



**HOA ROUNDTABLE**  
PROTECTING COMMUNITIES  
ADVOCATING QUALITY OF LIFE &  
PROPERTY VALUES IN NORTHERN  
VIRGINIA



Protect ~~F~~ Fauquier

## Northern Virginia HOA & Civic Associations' Collaborative Data Center Design and Construction Recommendations

The HOA Roundtable of Northern Virginia (HOA Roundtable) founded in Prince William County, joins in partnership with the Loudoun Coalition of Homeowners and Condominium Associations (LCHCA), and Protect Fauquier, to engage an inter-jurisdictional, resident-based collaboration to recommend design and construction standards for data center facilities. These standards were created with respect to residential quality of life and property value in the Northern Virginia region. They are not intended to limit recommendations by our respective organizations, or others for any purpose, but to convey what we as advocacy groups will support at a minimum.

Data centers represent an industry growing rapidly across the nation. While they are a source of tax revenue and an increasingly key support feature of the world's economy, their industrial scale and operations are having an unacceptably high impact on nearby incompatible properties, particularly residential communities, schools, and parks.

Local government decisions on land use directly affect residential quality of life and its core tenets of environmental protection, historic preservation, and sustainable economic activity. All of these factors contribute to healthy communities that grow in a vigorous way, resulting in flourishing residential property values, the most important financial asset held by American families.

Recommendations included herein reflect standards to protect these interests.



Village Place Tech Park under construction, immediately adjacent and viewable from every street in townhome community, Haymarket, VA .

Appropriate standards encourage business investment in areas where their implementation is straightforward and achievable while protecting areas of vulnerable incompatibility from the negative effects of industrial use. This serves the core tenets of successful communities and stable property values. Appropriate standards also protect average family finances and quality of life from the ravages of undesirable, highly impactful development near homes, schools, parks, and historic sites, among others. In rural areas, agriculture and associated open space are also protected from unintended consequences.

The standards recommended herein result from actual experiences and lessons learned during land use proposal reviews, as well from those living with the negative impacts of currently operational industrial data centers next to residential communities across Northern Virginia. These impacts are of a magnitude never-before experienced in our region. Therefore, while acknowledging the challenges, some of the recommendations would likely result in retroactive enhancements to current standards applied to approved and existing projects. Implementation would require cooperative agreements between industry and local governments. We encourage the industry to consider these while localities engage in their ordinance review processes.



## Recommendation Approach



Inter-jurisdictional, citizen-based recommendations are organized into the following categories:

- I. Siting & Setbacks
- II. Height\*
- III. Screening/Landscaping buffers and berms\*
- IV. Lighting\*
- V. Noise\*
- VI. Viewshed and Aesthetics
- VII. Environmental Impact
- VIII. Decommissioning
- IX. Power Infrastructure

\* Setbacks and siting of data centers are the primary standards localities should establish. **Where these cannot be achieved** for approved rezonings/zoning amendments/special use permits, increasing setbacks to the maximum extent possible prior to site plan acceptance should be sought. For these, as well as existing data centers, enhanced standards should be adopted to the maximum extent possible and are identified by an asterisk (\*).



## I. Siting & Setbacks

Data centers are industrial uses. Unfortunately, many localities include their use in areas zoned for office, light industrial, commercial and/or planned business uses and even agriculture. As data center development grows, many localities are allowing rezoning for this purpose adjacent to incompatible land uses. Also, building designs are rapidly evolving towards larger, taller facilities, with increasingly negative impacts on nearby properties.

Data centers should be sited as follows:

- A. ¼ mile (1300') from residential, schools & county/city parks
- B. ½ mile (2600') from state parks
- C. 1 mile from national parks

Development proposals meeting the above siting should achieve a minimum 100ft setback from their property lines. Understanding the unique challenges and negative impacts of data center development, as well as implementing changes after zoning amendments are approved, developments that **do not meet** the above siting *should*, prior to submitting site plans, re-configure building footprints to achieve 500 ft setbacks *where possible*. Such efforts should include implementing all enhanced standards detailed below for building height, screening, noise, lighting, and environmental impact noted by an asterisk (\*). Existing developments with siting and setbacks that do not meet the above, should examine their operational ability to achieve the enhanced standards of screening, noise, lighting, and environmental impact to the maximum extent possible.

## II. Height\*

Data center building heights are critically important where they negatively affect adjacent and nearby incompatible uses. Residential neighborhoods are particularly affected by a “David and Goliath” effect when massive structures are placed next to homes casting a giant shadow, often preventing the sun from reaching windows for significant periods of the day. This is only one of the unintended consequences of industrial uses that are improperly sited. Building heights for projects meeting the siting requirements in item I above could adhere to established local ordinance for industrial uses. Enhanced\* standards should be implemented, to the maximum extent possible for approved developments that do not meet siting and setback standards in item A above prior to site plan approval as follows:

- A. Maximum height of 75 ft to include all mechanical equipment, and parapet walls.
- B. Maximum building height reduced to 45 ft., for any facility within 40 ft of the required minimum setback. As mentioned above, the recommended minimum setback should be 100ft for those developments that meet recommended siting.



### III. Screening/Landscaping buffers and berms\*

- A. Buffer type: Opacity of 95%. This Buffer Yard Type is intended to provide the greatest degree of screening feasible and minimize visual contact between uses, creating a strong impression of total separation.
- B. Berms/Walls: A 6 ft wall, and/or berm, providing a minimum opacity of 95% is recommended to run the length of the required Buffer Yard between the proposed use and the required plant units. Required plant units may be planted on a berm.
- C. Number of Plant Units Per 100 Linear feet of Required Buffer Yard: 320.
- D. All reforestation/replanting must be a minimum of 6 feet or greater to expedite the opacity at an accelerated rate.
- E. Width: 200 ft (existing data centers shall fill the entire existing setback as much as possible and practical for maintenance and security operations, if less than 200 ft, with requirements outlined above.)

### IV. Lighting\*

- I. .25-foot candle limit at adjacent residential, schools, and park property lines.
- II. All lighting facing adjacent residential properties, schools, and parks should be downward facing.

## V. Noise

24/7 aspect of data center noise along with its low frequency characteristics makes it particularly irritating and harmful to the human auditory system. For that reason, such noise must be especially quiet, when measured from a nearby incompatible use, to prevent health and environmental impacts. Projects meeting the siting requirements in item A should adhere to the recommended standards below with the following exception: Enhanced\* standards are recommended only for approved developments that do not meet siting and setback standards in item A above prior site plan, as follows:

- A. \* Enhanced minimum requirement of 50 dba – daytime\*, 40 dba – nighttime\* at data center property line if siting and setbacks in item I not met.
- B. When recommended siting and setbacks are observed, local noise ordinance limits, not to exceed 60 dba daytime/55 dba nighttime, at data center property line should be followed.
- C. \*Data center construction, should meet the above noise limits for daytime(\*) on weekends, and all nighttime (\*) limits if siting and setbacks in item I not met.
- D. Credible noise modeling study by a licensed acoustic engineer, or licensed acoustical engineering firm, to be performed prior to rezoning approval to reflect item A or B above, as applicable. Study must include references and source of baseline data and information. Study to be repeated as plans mature, but at least within 30 days of approved site plan and again 30 days after issuance of occupancy permit with a study including actual readings.
- E. Once operations commence, continuous sound monitoring equipment to be installed and activated around the perimeter of data center development, a minimum of every 300 ft, with readings reported to a publicly available source 24/7. In the event sound monitoring equipment is found inoperable for a period greater than 24 hours, it will be considered a violation of the noise ordinance.
- F. \*Enforcement is critical and should include a phased shutdown if non-compliant within 60 days of violating occurrence. Developer should provide an applicable phased shutdown plan, prior to occupancy permit issuance, demonstrating how compliance will be achieved until noise can be appropriately and permanently abated with full operations.
- G. Appropriate escalation points of contact must be provided to allow for the reporting of noise violations and accountability for corrective actions.

## VI. Viewshed and Aesthetics

Data centers can have significant adverse visual impacts. They should be sited and designed to avoid these, especially for viewsheds that are valued by the community, including historic and cultural resources, residences and neighborhoods, parks and schools, and natural resources such as forested areas.

- A. Data centers should not be visible from national and state parks and historic resources. In areas of scenic viewsheds, data centers should be avoided or must be screened with berms, landscaping, and vegetation, with particular attention to relative elevations. Either existing trees and vegetation should be preserved to provide such screening, or any new plantings and berms should be designed to achieve screening within three years of the date of local site plan approval.
- B. Data center architectural design should be aesthetically compatible with adjacent uses, particularly residential neighborhoods, parks and schools. Exteriors should use fenestration, windows, variation in exterior materials, and other features to avoid monolithic appearances and to be congruent with the adjacent uses that have a view of the data center. Data centers should incorporate landscaping that is similar and compatible with that of the surrounding uses. Fencing and accessory structures and features (guard stations, waste areas, accessory equipment, parking areas, etc.) should also be designed and landscaped to be aesthetically compatible with the surrounding land uses.
- C. Data centers within view of national and state scenic byways should be compatible with documented goals and standards for those specific scenic byways. If requested by the entity responsible for the scenic byway, the relevant local government should consider imposing special requirements to minimize adverse effects on the scenic byway.
- D. All electrical substations built to support data centers should be sited and properly screened from all angles and views outside the development, to the maximum extent possible.





Manassas Battlefield Historic District (Nat'l Register of Historic Places) facing complete destruction from the PW Digital Gateway

## VII. Environmental Impact

A. **Water Quality:** Federal and state laws provide a good framework for protecting water quality, but local governments should be vigilant in using expert, independent advice.

1. Closed-loop cooling systems and maximum use of recycled water should be required.
2. Occoquan Watershed Monitoring Lab (OWML) Model must be appropriately populated and run, with results analyzed and reported to the overseeing locality's planning office, when any data center development is proposed within the Occoquan Watershed. Applicability to the Watershed should be defined according to Northern Virginia Regional Commission criteria, with actions detailed above required before a comprehensive plan amendment is adopted, or a rezoning is approved for any data center land use proposal.
3. State approved watershed management systems should be implemented and maintained to capture all stormwater before allowing it to run off.
4. Regular sampling and testing of data center runoff affecting local drinking water quality or pollution of local streams, ponds, lakes, and other surface water should be required with an annually-updated plan to accomplish this to include levels of salinity, cleaning chemicals, lubricants, and heavy metals.
5. A plan for responding to accidental chemical spills such as diesel fuel from generators should be required prior to site plan detailing measures that will be taken to protect the surrounding community, environment, and natural resources.





Little Bull Run, Catharpin, VA – PW Digital Gateway Corridor



In March 2023, Amazon directed massive tree cutting for a data center site on the gateway into the small town of Warrenton, VA.

- B. **Wetlands:** Both the federal government and the state of Virginia have strong laws and standards to protect wetlands. These laws and standards should suffice if they are implemented. First and foremost, local governments should avoid approving data centers sited on or near wetlands. In addition, local governments should ensure that during construction and operation no adverse impacts to nearby wetlands occur through inappropriately sited stockpiles or runoff. We recommend that fuel spill capture systems, such as those required in fuel storage yards or at gas stations, be required and that fuel storage be setback at least 100' from any defined stream or wetland.
- C. **Air Quality:** Diesel or other fossil fuel generators should be used only for emergency backup operation. Developers should ensure that all emergency power generators will be operated in compliance with Department of Environmental Quality standards and regulations.
  1. Usage of any generators for emergencies should meet noise/sound restrictions as cited in item V above.
  2. Emergency power usage should be defined as unexpected natural or weather disasters, causing an electrical shortage for a limited time, not because the local power grid has yet to permanently deliver power to the data center's substations.
- D. **Trees and vegetation:** Data center developers should submit a forestation and vegetation preservation plan prior to site plan. Deforestation should not occur prior to site plan approval. Violation of this provision should result in denial of site disturbance permits and a requirement to submit a new site plan.
- E. **Wildlife and endangered species:** All federal and state laws protecting wildlife and endangered species should be adhered to. Site plans will address these. Destruction of wildlife and endangered species habitats prior to site plan approval should result in denial of site disturbance permits and a requirement to submit a new site plan.

## VIII. Decommissioning

Provisions should be in place for decommissioning any data center. Change happens fast in the IT sector, and it is reasonable to expect that a data center may become technologically or economically obsolete sooner than anticipated. When a data center ceases operation, what happens? Is the locality left with a massive and hazardous eyesore -- a hulking abandoned warehouse, large arrays of generators and other equipment, and scores of 50,000-gallon diesel fuel containers? Moreover, does this prevent the conversion of the site into a productive, tax-revenue producing alternative use? When considering potential conversion of a data center structure to some other use, it is crucial to know to what extent it was built for "live load" or "static load." If built just to "static load," potential re-use will be significantly limited. And even if built to high "static load" standards, there may be degradation with age. Additionally, any re-use, such as a distribution center, a bowling alley, or a sports facility, will likely face rezoning or new special use requirements.

The following decommissioning standards should be considered, and a viable decommissioning plan required prior to rezoning:

- A. The owner of a nonoperational data center should remove from the site all hazardous materials, generators, and other mechanical equipment, pursuant to Federal, state, and local standards for removal and disposal.
- B. The owner of a nonoperational data center should either (a) disassemble or deconstruct the data center building and accessory structures within a reasonable time after ceasing operations, or (b) should enter into a contract or other legal arrangement for alternative use of the structure(s). Full site remediation should be required if the applicable structures are demolished.
- C. In the case of disassembly or deconstruction of the building and accessory structures, any man-made components below ground should be removed, including foundations, footers, poles, wires, and conduits.
- D. Adequate security is required to ensure that financial resources are available for decommissioning. Cash escrow from the data center owner should be estimated and established based on a decommissioning financial estimate to be submitted to, and approved by, the local government finance office prior to issuance of the final occupancy permit. The worst possible outcome for a community would be an abandoned data center with no resources available to pay for its removal and conversion to productive alternative use.



Power lines over homes in Kirkpatrick Farms, viewed from Supreme Drive in Aldie,VA

## IX. Power Infrastructure

Data centers require enormous amounts of electricity. One 75-MW data center consumes more energy than a community of 18,000 homes at peak usage. Data center energy demand brings substantial potential impacts to neighborhoods, schools, parks, and other nearby uses, including:

- A. Large industrial electric substations of 8 or more acres, often on-site;
- B. Numerous boxcar-sized diesel generators, which generate substantial noise and diesel emissions for back-up electricity in the case of a mainline power outage;
- C. Large diesel fuel containers on site, for the generators;
- D. New electric transmission lines running to the site, potentially from miles away;
- E. Increased electric load on regional power supply, reducing reliability and increasing reliance on fossil fuels by utilities, in conflict with climate change goals; and
- F. The newly emerging issue of power production on site, through small modular nuclear reactors, hydrogen, natural gas, geothermal, and solar.



Local governments need to be fully aware of these impacts and take steps to mitigate them:

- A. Transmission lines that carry high voltage (138kV or higher) power are regulated by the State Corporation Commission. They have siting authority, particularly the decision to place lines underground. This process can have significant impacts on communities, parks, trails, and natural resources. New transmission lines near these areas should be located underground.
- B. Transmission line congestion can result in efficiency loss and power outages. If a transmission line does not have enough capacity for the proposed use, the applicable utility, is required to build the infrastructure to meet that need which could include new or upgraded or transmission lines through communities. We recommend local governments require information from the applicant and Dominion about projected new infrastructure and/or upgrades needed to serve proposed data centers.
- C. The types of on-site power generation actively being developed include solar, wind, geothermal, natural gas, hydrogen, and small modular nuclear. Data centers are proposing power generation on data center campuses themselves, and it is unclear how this would be treated under current zoning codes. We recommend localities require a special use permit for any private on-site power generation facility serving a single user. Emergency back-up generators, on-site solar, geothermal, and UPS battery storage, should be excluded from this requirement.

The HOA Roundtable of Northern Virginia, the Loudoun Coalition of Homeowners and Condominium Associations (LCHCA), and Protect Fauquier join together in respectful, yet urgent, outreach to our respective jurisdictional governments with these recommendations. We ask that they, along with our state and federal representatives take seriously the impact to our residential communities, environment, historic sites and the distressingly negative results to the quality of life and property values of our homes from this unrestrained and highly underregulated industry. Pervasive secrecy and nondisclosure agreement use by the industry, permitted by local governments, is detrimental to the interest of residents, small business and others. The public must be better informed and protected, in every respect, regarding this issue, before permanent damage is done, and vast industrial corridors take over the metropolitan Washington region.



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