource.com</a>	219-853-5470
Jeffery W. Beattie	Consumers Energy	<a href="mailto:jwbeattie@cmsenergy.com">jwbeattie@cmsenergy.com</a>	517-788-7220
Tom Falin	PJM	<a href="mailto:thomas.falin@pjm.com">thomas.falin@pjm.com</a>	610-666-4683
Jordan Cole	MISO	<a href="mailto:jcole@misoenergy.org">jcole@misoenergy.org</a>	651-632-8573
Anthony Jablonski	ReliabilityFirst Staff	<a href="mailto:anthony.jablonski@rfirst.org">anthony.jablonski@rfirst.org</a>	216-503-0693