

## **DRAFT** Agenda

### **System Protection and Control Subcommittee**

February 14, 2017 | 8:00 a.m.–5:00 p.m. Eastern

February 15, 2017 | 8:00 a.m.–5:00 p.m. Eastern

#### FRCC Offices

3000 Bayport Plaza, Suite 600  
Tampa, FL 33607

Dial-in Information: +1-415-655-0002 US Toll or +1-416-915-8942 Canada Toll  
Meeting number (access code): 733 199 901

Click here for: [WebEx meeting](#)

**Introductions and Chair’s Remarks – Rich Quest**

**Host Arrangements and Safety – Hassan Hamdar**

**NERC Antitrust Compliance Guidelines and Public Announcement\* – Katherine Street**

#### **Agenda Items**

1. **Agenda (Approve) – Rich Quest**
2. **2017-Q1 PC Work Plan—SPCS items – Katherine Street**
3. **IEEE Stationary Battery Committee SAR\* (Review and Provide Comments for submission to the PC in March for information) – Sam Francis and Rich Quest**
4. **IEEE Protection System Commissioning Reference document (Review) – Katherine Street**
5. **Standards Under Development – Katherine Street**
  - a. 2015-10 [Single Points of Failure](#) – TPL-001
  - b. 2016-04 [Modifications to PRC-025-1](#)
6. **Request to add development of Compliance Guidance documentation for PRC-024 and PRC-023 to SPCS work plan (Discuss) – Rich Bauer**
7. **Development of Compliance Guidance documentation for PRC-019 (Discuss) – Mohamed Osman**
8. **SPCS Scope Revisions and membership – Katherine Street**
9. **Review of Actions/Assignments – Katherine Street**
10. **Future Meetings**
  - a. TBD
11. **Adjourn**

\*Background materials are included.

# NERC Antitrust Compliance Guidelines

## I. General

It is NERC's policy and practice to obey the antitrust laws and to avoid all conduct that unreasonably restrains competition. This policy requires the avoidance of any conduct that violates, or that might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition.

It is the responsibility of every NERC participant and employee who may in any way affect NERC's compliance with the antitrust laws to carry out this commitment.

Antitrust laws are complex and subject to court interpretation that can vary over time and from one court to another. The purpose of these guidelines is to alert NERC participants and employees to potential antitrust problems and to set forth policies to be followed with respect to activities that may involve antitrust considerations. In some instances, the NERC policy contained in these guidelines is stricter than the applicable antitrust laws. Any NERC participant or employee who is uncertain about the legal ramifications of a particular course of conduct or who has doubts or concerns about whether NERC's antitrust compliance policy is implicated in any situation should consult NERC's General Counsel immediately.

## II. Prohibited Activities

Participants in NERC activities (including those of its committees and subgroups) should refrain from the following when acting in their capacity as participants in NERC activities (e.g., at NERC meetings, conference calls and in informal discussions):

- Discussions involving pricing information, especially margin (profit) and internal cost information and participants' expectations as to their future prices or internal costs.
- Discussions of a participant's marketing strategies.
- Discussions regarding how customers and geographical areas are to be divided among competitors.
- Discussions concerning the exclusion of competitors from markets.
- Discussions concerning boycotting or group refusals to deal with competitors, vendors or suppliers.
- Any other matters that do not clearly fall within these guidelines should be reviewed with NERC's General Counsel before being discussed.

## III. Activities That Are Permitted

From time to time decisions or actions of NERC (including those of its committees and subgroups) may have a negative impact on particular entities and thus in that sense adversely impact competition.

Decisions and actions by NERC (including its committees and subgroups) should only be undertaken for the purpose of promoting and maintaining the reliability and adequacy of the bulk power system. If you do not have a legitimate purpose consistent with this objective for discussing a matter, please refrain from discussing the matter during NERC meetings and in other NERC-related communications.

You should also ensure that NERC procedures, including those set forth in NERC's Certificate of Incorporation, Bylaws, and Rules of Procedure are followed in conducting NERC business.

In addition, all discussions in NERC meetings and other NERC-related communications should be within the scope of the mandate for or assignment to the particular NERC committee or subgroup, as well as within the scope of the published agenda for the meeting.

No decisions should be made nor any actions taken in NERC activities for the purpose of giving an industry participant or group of participants a competitive advantage over other participants. In particular, decisions with respect to setting, revising, or assessing compliance with NERC reliability standards should not be influenced by anti-competitive motivations.

Subject to the foregoing restrictions, participants in NERC activities may discuss:

- Reliability matters relating to the bulk power system, including operation and planning matters such as establishing or revising reliability standards, special operating procedures, operating transfer capabilities, and plans for new facilities.
- Matters relating to the impact of reliability standards for the bulk power system on electricity markets, and the impact of electricity market operations on the reliability of the bulk power system.
- Proposed filings or other communications with state or federal regulatory authorities or other governmental entities.
- Matters relating to the internal governance, management and operation of NERC, such as nominations for vacant committee positions, budgeting and assessments, and employment matters; and procedural matters such as planning and scheduling meetings.

## Public Meeting Notice

REMINDER FOR USE AT BEGINNING OF MEETINGS AND CONFERENCE CALLS THAT HAVE BEEN PUBLICLY NOTICED AND ARE OPEN TO THE PUBLIC

### **Conference call/webinar version:**

As a reminder to all participants, this webinar is public. The registration information was posted on the NERC website and widely distributed. Speakers on the call should keep in mind that the listening audience may include members of the press and representatives of various governmental authorities, in addition to the expected participation by industry stakeholders.

### **Face-to-face meeting version:**

As a reminder to all participants, this meeting is public. Notice of the meeting was posted on the NERC website and widely distributed. Participants should keep in mind that the audience may include members of the press and representatives of various governmental authorities, in addition to the expected participation by industry stakeholders.

### **For face-to-face meeting, with dial-in capability:**

As a reminder to all participants, this meeting is public. Notice of the meeting was posted on the NERC website and widely distributed. The notice included the number for dial-in participation. Participants should keep in mind that the audience may include members of the press and representatives of various governmental authorities, in addition to the expected participation by industry stakeholders.

August 10, 2010

## Standards Authorization Request Form

When completed, please email this form to:  
[sarcomm@nerc.com](mailto:sarcomm@nerc.com)

NERC welcomes suggestions to improve the reliability of the bulk power system through improved Reliability Standards. Please use this form to submit your request to propose a new or a revision to a NERC Reliability Standard.

### Request to propose a new or a revision to a Reliability Standard

Title of Proposed Standard:	NERC PRC 005-4		
Date Submitted:			
SAR Requester Information			
Name:	Chris Searles, NERC Task Force Chair, IEEE Stationary Battery Committee		
Organization:	IEEE Stationary Battery Committee		
Telephone:	(214) 850-1183 (M)	Email:	<a href="mailto:chris.searles@baebatteriesusa.com">chris.searles@baebatteriesusa.com</a>
SAR Type (Check as many as applicable)			
<input type="checkbox"/> New Standard	<input type="checkbox"/> Withdrawal of Existing Standard		
<input checked="" type="checkbox"/> Revision to Existing Standard	<input type="checkbox"/> Urgent Action		

### SAR Information

Industry Need (What is the industry problem this request is trying to solve?):

Entities connected to the Bulk Electric Power System (BPS/BES) are incorrectly relying on elements of Tables 1-4(a) 1-4(b) and 1-4(f) of the current PRC-005 standard to assure that their batteries will perform as manufactured. Based upon current industry testing data and experience, utilization of internal ohmic and float current measurements as currently outlined in the standard do not provide the necessary assurance that the batteries will meet the reliability criteria intended by the standard.

SAR Information
Purpose or Goal (How does this request propose to address the problem described above?):
Correct the assumption regarding critical backup power reliability and performance as it affects the Protection and Control elements of the Bulk Power System (BPS/BES).
Identify the Objectives of the proposed standard’s requirements (What specific reliability deliverables are required to achieve the goal?):
The objective of this SAR is to correct Tables 1-4(a), 1-4(b) and 1-4(f) to ensure that testing as outlined in these tables will accurately determine that the batteries covered by this standard will perform as manufactured.
Brief Description (Provide a paragraph that describes the scope of this standard action.)
The internal ohmic testing and float current measurement options at 18-months in Table 1-4(a) and 6-months in Table 1-4(b) need to be revised to eliminate the perception that they can serve as the sole method for determining the ability of the battery to perform as manufactured. The 6-year and 3-year maximum maintenance performance testing intervals need to remain as is, as this has been shown to be the only proven method to determine that the batteries will perform as manufactured. Also, a slight revision to the Maintenance Activity described in Table 1.4(f) is required as well.
Detailed Description (Provide a description of the proposed project with sufficient details for the standard drafting team to execute the SAR. Also provide a justification for the development or revision of the standard, including an assessment of the reliability and market interface impacts of implementing or not implementing the standard action.)
<p>The text in Table 1-4(a) needs to be modified to state, “Trend analysis of the cell/unit measurements (such as internal ohmic values and float current measurements) against the station battery baseline may be used to indicate a need for a performance or modified performance test prior to the maximum maintenance interval of 6 years.”</p> <p>The text in Table 1-4(b) needs to be modified to state, “Trend analysis of the cell/unit measurements (such as internal ohmic values and float current measurements) against the station battery baseline may be used to indicate a need for a performance or modified performance test prior to the maximum maintenance interval of 3 years.”</p>

## SAR Information

The Maintenance Activity listed as the seventh component of Table 1.4(f) needs to be revised as follows to ensure consistency with Tables 1.4(a) and 1.4(b): “Measurements received relative to baseline battery cell/unit measurements indicative of battery performance need to be reviewed on a regular basis to determine if the cell(s)/unit(s) require corrective action.”

The IEEE Stationary Battery Committee is composed of members who are battery, battery charger and battery test equipment manufacturers, battery testing and maintenance providers, electrical and chemical engineers, as well as electric utility and other end-users who specialize in drafting standards to ensure that the design, performance and reliability of stationary batteries used by the functional entities are accurate, and when followed, provide assurance that the batteries in question will perform as manufactured.

IEEE Standard 450 (for VLA cells), IEEE Standard 1188 (for VRLA cells) and IEEE 1106 (for Nickel Cadmium cells) outline the generally accepted best practice guidelines for assuring that a string of cells connected in series will reliably perform as manufactured. While IEEE 1660 makes a case for economic considerations to bypass the requirement for performance testing in certain cases, the standard goes on to state in paragraph 8.4.3, “The cost of testing and maintenance should not be compared to the cost of the battery, but to the value of the load that is being supported by the battery. . . . For example, a greater expense can be justified for the maintenance and testing of high-value power applications such as those providing high revenue or for those supporting critical safety systems. In some cases, additional regulatory requirements may apply to critical safety systems that could transcend an application’s strict economics.”

The key question to answer here is are the batteries connected to the BES or BPS considered a “critical safety system” that transcends the strict economics of testing. Batteries connected to many if not most distribution service stations may be considered non-critical. However, if the batteries governed by this NERC standard are considered critical for safety and continuing service requirements, then all appropriate IEEE standards recommend performance testing, as it is the only proven method at present to determine if a battery can perform as manufactured.

Reliability Functions

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

<input checked="" type="checkbox"/> Reliability Coordinator	Responsible for the real-time operating reliability of its Reliability Coordinator Area in coordination with its neighboring Reliability Coordinator’s wide area view.
<input type="checkbox"/> Balancing Authority	Integrates resource plans ahead of time, and maintains load-interchange-resource balance within a Balancing Authority Area and supports Interconnection frequency in real time.
<input type="checkbox"/> Interchange Authority	Ensures communication of interchange transactions for reliability evaluation purposes and coordinates implementation of valid and balanced interchange schedules between Balancing Authority Areas.
<input type="checkbox"/> Planning Coordinator	Assesses the longer-term reliability of its Planning Coordinator Area.
<input type="checkbox"/> Resource Planner	Develops a one year plan for the resource adequacy of its specific loads within a Planning Coordinator area.
<input type="checkbox"/> Transmission Planner	Develops a one year plan for the reliability of the interconnected Bulk Electric System within its portion of the Planning Coordinator area.
<input type="checkbox"/> Transmission Service Provider	Administers the transmission tariff and provides transmission services under applicable transmission service agreements (e.g., the pro forma tariff).
<input checked="" type="checkbox"/> Transmission Owner	Owns and maintains transmission facilities.
<input checked="" type="checkbox"/> Transmission Operator	Ensures the real-time operating reliability of the transmission assets within a Transmission Operator Area.
<input checked="" type="checkbox"/> Distribution Provider	Delivers electrical energy to the end-use customer.
<input checked="" type="checkbox"/> Generator Owner	Owns and maintains generation facilities.
<input checked="" type="checkbox"/> Generator Operator	Operates generation unit(s) to provide real and reactive power.

Reliability Functions	
<input type="checkbox"/> Purchasing-Selling Entity	Purchases or sells energy, capacity, and necessary reliability-related services as required.
<input checked="" type="checkbox"/> Market Operator	Interface point for reliability functions with commercial functions.
<input checked="" type="checkbox"/> Load-Serving Entity	Secures energy and transmission service (and reliability-related services) to serve the end-use customer.

Reliability and Market Interface Principles	
Applicable Reliability Principles (Check all that apply).	
<input checked="" type="checkbox"/>	1. Interconnected bulk power systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards.
<input type="checkbox"/>	2. The frequency and voltage of interconnected bulk power systems 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 bulk power systems shall be made available to those entities responsible for planning and operating the systems reliably.
<input checked="" type="checkbox"/>	4. Plans for emergency operation and system restoration of interconnected bulk power systems shall be developed, coordinated, maintained and implemented.
<input checked="" type="checkbox"/>	5. Facilities for communication, monitoring and control shall be provided, used and maintained for the reliability of interconnected bulk power systems.
<input checked="" type="checkbox"/>	6. Personnel responsible for planning and operating interconnected bulk power systems shall be trained, qualified, and have the responsibility and authority to implement actions.
<input type="checkbox"/>	7. The security of the interconnected bulk power systems shall be assessed, monitored and maintained on a wide area basis.
<input type="checkbox"/>	8. Bulk power systems shall be protected from malicious physical or cyber attacks.
Does the proposed Standard comply with all of the following Market Interface Principles?	
1. A reliability standard shall not give any market participant an unfair competitive advantage.	Enter (yes/no) YES
2. A reliability standard shall neither mandate nor prohibit any specific market structure.	YES
3. A reliability standard shall not preclude market solutions to achieving compliance with that standard.	YES

**Reliability and Market Interface Principles**

<p>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.</p>	<p>YES</p>
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**Related Standards**

Standard No.	Explanation
IEEE 450-2010	IEEE Recommended Practice for Maintenance, Testing and Replacement of Vented Lead-Acid Batteries for Stationary Applications
IEEE 1106-2005	IEEE Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications
IEEE 1188-2005	IEEE Recommended Practice for Maintenance, Testing and Replacement of Valve-Regulated Lead-Acid (VRLA) Batteries for Stationary Applications
IEEE 1660-2008	IEEE Guide for Application and Management of Stationary Batteries Used in Cycling Service

**Related SARs**

SAR ID	Explanation

Regional Variances	
Region	Explanation
ERCOT	
FRCC	
MRO	
NPCC	
RFC	
SERC	
SPP	
WECC	

**Version History**

Version	Date	Owner	Change Tracking
1	June 3, 2013		Revised
1	August 29, 2014	Standards Information Staff	Updated template

## PSMTSDT Response to the SAR Submitted by IEEE Stationary Battery Committee

The NERC Project 2007-17.4 PRC-005 Standard Drafting Team (SDT) has reviewed the Standard Authorization Request (SAR) submitted July 13, 2015 by the IEEE Stationary Battery Committee. The response below refers to NERC Standard PRC-005-2 but also applies to subsequent versions including the currently-approved version, PRC-005-6.

### Summary Description of the IEEE Request

In the Industry Need section of the SAR, the IEEE Stationary Battery Committee makes the assertion that, “Entities connected to the Bulk Electric Power System (BPS/BES) are incorrectly relying on elements of Tables 1-4(a) 1-4(b) and 1-4(f) of the current PRC-005 standard to assure that their batteries will perform as manufactured. Based upon current industry testing data and experience, utilization of internal ohmic and float current measurements as currently outlined in the standard do not provide the necessary assurance that the batteries will meet the reliability criteria intended by the standard.”

In issuing the SAR, the IEEE Stationary Battery Committee proposes to eliminate a perceived problem of entities incorrectly relying on the Maintenance Activities of Table 1-4 of PRC-005-2 to be the “sole method for determining the ability of the battery to perform as manufactured.” The proposal for eliminating the perceived problem is to modify the wording of the 18 Calendar Month and 6 Calendar Month Maintenance Activities of Table 1-4 from, “verify that the station battery can perform as manufactured by evaluating cell/unit measurements indicative of battery performance against the station battery baseline,” to read, “trend analysis of the cell/unit measurements (such as internal ohmic values and float current measurements) against the station battery baseline may be used to indicate a need for a performance or modified performance test prior to the maximum maintenance interval of 6 years.”

### Application and Impact of NERC versus IEEE Standards

Through examination of the wording of the SAR, the SDT concludes the drafters of this SAR may not understand the major differences between a NERC Reliability Standard and a Recommended Practice standard of a professional association such as IEEE. To begin, professional association “Standards,” such as the IEEE Standards, are not mandatory and enforceable standards unless adopted by an “authority having jurisdiction.” Further, IEEE characterizes its Standards documents as either “Standards,” which are documents with *mandatory requirements*; “Recommended Practices,” which are documents in which procedures and positions presented by the IEEE are *recommended*; or “Guides,” which are documents in which alternative approaches to good practice are *suggested*, but no clear-cut recommendations are made. The IEEE Standards noted by the presenters of this SAR are “Recommended Practices”; sufficient agreement has not been reached within IEEE to make them mandatory requirements. By contrast, a NERC Reliability Standard, such as PRC-005-2, follows the NERC Standards Development Process in accordance with FERC guidance and, when approved by the applicable governmental authorities, becomes “mandatory and enforceable” by statute throughout the United States and several provinces in Canada.

## **Battery Maintenance and Condition Monitoring Choices**

In the Detailed Description section of the SAR proposal, the IEEE Stationary Battery Committee is, in essence, indicating that, the *only* maintenance activity an entity can perform to determine that a Lead Acid battery is able to perform as manufactured, is the IEEE-recommended maintenance activity of a performance or modified performance capacity test every 3 or 6 calendar years, depending on the type of Lead Acid battery. However, the language of the drafters' proposed modification to the 18 Calendar Months and 6 Calendar Months maintenance activities of Tables 1-4(a) and 1-4(b) essentially agrees with positions taken by the SDT, Electric Power Research Institute (EPRI), and the International Electrotechnical Commission (IEC) that trend analysis of lead acid battery's cells internal ohmic measurements against the station battery baseline **can** be used to indicate a loss of capacity and a need for a capacity test [emphasis added]. Further, by suggesting that capacity testing be specified as the only acceptable activity to determine a battery's ability to perform as manufactured, the drafters of the SAR are essentially asserting that no other activities are acceptable for this purpose.

It remains the SDT's position that the Functional Entities (Transmission Owner, Generator Owner, and Distribution Provider) to which the NERC Reliability Standard PRC-005-2 is applicable, and that own Lead Acid batteries, have two viable options for verifying that a station battery can perform as manufactured, as specified in Table 1-4 of the Standard. The SDT disagrees that entities connected to the BES are incorrectly relying on trending ohmic values to a baseline as the sole method for determining the ability of the battery to perform as manufactured.

Entities that are presently trending ohmic measurements to a battery baseline (the first option from Table 1-4 for verifying that a station battery can perform as manufactured) typically also use performance or modified performance testing (the second maintenance activity option of the standard) to establish where the actual value of the battery or cell is when the ohmic measurements indicate further examination is required. For example, a standard recommendation from an ohmic test equipment manufacturer is to replace any cell whose internal resistance reading is greater than 50% above its installed baseline without any testing, and Capacity test any cell or string with resistance between 20-50% of baseline. Those who employ ohmic trending are using it either as a Condition-Based Maintenance (CBM) activity to indicate the need to perform a capacity test to determine exactly what capacity their batteries have or, based solely on the value of ohmic measurement, opting to replace the cell or battery rather than perform a capacity test.

The inclusion of CBM practices as part of PRC-005 was recommended by the NERC System Protection and Control Task Force (SPCTF) in its SAR to modify Reliability Standard PRC-005-1 and further described in its subsequent Technical Reference document, "Protection System Maintenance." Using the SPCS reference document as guidance, the SDT defined CBM in the Supplementary Reference and FAQ documents for PRC-005-6 as "continuously or frequently reported results from non-disruptive self-monitoring of components demonstrate operational status as those components remain in service. Whatever is verified by CBM does not require manual testing, but taking advantage of this requires precise technical focus on exactly what parts are included as part of the self-diagnostics." Table 1-4(f) of PRC-005-2 was included in the standard so that if, in the future, owners of battery systems want to be able to take advantage of the concept of CBM as part of their battery maintenance program, they may do so.

Just like manual evaluation of ohmic measurements, once the CBM equipment listed in Table 1-4(f) indicates, through the evaluation of a monitored ohmic value, that a cell may not be able to perform as manufactured, further evaluation of the station battery must be performed to determine the true capacity of the battery or cell. Ohmic trending to a station battery baseline is an industry-accepted tool that can be used as a CBM indicator. This indicator allows for non-disruptive monitoring of the battery cell's internal ohmic values. When triggered, the indicator will provide notice to the owner that the ability of a battery to perform as manufactured is compromised and that a more-disruptive performance or modified performance capacity test of the entire battery bank or a battery bank or cell replacement may be warranted.

### **PRC-005-2 SDT– IEEE Stationary Battery Committee Interactions**

The IEEE Stationary Battery Committee had a role in developing the language related to battery testing in the PRC-005 tables and the Supplementary Reference and FAQ. Communication and cooperation between the PRC-005-2 SDT and the IEEE Stationary Battery Committee began on March 23, 2012, after the chairman of the NERC Protection System Maintenance and Testing SDT (PSMTSDT) received a letter from the chairman of IEEE Stationary Battery Committee. In that letter, the IEEE Chairman requested that an assigned representative from the IEEE Stationary Battery Committee participate with the PSMTSDT going forward as it relates to appropriate battery testing and maintenance. Along with the request to have participation from IEEE in the SDT meetings, the chairman listed several points and recommendations developed by a special task force of the IEEE Stationary Battery Committee after its review of the maintenance activities specified in the then-current draft of PRC-005-2.

On April 13, 2012, the chairman of the PSMTSDT responded to the IEEE Stationary Battery Committee's request. In his response, the PSMTSDT chairman welcomed attendance and participation of IEEE task force members at the next PRC-005-2 drafting team meeting and subsequent meetings. The PSMTSDT chairman also provided responses to the points and recommendations the special IEEE task force noted in the IEEE Stationary Battery Committee chairman's letter. Accepting the invitation from the PSMTSDT chairman, the IEEE Stationary Battery Committee chairman, along with members of the Stationary Battery Committee special task force, attended the April 17-19, 2012 PRC-005-2 SDT in Fort Worth, Texas.

During this three-day meeting, there was an exchange of ideas between the drafting team members and the Stationary Battery Committee task force members that resulted in significant changes to Table 1-4 of the standard. Two significant changes to the maintenance activities of the standard, made at the request of the Stationary Battery Committee in the April 2012 drafting team meeting, were to change "perform as designed" to "perform as manufactured" in all maintenance activities of Table 1-4 and to modify the activity of evaluating measurements to a station battery baseline. All of the resulting changes made to the tables of the standard and Supplementary Reference and FAQ for PRC-005-2 were made at the request and with the concurrence of the IEEE Stationary Battery Committee task force.

In the version of the standard crafted prior to the IEEE task force members' requested modifications, Tables 1-4-(a) and 1-4-(b) read, "verify that the station battery can perform as designed by evaluating the measured cell/unit internal ohmic values to station battery baseline." After the PRC-005-2 SDT modified the maintenance activity per the request, the maintenance activity read, "Verify that the station battery can perform as

manufactured by evaluating cell/unit measurements indicative of battery performance (e.g. internal ohmic values or float current) against the station battery baseline.” This specific language has remained in effect through subsequent drafting, commenting, and approval processes of PRC-005-2 through PRC-005-6.

Following the changes made to the standard at the April 2012 drafting team meeting, NERC posted PRC-005-2 for industry comment and ballot. PRC-005-2 passed its final, recirculation ballot on October 24, 2012. The Standard was subsequently approved by the NERC Board and sent on to FERC, where PRC-005-2 later became approved and effective April 1, 2015. During this process, there were no disapprovals or negative comments regarding the changes made to the maintenance activities of Table 1-4 as recommended by the IEEE Stationary Battery Committee and incorporated into the standard by the drafting team.

Subsequently, additional revisions of the standard have been promulgated to address applicability for dispersed generation resources and include Automatic Reclosing and Sudden Pressure relaying components. Throughout, each revision up through the current version (PRC-005-6) has maintained the battery maintenance activities developed through cooperation of the SDT and the IEEE battery task force in 2012. Throughout the development of these subsequent versions, commenters and voters have not expressed a desire for a “capacity testing only” requirement with regard to battery maintenance.

## Recommendations

The NERC Project 2007-17.4 SDT recommends the NERC Standards Committee reject the SAR submitted by the IEEE Stationary Battery Committee. The SDT contends that a revised standard, as proposed by the SAR, is not warranted for the following reasons:

1. The existing maintenance activities of Tables 1-4(a), 1-4(b), and 1-4(f), if followed, provide the necessary assurance that the batteries will meet the reliability criteria intended by the standard.
2. Performance of the present maintenance activities of Tables 1-4(a), 1-4(b), and 1-4(f) of PRC-005-6 ensure that the station batteries covered by the standard will perform as manufactured.
3. The proposed modifications to the text in Tables 1-4(a) and 1-4(b) would simply serve to provide an optional “prerequisite” to the performance of a single, prescriptive activity (capacity testing) that is a recommended (but not required) maintenance activity of a professional association “Recommended Practice” publication. As currently specified in PRC-005, the existing activities for deriving and comparing internal ohmic values to a battery baseline provide an effective, alternate means for determining a battery’s ability to perform as manufactured.
4. The scope of the proposed SAR is too restrictive in that it prescribes only a single maintenance activity for lead acid batteries to verify that a station battery can perform as manufactured. This prescribed maintenance activity has the potential to put the system load at risk while tests are being performed, leaves the battery fully discharged following the test, and requires the battery be recharged before it can resume serving as a reliable backup supply to the station dc load in the event of the loss of the battery charger.

March 28, 2016

Members of the Protection System Maintenance and Testing Standard Drafting Team

Charles Rogers, Chair	John Anderson	Rick Ashton	Forrest Brock	Aaron Feathers
Sam Francis	James Kinney	William Shultz	Phil Winston	Eric Udren