

James City County Ordinance Noise Contrast

CITIZEN ANALYSIS — PUBLIC REVIEW COPY

This issue paper was prepared by citizens for public education and discussion. Statements are treated as citizen analysis or opinion unless they are directly supported by a cited source. Source verification and factual review remain ongoing. Corrections and additional public records are welcome.

SOURCE-CITED FACT	A factual statement should be treated as source-supported only when a citation or source note is provided.
CITIZEN ANALYSIS	Interpretation, comparison, recommendation, or conclusion written by citizen contributors.
VERIFICATION ONGOING	Additional records, review, and corrections may change or refine the paper.

IMPORTANT

This is not an official New Kent County document and is not legal advice.

James City County's Data Center Policy on Noise Constraints

James City County's Noise Impact Guidance is a solid, process-oriented framework that exceeds many basic industrial noise rules, but it is not among the empirically most effective constraints currently in effect. It prioritizes studies and a 55 dB floor while leaving gaps in low-frequency control, measurement location, absolute limits, and equipment enclosure rigor that more protective ordinances address directly.

Core Elements of James City's Guidance

- Professional engineer sound study per ISO 9613 standards.
- Pre-construction nighttime ambient survey (11 p.m.–7 a.m.) at a minimum of the four property corners.
- Site-specific modeling of maximum levels, including all ancillary equipment and backup generators.
- Mitigation recommendations if needed for compliance.
- Post-construction survey (1–12 months after Certificate of Occupancy) with all equipment (including generators) at maximum capacity.
- Operational limit: shall not exceed existing ambient noise **or** 55 dB (whichever is greater), measured at the four corners/property lines.
- Cooling equipment and backup generators must be inside an enclosed building **or** attenuated (e.g., muffling materials) **and** screened by a wall or similar barrier.
- Generators must meet or exceed EPA Tier 4 emissions standards; routine testing limited to weekdays 9 a.m.–5 p.m.

Contrast with the Empirically Most Effective Standards in Effect Today

The strongest current standards (drawn from Shenandoah County VA, Stafford County VA revisions, York County VA, Prince William advisory recommendations, and select model/out-of-state ordinances) outperform James City on several measurable dimensions that correlate with reduced community complaints:

1. Metrics and low-frequency control (biggest gap) James City uses a single “55 dB” figure (implicitly A-weighted in most applications) and allows the higher of ambient or 55 dB.

Stronger ordinances explicitly require **both A-weighted (dBA) and C-weighted (dBC)** limits because data-center cooling fans and transformers produce continuous low-frequency tonal “hum” that dBA under-weights and that travels farther and penetrates structures more readily.

- Shenandoah County: operations shall not exceed **55 dBA or 65 dBC, whichever is more restrictive**, measured at the closest nonparticipating property line (Board may impose still lower C-weighted limits near sensitive receptors).
- Stafford and York County examples: 55 dBA **and** 65 dBC, or 55 dBA with a tighter 52 dBA limit when a prominent discrete tone is present (tone defined by ISO one-third-octave criteria). These dual metrics and tonal penalties are more effective at addressing the actual complaints that arise even when pure dBA readings appear compliant.

2. Absolute limits vs. ambient-or-55 James City’s “ambient or 55, whichever greater” can permit higher absolute levels in already-noisy locations and does not prevent a noticeable increase over quiet rural nighttime ambient.

More effective rules set fixed, lower absolute ceilings (especially at night) or allow only a very small increment over ambient:

- Residential/sensitive receptor limits commonly drop to 50–55 dBA daytime / 45–52 dBA nighttime (or lower).
- Some of the tightest fixed limits observed (e.g., Divide County, ND model language referenced in policy toolkits) reach 50 dBA day / 45 dBA night.
- Prince William advisory and similar recommendations push residential nighttime figures into the high 40s dBA range with corresponding dBC caps. Fixed low absolute limits plus measurement at the nearest sensitive receptor are empirically more protective than an ambient-or-55 rule measured only at property corners.

3. Measurement location and receptors James City measures only at the four corners of the data-center property.

Stronger standards require compliance at the **closest nonparticipating property line** and/or the nearest residential dwelling, school, park, or other sensitive receptor. This better captures real-world exposure and prevents “gaming” via property-line placement of equipment.

4. Equipment enclosure and generator controls James City allows enclosure **or** attenuation + screening.

The most effective rules mandate high-performance acoustic enclosures (often specifying ≤ 70 –75 dBA at 23 ft for generators) or full building enclosure for cooling and generator equipment wherever mechanically feasible, with solid walls as the fallback. Tier 4 is already common; the stricter ordinances add residential-grade silencers and tighter testing windows (sometimes 10 a.m.–4 p.m. only, or further restricted). Continuous or periodic post-occupancy monitoring (beyond a single 1–12-month survey) appears in the stronger packages and improves long-term enforceability.

5. Study and enforcement rigor James City’s pre-/modeling/post-construction sequence is good and aligns with best process practice. The strongest ordinances retain this sequence but require both dBA and dBC modeling, explicit tonal analysis, and Board authority to impose site-specific lower limits, additional attenuation, or ongoing monitoring near sensitive uses.

Summary Assessment

James City’s package is process-strong and better than many older industrial standards, particularly on generator testing hours and the requirement for professional studies with post-occupancy verification. It is **not** among the empirically most effective noise constraints now in use. The highest-performing current standards combine:

- Dual dBA + dBC (and tonal) limits,
- Lower absolute nighttime ceilings (often $\leq 50\text{--}55$ dBA / corresponding dBC at the nearest nonparticipating or sensitive receptor),
- Mandatory high-performance enclosures rather than optional attenuation,
- Measurement locations that reflect actual receptor exposure, and
- Authority for further site-specific tightening.

Adopting those elements (while retaining James City's solid study sequence, Tier 4 requirement, and testing-hour limits) would produce a measurably more protective noise regime for a highly restrictive New Kent ordinance.