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The Honorable James Richard Perry
Secretary of the Energy
United States Department of Energy
1000 Independence Ave, SW
Washington, DC 20585

Re: Report on Yorktown Units 1 and 2 Operations Pursuant to Order No. 202-17-4

Dear Secretary Perry:

Pursuant to Order No. 202-17-4 (the “Order”) issued on June 16, 2017, by the Secretary of Energy (“Secretary”), PJM Interconnection, L.L.C. (“PJM”) and Dominion Virginia Electric and Power Company (“Dominion Energy Virginia”) respectfully submits the attached reports regarding PJM’s dispatch of Yorktown Unit 2 on August 22, 2017, including the periods needed to startup and ramp down the unit from August 21 - 23, in accordance with the Secretary’s directive to “report all dates on which Yorktown Units 1 and 2 are operated as well as the estimated emissions and water usage data associated with their operations.”¹

In the Order, the Secretary determined “that an emergency exists in the Commonwealth of Virginia due to a shortage of electric energy, a shortage of facilities for the generation of electric energy, and other causes, and that issuance of this Order will meet the emergency and serve the public interest.”² In doing so, the Secretary directed Dominion Energy Virginia to operate Yorktown Units 1 and 2 only as directed by PJM as needed to ensure reliability for a 90-day period from, June 16, 2017 to September 14, 2017.³

On August 24, 2017 PJM and Dominion Energy Virginia filed a report on Yorktown Units 1 and 2 operations pursuant to the Order providing the Yorktown Units 1 and 2 runtime, emissions data, and

¹ The Order directs this report to be submitted by “September 14, 2017, or the date upon which a renewal request is submitted, whichever occurs first.” As explained below, complete operations and emission data for the August 21-23 dispatch was not available in time for the renewal request and report on operations and emissions filed August 24.

² Order at page 1

³ Order at page 2

water usage data for the operating period beginning July 10 and ending on July 26, 2017 (hereinafter “August 24 Report”). PJM and Dominion Energy Virginia explained in the August 24 Report that PJM directed the operation of Yorktown Unit 2 in August but the operations, emissions, and water usage data was not available in time for the report. PJM and Dominion Energy Virginia committed to include the data for the August operations in the next report or as directed by the Secretary.⁴

On August 21, PJM directed the dispatch of Yorktown Unit 2 at approximately 9 AM, Dominion Energy Virginia began the startup process at 1 PM, and the unit was on line and generating power on August 22 at 2 AM. PJM dispatched the unit off line around 10 PM on August 22, and Dominion Energy Virginia determined that in the interests of safety and good operating practice, the unit would continue to run to empty the bunkers of coal. Emptying of the Yorktown coal bunkers is necessary and a standard operating procedure to prevent fires and to prevent the coal from packing and not flowing after sitting dormant for an extended period. That activity took until 7 AM on August 23.

Attachment 1 to this report is the Yorktown Power Station Monthly Mass Emissions for August that shows the actual runtime and air emissions data for August 2017. This spreadsheet includes hourly runtime data for Yorktown Unit 2, Megawatt (MW) outputs, raw and calculated data for August 2017 showing air emissions data associated with operations of Yorktown Unit 2.⁵ PJM did not direct the operation of Yorktown Unit 1 during August, and Unit 1 did not operate.

The information in Attachment 1 reports Yorktown Unit 2 hourly emissions of PM-10 and SO₂ in pounds per hour and pounds per million BTU, and mercury in pounds per hour and pounds per trillion BTU (Mercury and Air Toxics Standards (MATS) format) for the operating period beginning August 21 through August 23, 2017. Additionally, Attachment 1 provides Unit 2 hourly emissions of NO_x in

⁴ On September 14th the Secretary issued Order No. 202-17-4 that directed PJM and Dominion to report every two weeks all dates between September 14 and December 13, 2017 on which Yorktown Units 1 and/or 2 are operated, and the associated air emissions and water usage for those dates. Order No. 202-17-4 at page 2. While the August dispatch is not within the specified dates of that order, PJM and Dominion submit this Report two weeks after that order.

⁵ The Yorktown units can emit pollution while not generating MWs (*e.g.* during standby, startup and shutdown sequences). Thus, Attachment 1 shows the MW output during the period Yorktown Unit 2 provided power to the grid including startup and shutdown processes (August 22 - 23) and it shows the emissions data for operations of Yorktown Unit 2 including times when the unit was not generating power.

pounds per hour, greenhouse gases (as CO₂) in tons per hour, lead in pounds per hour, HCl in pounds per hour, HF in pounds per hour, and CO in pounds per hour. NO_x and SO₂ emissions are based on valid hours of Continuous Emissions Monitoring System (CEMS) data for the period. PM-10 emissions are based on the emission factor derived from the July 21, 2017 stack test (0.0168 lbs/mmBtu corrected to 0.1143 lbs/mmBtu calculated for PM-10 filterable plus condensable as Shown in Attachment 3). CO₂ emissions are based on valid CEMS hours for the operating period. All other emissions were calculated using emission factors from AP-42, Fifth Edition, Volume 1, Chapter 1: External Combustion Sources and calculated hourly coal consumption in tons.⁶

Attachment 2 of this report is entitled “Yorktown Power Station August 2017 Circulating Water Usage for DOE Emergency Run per PJM Dispatch.” This report provides the intake circulating water usage for Yorktown Unit 2 operations from August 21 to August 27, 2017 pursuant to the Order. Operation of cooling water pumps extends over a period of time longer than unit operation to facilitate cooling of plant components that support the boiler and turbine. As a general rule cooling water will continue to be pumped until the turbine metal temperature is less than 300 °F. However, sometimes additional cooling water is necessary to complete proper cool down of auxiliary equipment and lubrication fluids after the turbine metal reaches 300 °F, as was the case with the Yorktown Unit 2 operations in August.

Attachment 3 is the Yorktown July 2017 Run Time and Projected Emissions Updated August 27 2017 revised from July 2017 to account for a revised PM-10 emission factor.⁷ The PM-10 emission factor used for the July 2017 emissions calculations and the Skiffes Creek Construction Transmission Outage Schedule was 0.0168 lbs/mmBtu based on the July 21, 2017, stack test on the combined stack for

⁶ Mercury and lead emissions were calculated using AP-42, Table 1.1-18. CO emissions were calculated using emission factors from AP-42, Table 1.1-3. Total HAP metals and individual HAP metals are not provided because MATS Table 2 (40 CFR 63, Subpart UUUUU) provides for compliance with either the PM limit or total non-mercury HAP metals limits or individual HAP metals. Dominion Energy Virginia is providing PM-10 emissions for the purposes of MATS. HCl and HF emissions were calculated using emission factors from AP-42, Table 1.1-15.

⁷ PJM and Dominion provided the Yorktown July 2017 Run Time and Projected Emissions in the August 24 Report.

Yorktown Units 1 and 2. This value represents filterable fraction of particulate matter and is known as total suspended particulates (TSP). The stack test reference method used, EPA Reference Method 5, uses a filter to capture particulate matter as it exits the stack (filterable particulate). Some particulate matter cannot be captured by a filter because the matter is in a vapor form until it exits the stack and condenses into a particulate. The TSP value does not capture all of what Dominion Energy Virginia refers to as PM-10, which is a calculated value based on the TSP value and represents both the filterable and the condensable fraction of particulate matter emissions. The calculated PM-10 emission factor based on the July 21, 2017, stack test TSP value is 0.1143 lbs/mmBtu and reflected in Attachment 3.

Attachment 4 is Skiffes Creek Construction Transmission Outage Schedule and Yorktown Units 1 and 2 Emission Estimates as of August 18, 2017 (subject to change) revised to account for a revised PM-10 emission factor also reflected in Attachment 3 as well as changes in the Skiffes Creek transmission project construction schedule. This attachment reflects changes from the Skiffes Creek Construction Transmission Outage Schedule and Yorktown Units 1 and 2 Emission Estimates as of August 9, 2017 (subject to change) provided in the August 24 Report.

Attachment 5 is August Yorktown Runtime showing Dominion Energy Virginia zonal load, temperature and heat index for August with Yorktown 2 output MW. This data demonstrates that that PJM dispatched Yorktown Unit 2 for Dom zonal load threshold greater than 18,400 MWs with a planned Skiffes Creek transmission outage shown in Skiffes Creek Construction Transmission Outage Schedule and Yorktown Units 1 and 2 Emission Estimates as of August 18, 2017.⁸

PJM and Dominion Energy Virginia respectfully submits the information in this report be accepted by the Secretary as compliant with the Order's directives to report all dates on which Yorktown

⁸ The Skiffes Creek Construction Transmission Outage Schedule and Yorktown Units 1 and 2 Emission Estimates as of August 18 and the outage schedule as of August 9, 2017 reflect that PJM will dispatch the Yorktown Units when Dominion Zonal load exceeds 18,400 MWs with the 230 kV Warwick-Wheaton 292 transmission line and the Wheaton transformer 2 on a planned outage from July 9 to September 29 to support the construction of the Skiffes Creek project. The 18,400 MWs load threshold is the same load threshold identified in the PJM June 13 2017 Request for Emergency order as Scenario One (increased load due to weather-related temperature extremes). Scenario Two is triggered when load conditions exceed a specific threshold, but the threshold was not lowered with the planned outage of the 230 kV Warwick-Wheaton 292 transmission line and the Wheaton transformer 2.

Units 1 and 2 are operated from June 16 to September 14, 2017 as well as the estimated and actual emissions and water usage data associated with their operations.

Request for CEII Designation

The filing consists of the following:

1. Non Public version of Attachments 4 (password protected containing Critical Energy Infrastructure (“CEII”) material).
2. Public version Attachments 5 (public version with CEII material redacted).

In regard to the Non Public version of Attachments 4, PJM respectfully requests the information submitted to the DOE be designated as CEII pursuant Federal Power Act (“FPA”) Section 215A(d) and the implementing regulations, 18 C.F.R. Section 388.113.

In FAST Act Section 215A(a)(3), CEII is specifically defined as information “designated as critical electric infrastructure information by ... the Secretary of the Department of Energy pursuant to subsection (d).”⁹ Under FPA Section 215A(a)(3), CEII includes information that is submitted to the DOE, and designated as such by DOE.¹⁰ The regulations define CEII in pertinent part as follows:

“1) Critical electric infrastructure information means information related to critical electric infrastructure ... Provided to the Commission or other Federal agency ... that is designated as critical electric infrastructure information by the Commission or the Secretary of the Department of Energy pursuant to section 215A(d) of the Federal Power Act. Such term includes information that qualifies as critical energy infrastructure information under the Commission's regulations. Critical Electric Infrastructure Information is exempt from mandatory disclosure under the Freedom of Information Act, 5 U.S.C. 552(b)(3) and shall not be made available by any Federal, State, political subdivision or tribal authority pursuant to any Federal, State, political subdivision or tribal law requiring public disclosure of information or records pursuant to section 215A(d)(1)(A) and (B) of the Federal Power Act.”

2) Critical energy infrastructure information means specific engineering, vulnerability, or detailed design information about ... existing critical infrastructure that:

- (i) Relates details about the production, generation, transportation, transmission, or distribution of energy;


⁹ FAST Act, Pub. L. No. 114-94, section 61,003, 129 Stat. 1312, 1776.

¹⁰ FAST Act, Pub. L. No. 114-94, section 61,003, 129 Stat. 1312, 1773 (“critical electric infrastructure information means information ... generated by or provided to the Commission or other Federal agency ... that is designated as critical electric infrastructure information by the Commission or the Secretary pursuant to subsection (d)”).

- (ii) Could be useful to a person in planning an attack on critical infrastructure;
- (iii) Is exempt from mandatory disclosure under the Freedom of Information Act, 5 U.S.C. 552; and
- (iv) Does not simply give the general location of the critical infrastructure.”¹¹

PJM and Dominion Energy Virginia submits the redacted information in Attachment 4 is CEII because it provided details about the production, generation and transportation of energy, which if publically available could be useful in planning an attack on critical infrastructure in the North Hampton Road area of the Commonwealth of Virginia namely the electric transmission system.

Respectfully submitted,



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¹¹ 18 C.F.R. Section 388.113(c)(1) and (2).

Attachment 1

(Excel Sheet attached separately)

Yorktown Power
Station Monthly Mass
Emissions for August
that shows the actual
runtime and air
emissions data for
August 2017

Attachment 2

(Excel Sheet attached separately)

Yorktown Power
Station August 2017
Circulating Water
Usage for DOE
Emergency Run per
PJM Dispatch.

Attachment 3

(Excel Sheet attached separately)

Yorktown July 2017
Run Time and Projected
Emissions Updated
August 27 2017 revised
from July 2017 to
account for a revised
PM-10 emission factor.

Attachment 4

Skiffes Creek Construction Transmission Outage Schedule and Yorktown Units 1 and 2 Emission Estimates as of August 18, 2017

PUBLIC VERSION – CEII DATA REMOVED

Skiffes Creek Construction Transmission Outage Schedule and Yorktown Units 1 and 2 Emission Estimates as of August 18, 2017 (subject to change)

Outage	Outage Time Frame	Limiting Contingency	Load Threshold	Hours over Load Threshold**	Days over load threshold **	Dominion Emissions Estimates
Redacted Information is CEII	7/9/17-9/29/17	Redacted Information is CEII	Redacted Information is CEII	87	18	NOx 243.06 SO2 933.11 PM10 52.62 CO2 122,385.60 Pb 0.0100 Hg 0.0015 HCl 22.01 HF 3.56 CO 11.88
Redacted Information is CEII	9/25/17-10/29/17	Redacted Information is CEII	Redacted Information is CEII	0	0	NOx 0.0 SO2 0.0 PM10 0.0 CO2 - Pb 0.0 Hg 0.0 HCl 0.0 HF 0.0 CO 0.0
Redacted Information is CEII	9/29/17-10/27/17	Redacted Information is CEII	Redacted Information is CEII	0	0	NOx 0.0 SO2 0.0 PM10 0.0 CO2 - Pb 0.0 Hg 0.0 HCl 0.0 HF 0.0 CO 0.0
Redacted Information is CEII	10/27/17-01/19/18	Redacted Information is CEII	Redacted Information is CEII	21	4	NOx 54.01 SO2 207.36 PM10 11.69 CO2 27,196.80 Pb 0.0022 Hg 0.0003 HCl 4.89 HF 0.79 CO 2.64
Redacted Information is CEII	10/30/17-1/28/18	Redacted Information is CEII	Redacted Information is CEII	8	3	NOx 40.51 SO2 155.52 PM10 8.77 CO2 20,397.60 Pb 0.0017 Hg 0.0003

PUBLIC VERSION – CEII DATA REMOVED

Skiffes Creek Construction Transmission Outage Schedule and Yorktown Units 1 and 2 Emission Estimates as of August 18, 2017 (subject to change)

						HCl 3.67 HF 0.59 CO 1.98
Redacted Information is CEII	11/13/17-11/17/17	Redacted Information is CEII	Redacted Information is CEII	7	2	NOx 27.01 SO2 103.68 PM10 5.85 CO2 13,598.40 Pb 0.0011 Hg 0.0002 HCl 2.45 HF 0.40 CO 1.32
Redacted Information is CEII	1/8/18-2/4/18	Redacted Information is CEII	Redacted Information is CEII	5	2	NOx 27.01 SO2 103.68 PM10 5.85 CO2 13,598.40 Pb 0.0011 Hg 0.0002 HCl 2.45 HF 0.40 CO 1.32
Redacted Information is CEII	2/5/18-2/25/18	Redacted Information is CEII	Redacted Information is CEII	147	10	NOx 202.55 SO2 777.59 PM10 43.85 CO2 101,988.00 Pb 0.0083 Hg 0.0013 HCl 18.34 HF 2.97 CO 9.90
Redacted Information is CEII	2/26/18-3/25/18	Redacted Information is CEII	Redacted Information is CEII	37	6	NOx 81.02 SO2 311.04 PM10 17.54 CO2 40,795.20 Pb 0.0033 Hg 0.0005 HCl 7.34 HF 1.19 CO 3.96
Redacted Information is CEII	3/26/18-5/6/18	Redacted Information is CEII	Redacted Information is CEII	16	4	NOx 54.01 SO2 207.36 PM10 11.69 CO2 27,196.80 Pb 0.0022 Hg 0.0003 HCl 4.89 HF 0.79 CO 2.64

PUBLIC VERSION – CEII DATA REMOVED

Skiffes Creek Construction Transmission Outage Schedule and Yorktown Units 1 and 2 Emission Estimates as of August 18, 2017 (subject to change)

Redacted Information is CEII	4/23/18-9/23/18	Redacted Information is CEII	Redacted Information is CEII	117	21	NOx 283.57 SO2 1088.63 PM10 61.39 CO2 142,783.20 Pb 0.0116 Hg 0.0018 HCl 25.68 HF 4.16 CO 13.86
Redacted Information is CEII	10/8/18-10/14/18	Redacted Information is CEII	Redacted Information is CEII	0	0	NOx 0.0 SO2 0.0 PM10 0.0 CO2 - Pb 0.0 Hg 0.0 HCl 0.0 HF 0.0 CO 0.0
Redacted Information is CEII	10/8/18-12/9/18	Redacted Information is CEII	Redacted Information is CEII	0	0	NOx 0.0 SO2 0.0 PM10 0.0 CO2 - Pb 0.0 Hg 0.0 HCl 0.0 HF 0.0 CO 0.0
Redacted Information is CEII	10/8/18-12/30/18	Redacted Information is CEII	Redacted Information is CEII	3	1	NOx 13.50 SO2 51.84 PM10 2.92 CO2 6,799.20 Pb 0.0006 Hg 0.0001 HCl 1.22 HF 0.20 CO 0.66
Redacted Information is CEII	10/15/18-10/21/18	Redacted Information is CEII	Redacted Information is CEII	40	1	NOx 54.01 SO2 207.36 PM10 11.69 CO2 27,196.80 Pb 0.0022 Hg 0.0003 HCl 4.89 HF 0.79 CO 2.64
Redacted Information is CEII	10/22/18-10/28/18	Redacted Information is CEII	Redacted Information is CEII	0	0	NOx 0.0 SO2 0.0 PM10 0.0

PUBLIC VERSION – CEII DATA REMOVED

Skiffes Creek Construction Transmission Outage Schedule and Yorktown Units 1 and 2 Emission Estimates as of August 18, 2017 (subject to change)

						CO2 - Pb 0.0 Hg 0.0 HCl 0.0 HF 0.0 CO 0.0
Redacted Information is CEII	10/29/18-11/11/18	Redacted Information is CEII	Redacted Information is CEII	0	0	NOx 0.0 SO2 0.0 PM10 0.0 CO2 - Pb 0.0 Hg 0.0 HCl 0.0 HF 0.0 CO 0.0
			Total Estimate	488	81	NOx 1093.77 SO2 4199.00 PM10 236.78 CO2 550,735.20 Pb 0.0449 Hg 0.0069 HCl 99.04 HF 16.04 CO 53.47

*Outages scheduled to complete 12/30/18.

** Estimates are for both Yorktown 1 & 2 units.

		07-2017	08-2017	09-2017	10-2017	11-2017	12-2017	01-2018	02-2018	03-2018	04-2018	05-2018	06-2018	07-2018	08-2018	09-2018	10-2018	11-2018	12-2018
Days over load threshold **		9	9	0	0	2	2	7	17	4	3	1	0	10	9	2	5	0	1
Hours over Load Threshold*		39	48	0	0	7	7	27	158	26	13	3	0	55	59	3	40	0	3

PUBLIC VERSION – CEII DATA REMOVED

Skiffes Creek Construction Transmission Outage Schedule and Yorktown Units 1 and 2 Emission Estimates as of August 18, 2017 (subject to change)

*																				
Dominion Emission Estimates (tons)	NOx	97.89	6.0	0.0	0.0	27.01	27.01	94.52	229.56	54.01	40.51	13.50	0.0	135.03	121.53	27.01	67.52	0.0	13.50	
	SO2	391.87	20.8	0.0	0.0	103.68	103.68	362.88	881.27	207.36	155.52	51.84	0.0	518.39	466.56	103.68	259.20	0.0	51.84	
	PM10	25.32	1.53	0.0	0.0	5.85	5.85	20.46	49.69	11.69	8.77	2.92	0.0	29.23	26.31	5.85	14.62	0.0	2.92	
	CO2	49,173.9	2741.4	-	-	13,598.4	13,598.4	47,594.4	115,586.4	27,196.8	20,397.6	6,799.2	-	67,992.0	61,192.8	13,598.4	33,996.0	-	6,799.2	
	Pb	0.0040	0.00561	0.0	0.0	0.0011	0.0011	0.0039	0.0094	0.0022	0.0017	0.0006	0.0	0.0055	0.0050	0.0011	0.0028	0.0	0.0006	
	Hg	0.0008	0.00004	0.0	0.0	0.0002	0.0002	0.0006	0.0014	0.0003	0.0003	0.0001	0.0	0.0008	0.0008	0.0002	0.0004	0.0	0.0001	
	HCl	11.48	0.6387	0.0	0.0	2.45	2.45	8.56	20.79	4.89	3.67	1.22	0.0	12.23	11.00	2.45	6.11	0.0	1.22	
	HF	1.43	0.07984	0.0	0.0	0.40	0.40	1.39	3.37	0.79	0.59	0.20	0.0	1.98	1.78	0.40	0.99	0.0	0.20	
	CO	4.78	0.26614	0.0	0.0	1.32	1.32	4.62	11.22	2.64	1.98	0.66	0.0	6.60	5.94	1.32	3.30	0.0	0.66	

Figures highlighted in green are actual emission data for the month

Attachment 5

(Excel Sheet attached separately)

August Yorktown
Runtime showing
Dominion Energy
Virginia zonal load,
temperature and heat
index for August with
Yorktown 2 output MW