

**MIDDLESEX TOWNSHIP PLANNING COMMISSION
WORKSHOP MEETING MINUTES
MONDAY, MARCH 9, 2026**

START TIME: 7:00 p.m.

END TIME: 10:10 p.m.

MEMBERS PRESENT:

Wes Beard
Robynn Eppley
Jim Gehr
Tracy Gleim
Doug Graham
Larry Claycomb

STAFF PRESENT:

Mark Carpenter, Zoning Officer
Zach Zook, Township Manager
Eileen Gault, Secretary/Treasurer

MEMBERS & STAFF ABSENT:

Tom Ryan
Bud Grove, Township Engineer
Margie Flatley-Carpenter, Secretary

Call Meeting to Order:

Tracy Gleim called the meeting to order at 7:00 pm.

Discussion and Possible Action on minutes of February 23, 2026: The Planning Commission minutes are under review by the Commission's solicitor; therefore, no approval action was taken. This allows members additional time to review the minutes.

Public Comment: Jody Shivell, Teaberry Drive, expressed concern that the Township newsletter distributed to residents did not include information about the proposed data center project. The resident stated that several people in the community were unaware of the project, and some believed the site was still planned for residential development. The resident suggested that better communication could have prevented confusion and recommended that a letter be mailed to all Township residents explaining the project, including its location and relevant details. Ms. Shivell emphasized the importance of sending information to residents promptly, so they can learn about the project and attend meetings if interested.

Township staff explained that the newsletter is produced quarterly and that timing sometimes limits the ability to include the most up-to-date information. Staff acknowledged the concern and indicated that the Township is working to improve communication and include more information about ongoing projects such as the data center. Township representatives noted that meeting information is also posted publicly and included in the newsletter.

John Manta, Wolfs Bridge Road, requested that the meeting begin with the Pledge of Allegiance; the board and all in attendance then recited the Pledge.

TPF 26-2 Final Major Subdivision Plan for Pennsylvania Digital 1 (PAX-1) Data Center: Justin Ross, representing Carlise Development Partners, presented the first item before the board, the final major subdivision plan. He explained that the plan follows the previously approved preliminary major subdivision plan and represents the next administrative step in the process. The plan proposes consolidating four existing tracts into one parcel and then subdividing the property into five lots. The subdivision would create five lots labeled 1A, 1B, 1C, 2, and 3.

Mr. Ross noted that the final plan is substantially the same as the preliminary plan previously reviewed by the Commission. The project team received a review letter from HRG, and no significant changes were made to the plan. One waiver request was included for the plan scale requirement due to the size of the project, which would allow the plan to be presented more clearly.

The Commission discussed the timing of action on the plan, noting that the Board of Supervisors would not meet again until March 27, 2026, and that the Planning Commission would meet again on March 23, 2026. It was noted that draft county comments were available electronically, though they were not printed for the meeting because immediate action had not been anticipated.

Pam Wenner, Teaberry Drive, asked for clarification about what the Commission was being asked to approve. It was explained that the Commission was reviewing the subdivision plan only, which involves combining the existing parcels and dividing them into five lots, and that other development phases would be addressed separately.

John Manta, Wolfs Bridge Road, asked whether there would be any tax advantage to the Township if the parcels remained as they currently are rather than being combined and subdivided. Township representatives explained that tax revenue would not be affected by the consolidation itself, as property taxes are primarily based on the value of improvements on the land rather than the parcel configuration. It was also noted that if a landowner meets the Township's subdivision and land development ordinance requirements, the Township cannot deny the subdivision request.

TPF 25-25 Preliminary Land Development Plan for Pennsylvania Digital 1 (PAX-1) Phase 1-B Data Center: Representatives of the applicant, including Charles Courtney, Justin Ross, and Pete McGrath introduced the project and noted that this was the first presentation of the plan to the Planning Commission. The team stated that the plan is currently in the preliminary stage and that review comments have been received and are being addressed as the plans are updated.

The applicants explained that the submission is a preliminary land development plan rather than a final plan. They noted that preliminary review allows flexibility because certain building details, equipment selections, and design elements will be finalized later in the process. Updated technical information, including a noise study, will be provided with the final submission once equipment and building specifications are finalized. Building façade information required by the zoning ordinance will also be provided during later stages of the review process. The applicant reviewed the site layout and relationship to the previously discussed subdivision plan. The infrastructure area previously approved (referred to as Lot 1A) includes the electrical substation and internal

circulation road. The current plan (Lot 1B, or Campus 1) proposes six data center buildings located in the northern portion of the property. The presentation included an overview of the property boundaries, nearby roads, the PPL transmission line crossing the site, and natural features including a creek, floodplain, and wetlands. The applicant explained that the power infrastructure and internal access road approved in the earlier plan would be constructed first and would provide access and utility service to the proposed data center campus.

The applicant continued the presentation of the preliminary land development plan for the Pennsylvania Digital data center campus. The plan includes the first cluster of six data center buildings located along an internal circulation road known as Data Center Drive. The main entrance to the campus will include multiple access lanes, a guard shack, and a security building for visitor check-in. A secondary gated access point will be provided for employees and emergency vehicles.

The applicant explained that each data center campus will be enclosed by a security fence, typically about ten feet high. The fencing will not extend around the entire 700-acre property but will instead surround each individual campus. Each campus will function independently with its own security systems, utilities, and water systems.

Commission members asked questions about water and wastewater usage. The applicant stated that sanitary wastewater would primarily come from employee use and estimated approximately fifty employees per building for planning purposes. The projected wastewater flows were described as conservative estimates used for infrastructure planning, and actual staffing levels are expected to be lower. Wastewater will include sanitary flows and blowdown water associated with the cooling system.

The applicant described the layout of a typical data center building. Each two-story building will include a receiving area, office space, and large equipment halls that house computer server systems. Exterior to the building will be water storage tanks used as buffers for cooling operations. Each building will also include a generator yard containing emergency backup generators and related mechanical equipment.

Commission members asked several questions regarding the backup generators, including fuel storage, noise, and testing. The applicant explained that the generators are intended strictly for emergency backup power and would typically have approximately 24 hours of fuel capacity. Additional centralized fuel storage has not yet been finalized and would be subject to additional permitting and regulatory review if included in the final design.

The applicant also noted that the generators are equipped with acoustic enclosures designed to reduce noise. Operation and testing of generators would be limited and regulated through air permitting requirements. Generators are typically tested periodically, often monthly, to ensure functionality, though not all generators would be tested simultaneously.

The Commission and audience also discussed the expected noise levels and operation of the generators. The applicant stated that the equipment is designed to meet required sound standards

on the property line and that additional technical details will be provided as the project moves further through the review process.

The applicant continued the presentation by providing additional details on the layout and operation of the proposed data center campus. The generator yard for each building was reviewed in greater detail. The plan shows approximately twenty-four generators per building along with associated electrical switchgear equipment. Commission members noted that this could result in many generators across the full campus buildout and raised concerns regarding potential fuel storage quantities, environmental safeguards, and overall operational impacts.

The applicant stated that the generator configuration shown represents the expected layout based on discussions with a prospective tenant, though final equipment specifications will not be confirmed until the tenant completes procurement. The generators will be enclosed in acoustic housing designed to reduce noise, and a sound wall is proposed around the generator yard to further mitigate sound. The wall is anticipated to be similar in height to the generator structures. The applicant indicated that additional details, including equipment specifications and updated noise modeling, will be provided prior to final plan approval once the tenant and equipment selections are finalized.

Commission members discussed generator operation and testing procedures. The applicant explained that generators are typically tested periodically to ensure proper operation, though not all units would be tested simultaneously. Commission members requested that a maintenance and testing plan be provided, including potential limits on testing hours, and suggested consideration of blackout periods to minimize disturbance during nighttime or weekend hours.

The discussion also addressed applicable noise standards under the Township's zoning ordinance. The applicant acknowledged that noise compliance must meet ordinance requirements at the property line and stated that updated noise studies will be prepared as more detailed design information becomes available.

The applicant then reviewed water and wastewater systems associated with the campus. A utility building will house equipment for inbound water treatment and outbound wastewater pretreatment. Water from the Municipal Authority will be softened and treated before use in the cooling systems. The plan includes several large on-site water storage tanks, currently shown at approximately two million gallons each, which will store water used primarily for cooling operations. Water usage will increase during high-temperature periods when evaporative cooling is required.

Wastewater from the cooling system, known as blowdown water, will be stored in separate tanks and gradually discharged to the municipal sewer system in accordance with pretreatment requirements. The applicant explained that cooling water may be recirculated multiple times before being discharged and that water quality will be maintained through pH and chlorine balancing. Commission members requested additional information on chemicals or treatment additives used in the cooling process. The plan also includes stormwater management facilities and associated infrastructure consistent with previously approved elements of the project. Fire protection systems will include a dedicated firewater supply and a fire loop around the campus buildings.

The applicant presented conceptual images of similar data center facilities previously constructed by the development team to illustrate the general appearance of the buildings. Final building fades will comply with Township zoning requirements related to materials, architectural treatments, and buffering.

The applicant concluded by briefly describing general operations of the facility. Data centers always operate continuously with staff on site, though many employees typically work during standard daytime business hours. Personnel will include engineering technicians responsible for facility systems and technicians managing network and computing equipment.

Public Comments

Arlene Darlington, Wertzville Road, raised concerns regarding water usage and discharge, specifically questioning what safeguards are in place to ensure discharged water does not impact private wells. Justin Ross responded that water discharge will be monitored by the Middlesex Township Municipal Authority (MTMA) including routine sampling. Jim Gehr clarified that discharge will go into the sewer system, not into nearby creeks. Mark Carpenter responded that MTMA oversees discharge compliance, with enforcement measures such as fines; the facility will be regulated similarly to other users (e.g., truck stops, restaurants).

Phil Neiderer, Old Stonehouse Road, thanked Planning Commission members for their thoughtful questions, noting the complexity and volume of information involved. He stated that a Q&A section will be added to the website and emphasized efforts to improve communication while working under tight timelines.

Andrew Dymski, Bernheisel Bridge Rd, expressed appreciation for the Township's time and consideration. He stated that there is no oversight from Pennsylvania Department of Environmental Protection (DEP) regarding acoustics, emphasizing that enforcement responsibility rests with the Township and its ordinances. He then commented that the Township has been highly accommodating to the proposed development and referenced urgency from PPL Corporation. Mr. Dymski noted that the Township's data center overlay ordinance was modeled after similar regulations in Virginia. He then presented two primary requests: 1) Ensure that any future noise ordinance updates do not apply retroactively to the current project and establish a binding "good neighbor" agreement tied to the project with clear accountability for violations. 2) Require post-construction noise studies to be provided and recommended that the Township strengthen its noise ordinance overall.

He then submitted his public comments and a Prince William County Noise Ordinance Update PowerPoint Presentation for the record.

Pam Wenner, Fieldstone Drive, noted minimal research she has conducted observed low-level hum, and acknowledged that noise may reach approximately seventy decibels. She did not see any fans on the roof and requested information on the location of all external fans on the project drawings. She then asked how to view the plans. Mark Carpenter advised making an appointment to review the plans. Mike Hess, HRG Engineer, explained that the ordinance includes two noise standards, including a 70-decibel standard near the power line. He clarified that standards do not

disappear during a power outage; the noise study accounts for both “power on” and “power off” scenarios.

Jenny Jackson, Briar Patch Road, asked whether this is the largest or second-largest data center in the country; it was confirmed it is not the largest. Ms. Jackson then raised concerns about potential impacts on local wildlife, including birds and bald eagles, as well as pets due to low-frequency noise. Planning members noted some birds were observed at similar facilities, but other wildlife was minimal. She then expressed concern about water pressure and availability during peak usage, particularly in summer months. Jim Gehr noted that public water conservation restrictions are rare and typically guided by the state.

Barb Simpson, Teaberry Drive, raised concerns regarding water issues at the highest points of the Meadows Development and potential impacts on property values. She noted that data centers can sometimes enhance property values, but sound and light impacts may reduce values for nearby properties. Ms. Simpson then commented that planning a data center in a residential community raises many issues, expressed disappointment about the project, and noted feelings of betrayal despite trusting local supervisors. She indicated feeling somewhat reassured after discussion.

Eric Keller, Teaberry Drive, asked whether the sound study will be conducted after project completion and if mitigation measures will be implemented if noise exceeds limits. He then inquired about planned road construction, including whether any work will occur prior to the project and emphasized that road work should be completed ahead of the project. Justin Ross responded that there are plans to rebuild the road and work with the Township when provisions are to be made.

Josh Asper, Horners Road, had questions about building elevations and if they could see them. Justin Ross noted these have not yet been fully developed. Mike Hess stated they are required for the final plan due to the absence of a defined end user. Mr. Asper asked about plans for handling and monitoring contaminants. Justin Ross explained this will depend on the filtration technology selected, which is still under evaluation and confirmed any byproducts would be transported to a regulated facility. Mr. Asper questioned why natural gas is not being used. Justin Ross stated the comparison between natural gas and diesel is still being considered. Mr. Asper then asked if the developer could provide more refined numbers for the water usage and cooling. Justin Ross said storage will be on-site and calculations depend heavily on temperature and weather data.

Jean Martin, Wild Rose Circle, asked if the water storage tanks would be underground. Justin Ross clarified that the water storage tanks will be above ground and noted they will be similar in design to the Municipal Authority’s tank located off Country Club Road.

Brian Jackson, Briar Patch Drive, expressed concern about noise, noting he lives within half a mile of the site. While generators are a concern, he emphasized that fan noise is the primary issue reported in other communities. He asked about newer fan technologies and whether this project differs from older data centers. Pete McGrath explained that older data centers relied on traditional air conditioning systems, but the industry has since engineered equipment to reduce sound levels. Justin Ross added that newer technologies, including magnetic fan blades, are being used, though he could not speak to specific studies or previously reported issues and also emphasized that the

project includes substantial setbacks (approximately 1,000–1,200 feet from the nearest homes), which, combined with newer technology, is expected to minimize noise impacts.

Township Staff Informational Comments, with no discussion: Supervisor Neiderer requested that the developer respond to the Cumberland County Planning Commission comments using a redline format. The meeting concluded with no additional staff comments.

Adjourn Meeting: Jim Gehr moved to adjourn the meeting at 10:10 p.m., seconded by Wes Beard. Motion carried.

Public Comment for the Record

Middlesex Township Planning Commission

Re: Pennsylvania Digital 1 (PAX-1) — Phase 1-B Land Development Plan Review

March 9, 2026

Reference:

- Prince William County Noise Ordinance - bit.ly/DataCenterNoiseStudy

Opening

Good evening. My name is Andrew Dymski, and I live at 430 Bernheisel Bridge Road. I have four kids, 9, 7, 4, and six months and their bedrooms are roughly 3,000 feet from the PAX-1 project site.

I want to be clear at the outset: I am not here tonight to oppose this project. That decision was made, and I accept it. I am here with two specific requests — first to suggest that this Commission should recommend a Good Neighbor Agreement between the developer and the township to the Board of Supervisors for PAX-1 Phase 1-B tonight, and one about the ordinance standards this township desperately needs going forward.

But first, the procedural history matters — because it explains why a Good Neighbor Agreement is necessary and why now is the right time.

How We Got Here

- **April 25, 2025** — Mr. Courtney, the developer's attorney, requests a standalone zoning amendment, citing PPL power allocation urgency. The developer's clients offer to pay all advertising costs. The Board schedules a hearing for May 30 — 35 days later.
- **May 12 & 27, 2025** — This Planning Commission reviews and unanimously recommends approval across two meetings.
- **May 30, 2025** — The Board votes 3-0 to adopt Ordinance No. 3-2025. The overlay ordinance — submitted by the landowner's attorney, advertised at the developer's expense, moved on the developer's timeline — makes data centers a use by right on 694 acres.
- **September 2025** — The Board approves the PPL laydown plan and adopts the new comprehensive zoning ordinance. It hires HRG at the developer's expense to independently review the data center plans.

- **October 2025 – January 2026** — The Board grants multiple review extensions in good faith. The preliminary subdivision plan is approved January 5, 2026, with conditions.

It has only been 318 days since Mr. Courtney first requested a standalone zoning amendment, citing PPL power allocation urgency. Nobody can look at this record and say Middlesex Township has been an obstacle to this project.

But the urgency that justified fast-tracking the overlay — the PPL power reservation — has been addressed. Phase 1-A secures the power pathway. That emergency is over.

What has not been addressed are the protections for the people who live here: no dBC limits, no octave-band standards, no baseline study requirements, no monitoring provisions, no cumulative noise mechanism for an 18-building campus. Those were left on the table when this township moved at the developer's pace in the spring of 2025.

That is the gap a Good Neighbor Agreement could fill.

Ask #1 — Recommend a Good Neighbor Agreement as a Condition of Phase 1-B Approval

I want to be direct about the right legal vehicle for what I am asking. The Pennsylvania Municipalities Planning Code allows the governing body, under Section 508(4)(ii), to approve a plan subject to conditions — but those conditions must have a basis in the existing zoning ordinance.

The current noise ordinance says 70 dBA at the property line and it even waives that requirement in the event of a power outage. It says nothing about baseline studies, dBC measurement, octave-band monitoring, or post-construction verification. And for any phase where plans have already been submitted, the current noise ordinance applies under the pending ordinance doctrine — which is precisely why a contractual agreement is the cleaner path for this project.

A binding Good Neighbor Agreement — signed by the developer, recorded with the Cumberland County Recorder of Deeds, running with the land, and binding on successors and assigns — does not require an ordinance basis because it is a contractual commitment, not a regulatory imposition. This mechanism works for PAX-1 at any stage of the review process. Communities in Linn County, Iowa and across Virginia have used exactly this approach.

This is what I am asking this Commission to recommend: that the Board condition Phase 1-B approval on the developer's execution of a binding Good Neighbor Agreement covering at minimum:

- **Specific operational noise limits** — The developer has said publicly they expect noise levels in the 50s. I am asking them to put that in writing with the metrics that make it verifiable: 50 dBA daytime / 45 dBA nighttime (Leq, one-hour, at the nearest residential

property boundary); 65 dBC daytime / 60 dBC nighttime, measured concurrently; octave-band limits of 65/60 dB at 31.5 Hz, 60/55 dB at 63 Hz, and 55/50 dB at 125 Hz (daytime/nighttime) — this is taken directly from the Nelson Acoustics continuous noise framework in the March 2025 Prince William County Board presentation, which I am providing to this Commission tonight; and a +5 dB tonal penalty where a tonal component is present. All limits apply to the combined campus output, not each building in isolation. For context on those numbers: the PWC experts recommended an even stricter standard — equivalent to 48/43 dBA — for continuous sources like data center cooling. My ask is 2 dB less protective than that recommendation, chosen because it sits at the protective end of enacted U.S. ordinances and is achievable for a well-engineered facility.

- **Post-construction compliance verification** — within six months of certificate of occupancy, an independent as-built study demonstrating that Phase 1-B operations comply with the limits in item 1. This directly follows the model Warrenton, Virginia established when it approved the Amazon data center in 2022: Amazon was required to reduce octave-band levels and mandated to conduct a sound test one month after the facility came online. That test was a compliance gate, not a formality.
- **Annual independent acoustic monitoring** for five years, with cumulative noise modeling before each subsequent phase comes online, results provided to the township within 30 days of completion. Chandler, Arizona requires annual monitoring for five years under its enacted ordinance. Linn County requires monitoring every five years for the entire operational life of the facility — the agreement should specify that the township retains the right to require additional studies if complaints are received or if operational changes occur.
- **Enforcement with real consequences** — Fines under the township's zoning ordinance are capped under state law and are inadequate for a facility of this scale. The agreement must include contractual enforcement mechanisms proportionate to the operation:
 - **Liquidated damages:** Pre-agreed damages of \$10,000 to \$25,000 per day for each day of confirmed ongoing violation, written into the contract. This is not subject to municipal fine caps because it is a private contractual obligation, not a regulatory penalty.
 - **Physical remediation obligation:** Violations trigger not just payment but a mandatory physical remediation obligation — acoustic barriers, equipment enclosures, fan silencers — at the developer's expense. Settlements following private nuisance suits against data centers, including in Saline Township, Michigan, have produced exactly this outcome. The agreement should establish this obligation contractually rather than requiring litigation to achieve it.
 - **Performance bond:** The developer posts financial security — a minimum of \$2 million — held in escrow and dedicated to noise remediation. If a confirmed violation is not remediated within the agreed timeline, the township can draw on the escrow directly.
 - **Resident standing:** Named neighboring property owners within one mile are expressly designated as third-party beneficiaries of the agreement with

independent standing to enforce it in court. Without this, only the township can enforce the GNA; if a future Board is unwilling to act, residents have no recourse.

- **Certificate of occupancy linkage:** No certificate of occupancy issues for any subsequent phase until the prior phase has passed its post-construction compliance study.
- **Injunctive relief preserved:** The agreement expressly states that it does not limit any party's right to seek injunctive relief in the Court of Common Pleas.

Ordinance compliance does not shield the operator from private nuisance claims.

- **Generator emission standards** — EPA Tier IV, not Tier II. Load testing limited to 10:00 AM to 4:00 PM Monday through Friday, with 24-hour advance notice to the township.
- **Groundwater monitoring** — developer-funded groundwater monitoring with defined response obligations if thresholds are exceeded.
- **Community liaison** — a designated contact with a 48-hour written complaint response obligation and an independent dispute resolution mechanism.

Over the course of this process, the developer's representatives have made public commitments on many of these points. If they truly intend to honor those commitments, a Good Neighbor Agreement costs them nothing. It simply converts stated intentions into enforceable contractual obligations.

This community accommodated the developer's timeline when PPL power allocation was at stake. It is entirely reasonable to ask the developer to accommodate the community's need for enforceable protections now that the urgency has passed.

Ownership changes. Management changes. Companies are acquired. What is a priority today may not be a priority for whoever operates this facility in ten years. A verbal commitment made at a Planning Commission meeting is not enforceable against a successor company. A recorded agreement running with the land is.

Why Noise Performance Conditions Matter — Starting with My Children

This facility will operate 24 hours a day, every day, for decades. The dominant noise source will be the cooling systems — large mechanical units that produce continuous low-frequency sound, concentrated in the 31.5 Hz to 125 Hz range. That frequency range is precisely where the township's current 70 dBA standard offers the least protection. A-weighting mathematically subtracts up to 39 decibels at 31.5 Hz before measurement is even taken. A facility can produce a continuous, physically present hum and still pass a dBA-only test.

I want to be clear that this is not my personal opinion. In March 2025, Prince William County, Virginia — the largest data center market in the world — presented the results of a \$270,000 acoustical study to its Board of Supervisors. The study was conducted by Nelson Acoustics, a licensed acoustical engineering firm. Their conclusion, in their own words: "The A-weighted scale doesn't effectively address the low-frequency noise generated by data centers and other

large commercial facilities." That is the expert finding of the most experienced data center jurisdiction in the country. Our current ordinance uses only A-weighting.

The reason this matters especially for children is well-documented in the medical literature. Low-frequency noise penetrates residential walls in ways that higher-frequency sound does not — standard double-pane windows provide almost no attenuation at these frequencies. For children who are sleeping, the harm is not primarily about waking them up. Research published in peer-reviewed medical journals shows that children exposed to continuous low-frequency noise during nighttime hours experience disruption of deep slow-wave sleep — the stage critical for growth hormone secretion, memory consolidation, and neurological development.

The cognitive effects extend into waking hours as well. A comprehensive meta-analysis of 21 studies found a statistically significant negative impact of chronic environmental noise on children's academic performance, with effects particularly pronounced in children aged 6 to 12. Low-frequency background noise masks the consonant sounds that developing brains use to distinguish speech, creating acoustic interference that requires measurably more neurological effort to parse language — diverting cognitive resources away from learning. The RANCH study, a large European epidemiological study, found that reading acquisition was delayed by approximately two months for every 5 dB increase in chronic noise exposure.

I have four children. As I said, this facility is going to be operating 3,000 feet from their bedrooms for the rest of their childhoods.

The Cumulative Impact Problem — and Why 18 Buildings Is Different from 1

The same Prince William County study contains a finding that applies directly and specifically to PAX-1. Their acoustical engineers modeled what happens when multiple data center buildings operate simultaneously on the same campus. Starting from a neighborhood ambient of 40 dBA, each building adds approximately 3 decibels to the combined level. Three buildings raise the ambient by 9 decibels.

PAX-1 is not 3 buildings. It has 18 buildings across three campuses. Our current ordinance has no mechanism for cumulative impact — my understanding is that it would evaluate each building individually against a flat 70 dBA limit, regardless of what the combined campus produces at residential boundaries.

The Good Neighbor Agreement I am requesting must address the fully-built campus, not just Phase 1-B in isolation. A pre-construction baseline study before Phase 1-B operations begin, and monitoring requirements that extend through full campus buildout, are the only way to detect and respond to cumulative noise escalation as phases come online.

Ask #2 — Recommend That the Board Strengthen the Noise Ordinance

Whatever standards apply to PAX-1, this township is now on record as a jurisdiction that permits hyperscale data centers. The next application could arrive before the comprehensive plan update is complete, and the ordinance that governs it will be the same 70 dBA flat limit — unless the Board acts.

Prince William County's \$270,000 acoustical study recommends limits equivalent to 48/43 dBA. Chandler, Arizona prohibits any increase over ambient. Silver Spring Township, right here in Pennsylvania, adopted stricter standards in February of this year.

I am asking the Commission to include in tonight's recommendation a statement that the Board should initiate an ordinance amendment establishing dual-metric dBA/dBC limits, octave-band standards, and mandatory pre-construction baseline and post-construction monitoring requirements — built into the ordinance, not negotiated case-by-case.

Closing

This community moved fast when the developer needed it to. In 35 days, we went from an application to an adopted overlay ordinance. We approved the PPL laydown. We approved the preliminary subdivision. We hired independent consultants. We granted extensions. At every step, this township acted in good faith to keep this project on track.

Now I am asking for good faith in return. Not to stop the project — to ensure it operates with enforceable protections that match the scale of what is being built. A Good Neighbor Agreement does not delay the project. It converts the developer's own stated commitments into a form that protects this community for the life of the facility — through ownership changes, management changes, and the passage of time.

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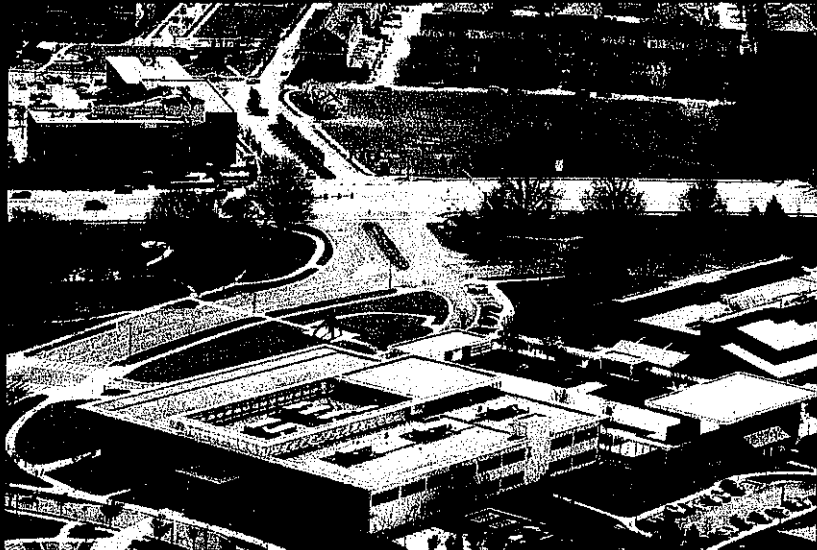
Closing



Prince William County Noise Ordinance Update

March 18, 2025

Board of County
Supervisors Meeting



Photos borrowed from: <https://historicprincewilliam.org/county-history/aerial-photo-survey/>

Prince William County Noise Ordinance Update

AGENDA

- Background
- Peer Reviewed Communities
- Overview of Draft Updates
 - Administrative
 - Elements of sound
 - Technical
- Measurements Levels
 - A, C weighted & Octave Bands
 - Impulse, Intermittent & Continuous
 - Comparisons
 - Additive Model
 - Actual measurements
- Additional Recommendations
 - Proposed Enforcement
 - Additional Processes
 - JLARC and County Staff Recommendations

Prince William County
Consultant Team

Ed Davidson, PG
Project Manager

Jenn Cinelli-Miller
Planner

David Nelson
Acoustical Engineer
Nelson Acoustics

Photos borrowed from: <https://historicprincewilliam.org/county-history/aerial-photo-survey/>



Digital version: bit.ly/DataCenterNoiseStudy
Recommendations on slide 14

Background

Why are we updating the County Noise Ordinance?

- The current decibel scale used in the County Noise Ordinance was created over 30 years ago.
- A-weighted scale doesn't effectively address the low-frequency noise generated by Data Centers and other large commercial facilities.
- Data Center development has grown exponentially over the past 10 years.
- Noise is potentially produced 24 hours per day/7 days per week.
- An example of noise created by cooling equipment:
 - Air pulled across fans which creates low frequency noise and vibrations.
 - Air is exhausted through fans on the top of the building which also generates noise.
- Tanner Way Data Center complex has significant rooftop equipment - 424 total exhaust fans.



Data Center noise is a 21st century issue that is ever evolving due to high demand for technology.



Background, continued

Establishment of the Data Center Ordinance Advisory Group (DCOAG)

In 2023, Prince William County staff created the DCOAG:

- Comprised of citizen representatives and a member of the National Parks Conservation Association.
- Advises the County staff on regulatory changes proposed to address the impacts of data center development.
- Regulatory changes include the County Noise Ordinance (Chapter 14 of County Code), Zoning Ordinance and Design and Construction Standards Manual.
- The County brought in two consulting firms, JMT and Nelson Acoustics to assist with
 - Recommending revisions to the County Ordinance.
 - Provide recommendations for State level changes to address Legislative changes.
 - Create a framework for noise testing and modeling.



Background, continued

JMT conducted extensive research of peer communities that have dealt with or are currently dealing with Data Center noise. This research included:

- Prince William County Noise Ordinance, Chapter 13.1-10
- State of Virginia Dillon Rule, State Code
- Online explanation of noise at 100, updated codes of peer communities
- County code reviews:
 1. VA Beach - Tanner v. Virginia Beach
 2. Wrentham, VA - Three court cases concerning the incoming Amazon Data Center filed by Citizens for Fauquier County
 3. Williston, ND - Corey Seidel, et al. vs. Atlas Power Holdings (ND), LLC*
 - *Could become a precedent setting case
 4. Federal Noise Standards Review
- International communities

JMT spoke with Planning Directors and planning staff in multiple locations to verify information and to receive updated documents. Most communities found updating their zoning ordinance over their noise ordinance had the most impact on mitigating noise from incoming data centers.

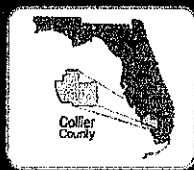


Peer Reviewed Communities, Ordinance & Zoning Changes



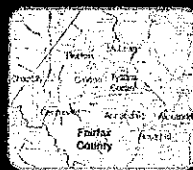
Chandler, AZ

- Maintain existing Ambient Levels
- Strong Zoning Requirements for incoming Data Centers
- Continued Monitoring of noise levels



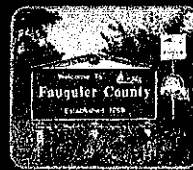
Collier County, FL

- Divided noise ordinance into multiple sections
- Appropriate enforcement response to Noise - i.e. route Barking Dog to Animal control
- Updated Zoning Code



Fairfax County, VA

- Noise Ordinance applicability tables are very detailed and explain regulations
- Created a Department of Code Compliance
- Has exception list for emergencies, responding vehicles and alarms



Fauquier County, VA

- Developed a comprehensive Data Center Policy
- Addresses siting of incoming data centers
- Considers existing infrastructure and compatibility with the surrounding area



Peer Reviewed Communities, Ordinance Updates

City of Manassas, VA

- A. Studies were conducted over two years to provide data for the Noise Ordinance update.
 - 1. Measured maximum sound levels from the source.
 - 2. Reduced the maximum sound levels for industrial districts.
 - 3. Removed commercial and industrial cooling equipment from noise limit exemptions.
- B. Maximum Sound Levels were reduced by 5 decibels based on the type of district for both day and night.



King George County, VA

- A. Noise Ordinance update was completed in 2023.
 - a. Linked continuous versus impulse noise.
 - b. Added dB² as a form of measurement for violations.



Peer Reviewed Communities Ordinance Updates, cont.

Loudon County

- Updated Data Center standards and locations and incorporated into their Comprehensive Plan and Zoning Ordinance.

Town of Warrenton, VA

- 2022 – Required Amazon Data Center to reduce their Octave Band levels to reduce the lower frequency sound.
- Added a request to conduct a sound test a month after the facility came online.

The Town is currently updating their Zoning Ordinance:

- <https://www.warrentonzoningordinanceupdate.com/>
- Summer of 2024 a survey and initial public outreach were conducted
- This two-year process will allow resident, business owners and staff to assess the current zoning regulations and update based on the needs of the community.





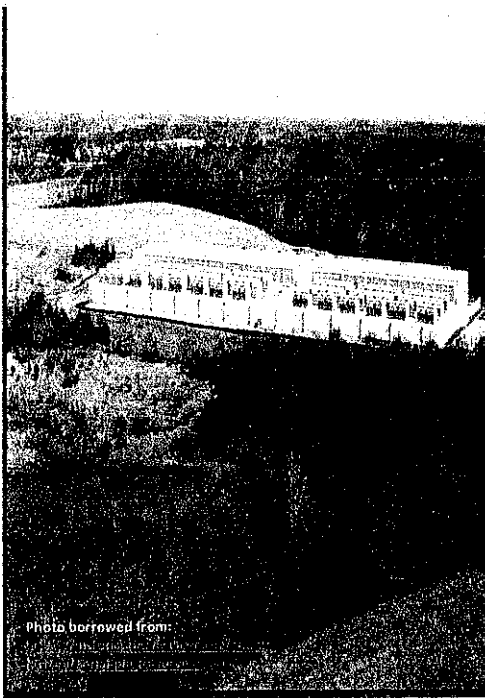


Photo borrowed from:

http://www.fda.gov/oc/ohrt/ohrt.html
 National Commission on

Proposed Technical Updates

Proposed major changes:

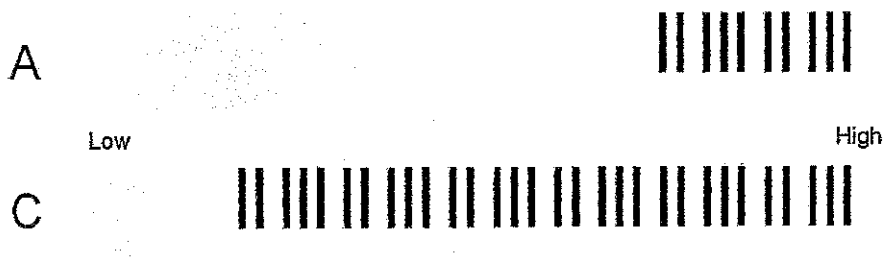
- Revised Permissible Limits to address:
 - Impulse noise
 - Intermittent noise
 - Constant or Continuous Noise
- Created more concise measurement levels
 - Add dBC
 - Provide Octave band sound levels

11

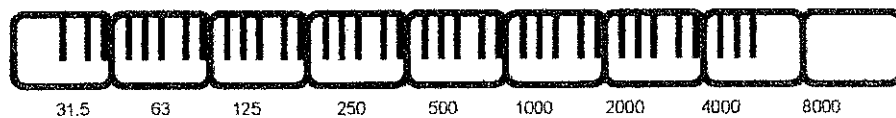


Measurement Levels – Being updated

Distinction between A/C Weighted Scale



Octave-band sound levels, continuous



Draft Impulse Levels

Maximum Permissible Impulse Levels (Lmax)

Zoning District Classification	Maximum dBA Daytime	Maximum dBA Nighttime	Maximum dBC Daytime	Maximum dBC Nighttime
Residential	77	62	90	75

Draft Intermittent Levels

Maximum Permissible Equivalent Sound Pressure Levels (LEQ)

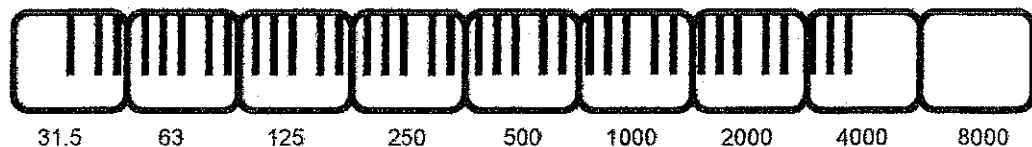
Zoning District Classification	Maximum dBA Daytime	Maximum dBA Nighttime	Maximum dBC Daytime	Maximum dBC Nighttime
Residential	52	47	65	60
Mixed Use District	62	57	70	65
Commercial	65	60	75	75
Industrial	79	72	80	80

13



Draft Continuous Measurement Levels

Octave-band sound levels, continuous



Daytime:	65	60	55	50	45	41	38	36	35
Nighttime:	60	55	50	45	40	36	33	31	30

Daytime = 48 dBA/Nighttime = 43 dBA

Measurement Level Comparisons

Comparison of Criteria

Day				Night			
31.5	65	—	68	31.5	60	—	65
63	60	64	65	63	55	59	62
125	55	60	61	125	50	55	56
250	50	54	55	250	45	49	50
500	45	48	52	500	40	43	46
1000	41	42	49	1000	36	37	43
2000	38	38	46	2000	34	33	40
4000	36	34	43	4000	32	29	37
8000	35	30	40	8000	30	25	34
A_{max}	48	51	55	A_{max}	43	46	49
C_{med}	65	67	69	C_{max}	59	64	65



Additive Noise Example +3 Model with Resampling

Sample
Neighborhood



Ambient measurement is 40 dBA

Modeling reflects the rise in decibel
levels by 9 with only three applications.



Data Center Bld 1
Emits 40 dBA
Adds 3 dBA

New Ambient = 43 dBA



Data Center Bld 2
Emits 43 dBA
Adds 3 dBA

New Ambient = 46 dBA



Data Center Bld 3
Emits 46 dBA
Adds 3 dBA

New Ambient = 49 dBA



General Observations

Background Levels

Residential

1. Great Oak – Tanner Way Data Center noise

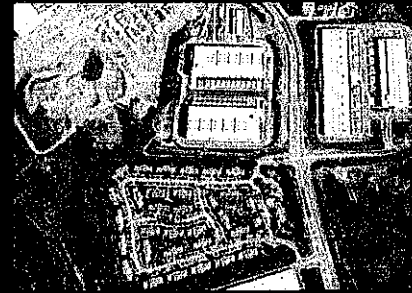
- Data Center strongly masked by traffic noise during shift
- Effect not felt at greater distance in the neighborhood.
- Likely because of shielding due to roof parapets
- Low-frequency tones are present (90 Hz in particular)
- Most likely audible indoors

2. Hornbaker

- Masked by traffic noise, kept pushing to remove enough
- If Hornbaker were more noticeable on ground, it may have been
- possibly less impactful at neighboring apartments

3. Cloud HQ

- Very difficult to pick out device
- Traffic, traveling roadways near and far
- Aircraft operations at Manassas Airport



Sound Measurements – Locations with No Data Centers

Unit: dBA, Leq, 10 min, 1000 Hz

Date	Time	Class	Location	LpAeq		Lp,50 OBSPL									
				LpAeq	LpC,eq	31.5	63	125	250	500	1000	2000	4000	8000	
10/9/24	Day	Residential	Kingsbrooke	52	65	66	54	50	44	41	38	33	27	19	
11/5/24	Day	Residential	Montclair Subdivision	44	57	49	49	45	39	33	36	34	32	28	
11/5/24	Day	Residential	Cloverdale	39	54	51	50	47	40	32	35	35	32	31	
11/5/24	Day	Residential	Rollingwood	47	62	55	57	55	47	37	36	32	31	26	
11/27/24	Day	Residential	Nokesville	37	53	52	50	40	35	33	31	21	14	13	
1/30/25	Day	Residential	Heritage Hunt Community	40	55	54	50	43	39	36	33	27	22	21	
1/30/25	Day	Residential	Amberleigh Station	36	59	59	54	46	34	30	27	23	21	17	
10/9/24	Day	Education	Yung Elementary	46	63	61	58	54	46	42	40	33	26	23	
11/5/24	Day	Education	Beville MS	48	64	57	55	47	38	30	35	34	26	16	
11/5/24	Day	Education	Montclair Library	43	59	56	55	49	45	39	36	33	24	17	
10/9/24	Day	Park	Rollins Ford	47	62	56	58	56	49	39	38	31	23	14	
11/5/24	Day	Park	Locust Shade	52	63	60	58	54	49	49	48	42	36	30	
1/30/25	Day	Park	Manassas Battlefield/Brawner Farms	43	62	60	56	49	41	39	37	25	21	18	
1/30/25	Day	Park	Long Park	51	62	57	58	52	46	49	47	38	21	16	
Day Criterion				52	65	65	60	55	50	45	41	38	36	35	

Residential “Background” Day

Effective 48 dBA day

Vehicle traffic and school bus noise contributed to the “false positives”

Sound Measurements Locations No Data Centers

Red shading = non-compliance

Date	Time	Class	Location	LpA,eq	LpC,eq	Lp,50 OBSPL									
						31.5	63	125	250	500	1000	2000	4000	8000	
10/23/24	Night	Residential	Kingsbrooke	35	49	47	46	41	36	34	29	28	32	23	
11/12/24	Night	Residential	Kingsbrooke	45	58	45	43	41	39	35	38	42	44	38	
11/29/24	Night	Residential	Nokesville	32	48	45	44	40	33	27	26	15	12	12	
10/23/24	Night	Education	Yung Elementary	40	55	51	50	47	39	39	34	29	28	17	
10/23/24	Night	Park	Rollins Ford	39	60	58	54	49	43	36	31	27	25	18	
			Night Criterion	47	60	60	55	50	45	40	36	33	31	30	

Residential "Background" Night

Effective 43 dBA night

Insect noise contributed to the "false positives"

Data Centers Day

Date	Time	Class	Location	LpA,eq	LpC,eq	Lp,50 OBSPL									
						31.5	63	125	250	500	1000	2000	4000	8000	
10/9/24	Day	Data Center	Tanner Way	54	66	64	61	56	51	51	51	42	31	24	
10/9/24	Day	Data Center	Wellington Glen	59	73	64	65	59	53	51	53	49	41	30	
10/9/24	Day	Data Center	Hornbaker 1	60	71	69	64	63	59	59	57	51	44	29	
10/9/24	Day	Data Center	Hornbaker 2	62	75	66	64	64	56	56	54	50	43	29	
1/30/25	Day	DC/Traffic	Hornbaker 1	56	68	65	62	59	52	52	51	48	37	22	
1/30/25	Day	Traffic/DC	Cloud HQ	52	64	60	59	56	51	46	43	33	25	20	
Day Criterion				52	65	65	60	55	50	45	41	38	36	35	

Red shading = non-compliance

Data Centers Night

Date	Time	Class	Location	LpA _{eq}	LpC _{eq}	Lp,50-OBSPL								
						31.5	63	125	250	500	1000	2000	4000	8000
10/23/24	03:23	Data Center	Tanner Way Powerline Easement	47	61	58	57	54	49	45	40	37	41	19
1/30/25	05:35	DC/Traffic	Tanner Way Powerline Easement	52	65	61	60	56	50	50	48	37	22	17
1/30/25	04:24	DC/Traffic	10200 Winged Elm	48	61	57	58	51	47	45	43	32	23	20
1/30/25	04:44	DC/Traffic	10224 Winged Elm	52	63	59	58	56	48	46	44	33	20	17
1/30/25	05:06	DC/Traffic	10087 Post Oak Terrace	49	60	54	56	50	46	45	45	35	20	17
10/23/24	04:47	Data Center	Wellington Glen	56	66	60	61	53	49	50	49	44	35	26
11/12/24	05:40	Data Center	Wellington Glen	54	70	59	60	55	49	42	44	43	34	22
1/30/25	06:13	Data Center	Wellington Glen A	60	72	72	67	60	54	54	56	52	39	26
1/30/25	06:21	Data Center	Wellington Glen B	62	73	70	66	61	58	55	57	53	42	30
10/23/24	05:06	Data Center	Hornbaker 1	55	70	66	64	63	56	54	51	48	44	40
10/23/24	05:09	Data Center	Hornbaker 2	52	67	65	63	61	54	50	48	46	43	38
Night Criterion				47	60	60	55	50	45	40	36	33	31	30

Red shading = non-compliance

http://www.joint.org/

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21

Using Ordinance Levels

Updating measurements will:

- Provide moderate protection against noise sources incompatible with residential living,
- Provide additional protection against continuous noise sources,
- Be more restrictive at night,
- Minimize "false positives."

Updating measurements won't:

- Achieve complete "silence." Sources may still be audible,
- Once sound is heard by human ear, it is more easily detected - even at lower levels.

http://www.joint.org/

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22



JLARC

Report/Recommendations

Land Use Recommendations

- Classify data centers as industrial use,
- Revise zoning maps to prevent by-right data centers next to residential,
- Ensure minimum requirements for data center developments are sufficient (setbacks, building heights),
- Designate optimal locations for data center development (away from residential, close to transmission),
- Require pre-development sound modeling and revise ordinances to better prevent and address noise conflicts.

These items will be referred to Mosley Architects for Future Board Consideration



JLARC

Report/Recommendations, cont.

Land Use Recommendations

- Initiate changes to zoning ordinances that can address incoming data centers and other industrial uses for best practices.
- Review locations of zones currently allowing data centers by right, and re-assess the overlay district, while considering proximity to existing and proposed residential areas, parks, historical landmarks, etc. when siting data centers.
- Consider data center applications within the context of current and planned development in the same area to minimize aggregate effects.
- Ensure incoming industrial development includes necessary setbacks, building heights, and has access to necessary infrastructure.
- Require pre-development sound modeling to better prevent and address noise conflicts.

These items will be referred to Mosley Architects for Future Board Consideration



Enforcement Updates

1. Excessive Sound in Residential Areas: will continue to be enforced by Prince William County Police and prosecuted by the Commonwealth Attorney's Office
2. Industrial, Construction and Commercial Noise: proposed to be enforced by PWC Police in conjunction with PWC Public Works and a third-party noise consultant (prosecuted by the Commonwealth Attorney's Office)
 - Purchasing 10 new level one noise meters = \$50K
 - Staff training in the use of the meters = \$2,000
 - Rutgers Noise Technical Assistance Center (RNTAC) online certification per registration = \$1120 (\$730/\$390)
 - Third-party noise consultant estimated at \$2,000/- per violation case.
 - Cost to obtain ambient noise readings for a residential community by a consultant = \$30,000
 - Time to respond to noise violations needs to be addressed.



25

Additional Process Needed

1. Update Zoning Ordinance
 - a. Develop a potential impact checklist for incoming Data Centers/Industrial complexes and add a noise emission model.
 - b. Consider re-assessing the Data Center Overlay District.
 - c. Change zoning and building codes to require updated design practices for data center/industrial use.
2. Modify citations, fees and how penalties are assessed – Legislation may be required.
3. Compute sound pressure levels at representative locations (e.g., perimeter above noise barriers or parapets) that correspond to compliant levels at noise-sensitive areas in the community
4. Require monitoring and enforce sound pressure levels at the monitor locations, including the use of perimeter monitoring.



These items may require legal review, need legislative or other types of state level action.



26

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Prince William County Staff: Request for Board direction

1. Does the Board support the proposed re-write of the Noise Ordinance to include a change in the noise scale?
2. Does the Board support the establishment of the three categories for noise enforcement?
 - Impulse noise
 - Intermittent noise
 - Continuous noise
3. Does the Board support the requirement for projects meeting the low frequency noise emission criteria (TBD) to submit noise testing and noise modeling to ensure compliance with the Noise Ordinance as a condition to operate in the County?
4. Does the Board support staff developing a budget for the Board's consideration for the enforcement of the continuous noise standards?



Questions

