



Data Center Air Permitting in Virginia

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Logistics

- ❑ How can I ask questions?
 - Please enter your questions in the Questions box.
 - There will be a Q&A at the end.
- ❑ Will I get a certificate of completion?
 - Yes, all attendees will automatically be sent a certificate of completion a few hours after the webinar concludes.
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Overview

- ❑ Regulatory Background for Air Permits
- ❑ Federal vs. State Air Permitting
- ❑ Emission Source Types
- ❑ Early Permitting Considerations
- ❑ Challenges
- ❑ Nuances of Virginia Air Permitting
- ❑ Timeline and Post-Submittal Actions



Federal Regulatory Background



- ❑ Clean Air Act (CAA) and CAA Amendments
 - Established National Ambient Air Quality Standards (NAAQS)
 - Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NNSR)
 - Created the Operating Permit Program (Title V of the CAAA of 1990)
 - Established Standards of Performance for New Stationary Sources (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP)
 - NSPS IIII or JJJJ (engines)
 - NESHAP ZZZZ (engines)
 - NSPS KKKK or KKKKa (turbines)



Federal/State Air Permitting

- ❑ Federal construction permitting through New Source Review (NSR)
 - If area is classified as in attainment with NAAQS, falls into PSD permitting
 - Major source threshold for data centers of 250 tons/year of a criteria pollutant
 - Combined cycle turbines (steam generation) reduces this threshold to 100 tons/year
 - If area is classified as in nonattainment NAAQS, falls into Nonattainment NSR permitting
 - Major source thresholds vary based on classification (Moderate, Serious, Severe, or Extreme)
 - Lengthy permitting process for major sources with extensive modeling, emissions offsets, public input, and/or emissions control requirements
 - These programs consider “project” emissions – may be facility-wide or a subset
- ❑ Avoid Major NSR by taking federally enforceable operating limits and permit as a Synthetic Minor Source



Federal/State Air Permitting

- ❑ Each state has its own air quality program to meet U.S. EPA commitments and targets
 - Air pollution control regulations
 - Air permitting program, including key thresholds and exemptions
 - Required forms and other construction permit application components
 - Air dispersion modeling requirements
 - Short term emission rate requirements
 - Identification of pollutants of concern
 - Air compliance/enforcement program
- ❑ Federal construction permitting is typically conducted at the state level, although it may involve U.S. EPA input



Federal/State Air Permitting

- ❑ In addition to construction permitting, operating permits may be required
 - Major Source Title V Operating Permit
 - Threshold is 100 tons/year for criteria pollutants unless further nonattainment designation lowers thresholds
 - Federal program, but issued at the state level
 - This program considers aggregated emissions from entire facility/campus
 - Minor Source (True or Synthetic)
 - Some states require their own operating permit
 - *Virginia has a State Operating Permit but rarely used for data centers*



Emission Sources at Data Centers

- ❑ Air permitting for data centers is typically driven by engines
 - Diesel-fired generators (NSPS Subpart IIII)
 - Natural gas-fired generators (NSPS Subpart JJJJ)
- ❑ Natural gas-fired combustion turbines (NSPS Subpart KKKK or KKKKa)
- ❑ Fuel cells
- ❑ Emission controls (if required)
- ❑ Evaporative cooling equipment (e.g., cooling towers)
- ❑ Fuel storage tanks (typically air permit exempt)



Early Permitting Considerations

- ❑ Many factors affect air permitting, but considering air permitting early in process might influence aspects of the project
 - Size of Data Center (MW, number of buildings, etc.)
 - Attainment vs. Nonattainment and impact on Major source thresholds
 - Ownership of Data Center
 - Same LLC/owner vs. separate owners
 - Common operatorship could also play a role (see APG-204 VA guidance document)
 - Construction Schedule or Phasing



Early Permitting Considerations

❑ Additional factors to consider:

- Number of generators needed and how they will be operated
 - Emergency vs. Non-emergency
 - Emergency Demand Response
- Customer operating requirements
- Evaluate need for emissions controls and associated financial cost
- Evaluate on-site power generation due to limits on utility availability
 - Separate owner vs. data center owner
 - Additional emissions sources
- Air Dispersion Modeling
- Location of the facility [e.g., in Environmental Justice (EJ) area, community perception of data centers]

Early Permitting Considerations

- ❑ Air Permitting strategy culminates in the three main considerations:
 - Regulatory burden
 - Difference in permitting programs (Major vs. Synthetic Minor)
 - Operational flexibility
 - Total operating hours or fuel consumption allowed
 - Capital cost
 - Emissions controls



Challenges

- ❑ Evolving Regulatory Landscape
 - Redesignation of attainment status
 - Potential for changing requirements
- ❑ Receptiveness of communities, public perception
- ❑ Building in states that are unfamiliar with data centers
 - VA, especially northern VA, is **very** familiar with data centers
- ❑ Power needs – both denser power on-site and power availability





Nuances of Virginia Air Permitting

Virginia Air Permitting: 5 Things to Know

#1: New Tier 4 Equivalent Requirement

- ❑ Air Permit Applications submitted to VADEQ on or after July 1, 2026: data centers must use ***Tier 4 equivalent engines***
 - Previous: Tier 2/Tier 3 engines meeting NO_x emissions standard of 6 g/bhp-hr
 - Generators permitted before July 1, 2026, will NOT require automatic retrofits; if modified, uncertain if new BACT will be considered
- ❑ Where guidance (APG-576) and signed HB507 legislation differ, legislation wins
- ❑ Tier 4 Equivalent Engines
 - New NO_x emissions standard of 0.6 g/bhp-hr (Compliance demonstration: >90% testing)
 - Must meet Tier 4 standards but no need for controls if can comply without them
 - Compare worst-case emissions factors to Tier 4 standards x 1.25 scaling factor
 - This accounts for the Tier 4 standards being weighted averages
 - No exemption for administrative or redundant generators; only fire or water pumps are exempt as not engine generator sets



Virginia Air Permitting: 5 Things to Know

#1: New Tier 4 Equivalent Requirement

- ❑ Open Questions – Working Closely with VADEQ – stay tuned for ALL4’s blog!
 - VADEQ is working on guidance document and Q&A
 - What must be included by July 1, 2026, for a complete application?
 - For now, assume everything, including fee and approved local forms
 - What changes can a facility make to their application while VADEQ reviews?
 - For now, none – VADEQ has received guidance to not process an application until it is deemed complete; no mid-review generator changes
 - What happens if you modify a permit for “grandfathered” generators?
 - Still undergoing discussion, particularly if permitted and installed, and permitted but not yet installed may be evaluated differently
 - Is there risk to add new equipment and not change existing equipment?
 - Still undergoing discussion

Virginia Air Permitting: 5 Things to Know

#2: Emergency Generator Operating Limitations

- ❑ Emergency Power Generation
 - When primary power is disrupted (grid failure, on site disaster, public service emergency)
 - Sept 2025 guidance document – ***unforeseeable*** grid outage with ***less than 14-days notice***, can use permitted equipment
- ❑ ISO-declared Emergency
 - Federal Rules (NSPS Subpart IIII, etc.) limit this operation, as does VADEQ
- ❑ Scheduled Maintenance Checks and Readiness Testing (MCRT)
 - Monthly, quarterly, annual scheduled/planned runs
- ❑ Unscheduled Maintenance, Testing, Operator Training
- ❑ Ozone Season (for newer air permits, May 1 thru Sept. 30, 7am – 5pm)
 - Except during the integration period after startup (with limitations), **generators cannot run** for planned reasons during this period without a waiver

Operating Limits (hours or fuel) in permit include *ALL Generator Operation*



Virginia Air Permitting: 5 Things to Know

#3: Virginia Nonattainment Areas

- ❑ Northern Virginia – Moderate Nonattainment for 2015 eight-hour ozone standard
 - Major Source Thresholds are 100 tons/year for NO_x and VOC
 - Alexandria City, Arlington County, Fairfax City, Fairfax County, Falls Church City, Loudoun County, Manassas Park City, Manassas City, Prince William County
- ❑ Ozone Transport Region
 - U.S. EPA designated certain areas of the country as Ozone Transport Regions (OTRs)
 - Subject to more strict regulations to reduce ozone precursors (NO_x and VOC)
 - **Reduces Major Source Threshold for VOC to 50 tons/year**
 - Overlaps with NOVA nonattainment areas



Virginia Air Permitting: 5 Things to Know

#4: Main Air Permitting Pathways in Virginia, Minor Sources:

Minor Sources	Major Sources	
	In an Attainment Area	In a Nonattainment Area
General Permit True Minor NSR Synthetic Minor NSR	State Major + Title V PSD + Title V	Nonattainment NSR <i>(if major source pollutant is NOx or VOC)</i>

□ General Permit

- VA has a specific general permit for emergency generators
- Rarely used for data centers due to limit on aggregated electrical output of generators

□ True or Synthetic Minor NSR Permit

- Most common permit for data centers in Virginia
- True Minor: No operating limits needed to remain below major source thresholds
- Synthetic Minor: Accept voluntary, enforceable operating limits (hours or fuel limit) so that facility-wide emissions are below major source thresholds



Virginia Air Permitting: 5 Things to Know

#4: Main Air Permitting Pathways in Virginia, Major Sources:

❑ **State Major**

- Facility-wide emissions are above TVOP thresholds but below Major NSR thresholds
- Permit applications subject to air quality modeling and public comment
- Permitting process is longer (public notice and modeling), and permitting fee is much higher

❑ **PSD Permit**

- Facility-wide emissions are above one or more major source thresholds in an attainment area
- PSD is federal pre-construction permitting program
- Permit applications require more components, and process is longer (BACT, public notice, and modeling), and ongoing compliance more burdensome (higher fees and additional reporting)

❑ **Nonattainment NSR (NNSR)**

- Facility-wide emissions are above one or more major source thresholds in nonattainment area
- NNSR is federal pre-construction permitting program
- Process to obtain a permit is burdensome, costly, and lengthy; in addition to Lowest Achievable Emissions Rates (LAER), lack of emissions offsets in Northern VA creates risk

- ❑ Major Sources also require a Title V, a federal operating permit: it consolidates all permit conditions, but exposes Facility to more compliance oversight, reporting, and higher permitting and annual fees



Virginia Air Permitting: 5 Things to Know

#5: Miscellaneous Permitting Notes

- ❑ Local Governing Body + Site Suitability/Value Forms
 - VADEQ requires greenfield sites to submit forms to local authority (county or city)
 - The locality must sign both forms for an application to be “complete”
- ❑ Source Aggregation
 - Per VADEQ guidance, sources with the same owner and business function less than 0.25 miles from each other may be considered a single source
 - Sources less than 0.125 miles from each other will tend to be aggregated; between 0.125 and 0.25 miles is determined case-by-case
 - Single source = emissions are aggregated on permit, harder to avoid major source
 - Different LLC doesn't mean a different owner, VADEQ follows ownership to the top
 - Aggregation of power generation facility with data center, even if different entities, is likely



Virginia Air Permitting: 5 Things to Know

#5: Miscellaneous Permitting Notes

- ❑ Nonroad engines
 - If meets the definition (portable in nature, less than 12 months), exempt from air permitting, regardless of quantity or purpose (prime vs. back-up)
 - Because no air permit, ozone season restrictions do not apply
 - Although no permit needed, mindfulness recommended of public opinion/perception
- ❑ Environmental Justice – HB 1266 - Permitting Guidance must be final 12/31/2026
 - VADEQ to evaluate how to assess cumulative impact; Informal public comment in Summer 2026; Official public comment in Fall 2026
 - HB 256: Many localities are also directed to develop comprehensive plans/EJ strategies
- ❑ Use Virginia Permit Transparency (VPT) and Permitting Enhancement and Evaluation Platform (PEEP) resources to track permits/permit applications
 - <https://www.deq.virginia.gov/news-info/shortcuts/track-a-permit>
- ❑ VADEQ-issued guidance for data centers and all data center permits
 - <https://www.deq.virginia.gov/news-info/shortcuts/permits/air/issued-air-permits-for-data-centers>



Virginia Air Permitting: Best Practices

- ❑ Set up a pre-application meeting with VADEQ
 - Discuss project, ensure correct permitting program, and resolve questions
- ❑ VADEQ is responsive to questions
 - Reach out by phone or email
- ❑ Initial Letter of Determination (ILOD)
 - After an application is submitted, VADEQ will issue an ILOD within 30 days
 - ILOD addresses outstanding questions and provides a completeness determination
- ❑ Submittals typically made via email to Regional Air Permit Manager



Virginia Air Permitting: Timeline

- Typical VADEQ processing time (after application is submitted)

Application Type	Typical Processing Time
Synthetic Minor NSR	4-6 Months
State Major + Title V	6-12 Months
Major NSR + PSD	1-2 Years

- VADEQ *does not have* an expedited permitting option



Virginia Air Permitting: Cost

- ❑ VADEQ has the following permitting fees for CY2026

Application Type	Initial Permit/Major Modification	Amendment/Modification /Renewal
Synthetic Minor NSR	\$4,240	\$1,413
State Major + Title V	\$35,334 (State Major) + \$49,467 (Title V)	\$21,200 (Title V Renewal) \$5,656 (Title V Mod)
Major NSR (PSD/NNSR) + Title V	\$89,041 (Major NSR) + \$49,467 (Title V)	\$14,133 (Major NSR) Same Title V Fees as Above

- ❑ Permit fees increase each calendar year by Consumer Price Index
- ❑ Permit fees are “per permit action”, not “per equipment” – handy for large projects!
- ❑ These do not include ongoing annual emissions fees



Air Permit Application Submitted, Now What?

- ❑ Respond to any VADEQ additional information requests, such as ILOD
- ❑ Review draft permit, provide comments/questions
- ❑ Review final permit
- ❑ Prepare for monthly and annual recordkeeping (i.e., tracking tool)
- ❑ Prepare for performance testing (emissions and visible emissions)
- ❑ Annual Update Report/Annual Emissions Report (sent annually by VADEQ)
- ❑ Non-air considerations:
 - Storage tank registration (not required for belly/sub-base tanks)
 - Spill Prevention, Control, and Countermeasure (SPCC) Plan and associated training typically required
 - Emergency Planning and Community Right-to-Know Act (EPCRA) Tier II Report



Questions or Comments?

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