



# Chesterfield Energy Reliability Center

## DEQ Public Briefing

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# Overview

- Purpose of this briefing
- Background of Chesterfield Power Station
- Air emission trends for Chesterfield Power Station
- Current Chesterfield Energy Reliability Center (CERC) Proposal
- Federal and State agencies involved
  - DEQ permits involved
- Details of proposed CERC operations
- Anticipated air emissions and air pollution controls
- Public comment period
- Q&A

# Purpose of Public Briefing

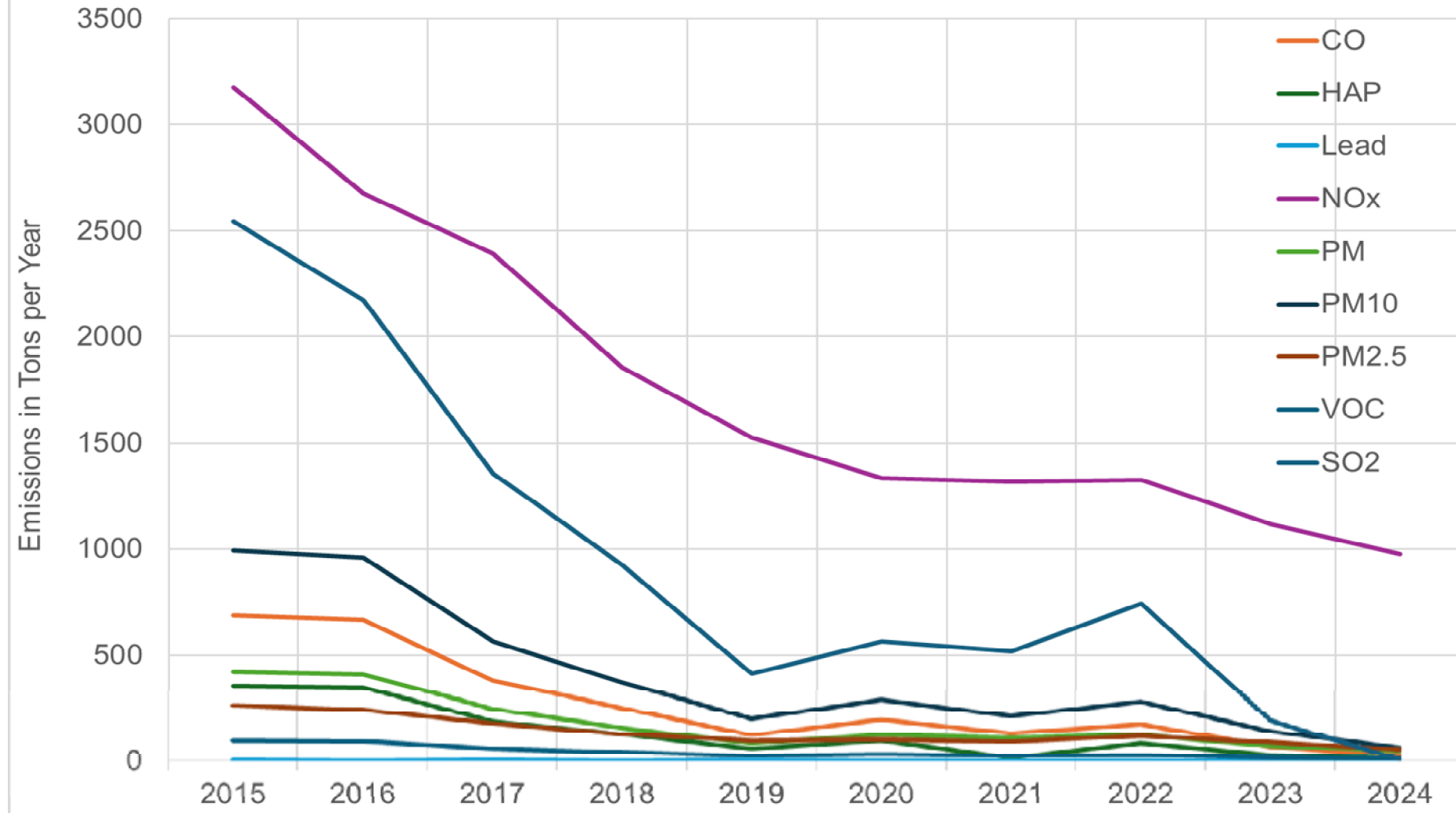
- Explain the air permitting process to assist the public's ability to provide meaningful comments on the draft air permit
- Provide a simple and brief overview of the DEQ's draft air permit
- Answer questions related to the permitting process for the proposed CERC air pollution control permit
- Note that comments and questions tonight will not be considered as formal comments and will not be part of the formal record

# Chesterfield Power Station Background

- Since 1944, a powerplant has been at this site
  - Used coal-fired boilers to create steam for power generators
- March 2019 - Coal units 3 and 4 were shutdown
- May 2023 – Coal units 5 and 6 were shutdown, no more coal burning at the site

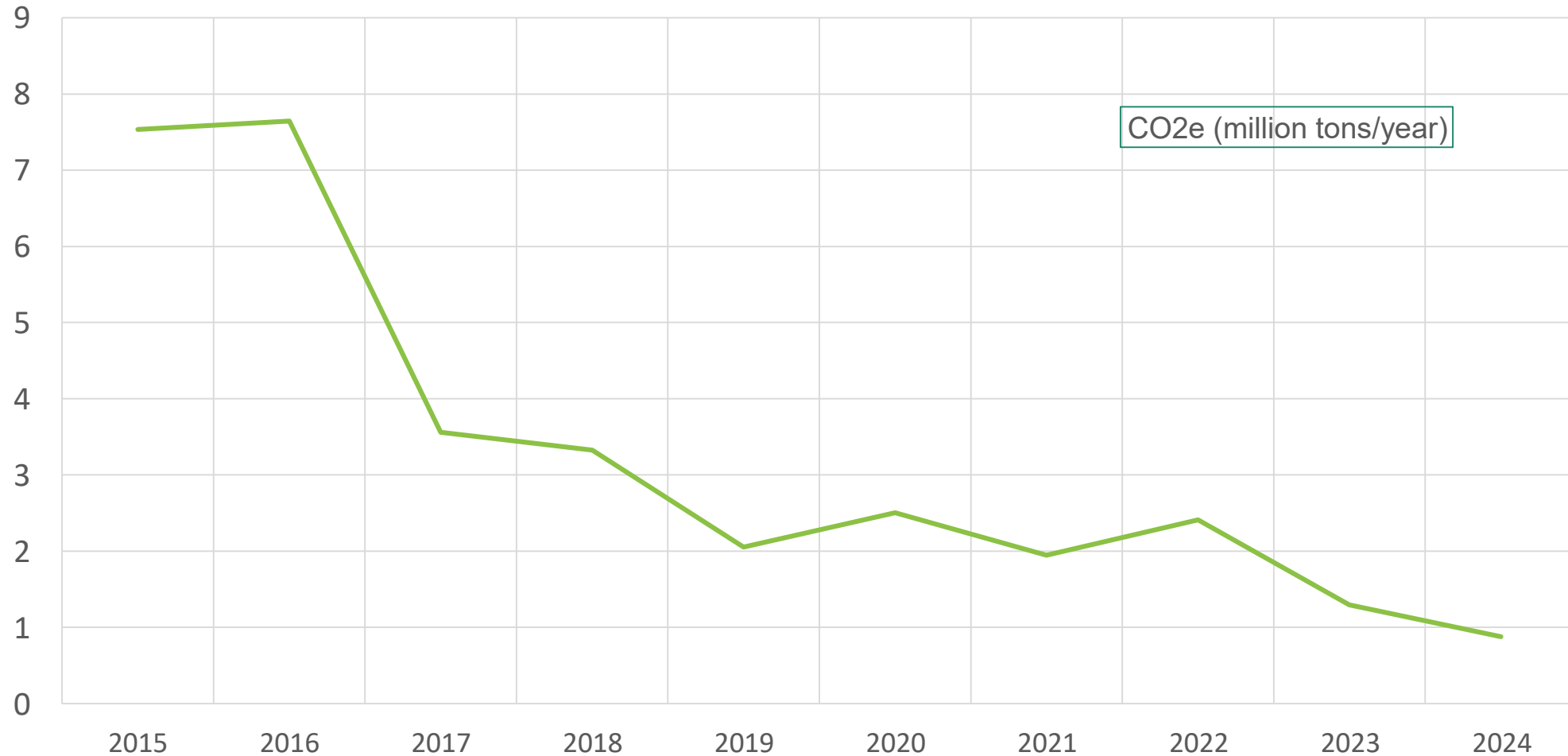


# Air Pollution Trends for the Chesterfield Power Station: Actual Emissions from 2015 through 2024



# CO<sub>2</sub>-equivalent Trends for the Chesterfield Power Station

based on fuel usage for all units from 2015 through 2024



# What is at the Chesterfield Power Station now?

- Two small turbines that burn natural gas and oil
  - Constructed in 1990
  - Can create up to 420 MW of power (generating capacity)
- Coal Combustion Residual (CCR) excavation to transfer the coal ash to a landfill or remove for recycling/reuse
- Assorted small emergency generators (too small for permit)
  - three emergency generators
  - a small fire pump

# DEQ Air Permits - Chesterfield Power Station

- Title V permit (all applicable requirements for major source)
- Minor new source review (NSR) permit related to management of Coal Combustion Residuals (CCR)
- State operating permit
  - The two smaller combustion turbines
  - The permit requirements for the coal boilers and associated equipment have been rescinded



# What is Being Proposed?

- Dominion's stated purpose for the proposed **Chesterfield Energy Reliability Center (CERC)**
  - “to support the clean energy transition while optimizing reliability and economics for power customers”
- Available, when needed, to provide additional power to the grid if demand for electricity is high and the supply might not be enough to meet demand



# Federal and State Regulatory Reviewing Agencies



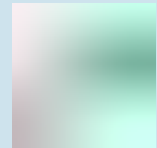
Federal Energy Regulatory Commission (FERC) (<https://www.ferc.gov>)  
Interstate powerlines (electricity)



Pennsylvania, New Jersey, Maryland Regional Transmission Organization (PJM) (<https://pjm.com>)  
Regional electric grid reliability



Virginia State Corporation Commission (SCC) (<https://www.scc.virginia.gov>)  
Power plants, transmission lines, natural gas pipelines, also electric rate changes, etc.



Environmental Protection Agency (EPA). (<https://www.epa.gov>)  
Human health and the environment



**Virginia Department of Environmental Quality (DEQ)** (<https://www.deq.virginia.gov>).  
Human health and the environment, receives permission from EPA to write permits

## About the PSD Permit

- PSD applies to larger emitters in areas of the United States where the air quality is good (DEQ Ambient Air Quality Monitoring)
- The permit requires air pollution controls and enforceable limits
  - Testing (by Dominion, reviewed by DEQ)
  - Monitoring (by Dominion, reviewed by DEQ)
  - Reporting (by Dominion, reviewed by DEQ and EPA)
  - Inspecting (by Dominion and DEQ)
- DEQ makes sure that the emission limits in the air permit protect air quality (DEQ Air Modeling)

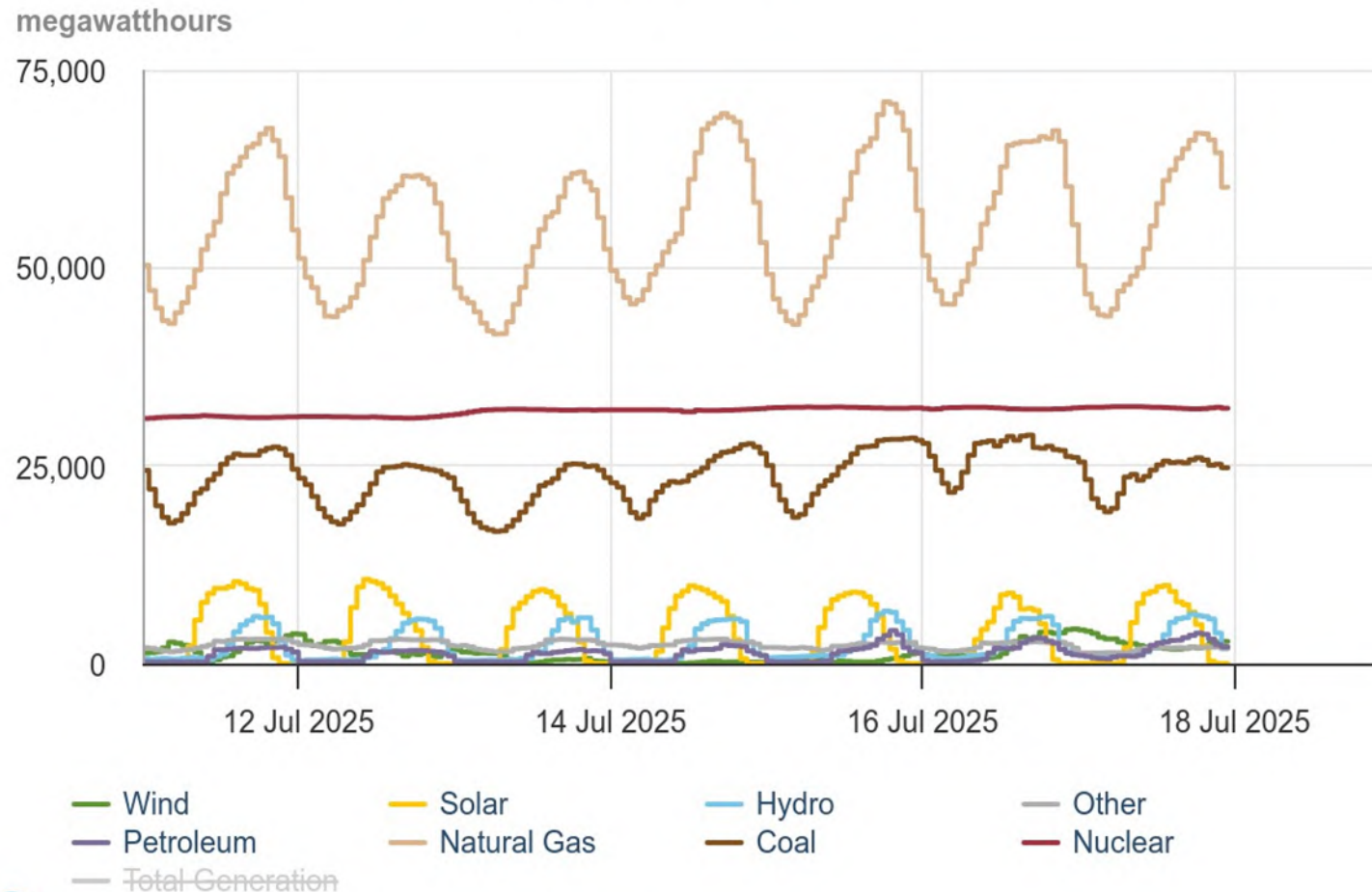
## Proposed Operation: Four 250 MW Turbines

- Request to add four 250 MW turbines (combined 1000 MW)
- It may be necessary to start up a turbine if the electricity demand is predicted to be more than the electricity produced by the resources below
  - Baseload turbines operating
  - Nuclear plants operating
  - Hydroelectric plants operating
  - Renewables operating
  - Energy storage devices utilized
- This will most likely occur on a very cold night or a very hot afternoon but may also occur during load shedding (brown outs)



# Example of sources of electricity generation in the PJM region and how much electricity they generated in a week in July

PJM Interconnection, LLC (PJM) electricity generation by energy source 7/11/2025 – 7/18/2025, Eastern Time



# Proposed Operation: Black Start Engine Generator

- Currently, they have zero black start engine generators
- Request to add seven 3500 KW black start engine generators
- Specialized to start without the power grid, used in the rare emergency event if a grid shut-down occurs
- Like an emergency generator for the turbine to restore the grid
- Having seven engines allows for a backup if one of the other generators failed to operate or were offline for repair or maintenance in such an emergency



## Other Emissions Sources associated with the CERC

- Fuel Gas Heater
  - Small burner burns natural gas when gas feeding the turbines needs to be warmed before it is burned
- Fuel oil tanks (storage)
- Circuit breakers
  - Prevent damage to turbines and generator, if power goes out
- Fugitive emissions of natural gas (pipeline fittings or maintenance)





# Air Permit Process Overview

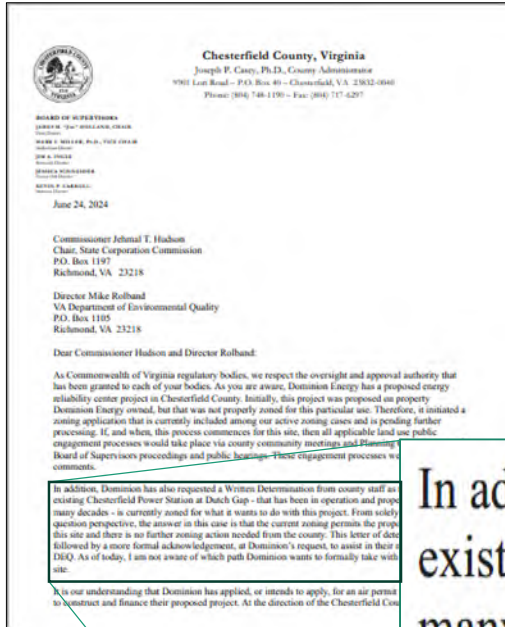
- Permits required for new facilities or projects (new or expanded construction) at existing facilities
- Facility submits a permit application for permit to construct and/or modify and operate
  - DEQ reviews application for regulatory applicability and compliance
  - DEQ receives a permit application fee
  - DEQ reviews the local government certification form and site suitability form

# Site Suitability Determination - The Rule

§10.1-1307.E.3 - The suitability of the activity to the area in which it is located, except that consideration of this factor shall be satisfied if the local governing body of a locality in which a facility or activity is proposed has resolved that the location and operation of the proposed facility or activity is suitable to the area in which it is located.



# Site Suitability - Letter from Chesterfield County dated June 24, 2024



In addition, Dominion has also requested a Written Determination from county staff as to whether the existing Chesterfield Power Station at Dutch Gap - that has been in operation and properly zoned for many decades - is currently zoned for what it wants to do with this project. From solely a land use question perspective, the answer in this case is that the current zoning permits the proposed project at this site and there is no further zoning action needed from the county. This letter of determination was followed by a more formal acknowledgement, at Dominion's request, to assist in their next steps with DEQ. As of today, I am not aware of which path Dominion wants to formally take with regard to either site.

## Site Suitability – DEQ’s July 1, 2024 response to Chesterfield County’s letter

“With respect to two other issues related to your June 24 letter, DEQ considers your letter as notification that in the event Dominion Energy locates the proposed CERC project on the site of the existing Chesterfield Power Station, the location and operation of the project is consistent with all applicable Chesterfield County ordinances and zoning conditions as required by Va. §Code 10.1-1321.1.

In addition, DEQ considers your June 24 letter as notification that in the event Dominion Energy locates the proposed CERC project on the site of the existing Chesterfield Power Station, Chesterfield County has determined that the site is suitable for the project pursuant to Va. Code 10.1-1307 E. If that was not the intent of your June 24 letter, please clearly so indicate to me in writing within 15 business days of your receipt of this letter.”



## Air Permit Process Overview (cont'd)

- DEQ reviews application
  - Type and quantity of pollutants emitted
  - Applicable federal and state regulations
  - Reviews Best Available Control Technology (BACT)
  - Reviews any necessary air quality analyses – computer program models ambient air concentrations based on permitted emission rates and other factors
- DEQ requires monitoring, recordkeeping and reporting to assure compliance

# Air Pollution Controls

- The air permit process requires DEQ to evaluate proposed air pollution controls for the project and compare them with similar projects
- DEQ ran a report of all U.S. quick-start power plants that started operating in the last ten years to evaluate their emissions
- The proposed emissions from CERC match or are lower than similar facilities that are currently operating. Therefore, the proposed limits have been determined to be BACT for this facility

# Best Available Air Pollution Control Technology (BACT)

Unit	Pollutant	Primary BACT Limit	Control	Compliance
Each Turbine	<i>NOx</i>	2.5 ppmvd on NG 5.0 ppmvd on #2 oil	DLN burners/SCR Water injection/SCR	Initial stack test on both fuels & NOx CEMS 4-hr avg
	<i>CO</i>	2.0 ppmvd on all fuels	Oxidation catalyst Good combustion practices	CO CEMS 4-hr avg
	<i>PM10 &amp; PM2.5</i>	0.014 lb/MMBtu on natural gas 0.04 lb/MMBtu on #2 fuel oil	Low sulfur/carbon fuel and good combustion practices	Stack test, three 1-hr tests
	<i>VOC</i>	1.0 ppmvd on natural gas 2.0 ppmvd on #2 fuel oil	Oxidation catalyst Good combustion practices	Stack test and CO CEMS 3-hr average
	<i>SO<sub>2</sub></i>	0.0034 lb/MMBtu	Low sulfur fuel	Fuel monitoring, stack test
	<i>H<sub>2</sub>SO<sub>4</sub></i>	0.0023 lb/MMBtu on natural gas 0.0013 lb/MMBtu on #2 oil	Low sulfur fuel	Fuel monitoring
	<i>CO<sub>2e</sub></i>	120 lb CO <sub>2e</sub> /MMBtu on natural gas 160 lb CO <sub>2e</sub> /MMBtu on fuel oil	Energy efficient combustion practices and low GHG fuels	Stack test for CO <sub>2</sub> while measuring heat input for both fuels then calculation
Each Black Start Generator	<i>NOx</i>	4.48 g/kW-hr	Good combustion practices	Purchase Tier 2 certified engines
	<i>CO</i>	3.5 g/kW-hr	Good combustion practices	Purchase Tier 2 certified engines
	<i>PM10 &amp; PM2.5</i>	0.23 g/kW-hr	Low sulfur fuel and good combustion practices	Purchase Tier 2 certified engines
	<i>VOC</i>	1.92 g/kW-hr	Good combustion practices	Purchase Tier 2 certified engines
	<i>SO<sub>2</sub></i>	0.00154 lb/MMBtu	#2 fuel with 15 ppm S	Fuel certification and hours of operation
	<i>H<sub>2</sub>SO<sub>4</sub></i>	0.00012 lb/MMBtu	#2 fuel oil with 15 ppm S	Fuel monitoring
	<i>CO<sub>2e</sub></i>		High efficiency design and operation and good combustion practices	Records of manufacturer's operating procedures and maintenance.
Fug.	<i>CO<sub>2e</sub></i>		BMP, monitoring and leak repair plan	recordkeeping



# Modeling Results

## NAAQS Analysis Results

Pollutant	Averaging Period	Total Modeled Concentration ( $\mu\text{g}/\text{m}^3$ )	Ambient Background Concentration ( $\mu\text{g}/\text{m}^3$ )	Total Concentration ( $\mu\text{g}/\text{m}^3$ )	NAAQS ( $\mu\text{g}/\text{m}^3$ )	% of NAAQS
NO <sub>2</sub>	1-hour	169.83	--- <sup>(1)</sup>	169.83	188	90.34
NO <sub>2</sub>	Annual	11.86	7.5	19.36	100	19.36
SO <sub>2</sub>	1-hour	136.73	7.9	144.63	196	73.79
SO <sub>2</sub>	3-hour	84.88	8.9	93.78	1,300	7.21
SO <sub>2</sub>	Annual	4.32	0.8	5.12	26	19.69
PM-10	24-hour	32.73	24	56.73	150	37.82
CO	1-hour	5,569.81	1,610	7,179.81	40,000	17.95
CO	8-hour	3,613.40	1,380	4,993.40	10,000	49.93
PM-2.5	24-hour	11.97 <sup>(2)</sup>	12.0	23.97	35	68.49
PM-2.5	Annual	2.34 <sup>(2)</sup>	5.8	8.14	9	90.44

<sup>(1)</sup> Season and hour of day varying

<sup>(2)</sup> Concentration includes the contribution from secondary PM-2.5 formation.



# Modeling Results (cont'd)

## PSD Increment Modeling - Cumulative Impact Results

Pollutant	Averaging Period	Modeled Concentration ( $\mu\text{g}/\text{m}^3$ )	Class II PSD Increment ( $\mu\text{g}/\text{m}^3$ )
PM <sub>2.5</sub>	24-hour	3.87 <sup>(1)</sup>	9
	Annual	1.11 <sup>(1)</sup>	4

<sup>(1)</sup> Concentration includes the contribution from secondary PM-2.5 formation.

### *NAAQS and PSD Increment Analyses Conclusions*

Based on DEQ's review of the NAAQS and PSD increment analyses, assuming DEQ's regional office processing the permit application approved all of the emission estimates and associated stack parameters for the modeled scenarios, the proposed Project does not cause or significantly contribute to a predicted violation of any applicable NAAQS or Class II area PSD increment.

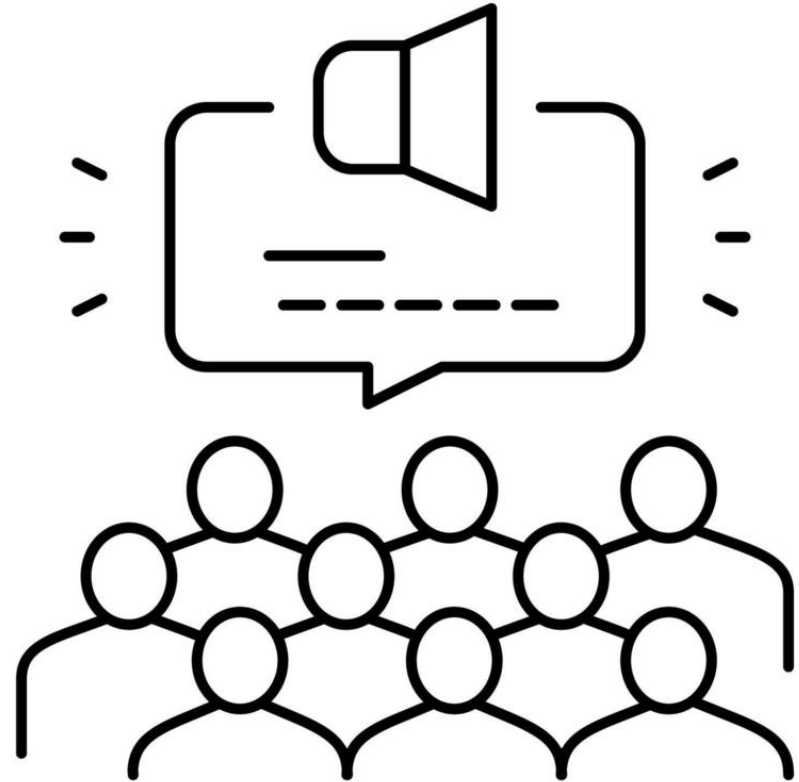
# Chesterfield Power Station: Proposed Permitted Emissions\* (in tons per year)

PM10	PM2.5	CO	NOx	SO <sub>2</sub>	VOC	H <sub>2</sub> SO <sub>4</sub>	Lead	CO <sub>2</sub> e
153.5	153.5	825.3	353.3	27.8	162.5	18.6	0.01	2,215,000

\*Only the “criteria” pollutants listed above were evaluated for PSD and minor NSR permitting (CO<sub>2</sub>e is not a criteria pollutant but it is a regulated pollutant for PSD analysis). Hazardous air pollutants (HAP) from this facility, like formaldehyde, are regulated by federal requirements known as National Emission Standards (NESHAP), specifically Maximum Achievable Control Technology (MACT), Subpart YYYY for combustion turbines. Therefore, the emission of “toxic pollutants,” as defined by regulation (9VAC5-60-310.C), are not subject to minor NSR permitting (as per 9VAC5-60-300.C.4). Requirements from the federal MACT regulation will be included in the Title V permit, when it is revised for this project. The facility must operate in compliance with the MACT even if no permit conditions exist.

# Public Comment

- DEQ drafts permit documents
  - May hold a public briefing if there is interest
  - Is required to hold a public comment period and hearing for a PSD permit



# Upcoming Opportunity to Comment

- Tomorrow (**August 8**) will be the start of the 60-day public comment period for the draft permit. A notice will appear in the Richmond Times-Dispatch and on the DEQ website explaining how to send us comments by mail or by email. DEQ accepts comments throughout the entire public comment period (Town Hall, too). All the proposed draft documents will be available for review on DEQ's website
- If you want to comment in person, a public hearing is scheduled for **September 8** (you do not need to request one). Comments received at the hearing do not receive any extra consideration. All oral comments are recorded, transcribed and compiled with the written comments as part of the permit record
- The public comment period will end 30 days after the hearing, on **October 8**

## More Information

- CERC Website



- Sign up for updates



# Recap

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# Questions?