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Revise/Review By:	06/27/2018		

1. PURPOSE / INTENT

On June 16, 2017, the Department of Energy (DOE) issued Emergency Order 202-17-2 (the “DOE Order”) requiring Dominion Energy Virginia to operate Yorktown Units 1 and 2 as directed by PJM to address reliability issues on the North Hampton Roads area of the Yorktown peninsula effective June 16, 2017 – September 14, 2017. Should it be needed, PJM will request the Order be renewed every 90 days until the construction related to the Skiffes Creek Transmission project is completed.

The purpose of this protocol is to:

- Establish and document a PJM dispatch methodology for scheduling Yorktown 1 and/or 2 units.
 - Section 3, [Yorktown Units 1 and/or 2 Commitment Procedure](#)
- Describe the utilization and trip conditions of the North Hampton Remedial Action Scheme for mitigating congestion on the Peninsula.
 - Section 4, [North Hampton Remedial Action Scheme Procedure](#)
- Describe Dominion’s mitigation options for the existing James River tower contingency.
 - Section 5, [N-2 Constraint Procedure](#)

2. BACKGROUND

According to the DOE Order, PJM may dispatch Yorktown units to help mitigate:

- Reliability issues associated with scheduled and emergency transmission outages directly related to the Skiffes Creek project
- Other local area transmission issues

In the event that Yorktown Units 1 and 2 are unavailable, this procedure details the steps to be used for enabling the North Hampton Remedial Action Scheme (RAS).

The Dominion System Operation Center (SOC) will contact PJM to authorize enabling of the RAS when the SOC Real Time Contingency Analysis (RTCA) application indicates [REDACTED] will result in potential unreliable conditions in the North Hampton Roads area. Potential unreliable conditions are defined as:

Yorktown
Peninsula
Reliability and
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- Unsolved N-2 contingency
- Any voltage exceedance less than 0.90 p.u.
- Any thermal contingency violation above the load dump rating

[Redacted]

- [Redacted]
- [Redacted]
- [Redacted]
- [Redacted]
- [Redacted]
- [Redacted]
- [Redacted]
- [Redacted]

[Redacted]

- [Redacted]
- [Redacted]
- [Redacted]

3. YORKTOWN UNIT 1 AND/OR 2 COMMITMENT PROCEDURE

3.1 Yorktown generation commitment for Skiffes Creek Project and Local Transmission Issues

3.1.1 Day-ahead commitment of Yorktown 1 and/or 2:

- PJM will schedule Yorktown Units 1 and 2 generation to support Skiffes Creek project outages or local transmission issues.
- If Yorktown Units 1 and/or 2 are needed for the next day's operations based on PJM Reliability Engineer (RE) Reliability Analysis, PJM RE will verify time-to-start parameters for the unit in Dispatch Management Tool (DMT) and confirm with the Dominion Market Operation Center (MOC).

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- PJM RE will notify PJM Day-Ahead Market operators if Yorktown 1 and/or 2 is needed for the next day and will include the specific reason for the commitment:
 - Skiffes Creek-associated outage and constraint/contingency requiring Yorktown generation.
- PJM RE will instruct the PJM Master Coordinator (MC) to commit the unit(s) on its cost based offer and notify the Dominion MOC.

3.2.2 Real-Time commitment of Yorktown 1 and/or 2:

- Unit commitment for an Emergency or Scheduled Transmission Outage or local transmission emergencies will be based on unit bid parameters (time-to-start) and available cost schedule.
 - PJM MC will contact the Dominion MOC to request Yorktown 1 and/or 2 based on the cost-based offer.
 - PJM RE will notify PJM Day-Ahead Market Operations of unit commitment.

3.2.3 Unit release:

- PJM will release Yorktown units based on bid parameters at the conclusion of the reliability event causing dispatch.

4. NORTH HAMPTON REMEDIAL ACTION SCHEME PROCEDURE (N-1 CONTROL)

The North Hampton RAS is only valid [REDACTED]
 [REDACTED]
 [REDACTED]. Its purpose is to prevent voltage collapse in the North Hampton Roads area [REDACTED]
 [REDACTED]

NOTE: The only valid N-1 scenarios that could result in arming of the RAS are [REDACTED]
 [REDACTED]

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4.1 PJM will monitor and control to any N-1 exceedance observed

- PJM will confirm N-1 analysis with Dominion SOC. Once the analysis is confirmed, PJM will implement all available mitigation actions.
- Once all options have been exhausted, PJM will issue a PCLLRW and coordinate a load shed plan with Dominion SOC.
- PJM will evaluate available Demand Response resources located within the Yorktown Peninsula and will issue appropriate emergency procedures to coincide with activation of available Demand Response resources.
 - Currently, approximately 14 MW [REDACTED] of PJM Demand Response is available in the Yorktown Peninsula. Since usage is limited, PJM will only implement DR as needed post-contingency to restore customer load.
 - If Demand Response is activated, PJM Master Dispatcher (MD) will bridge the Yorktown Interface to PJM Security Constrained Economic Dispatch (SCED) application.
 - PJM MD will post Load Management action in Emergency Procedures posting application.

4.2 PJM will direct arming of the North Hampton RAS if the N-1 contingency condition [REDACTED] exceeds the Load Dump thermal or Load Dump low voltage rating or results in a non-converged contingency.

- PJM MD will direct the North Hampton RAS armed.
- Dominion SOC will arm the North Hampton RAS.
- PJM MD will evaluate disarming the RAS by monitoring the non-RAS contingency in Security Analysis (SA) Specials contingency group. PJM MD will direct the disarming of the North Hampton RAS once non-RAS contingency shows no N-1 exceedances.
- Dominion SOC will disarm the North Hampton RAS.

5. N-2 CONSTRAINT PROCEDURE

5.1 Dominion SOC will monitor the following N-2 [REDACTED] in their Next Day and 10 Day Studies:

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- [REDACTED]
- [REDACTED]

Note:

- For awareness and solution result comparison purposes, PJM will monitor the same N-2 contingency. It will be normally activated in the SA Specials contingency group for use in study as well as real-time. PJM will not control to the N-2.

5.1.1 Dominion SOC may request Yorktown generation to be online when the following study results are observed:

- Unsolved N-2 contingency
- Any voltage exceedance less than 0.90 p.u.
- Any thermal contingency violation above the load dump rating

Note:

- If Yorktown generation is committed to alleviate the N-2 contingency and trips during real-time operations, the PJM Real Time desk will continue to operate and monitor for only N-1 contingencies. If the Yorktown generation trips and loads are above ~17,500 MW, the next N-1 contingency may cause violations listed in 5.1.1 necessitating commitment of additional Yorktown generation or arming of the North Hampton RAS (see also North Hampton RAS sections below).
- Unit commitment must be made with respect to unit time-to-start parameters. PJM will verify applicable time-to-start parameters with the Dominion MOC.

5.2 Unit Commitment – Dominion SOC Actions:

- Dominion SOC will perform studies with the N-2 [REDACTED] contingency active in Dominion study package. For any violations observed, contact PJM to confirm results and verify running Yorktown generation will mitigate observed violations.
- Once any of the following violations within the Yorktown peninsula are observed in the study, confirm with PJM:

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- Unsolved N-2 contingency
- Any N-2 voltage exceedance less than 0.90 p.u.
- Any N-2 thermal contingency violation above the load dump rating
- The Dominion SOC Manager or Dominion SOC Director (or their designee) will notify PJM that the Dominion SOC requests Yorktown generation to alleviate expected N-2 contingency violations.
- The Dominion SOC will notify PJM when the committed Yorktown Units 1 and 2 can be released.

5.3 Unit Commitment - PJM Actions

- When requested by Dominion SOC, PJM RE will confirm study results and mitigation options with the Dominion SOC.
- When requested by Dominion SOC, PJM RE will schedule Yorktown generation. PJM will select the lowest offer available.
- PJM RE will communicate expected on-line time for Yorktown generation to the Dominion SOC based on feedback from the Dominion MOC.
- PJM RE will notify the PJM DA Market group of the unit commitment.
- PJM RE will note unit commitment and associated local constraint on the Daily Analysis report.
- PJM RE will log the unit in DMT as Local-Dispatchable to ensure appropriate billing as well as Smartlogs
- PJM will release the committed Yorktown units after receiving notification from the Dominion SOC indicating the unit can be released.

5.4 North Hampton RAS

If Yorktown units are not available or online, Dominion SOC may request the North Hampton RAS to be enabled when the following study results are observed:

- Unsolved N-2 contingency

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- Any N-2 voltage violation less than 0.90 p.u.
- Any N-2 thermal contingency violation above the load dump rating

Note:

- If any of the above N-2 contingency violations are seen in the Dominion Next Day or 10 Day Studies, Dominion will monitor and operate for the N-2 contingency in Real Time. As noted above, PJM will keep the N-2 contingency normally active in the SA Specials contingency group but will not operate to them.
- The Remedial Action Scheme may be enabled in Real Time, if Yorktown generation is on-line to mitigate the noted study violations and subsequently trips.
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

5.5 North Hampton RAS - Dominion Actions:

- Effective April 1, 2017, load forecasts of approximately 17,500 MW or more will trigger Dominion studies with the N-2 [REDACTED] contingency active in STNET. If Yorktown generation is unavailable and any violations are observed, Dominion SOC will contact PJM to confirm results.
- Dominion SOC will confirm any of the following violations within the Yorktown Peninsula (when Yorktown generation is unavailable) with PJM:
 - Unsolved N-2 contingency
 - Any N-2 voltage violation less than 0.90 p.u.
 - Any N-2 thermal contingency violation above the load dump rating

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- The Dominion SOC Manager or Dominion SOC Director (or their designee) will notify PJM that the Dominion SOC requests the North Hampton Remedial Action Scheme to be Enabled to alleviate expected N-2 contingency violations.

- [REDACTED]

 - [REDACTED]
 - [REDACTED]
 - [REDACTED]
 - [REDACTED]
 - [REDACTED]
 - [REDACTED]
 - [REDACTED]
 - [REDACTED]
 - [REDACTED]

- The Dominion SOC will notify PJM when the RAS can be Disabled.

- [REDACTED]

 - [REDACTED]
 - [REDACTED]
 - [REDACTED]
 - [REDACTED]
 - [REDACTED]

5.6 North Hampton RAS - PJM Actions

- When requested by Dominion SOC, PJM MD will confirm study results and mitigation options with the Dominion SOC.
- When requested by Dominion SOC, PJM MD will confirm Enabling the Remedial Action Scheme with the Dominion SOC.
- PJM MD will confirm Disabling the Remedial Action Scheme after receiving notification from the Dominion SOC.

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6. UNIT TESTING

Yorktown Units 1 and 2 may require basic periodic and compliance related activities consistent with normal operating procedures and good engineering practices to ensure the units remain reliable and capable of operating when necessary. These activities include, but are not limited to, operating equipment for maintenance testing and reliability check out, testing of fuel systems, tuning of units, required emissions or operational testing, and emptying of coal bunkers. These needs will be determined by the Dominion MOC in coordination with the plant. If either Yorktown Units 1 or 2 needs to come online for testing, the following procedure will be used:

- Dominion MOC will contact PJM generation dispatcher to request to bring Yorktown 1 or 2 online
- PJM reliability engineer and master dispatcher will study system conditions in coordination with Dominion SOC to determine if the unit is able to run
- PJM generation dispatcher will grant or deny testing request to Dominion SOC
- When testing is complete, Dominion MOC will inform PJM generation dispatcher
- PJM reliability engineer and master dispatcher will study unit coming offline in coordination with Dominion SOC
- If the unit is required to stay online, it will be requested by the PJM generation dispatcher pursuant to the previously outline system conditions
- If the unit is not required to stay online, PJM generation dispatcher will grant the release of the unit.

7. REFERENCES

- **PJM MANUAL 13:**
[HTTP://WWW.PJM.COM/~MEDIA/DOCUMENTS/MANUALS/M13.ASHX](http://www.pjm.com/~media/documents/manuals/m13.ashx)
- **DOE EMERGENCY ORDER 202-17-2:**



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8. ASSOCIATED APPLICATIONS

Applications that may be impacted by any revisions to this Operating Memo should be noted within this section.

IEP Procedure ID:	n/a	Event Name:	
Note:			

SCADA/EMS:	n/a	Display:	
Note:			

System Impacts:	n/a	Title:	
Note:			

9. REVISION HISTORY

Rev. #	Date	Author	Description
0	04/15/2017	Phil D'Antonio / Ed Croasdale	OM creation
1	06/26/2017	Simon Tam/ Donnie Bielak	Updated per DOE emergency order 202-17-2

10. APPENDIX

A: YORKTOWN DEMAND RESPONSE RESOURCES

[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]