

April 30, 2015

**VIA ELECTRONIC FILING**

Ms. Kimberly D. Bose  
Secretary  
Federal Energy Regulatory Commission  
888 First Street, N.E.  
Washington, DC 20426

**Re: NERC Full Notice of Penalty regarding PJM Interconnection, LLC and Delmarva Power & Light Company,  
FERC Docket No. NP15-\_-000**

Dear Ms. Bose:

The North American Electric Reliability Corporation (NERC) hereby provides this Notice of Penalty<sup>1</sup> regarding PJM Interconnection LLC (PJM) and Delmarva Power & Light Company (Delmarva), NERC Registry IDs# NCR00879 and NCR00752,<sup>2</sup> in accordance with the Federal Energy Regulatory Commission's (Commission or FERC) rules, regulations, and orders, as well as NERC's Rules of Procedure including Appendix 4C (NERC Compliance Monitoring and Enforcement Program (CMEP)).<sup>3</sup>

PJM is a regional transmission organization that coordinates the movement of wholesale electricity in all or part of 13 states and the District of Columbia. PJM has more than 800 members, which include

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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), III FERC Stats. & Regs. ¶ 31,204 (2006); *Notice of New Docket Prefix "NP" for Notices of Penalty Filed by the North American Electric Reliability Corporation*, Docket No. RM05-30-000 (February 7, 2008). See also 18 C.F.R. Part 39 (2014). *Mandatory Reliability Standards for the Bulk-Power System*, FERC Stats. & Regs. ¶ 31,242 (2007) (Order No. 693), *reh'g denied*, 120 FERC ¶ 61,053 (2007) (Order No. 693-A). See 18 C.F.R § 39.7(c)(2).

<sup>2</sup> PJM was included on the NERC Compliance Registry for the ReliabilityFirst region as an Interchange Authority as of June 10, 2008, and Planning Authority (PA), Reliability Coordinator (RC), Resource Planner (RP), Transmission Operator (TOP), Transmission Planner (TP), and Transmission Service Provider (TSP) as of May 30, 2007. Delmarva was included in the NERC Compliance Registry as a Distribution Provider (DP), Load-Serving Entity (LSE), Purchasing-Selling Entity (PSE), and Transmission Owner (TO) as of May 30, 2007.

<sup>3</sup> See 18 C.F.R § 39.7(c)(2) and 18 C.F.R § 39.7(d).

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power generators, transmission owners, power marketers, and large consumers. PJM dispatches approximately 183,600 MW of generating capacity over 62,556 miles of transmission lines.

Delmarva is a subsidiary of Pepco Holdings, Inc., and provides energy to about 498,000 electric customers in Delaware and the Delmarva Peninsula, and to approximately 123,000 natural gas customers in northern Delaware.

This Notice of Penalty is being filed with the Commission because ReliabilityFirst Corporation (ReliabilityFirst) and PJM and Delmarva have entered into a Settlement Agreement to resolve all outstanding issues arising from ReliabilityFirst’s determination and findings of the violation<sup>4</sup> addressed in this Notice of Penalty. According to the Settlement Agreement, PJM and Delmarva agreed to the terms of the Settlement Agreement and to the assessed penalty of zero dollars (\$0), in addition to other remedies and actions to mitigate the instant violation and facilitate future compliance under the terms and conditions of the Settlement Agreement. Accordingly, the violation in this Full Notice of Penalty is being filed in accordance with the NERC Rules of Procedure and the CMEP.

**Statement of Findings Underlying the Violation**

This Notice of Penalty incorporates the findings and justifications set forth in the Settlement Agreement, which is included as Attachment A. The details of the findings and basis for the penalty are set forth in the Settlement Agreement and herein. This Notice of Penalty filing contains the basis for approval of the Settlement Agreement by the NERC Board of Trustees Compliance Committee (NERC BOTCC). In accordance with Section 39.7 of the Commission’s regulations, 18 C.F.R. § 39.7 (2015), NERC provides the following summary table identifying each violation of a Reliability Standard resolved by the Settlement Agreement, as discussed in greater detail below.

NERC Violation ID	Reliability Std.	Req.	VRF/VSL*	Applicable Function(s)	Total Penalty
RFC2012011378	TOP-004-2	R4	High/Severe	TOP	\$0

\*Violation Risk Factor (VRF) and Violation Severity Level (VSL)

<sup>4</sup> For purposes of this document, each violation at issue is described as a “violation,” regardless of its procedural posture and whether it was a possible, alleged, or confirmed violation.

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### Background

This Settlement Agreement resolves a violation of PJM and Delmarva related to a January 5, 2012 event (2012 event). The 2012 event involved an intermittent loss of direct current (DC) power at Delmarva's Indian River substation, which includes five 138 kV lines.

Pursuant to Section 5.11 of NERC's Compliance Monitoring and Enforcement Program,<sup>5</sup> ReliabilityFirst determined that PJM and Delmarva are equally responsible for the actions or omissions that caused the 2012 event. Both registered entities previously contested the violation, but in an effort to resolve this issue, agreed to the terms of the Settlement Agreement and associated mitigation activities.

### TOP-004-2 R4 (RFC2012011378)

From September 25, 2012 through September 27, 2012, ReliabilityFirst conducted a Compliance Audit (Audit) of PJM and Delmarva for the Transmission Operator (TOP) tasks that PJM shares or has assigned to Delmarva. During the Audit, ReliabilityFirst discovered a violation of TOP-004-2 R4 because the two entities failed to restore operations to respect proven reliable power system limits within 30 minutes after entering an "unknown operating state."

On September 5, 2012, a Delmarva system operator at the Indian River substation received 14 fatal and non-fatal energy management system (EMS) alarms over a seven-hour period.<sup>6</sup> At the time of the 2012 event, the Delmarva operator believed the alarms indicated some protection system issue, but the extent of the issue was unknown. During the 2012 event, two circuit breakers opened, the operator closed them, but the breakers tripped again. Also, remote terminal unit (RTU) communication was affected at three Bulk Electric System RTUs, with each RTU being affected several times during the seven-hour period of the 2012 event. During the 2012 event, Delmarva did not know which 138 kV lines were affected by the low and fluctuating DC voltage and believed that circuit breakers would not operate under a fault condition due to the loss of DC power.

Delmarva informed PJM that protection at the substation was compromised as a result of the unstable DC voltage. However, neither Delmarva nor PJM understood the potential impact of the alarms at the time of the 2012 event. ReliabilityFirst determined that Delmarva was operating in an "unknown operating state" because neither PJM nor Delmarva analyzed or studied the 2012 event state despite the intermittent loss of DC power. Also, PJM did not understand the impact of the alarms that Delmarva received or the extent of the protection system issue during the 2012 Event. As a result, PJM did not consider Delmarva to be in an "unknown operating state" and did not take any actions during the 2012 event.

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<sup>5</sup> For a detailed description of ReliabilityFirst's determination of responsibility, see Settlement Agreement at PP 9-13.

<sup>6</sup> For a detailed description of the 2012 event, see Settlement Agreement at PP 18-28.

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A review following the 2012 event showed that none of the protection systems at the substation were compromised. The system operators received only communications alarms rather than alarms indicating that the protection systems would not function. There was no loss of load associated with the 2012 event.

ReliabilityFirst determined that PJM and Delmarva had a violation of TOP-004-2 R4 because they failed to restore power system limits within 30 minutes after entering into an “unknown operating state.”

ReliabilityFirst determined the duration of the violation to be on January 5, 2012, the date of the 2012 event. PJM and Delmarva completed all mitigating activities on June 1, 2013.

ReliabilityFirst determined that this violation posed a moderate risk to the reliability of the bulk power system (BPS), but did not pose a serious or substantial risk. Specifically, neither Delmarva nor PJM considered that Delmarva was in an “unknown operating state” and did not conduct a study, based on the information known at the time of the 2012 event. The entities did not determine if the loss of the Indian River substation would have created a system reliability issue. PJM’s system operator did not understand the severity of the situation and did not follow up with the Delmarva operator to receive updates or to direct Delmarva to take specific actions. Thus, at the time of the 2012 event, it was unknown which protection system would operate if a fault occurred. However, the risk was mitigated by several factors. First, Delmarva received only communication alarms and not loss-of-relay alarms. Also, the EMS communication alarms were alarming for a period of one minute and 37 seconds, during which time the RTU alarms were also simultaneously alarming for 23 seconds. Thus, for a limited time of 23 seconds only, the RTU scans were not functioning and the relay status for a single line could not be sent to the EMS system.

PJM’s mitigation activities to address this violation were submitted to ReliabilityFirst on September 4, 2013.<sup>7</sup>

PJM’s mitigating activities required PJM to:

1. Train on proper procedures the participants of the PJM 2013 Spring Operator’s Seminar. The training stressed the importance of immediate communications to PJM, and stated that the study results could lead to pre-contingency load shedding;
2. Discuss the 2012 event in detail at two of its member meetings and stress the need for timely updates to PJM on protection system status reporting; and

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<sup>7</sup> See Attachment C to Settlement Agreement.

3. Add two clarifying notes to its PJM Manual 03. The notes clarify that PJM relies on its transmission and generation owners to identify, assess, and notify PJM of changes, degradation, or outages to relay systems that impact normal fault clearing. The notes also clearly indicate that facilities with degraded or no relay protection will be switched out-of-service, unless doing so would create a load-shed situation. In such situations, PJM would model the remote clearing points and operate to control any resulting contingencies using normal operating procedures, including post-contingency local load relief warnings. The notes further indicate that these actions should be completed within 30 minutes of identification of the protection problem.

In addition, Delmarva began mitigating the risk of the loss of DC power prior to the Audit. Delmarva began a separation project to switch the Indian River substation's DC power supply from the Indian River Generation Plan to a battery supply system. The project is now complete.

On December 22, 2014, ReliabilityFirst verified that PJM's mitigating activities were complete.<sup>8</sup>

#### Regional Entity's Basis for Penalty

According to the Settlement Agreement, ReliabilityFirst has assessed a penalty of zero dollars (\$0) for the referenced violation. In reaching this determination, ReliabilityFirst considered the following factors:

1. The violation constituted PJM and Delmarva's first occurrence of violation of the subject NERC Reliability Standard;
2. PJM and Delmarva had an internal compliance program at the time of the violation, which ReliabilityFirst considered a mitigating factor;<sup>9</sup>
3. Delmarva had already begun to mitigate the risks of the loss of DC power at the substation prior to ReliabilityFirst's Audit. The project to switch the substation's power supply to a battery system was well underway at the time of the Audit.

PJM has used the 2012 event as a learning tool for its Operator's Seminars, System Operations Subcommittee, and Operating Committee. PJM emphasized the need for timely reporting of the status of protection systems. PJM updated its manuals to stress the importance of transmission and generation owners providing current information to PJM. PJM also included notes to indicate that it will model contingencies resulting from the real-time information.

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<sup>8</sup> *Id.*

<sup>9</sup> For a detailed description of the internal compliance programs, please see Settlement Agreement at PP 39-40.

ReliabilityFirst determined that Delmarva's and PJM's responses to the 2012 event were the kinds of behaviors it seeks to encourage.

4. PJM and Delmarva were cooperative throughout the compliance enforcement process;
5. There was no evidence of any attempt to conceal a violation nor evidence of intent to do so;
6. The violation posed a moderate risk but did not pose a serious or substantial risk to the reliability of the BPS, as discussed above; and
7. There were no other mitigating or aggravating factors or extenuating circumstances that would affect the assessed penalty.

After consideration of the above factors, ReliabilityFirst determined that, in this instance, the penalty amount of zero dollars (\$0) is appropriate and bears a reasonable relation to the seriousness and duration of the violation.

#### **Statement Describing the Assessed Penalty, Sanction or Enforcement Action Imposed<sup>10</sup>**

##### **Basis for Determination**

Taking into consideration the Commission's direction in Order No. 693, the NERC Sanction Guidelines and the Commission's July 3, 2008, October 26, 2009 and August 27, 2010 Guidance Orders,<sup>11</sup> the NERC BOTCC reviewed the Settlement Agreement and supporting documentation on April 13, 2015 and approved the Settlement Agreement. In approving the Settlement Agreement, the NERC BOTCC reviewed the applicable requirements of the Commission-approved Reliability Standards and the underlying facts and circumstances of the violation at issue.

In reaching this determination, the NERC BOTCC also considered the factors considered by ReliabilityFirst as listed above.

For the foregoing reasons, the NERC BOTCC approved the Settlement Agreement and believes that the assessed penalty of zero dollars (\$0) is appropriate for the violation and circumstances at issue, and is consistent with NERC's goal to promote and ensure reliability of the BPS.

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<sup>10</sup> See 18 C.F.R. § 39.7(d)(4).

<sup>11</sup> *North American Electric Reliability Corporation*, "Guidance Order on Reliability Notices of Penalty," 124 FERC ¶ 61,015 (2008); *North American Electric Reliability Corporation*, "Further Guidance Order on Reliability Notices of Penalty," 129 FERC ¶ 61,069 (2009); *North American Electric Reliability Corporation*, "Notice of No Further Review and Guidance Order," 132 FERC ¶ 61,182 (2010).

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Pursuant to 18 C.F.R. § 39.7(e), the penalty will be effective upon expiration of the 30-day period following the filing of this Notice of Penalty with FERC, or, if FERC decides to review the penalty, upon final determination by FERC.

**Attachments to be Included as Part of this Notice of Penalty**

The attachments to be included as part of this Notice of Penalty are the following documents:

- a) Settlement Agreement by and between ReliabilityFirst and PJM and Delmarva executed February 6, 2015, included as Attachment A;
  - a. Possible Violation Identification form, included as Attachment A to the Settlement Agreement;
  - b. Transmission Owners Agreement, Signature Page for Delmarva and PJM, included as Attachment B to the Settlement Agreement;
  - c. Mitigating Activities, included as Attachment C to the Settlement Agreement.<sup>12</sup>
- b) ReliabilityFirst's Notice of Possible Violation dated December 31, 2012, included as Attachment B.

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<sup>12</sup> This document also serves as a verification.

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**Notices and Communications:** Notices and communications with respect to this filing may be addressed to the following:

<p>Gerald W. Cauley                  President and Chief Executive Officer                  North American Electric Reliability Corporation                  3353 Peachtree Road NE                  Suite 600, North Tower                  Atlanta, GA 30326                  (404) 446-2560</p> <p>Charles A. Berardesco*                  Senior Vice President and General Counsel                  North American Electric Reliability Corporation                  1325 G Street N.W., Suite 600                  Washington, DC 20005                  (202) 400-3000                  (202) 644-8099 – facsimile                  charles.berardesco@nerc.net</p> <p>Srinivas Kappagantula*                  Sr. Analyst, NERC and Regional Coordination                  PJM Interconnection, LLC                  955 Jefferson Avenue                  Norristown, PA 19403                  srinivas.kappagantula@pjm.com                  610-666-4449 Phone</p>	<p>Sonia C. Mendonça*                  Deputy General Counsel, Vice President of Compliance and Enforcement                  North American Electric Reliability Corporation                  1325 G Street N.W.                  Suite 600                  Washington, DC 20005                  (202) 400-3000                  (202) 644-8099 – facsimile                  sonia.mendonca@nerc.net</p> <p>Edwin G. Kichline*                  Senior Counsel and Associate Director, Enforcement Processing                  North American Electric Reliability Corporation                  1325 G Street N.W.                  Suite 600                  Washington, DC 20005                  (202) 400-3000                  (202) 644-8099 – facsimile                  edwin.kichline@nerc.net</p> <p>Robert V. Eckenrod*                  Senior Counsel                  PJM Interconnection, LLC                  955 Jefferson Avenue                  Norristown, PA 19403                  robert.eckenrod@pjm.com                  610-666-3184 Phone                  610-666-8211 Fax</p>
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<p>Robert K. Wargo*                  Vice President                  Reliability Assurance &amp; Monitoring                  ReliabilityFirst Corporation                  3 Summit Park Drive, Suite 600                  Cleveland, OH 44131                  (216) 503-0682                  (216) 503-9207 facsimile                  bob.wargo@rfirst.org</p> <p>Niki Schaefer*                  Managing Enforcement Attorney                  ReliabilityFirst Corporation                  3 Summit Park Drive, Suite 600                  Cleveland, OH 44131                  (216) 503-0689                  (216) 503-9207 facsimile                  niki.schaefer@rfirst.org</p> <p>Jason Blake*                  General Counsel &amp; Corporate Secretary                  ReliabilityFirst Corporation                  3 Summit Park Drive, Suite 600                  Cleveland, OH 44131                  (216) 503-0683                  (216) 503-9207 facsimile                  jason.blake@rfirst.org</p> <p>Kristen Senk*                  Counsel                  ReliabilityFirst Corporation                  3 Summit Park Drive, Suite 600                  Cleveland, OH 44131                  (216) 503-0669                  (216) 503-9207 facsimile                  kristen.senk@rfirst.org</p>	<p>Stephanie Monzon*                  Manager, NERC and Regional Coordination                  PJM Interconnection, LLC                  955 Jefferson Avenue                  Norristown, PA 19403                  stephanie.monzon@pjm.com                  610-666-8870 Phone</p> <p>Bradley Hofferkamp*                  Senior Analyst                  PJM Interconnection, LLC                  955 Jefferson Avenue                  Norristown, PA 19403                  bradley.hofferkamp@pjm.com                  610-666-4688 Phone</p> <p>Thomas Moleski*                  Sr. Analyst, NERC and Regional Coordination                  PJM Interconnection, LLC                  955 Jefferson Avenue                  Norristown, PA 19403                  thomas.moleski@pjm.com                  610-666-8826 Phone</p> <p>James Ruddell*                  Senior CIP Compliance Analyst                  PJM Interconnection, LLC                  955 Jefferson Avenue                  Norristown, PA 19403                  jim.ruddell@pjm.com                  610-666-4350 Phone</p>
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<p>James Boone*                  Manager Sr. Strategic Initiatives                  Delmarva Power &amp; Light Company                  401 Eagle Run Road                  Newark, DE 19702                  302-283-5814 Phone                  james.boone@pepcoholdings.com</p>	<p>Mark Holman*                  Manager, NERC &amp; Regional Coordination                  PJM Interconnection, LLC                  955 Jefferson Avenue                  Norristown, PA 19403                  mark.holman@pjm.com                  610-666-4518 Phone</p>
<p>David Thorne*                  NERC Policy Manager                  Delmarva Power &amp; Light Company                  P.O. Box 9239                  Newark, DE 19714                  302-283-5718 Phone                  dkthorne@pepco.com</p>	<p>Rahul Chhabra*                  Manager, CIP Compliance                  Delmarva Power &amp; Light Company                  401 Eagle Run Road                  Newark, DE 19702                  302-454-4915 Phone                  rahul.chhabra@pepcoholdings.com</p>
<p>Mark Yerger*                  Manager Compliance &amp; Investigations                  Delmarva Power &amp; Light Company                  401 Eagle Run Road                  Newark, DE 19702                  302-454-4142 Phone                  Mark.Yerger@pepcoholdings.com</p>	<p>Claudia Meluni*                  Manager, Compliance Operations &amp; Planning                  Delmarva Power &amp; Light Company                  2530 N. Salisbury Blvd.                  Salisbury, MD 21801                  410-860-6012 Phone                  claudia.meluni@delmarva.com</p>
<p>Nicole Buckman*                  Lead NERC Consultant                  Delmarva Power &amp; Light Company                  P.O. Box 9239                  79NC58                  Newark, DE 19714-9239                  302-454-5181 Phone                  302-454-4161 Fax                  nicole.buckman@pepcoholdings.com</p>	<p>*Persons to be included on the Commission’s service list are indicated with an asterisk. NERC requests waiver of the Commission’s rules and regulations to permit the inclusion of more than two people on the service list.</p>

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**Conclusion**

NERC respectfully requests that the Commission accept this Notice of Penalty as compliant with its rules, regulations, and orders.

Respectfully submitted,

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cc: PJM Interconnection LLC and Delmarva Power & Light Company  
ReliabilityFirst Corporation

Attachments

## **Attachment A**

# **Settlement Agreement by and between ReliabilityFirst and PJM Delmarva executed February 6, 2015**

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**RELIABILITY FIRST**

<b>In re: PJM INTERCONNECTION, LLC</b>	)	<b>Docket No.</b>
	)	RFC2012011378 (TOP-004-2 R4)
	)	
<i>and</i>	)	
	)	
<b>DELMARVA POWER &amp; LIGHT COMPANY</b>	)	
	)	
NERC Registry ID Nos. NCR00879	)	
NCR00752	)	

**SETTLEMENT AGREEMENT  
BETWEEN  
RELIABILITYFIRST CORPORATION,  
PJM INTERCONNECTION, LLC,  
AND  
DELMARVA POWER & LIGHT COMPANY**

**I. INTRODUCTION**

1. ReliabilityFirst Corporation (“ReliabilityFirst”), PJM Interconnection, LLC (“PJM”), and Delmarva Power & Light Company (“Delmarva”) (collectively, the “Parties”) enter into this Settlement Agreement (“Agreement”) to resolve an Alleged Violation by PJM of TOP-004-2 R4, for which ReliabilityFirst finds PJM and Delmarva each partly responsible. This Agreement resolves all issues related to the January 2012 event described in Section IV below.
  
2. The Parties agree and stipulate to this Agreement in its entirety. The facts are stipulated to herein solely for the purpose of resolving among the Parties the subject matter of this Agreement. PJM and Delmarva neither admit nor deny the Alleged Violation.
  
3. ReliabilityFirst discovered the Alleged Violation during a September 2012 Compliance Audit of PJM and Delmarva for the Transmission Operator (“TOP”) tasks that PJM shares with or has assigned to Delmarva, the Transmission Owner (“TO”). The Alleged Violation relates to a January 2012 event involving what ReliabilityFirst believes was an intermittent loss of direct current (“DC”) power at

one of Delmarva's substations (the "Event"), which ReliabilityFirst determined posed a moderate risk to the reliability of the Bulk Electric System ("BES"). PJM and Delmarva previously contested the Alleged Violation, as their understanding of TOP-004-2 R4 differs from ReliabilityFirst's understanding of TOP-004-2 R4. More specifically, the Parties disagree as to the meaning of "unknown operating state" as it is used in TOP-004-2 R4. However, in an effort to resolve this 2012 Alleged Violation, the Parties have agreed to the terms of this Settlement Agreement, including PJM's mitigating activities to resolve the Alleged Violation.

## II. OVERVIEW OF PJM, DELMARVA, AND THE INDIAN RIVER SUBSTATION

4. PJM is a regional transmission organization that coordinates the movement of wholesale electricity in all or part of 13 states and the District of Columbia. PJM's members, totaling more than 800, include power generators, TOs, electricity distributors, power marketers, and large consumers. PJM is headquartered in Valley Forge, Pennsylvania. PJM dispatches approximately 183,600 megawatts of generating capacity over 62,556 miles of transmission lines.
5. PJM is registered on the NERC Compliance Registry as a Balancing Authority, Interchange Authority, Planning Authority, Reliability Coordinator, Reliability Planner, TOP, Transmission Planner, and Transmission Service Provider in the ReliabilityFirst region. In its capacity as a TOP, PJM is required to comply with TOP-004-2; however, under the terms of its governing agreements, including its Consolidated Transmission Owners Agreement ("TO Agreement") and its Amended and Restated Operating Agreement, PJM has delegated certain tasks associated with compliance to the TOP Reliability Standards, including TOP-004-2, to its TOs.
6. Delmarva, a subsidiary of Pepco Holdings, Inc. ("PHI"), provides energy to approximately 498,000 electric delivery customers in Delaware and the Delmarva Peninsula and to approximately 123,000 natural gas delivery customers in northern Delaware. Delmarva owns approximately 16 miles of 500 kilovolt ("kV") transmission lines, 467 miles of 230 kV transmission lines, and 497 miles of 138 kV transmission lines.
7. Delmarva is registered on the NERC Compliance Registry as a Distribution Provider, Load-Serving Entity, Purchasing-Selling Entity, and TO.
8. Delmarva owns the Indian River 138/69kV Substation ("Indian River Substation"). Delmarva also owned the Indian River Generation Plant until 2000, at which time Delmarva sold the Indian River Generation Plant to NRG Energy. As part of the sales agreement with NRG Energy, the 125V DC supply needed to power the Indian River Substation protection systems was sourced from the Indian River Generation Plant DC system, and made available to the Indian River Substation via a cable. In 2011, a project began to move all 138/69 kV protective/control systems to a Delmarva-owned DC System and to eliminate dependence on the NRG Energy DC

system. At the time of the Event on January 5, 2012, two DC systems were in use at the Indian River Substation. One system was supplied by batteries and a charger in the Indian River Generation Plant, owned by NRG, and the other was supplied by batteries and a charger in the Indian River Substation, owned by Delmarva.

### **III. OVERVIEW OF CMEP SECTION 5.11 PROCEDURE**

9. On December 20, 2012, the Federal Energy Regulatory Commission (the “Commission”) approved NERC’s requested changes to the NERC Rules of Procedure and its Appendices, including the addition of Section 5.11, *Procedures for Third Party Involvement in an Enforcement Action against an ISO/RTO*, to Appendix 4C, the Compliance Monitoring Enforcement Program (“CMEP”).
10. On January 14, 2013, PJM notified Delmarva of its intent to submit a request to ReliabilityFirst, pursuant to Section 5.11 of the CMEP, for a determination as to whether Delmarva was responsible, in whole or in part, for actions or omissions that may have caused or contributed to the Possible Violation of TOP-004-2 R4. On the same day, PJM submitted its request to ReliabilityFirst.
11. In accordance with Section 5.11 of the CMEP, on January 24, 2013, ReliabilityFirst issued to Delmarva a Notice of PJM’s request for determination of responsibility for Docket No. RFC2012011378 and a request for Delmarva to execute a nondisclosure agreement. On January 31, 2013, Delmarva issued a letter to ReliabilityFirst regarding its intent to participate in the enforcement action for RFC2012011378 along with the executed nondisclosure agreement.
12. On May 1, 2013, PJM, Delmarva, and ReliabilityFirst executed a letter of intent to engage in settlement discussions for the Possible Violation of TOP-004-2 R4, RFC2012011378.
13. For the reasons stated below, ReliabilityFirst hereby determines that PJM and Delmarva were each partly responsible for the actions or omissions that caused or contributed to the violation of TOP-004-2 R4.

### **IV. ALLEGED VIOLATION OF TOP-004-2 R4 (RFC2012011378)**

14. TOP-004-2 ensures that the transmission system is operated so that instability, uncontrolled separation, or cascading outages will not occur as a result of the most severe single Contingency and specified multiple Contingencies.
15. A violation of TOP-004-2 R4 has the potential to affect the reliable operation of the Bulk Electric System by requiring TOPs to take the necessary action to restore operations to respect proven limits when a TOP enters a state for which valid operating limits have not been determined.

16. TOP-004-2 R4 states:
- R4. If a [TOP] enters an unknown operating state (i.e. any state for which valid operating limits have not been determined), it will be considered to be in an emergency and shall restore operations to respect proven reliable power system limits within 30 minutes.
17. ReliabilityFirst alleges that PJM, in its capacity as a TOP, violated TOP-004-2 R4 due to PJM and Delmarva's failure to restore operations to respect proven reliable power system limits within 30 minutes after entering an unknown operating state.

*Description of Alleged Violation and Risk Assessment*

18. From September 25, 2012 through September 27, 2012, ReliabilityFirst conducted a Compliance Audit of PJM and Delmarva for the TOP tasks that PJM shares with or has assigned to Delmarva, the TO, during which ReliabilityFirst discovered a Possible Violation of TOP-004-2 R4. PJM and Delmarva did not restore operations to respect proven reliable power system limits within 30 minutes after entering an unknown operating state. *See Possible Violation Summary, Attachment A.*
19. ReliabilityFirst's audit team reviewed the Event, which involved an intermittent DC voltage fluctuation at Delmarva's Indian River Substation. On January 5, 2012 from 11:38 A.M to 11:41 A.M., Delmarva received five Energy Management System ("EMS") alarms for one 138 kV Indian River line (i.e., protection system communication alarms). Communication returned to normal at 11:41 A.M., three minutes after the initial alarms. From 12:31 P.M. to 12:42 P.M., Delmarva again received EMS alarms for the same 138 kV Indian River line (i.e., protection system communication alarms). During this same period, at 12:39 P.M., circuit breakers associated with the 138 kV line tripped open at the Indian River terminal. The remote end of the line did not trip. Communication returned to normal at 12:42 P.M., eleven minutes after the alarms. At 12:43 P.M., the system operator dispatched a communication technician to investigate the alarm. At 12:46 P.M., three minutes after the trip, the system operator successfully closed both breakers at Indian River restoring the electric system to its normal configuration. The communication technician found no relay targets at Indian River (1:20 P.M.) or at the remote end (2:01 P.M.). The system operator dispatched an additional crew at 12:06 PM to investigate. At 4:11 P.M, circuit breakers associated with the same 138 kV line tripped open at the Indian River terminal. As before, the remote end of the line did not trip. At 4:20 P.M, nine minutes after the trip, the Delmarva system operator successfully closed both breakers at Indian River restoring the electric system to its normal configuration. At 4:22 P.M., a relay crew was on its way. At 4:26 P.M., the NRG plant shift supervisor was called to have someone look at the DC supply at the plant. From 4:50 P.M. to 5:04 P.M., Delmarva received additional EMS alarms for the same 138 kV Indian River line. Communication returned to normal at 5:04 P.M., fourteen minutes after the initial alarms. At 5:17 PM, the system operator notified PJM that there was a protection system issue, but

the full extent of that issue was unknown. The primary and back-up relay communications were affected for a cumulative total of 1 minute and 37 seconds from approximately 11:38 A.M. to 12:42 P.M. on January 5, 2012.

20. After 12:42 P.M., Delmarva could confirm that the line at issue had primary and/or back-up communication and protection. According to Delmarva, review of the alarms from the Event show no evidence that the 138 kV line was ever unprotected. Also, the Indian River Substation DC supply voltage associated with high-speed tripping was fluctuating for Remote Terminal Unit (“RTU”) and communication equipment. As a result, RTU communication was impacted at three BES RTUs, with each RTU being impacted seven to eight times over a seven hour period. During that seven hour period, each RTU was impacted for 12 to 18 minutes. Neighboring RTUs and EMS analysis tools mitigated this impact. PJM’s and Delmarva’s analysis packages were available at all times during the course of the Event.
21. Regarding Delmarva’s communication with PJM, at 5:17 P.M., a Delmarva system operator verbally notified PJM that protection was compromised at the Indian River Substation as a result of low and fluctuating DC voltage. By 6:41 P.M. the Delmarva crew dispatched to the substation had switched to a backup DC feed and they completed their check-out at 6:57 P.M. At 7:00 P.M., a second Delmarva system operator verbally notified PJM that the problem was resolved.
22. According to PJM, the magnitude, duration, and consequences of the Event could not be quantified at the time of audit. As a result, the audit findings were based on the worst case scenario using information available at that time. After further review, PJM and Delmarva determined that none of the relays at Indian River were operationally impacted. Rather, the system operators received only communication alarms, which impacted the front-line and back-up line protection system on one 138 kV line for a cumulative total of one minute and 37 seconds. During this one minute and 37 seconds, the impacted line was still protected by zone distance relays. Therefore, according to PJM and Delmarva, the electric system always was within reliable power system limits. However, PJM does not dispute that PJM and Delmarva did not fully understand the impact of these alarms at the time of the Event.
23. PJM believes that, at all relevant times, it was operating within the thirty minute proven reliable power system criteria. ReliabilityFirst disagrees as a result of the intermittent loss of DC power coupled with the fatal and nonfatal EMS alarms and the fact that the extent of the protection system issue was unknown at the time of the Event.
24. According to the Federal Energy Regulatory Commission, as stated in a December 5, 2013 Notice of Proposed Rulemaking (“NOPR”):

With regard to mitigation of unknown operating states . . . a transmission provider could have valid operating limits for all facilities but lack situational awareness when valid limits are exceeded. In addition, a transmission operator could operate in an unanalyzed or unstudied state . . . .

ReliabilityFirst believes that Delmarva was operating in an “unknown operating state” because neither PJM nor Delmarva analyzed or studied the state despite the intermittent loss of DC power and the fact that PJM did not understand the impact of the alarms that Delmarva received or the extent of the protection system issue during the Event.

25. Prior to the Event, PJM had formally equated an “unknown operating state” to a catastrophic failure of Inter-Control Center Communications Protocol links or the loss of EMS analysis tools. PJM’s interpretation of unknown operating state was based on FERC’s finding in the November 21, 2013 TOP-006 NOPR. In the NOPR, FERC quotes the 2011 Southwest Outage Blackout Report, which found that Western Area Power Administration-Lower Colorado was operating in an “unknown state” when it lost its real-time contingency analysis capabilities and, at the same time, did not notify its reliability coordinator to assist with situational awareness. These conditions did not occur during the Event. Once PJM enters into an “unknown operating state” as defined by PJM, PJM’s Operating Manual requires the following actions with respect to transmission:
  - Notify ITOC of COM failure (if ITOC did not initiate contact)
  - All-call notifying Local Transmission Companies of EMS problems informing them to monitor their transmission system.
  - ITOC will contact EMS Support/Engineering Support to initiate COM failover.
  - If COMs cannot be failed over, ITOC will recommend failover to synchronized alternate primary EMS per OM 10.
26. However, PJM did not take these actions because it did not consider Delmarva to be in an “unknown operating state.”
27. This Alleged Violation began on January 5, 2012, the date PJM and Delmarva failed to restore operations to respect proven reliable power system limits within 30 minutes after entering an unknown operating state on behalf of PJM. This Alleged Violation ended on January 5 with the completion of all other mitigating activities on June 1, 2013, the date PJM completed its mitigating actions.
28. ReliabilityFirst determined that the Alleged Violation posed a moderate risk to the reliability of the BES. Neither Delmarva nor PJM considered that Delmarva was in an “unknown operating state” and did not conduct a study, based on the information known at the time of the Event, to determine if the loss of the Indian

River substation involving five (5) 138 kV lines would have created a system reliability issue. At the time of the event, the PJM system operator did not understand the severity of the situation and did not follow-up with the Delmarva operator for updates, or conduct additional questioning, or direct Delmarva to take any actions. Thus, at the time of the Event, it was unknown which protection systems would operate if a fault occurred. The potential risk posed by the foregoing facts and circumstances was mitigated by the fact that Delmarva received only communication alarms and not loss of relay alarms. Also, the EMS communication alarms were alarming for only one minute and 37 seconds and during this one minute and 37 seconds, the RTU communications were simultaneously alarming for 23 seconds. Thus, for a total of only 23 seconds, the RTU scans were not functioning and the relay status for a single line could not be sent to the EMS system.<sup>1</sup>

#### *Determination of Responsibility*

29. As a signatory to the TO Agreement,<sup>2</sup> Delmarva is required to abide by the TO Agreement's terms and provisions, including, but not limited to, those listed in Article 4.1.5, which states:

As required by the PJM Tariff, the Operating Agreement, the PJM Manuals, or as otherwise reasonably requested by PJM, each Party will provide to PJM necessary data, information and related technical support consistent with enabling PJM to monitor and analyze system conditions so that PJM may affirmatively determine that PJM is in compliance with NERC standards.

30. Delmarva Power had the following responsibilities specific to TOP-004-2 R4.

1. If the Member TO analysis packages are unavailable for more than 15 minutes, the Member TO shall coordinate with PJM to see if the PJM analysis packages are available. This is not an unknown operating state.
2. PJM will rely on the Member TO to monitor the Member TO's BES facilities and supply operating information to PJM verbally if appropriate.
3. Member TO LCC system operators shall comply with instructions issued by PJM to restore operations to respect proven reliable power system limits unless such actions would violate safety, equipment, regulatory or statutory requirements. If, because of the reasons mentioned

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<sup>1</sup> TOP-004-2 R4 has a Violation Risk Factor of "High." ReliabilityFirst determined that this issue warranted a "Severe" Violation Severity Level.

<sup>2</sup> See FERC Docket No. ER10-2713; see also Signature Page, Attachment B.

above, the PJM instructions cannot be complied with, the Member TO LCC system operator shall inform PJM as soon as possible

31. Based on the foregoing, ReliabilityFirst determined that PJM and Delmarva were each equally responsible for actions or omissions that caused the violation of TOP-004-2 R4.

*Mitigating Actions*

32. PJM completed certain mitigating activities to address the Alleged Violation of TOP-004-2 R4. *See* Mitigating Activities Form, **Attachment C**. On November 19, 2014, ReliabilityFirst accepted these mitigation activities.
33. Delmarva began to mitigate risks of the loss of DC power prior to ReliabilityFirst's audit. By the time of the audit, the separation project to switch the Indian River Substation's DC power Supply from the Indian River Generation Plant to the battery system in the Indian River Substation was well underway and has since been completed.
34. Additionally, to mitigate the Alleged Violation, PJM committed to do the following three activities. First, at PJM's 2013 Spring Operator's Seminar, PJM lectured on proper procedures when compromised relay protection has been identified. This training stressed the importance of immediate communication to PJM, and stated that the study results could result in precontingency load shedding. Second, at the February 27, 2013 System Operations Subcommittee meeting and the March 5, 2013 PJM Operating Committee meeting, PJM discussed the Event in detail and stressed the need for timely updates to PJM on protection system status reporting. Third, PJM added two clarifying notes to PJM Manual 03: Transmission Operations, Section 4.2.2 Hotline/In Service Work Requests/Protective Relay Outages/Failures. These notes clarify that PJM relies on its transmission and generation owners to identify, assess, and notify PJM of changes, degradations, or outages to relay systems that impact normal fault clearing. Additionally, these notes clearly indicate that facilities with degraded or no relay protection will be switched out-of-service, unless doing so would create a load-shed situation. In such situations, PJM would model the remote clearing points and operate to control any resulting contingencies using normal operating procedures including Post Contingency Local Load Relief Warnings. The notes also indicate that these actions should be completed within 30 minutes of identification of the protection problem.
35. PJM provided evidence demonstrating its completion of the mitigating activities to ReliabilityFirst. On December 22, 2014, ReliabilityFirst verified PJM's completion of the mitigating activities.

36. ReliabilityFirst also believes that to restore operating to respect proven reliable power system limits, PJM should have studied the worst-case scenario and developed a plan based on the results of that study.

## V. ADJUSTMENT FACTORS

37. In addition to the facts and circumstances stated above, ReliabilityFirst considered the following factors in the penalty determination.
38. ReliabilityFirst is committed to using the penalty process to incent strong compliance programs and encourage the development of robust internal controls. PJM and Delmarva's responses to the audit finding, including their cooperation throughout the enforcement process and the positive proactive steps to prevent recurrence of noncompliance, are behaviors that ReliabilityFirst seeks to encourage. In light of the potential risk posed by the instant Alleged Violation and PJM and Delmarva's improvements following the audit finding, despite their disagreement that Delmarva was in an unknown operating state, ReliabilityFirst determined that a monetary penalty was not necessary or appropriate, as it would neither incent desired behavior nor improve BES reliability.
39. ReliabilityFirst further considered certain aspects of PJM's internal compliance program as mitigating factors. PJM senior management, including the PJM executive team and the PJM Board of Managers for the corporate compliance program, is involved in compliance matters. PJM has also established a formal compliance review committee, known as the Regulatory Oversight and Compliance Committee, which is charged with evaluating identified compliance issues and recommended actions from PJM senior management and, ultimately, the PJM Board of Managers. Furthermore, PJM established compliance with NERC and Regional Reliability Standards as a corporate goal. Finally, PJM put in place a program that allows PJM employees to raise concerns about compliance issues through anonymous comment boxes placed throughout the PJM campus.
40. ReliabilityFirst also considered certain aspects of Delmarva's internal compliance program as mitigating factors. Delmarva's parent company, PHI, administers a uniform compliance program for all of its subsidiaries. This program includes three major sets of internal processes to ensure compliance with the Reliability Standards that are assigned responsible owners, including a Chief Compliance Officer ("CCO"), who is responsible for leading PHI's Corporate Compliance organization and compliance efforts; a Compliance Steering Committee responsible for compliance assurance; a Manager, Sr. Strategic Initiatives responsible for compliance monitoring of each subsidiary, an Internal Auditor and the Senior Vice President of Strategic Initiatives who are responsible for assuring the performance of compliance assessments. The PHI NERC Compliance Executive Steering Committee oversees and coordinates PHI compliance activities to ensure compliance with all of the applicable NERC Reliability Standards. The PHI NERC Compliance Executive Steering Committee is co-chaired by the CCO and the

Senior VP Strategic Initiatives NERC and embodies executive-level representation from each of PHI's subsidiaries who report to PHI's Executive Leadership Team, which including the CEO & President, the COO, and of PHI executive leaders. Other individuals charged with ensuring compliance with NERC Reliability Standards have independent access to the CEO & President, EVP Power Delivery, and SVP NERC. In addition, the compliance program is operated independently from departments that are responsible for compliance with Reliability Standards.

41. When assessing the penalty for the Alleged Violation at issue in this Agreement, ReliabilityFirst considered whether the facts of this Alleged Violation constitute a repetitive infraction. Neither PJM nor Delmarva have previous Alleged Violations of TOP-004 R4. As a result, ReliabilityFirst did not consider their violation history as an aggravating factor in the penalty determination.

## **VI. MONETARY PENALTY**

42. Based on the foregoing, PJM shall pay no monetary penalty to ReliabilityFirst.

## **VII. ADDITIONAL TERMS**

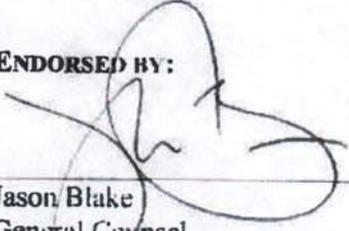
43. The Parties agree that this Agreement is in the best interest of BES reliability. The terms and conditions of the Agreement are consistent with the regulations and orders of the Commission and the NERC Rules of Procedure.
44. ReliabilityFirst shall report the terms of all settlements of compliance matters to NERC. NERC will review the Agreement for the purpose of evaluating its consistency with other settlements entered into for similar violations or under similar circumstances. Based on this review, NERC will either approve or reject this Agreement. If NERC rejects the Agreement, NERC will provide specific written reasons for such rejection and ReliabilityFirst will attempt to negotiate with the Parties a revised settlement agreement that addresses NERC's concerns. If a settlement cannot be reached, the enforcement process will continue to conclusion. If NERC approves the Agreement, NERC will (a) report the approved settlement to the Commission for review and approval by order or operation of law and (b) publicly post the Alleged Violations and the terms provided for in this Agreement.
45. This Agreement shall become effective upon the commission's approval of the proposed resolution of the above Alleged Violation as set forth in this Agreement by order or operation of law or as modified in a manner acceptable to the parties. The Parties agree that this Agreement, upon its execution, shall represent a final settlement of all matters set forth herein and binds the Parties to perform the actions enumerated herein and may only be altered or amended by written agreement executed by the Parties. The Parties expressly waives their rights to any hearing or appeal concerning any matter set forth herein, unless and only to the extent that the Parties contend that any NERC or Commission action constitutes a material modification to this Agreement.

46. ReliabilityFirst reserves all rights to initiate enforcement action against the Parties in accordance with the NERC Rules of Procedure in the event that the Parties fail to comply with any of the terms or conditions of this Agreement. The Parties retain all rights to defend against such action in accordance with the NERC Rules of Procedure.
47. The Parties consent to ReliabilityFirst's future use of this Agreement for the purpose of assessing the factors within the NERC Sanction Guidelines and applicable Commission orders and policy statements, including, but not limited to, the factor evaluating the Parties' history of violations. Such use may be in any enforcement action or compliance proceeding undertaken by NERC or any Regional Entity or both, provided however that the Parties do not consent to the use of the conclusions, determinations, and findings set forth in this Agreement as the sole basis for any other action or proceeding brought by NERC or any Regional Entity or both, nor do the Parties consent to the use of this Agreement by any other party in any other action or proceeding.
48. PJM and Delmarva each affirm that all of the matters set forth in this Agreement are true and correct to the best of their knowledge, information, and belief, and that they understand that ReliabilityFirst enters into this Agreement in express reliance on the representations contained herein, as well as any other representations or information provided by PJM and Delmarva to ReliabilityFirst during any PJM or Delmarva's interaction with ReliabilityFirst relating to the subject matter of this Agreement.
49. Upon execution of this Agreement, the Parties stipulate that the Possible Violation addressed herein constitutes an Alleged Violation. The Parties further stipulate that all required, applicable information listed in Section 5.3 of the CMEP is included within this Agreement.
50. Each of the undersigned agreeing to and accepting this Agreement warrants that he or she is an authorized representative of the party designated below, is authorized to bind such party, and accepts the Agreement on the party's behalf.
51. The undersigned agreeing to and accepting this Agreement warrant that they enter into this Agreement voluntarily and that, other than the recitations set forth herein, no tender, offer, or promise of any kind by any member, employee, officer, director, agent, or representative of the Parties has been made to induce the signatories or any other party to enter into this Agreement.
52. The Agreement may be signed in counterparts.
53. This Agreement is executed in duplicate, each of which so executed shall be deemed to be an original.<sup>3</sup>

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<sup>3</sup> An electronic version of this executed document shall have the same force and effect as the original.

**ENDORSED BY:**

  
\_\_\_\_\_  
Jason Blake  
General Counsel  
ReliabilityFirst Corporation

1/29/15  
Date

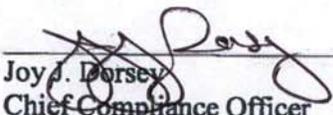
**AGREED TO AND ACCEPTED BY:**

**PJM Interconnection, LLC:**

  
\_\_\_\_\_  
Michael J. Kormos  
Senior Vice President - Operations  
PJM Interconnection, LLC

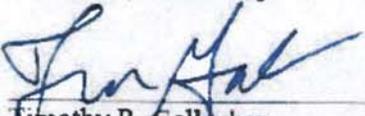
1/30/15  
Date

**Delmarva Power & Light Company**

  
\_\_\_\_\_  
Joy J. Dorsey  
Chief Compliance Officer  
Pepco Holdings, Inc.

2/6/15  
Date

**ReliabilityFirst Corporation:**

  
\_\_\_\_\_  
Timothy R. Gallagher  
President & Chief Executive Officer  
ReliabilityFirst Corporation

1/29/2015  
Date



## ***Possible Violation (PV) / Find, Fix, and Track (“FFT”) Identification Form***

### **INSTRUCTIONS**

1. In the “Violation Reported By” field, specify name of the reporting auditor. For audits/spot-checks, this would be the Audit Team Lead (ATL). For all other compliance monitoring processes, it would be the selected reporting auditor.
2. In the “Submittal Date” field, enter the date this PV/FFT will be submitted to Enforcement.
3. If this possible violation is a “Candidate for FFT treatment,” check the “YES” box. Otherwise, check the “NO” box.
4. Enter the “Registered Entity’s” name and the associated “NERC Registry ID#” (NCR number) as they appear on the [NERC Compliance Registry](#) or the available audit records (e.g. pre-audit survey).
5. Choose the appropriate “Compliance Monitoring Process.”
6. In “Standard, Version and Requirement,” list all versions of the standard in violation based on the period of the violation. List requirement(s) and the specific sub-requirement(s), if applicable, since each PV summary is to include a rollup of all violated sub-requirements under a single PV.  
*For example: CIP-004-1, 2, 3 R4 (R4.1, R4.2).*
7. Enter the “Registered Function(s) in Violation.” Include only those functions to which the violation is applicable. For example, if an entity is registered as GO and GOP and is in violation of FAC-009-1 R1 (applicable to only GO and TO), then only list “GO.”
8. Enter the date the PV was discovered by ReliabilityFirst. For example, this may be the date of the exit briefing of an audit.
9. To the best of the auditor’s ability, determine the beginning date of the violation (or the first date of the audit period if the violation began before the audit period) and select that date from the “Date for Determination of Penalty/Sanction” date field.
  - a. Note: For CIP, depending on the registered functions, different C-Compliance dates apply based on the CIP Ver. 1 Implementation Plan. If the violation was in effect for the entire audit review period going back to the C-Compliance date, specify the date and function per the following:
    - i. For TOP/BA functions, the C-Compliance date is 7/1/2009.
    - ii. For GO/GOP/LSE/TO functions, the C-Compliance date is 1/1/2010.
  - b. If the entity was previously audited or spot-checked after its C-Compliance date, specify the date after the Exit Briefing of that audit or spot-check.
10. For FFT Candidates:
  - a. Specify the “End Date of the Possible Violation,” typically the date the violation was mitigated. If not mitigated, list “Not Mitigated.”
  - b. Skip Instruction 11 below.
  - c. Complete Instructions 12 – 17 below.
  - d. Complete the “FFT Candidates ONLY” section at the bottom of the form.
11. For non-FFT candidates:
  - a. Obtain the most recent VRF Matrix from [www.nerc.com](#) -> Standards -> Reliability Standards -> VRF Matrix (Left Menu). If the PV addresses a single requirement, select the appropriate VRF level from the pull-down menu in this form. If the PV addresses a requirement and sub-requirement(s), list out the appropriate VRF for each requirement/sub-requirement.
  - b. Obtain the most recent VSL Matrix from [www.nerc.com](#) -> Standards -> Reliability Standards -> VSL Matrix (Left Menu). If the PV addresses a single requirement, select the



appropriate VSL level from the pull-down menu in this form. If the PV addresses a requirement and sub-requirement(s), list out the appropriate VSL for each requirement/sub-requirement.

- c. Choose a Potential Impact from the pull-down list (Example definitions are italicized):
    - i. Minimal: *This violation is document related, or poses only a small risk to the BES.*
    - ii. Moderate: *This violation puts the BES at risk, but is not a serious, imminent threat.*
    - iii. Severe: *This violation constitutes a serious, imminent threat to the BES.*
  - d. Under "Provide Explanation for Selection," explain the choice of Potential Impact above.
  - e. Complete the Instructions 12-17 below.
12. Enter a brief summary of the "Basis for the PV," for each requirement/sub-requirement, as applicable.
    - a. For example, consider what was not met in the requirement or what was lacking in the evidence. Mention any additional information, as applicable or relevant (i.e., self report, OEA, etc.)
  13. Under "Evidence," list only the evidence documents reviewed to substantiate the PV.
  14. Under "Facts," discuss how the entity is in violation and how each of the evidence documents demonstrates this.
  15. Save this revised template as a pattern for each of the PVs/FFT Candidates identified for this entity and perform the steps outlined above.
  16. Before finalizing the PV/FFT Candidate and circulating for Management review, remove these instructions and the Template's revision history.
  17. Once approved by the Manager, save a copy with the Manager's approval note on the P Drive in the folder entitled "13 – PV Summary Report" within the applicable entity folder and send to Enforcement.

**Note:** Enter "X" in the appropriate YES, NO boxes in the following pages.



***Possible Violation (PV) / Find, Fix, and Track (“FFT”)  
Identification Form***

This document is to be completed upon identification of a possible violation, typically within 5 business days of the audit exit brief, and emailed to Veronica Miller (Paralegal) with a copy to: Ray Palmieri (Sr. Vice President), Gary Campbell (Manager, Ops & Planning Audits) or Tony Purgar (Manager, CIP Audits) or Jim Uhrin (Manager, Compliance Services and Investigations) and Mike Austin (Managing Enforcement Attorney).

For non-FFT candidates: Upon receipt of this document, Enforcement will coordinate with the reporting auditor and Enforcement to initiate the Enforcement processing of this possible violation.

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**Violation Reported By:** Don Urban

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**Submittal Date:** 10/26/2012

**Candidate for FFT Treatment:** YES  NO

**Registered Entity:** PJM Interconnection LLC

**NERC Registry ID#:** NCR00879

**Compliance Monitoring Process:** Compliance Audits

**Standard, Version and Requirement in Violation:** TOP-004-2, R4

**Registered Function(s) in Violation:** TOP

**Initial PV Date (Actual Date Discovered by ReliabilityFirst):** 9/27/2012

**Date for Determination of Penalty/Sanction (Beginning Date of Violation):** 1/05/2012

**End Date of Possible Violation:** Unable to determine since this is based on Mitigation Plan

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**For Non-FFT Candidate ONLY**

**Violation Risk Factor:** VRF - High

**Violation Severity Level:** Severe VSL

**Potential Impact to Bulk Electrical System (BES):** Severe

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**Provide Explanation for Selection:** DP&L and PJM did not conduct a study to determine if the loss of the entire Indian River substation involving five (5) 138 kV lines would have created a system reliability issue. The PJM system operator did not understand the severity of the situation, was more concerned with over tripping instead of no tripping, did not follow-up with the DP&L operator for updates, or conduct additional questioning. The possibility that breakers would fail to operate for a fault condition existed for 2 hours and 44 minutes.



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**For Non-FFT and FFT Candidates**

**Basis for the PV:** PJM did not restore operations to respect proven reliable power system limits within 30 minutes after entering an unknown operating state.

**R4:** If a Transmission Operator enters an unknown operating state (i.e. any state for which valid operating limits have not been determined), it will be considered to be in an emergency and shall restore operations to respect proven reliable power system limits within 30 minutes.

**Facts and Evidence pertaining to the PV:** PJM was notified verbally by a phone call (1/5/12 17:17:29) from the DP&L system operator of the relaying issue. A recording of this phone call was included as evidence. A second DP&L system operator verbally notified PJM by a phone call (1/5/12 20:01:42) that the problem was resolved. A recording of this phone call was also included as evidence.

**R4:** If a Transmission Operator enters an unknown operating state (i.e. any state for which valid operating limits have not been determined), it will be considered to be in an emergency and shall restore operations to respect proven reliable power system limits within 30 minutes.

Evidence:

- ER-014-DPL Voice Recording on January 5, 2012 at 17:59
- PJM Relay Subcommittee Bulk Power System Protection Misoperation Report, dated January 5, 2012
- Phone interview with the DPL Bay Region individual responsible for system protection.

Facts:

The audit team reviewed the voice recording (*ER-014-DPL Voice Recording on January 5, 2012 at 17:59*) of the phone call from DPL to PJM notifying them that the protection was compromised at the Indian River 138kv substation as a result of low and fluctuating DC voltage.

The audit team also reviewed the *PJM Relay Subcommittee Bulk Power System Protection Misoperation Report* for the misoperations at the Indian River 138 kV substation. The report describes the problems experienced leading up to the DC voltage issue. A summary of the report is as follows:

- At 1239, circuit breakers associated with the 13705 terminal at Indian River tripped open.
- At 1241, the system operator closed one of these breakers but it tripped again at 1243.
- At 1249, both breakers were successfully closed but tripped again at 1611. Microprocessor relay records did not indicate a fault. This was confirmed by relay technicians after their interrogation of the frontline and backup relays.
- Numerous alarms associated with the 13705 relay communication equipment were received via SCADA during the hour prior to the first trip at 1239 (see first bullet).



- Further investigation revealed that the cable providing the normal DC control power feed to the substation was in the process of failing.

The audit team also conducted a phone interview with the DPL Bay Region individual who is responsible for system protection and who initially notified system operations of the problem. A summary of this phone conversation is shown below:

- DPL system operations was receiving fatal/nonfatal communication alarms
- The Indian River substation DC supply voltage associated with high-speed tripping was fluctuating for RTU and communication equipment
- It was believed by this individual that the 138 kV front line and BU relay protection would not function for a fault condition since 90 to 100 volts DC is required for breaker trip coils to operate
- DC supply voltage would drop to approximately 50 volts for about 10 to 15 seconds
- DPL was not sure what 138 kV lines were impacted but believed no operation of circuit breakers would occur upon a fault condition (Five 138 kV lines are connected to Indian River substation and one 150 MW generator. This generator was off-line during this incident)
- DC supply voltage fluctuations were not being continuously monitored, thus low voltage conditions may have dropped lower or remained at 50 volts for longer periods than 10 to 15 seconds

Gary Campbell This document has been reviewed by Gary Campbell, Manager of Compliance Audits or his designee on October 29, 2012. After addressing the comments, the PV Summary can proceed forward unless further review has been specified.

A handwritten signature in black ink that reads "Gary Campbell".

Manager of Operation & Planning Audits



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**REVISION HISTORY**

<b>Revision</b>	<b>Prepared By</b>	<b>Approved By</b>	<b>Date</b>	<b>Comments</b>
Rev. 0	Tony Purgar	Tony Purgar Gary Campbell Jim Uhrin Ray Palmieri Jason Blake Bob Wargo	6/1/2012	Initial Release of New Form. Replaces PV Summary Template Rev 6.
Rev. 1	Renata Fellmeth	Tony Purgar	6/1/2012	Grammar & Formatting Changes.

**Attachment B**

PJM Interconnection, L.L.C.  
Rate Schedule FERC No. 42

Original Sheet No. 54

**IN WITNESS WHEREOF**, the Parties and PJM have caused this Agreement to be executed by their duly authorized representatives.

Delmarva Power & Light Company

By: \_\_\_\_\_

Name: David M. Velazquez

Title: Vice President, Pepco Holdings, Inc.

Date: December 15, 2005

Issued By: Craig Glazer  
Vice President, Federal Government Policy  
Issued On: January 17, 2006

Effective: March 19, 2006



**RELIABILITY FIRST**  
Mitigating Activities

**A. Violation Information**

**Registered Entity Name:** PJM Interconnection, LLC  
**NERC Registry ID:** NCR00881  
**NERC Violation ID:** RFC2012011378  
**Standard, Requirement:** TOP-004-2 R4

**B. Mitigating Activities**

**PV Facts:**

This Alleged Violation involves PJM Interconnection, LLC (“PJM”) and Delmarva Power & Light Company (“Delmarva”), which is owned by Pepco Holdings, Inc. The Alleged Violation relates to a January 2012 event involving what ReliabilityFirst believes was an intermittent loss of direct current (“DC”) power at one of Delmarva’s substations (the “Event”).

ReliabilityFirst’s audit team reviewed the Event, which involved an intermittent loss of DC power at Delmarva’s Indian River Substation. On January 5, 2012, beginning at 11:38 A.M, a Delmarva system operator at the Indian River Substation received 14 fatal and nonfatal Energy Management System (“EMS”) alarms over a seven-hour period. At the time of the Event, the system operator believed that the alarms indicated that there was some type of protection system issue, but the full extent of that issue was unknown. Additionally, at 12:39 P.M., circuit breakers associated with an Indian River terminal tripped open. At 12:41 P.M., the system operator closed one of the breakers, but it tripped again at 12:43 P.M. At 12:49 P.M., the system operator closed both breakers, but they tripped again at 4:11 P.M. Also, the Indian River Substation DC supply voltage associated with high-speed tripping was fluctuating for Remote Terminal Unit (“RTU”) and communication equipment. As a result, RTU communication was impacted at three BES RTUs, with each RTU being impacted seven to eight times over a seven hour period. During that seven hour period, each RTU was impacted for 12 to 18 minutes.

The Delmarva system operator indicated that during the Event, he believed that the 138 kV front line and backup relay protection would not function for a fault condition because 90 to 100 volts DC is required for breaker trip coils to operate and DC supply voltage would intermittently drop to approximately 50 volts for about 10 to 15 seconds. At the time of the Event, Delmarva was not sure what 138 kV lines, if any, were impacted, but believed no operation of circuit breakers would occur upon a fault condition.

Regarding Delmarva's communication with PJM, at 5:17 P.M., a Delmarva system operator verbally notified PJM that protection was compromised at the Indian River Substation as a result of low and fluctuating DC voltage. At 8:01 P.M., a second Delmarva system operator verbally notified PJM that the problem was resolved.

According to PJM, the magnitude, duration, and consequences of the Event could not be quantified at the time of audit. As a result, the audit findings were based on the worst case scenario using information available at that time. After some investigation following the Event, PJM initially determined that the alarms indicated that front-line and back-up line protection was not functional for a cumulative total of one minute 37 seconds over the seven-hour period. Later, after further investigation, PJM determined that none of the protection systems were impacted. Rather, the system operators received only communication alarms rather than alarms indicating that the protection system would not function. However, PJM does not dispute that PJM and Delmarva did not understand the impact of these alarms at the time of the Event.

**Completion Date:                    June 1, 2013**

**Description of Mitigating Activities:**

On September 4, 2013, PJM notified ReliabilityFirst of its mitigating activities for RFC2012011378 that addressed the alleged violation. These mitigating activities were reviewed and approved by Kristen Senk on November 19, 2014 as adequate to correct the alleged violation and prevent recurrence.

PJM took the following actions:

1.     At PJM's 2013 Spring Operator's Seminar, PJM lectured on proper procedures when compromised relay protection has been identified. This training stressed the importance of immediate communication to PJM, and stated that the study results could result in precontingency load shedding.
2.     At the February 27, 2013 System Operations Subcommittee meeting and the March 5, 2013 PJM Operating Committee meeting, PJM discussed the Event in detail and stressed the need for timely updates to PJM on protection system status reporting.
3.     PJM added two clarifying notes to PJM Manual 03: Transmission Operations, Section 4.2.2 Hotline/In Service Work Requests/Protective Relay Outages/Failures. These notes clarify that PJM relies on its transmission and generation owners to identify, assess, and notify PJM of changes, degradations, or outages to relay systems that impact normal fault clearing. Additionally, these notes clearly indicate that facilities with degraded or no relay protection will be switched out-of-service, unless doing so would create a load-shed situation. In such situations, PJM would

## Attachment C

model the remote clearing points and operate to control any resulting contingencies using normal operating procedures including Post Contingency Local Load Relief Warnings. The notes also indicate that these actions should be completed within 30 minutes of identification of the protection problem.

**Reviewer: Kristen Senk**

**Date Mitigating Activities Verified: December 22, 2014**

First, PJM provided ReliabilityFirst with the 2013 Spring Operator's Seminar attendance records and the instructor's PowerPoint presentation, which confirms that PJM lectured on proper procedures when compromised relay protection has been identified and stressed the importance of immediate communication to PJM, and stated that the study results could result in precontingency load shedding.

Second, PJM's updated Manual is available online and ReliabilityFirst has confirmed that PJM added the clarifying notes to Section 4.2.2 Hotline/In Service Work Requests/Protective Relay Outages/Failures.

Third, PJM provided ReliabilityFirst with the minutes from the February 27, 2013 System Operations Subcommittee meeting and the March 5, 2013 PJM Operating Committee meeting confirming that PJM discussed the Event and stressed the need for timely updates to PJM on protection system status reporting.

**Attachment B**

**ReliabilityFirst's Notice of Possible  
Violation dated December 31, 2012**

**From:** [noreply@oati.net](mailto:noreply@oati.net)  
**To:** [Veronica Miller](#)  
**Subject:** [REDACTED] Notice of Possible Violation - PJM Interconnection, LLC | NCR00879  
**Date:** Monday, December 31, 2012 3:37:24 PM

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**Please do not REPLY to this message. It was sent from an unattended mailbox and replies are not monitored.**

**Entity: PJM Interconnection, LLC - NCR00879**  
**NERC Violation ID: RFC2012011378**  
**Standard Requirement: TOP-004-2 R4**  
**Discovery Method: Audit**  
**Possible Violation submitted on: Nov 9 2012 4:38PM GMT**

ReliabilityFirst Corporation ("ReliabilityFirst") hereby informs PJM Interconnection, LLC that the above captioned matter is assigned to ReliabilityFirst Enforcement for resolution. The above-captioned matter concerns PJM Interconnection, LLC's possible violation of the following Reliability Standard:

**Standard Requirement:** TOP-004-2 R4

**Brief Description:** The Entity did not restore operations to respect proven reliable power system limits within 30 minutes after entering an unknown operating state.

At this time, it appears that this possible violation may have commenced on 01/05/2012. ReliabilityFirst continues to analyze both the scope and duration of this possible violation.

#### **A. Document Hold and Request for Information**

The resolution of this enforcement action may include fact gathering in order to determine the appropriate resolution for this matter. To that end, ReliabilityFirst hereby provides notice that PJM Interconnection, LLC must preserve all documents that are in any way related to the above captioned matter. These documents include, but are not limited to, memoranda, correspondence, operator logs, recorded voice communications, work orders, and inspection and patrol records.

If, during the course of the investigation, ReliabilityFirst determines that additional information is needed from PJM Interconnection, LLC, ReliabilityFirst will issue PJM Interconnection, LLC a Request for Information. PJM Interconnection, LLC must provide ReliabilityFirst with timely, complete, and accurate responses to the Request for Information.

After the conclusion of its fact gathering and analysis, ReliabilityFirst will notify PJM Interconnection, LLC of the determined resolution for this matter.

#### **B. Compliance Program Survey**

In accordance with NERC Sanction Guidelines (Appendix 4B of the NERC Rules of Procedure), ReliabilityFirst must perform an assessment of the PJM Interconnection, LLC Compliance Program. The presence of a strong compliance program will be considered favorably in accordance with Section 4.3.5 of the NERC Sanction Guidelines. In furtherance of this effort, if PJM Interconnection, LLC has not previously submitted the Compliance Program Survey or wishes to update its Compliance Program Survey, please email Veronica Miller at [veronica.miller@rfirst.org](mailto:veronica.miller@rfirst.org) to request the form.

#### **C. Mitigation Plan**

If PJM Interconnection, LLC has not yet done so, ReliabilityFirst encourages PJM Interconnection, LLC to submit

a mitigation plan through the webCDMS system at the earliest possible date. This will ensure that any possible violation is immediately corrected and any risk to the reliability of the bulk power system is promptly minimized. The submission of a mitigation plan does not waive PJM Interconnection, LLC's right to contest the possible violation or the proposed penalty or sanction, or both. ReliabilityFirst will analyze the proposed mitigation plan and will notify PJM Interconnection, LLC of its decision to accept or reject the plan. In the event that ReliabilityFirst needs additional information to reach its decision, ReliabilityFirst will contact PJM Interconnection, LLC.

**D. Designated Representative**

ReliabilityFirst will consider PJM Interconnection, LLC's Primary Compliance contact(s) as PJM Interconnection, LLC's designated representative(s) for any enforcement activity relating to the subject matter of this Notice, including, but not limited to, settlement negotiations unless PJM Interconnection, LLC provides ReliabilityFirst with written notice of alternate designated individual(s).

Please feel free to contact the undersigned with any questions.

Respectfully submitted,

Theresa Cunniff  
Associate Attorney  
**ReliabilityFirst Corporation**  
320 Springside Drive, Suite 300  
Akron, Ohio 44333  
Telephone: 330.456.2488  
Facsimile: 330.456.3648

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