



# Prince William County Noise Ordinance Update

August 7, 2024

PRESENTED TO: Prince William County/Data  
Center Ordinance Advisory Group



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Prince William County

# Noise Ordinance Update

YOUR **JMT** Team

## AGENDA

### Draft Outline Updates

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# DRAFT OUTLINE UPDATES

JMT is pleased to present revised language based on comments received from the County, the Data Center Ordinance Advisory Group members.

- New and modified recommendations based on comments received.
- These updates focus on noise as a whole, not just based on single source output.
- Only updated sections are included in the presentation.



# Draft Noise Ordinance, Updates

## 14.2 Definitions

For the purposes of this chapter, the following words and phrases shall have the meanings respectively ascribed to them by this section:

- **Ambient sound** shall mean encompassing and/or background composite sound at a given place, exclusive of a single activity or source subject to this chapter
  - Adapted from ASA definition 2.33
- **ANSI** means the American National Standards Institute, Inc., New York, New York.
- **ASA** means the Acoustical Society of America
- **Board** shall mean the Prince William County Board of Supervisors
- **Chief** means the chief of police of Prince William County or his authorized agents.
- **A-Weighted Sound Pressure Level** shall mean frequency-weighted sound levels, measured over the 'A' frequency range, specified in units of dB(A) or dBA and as specified in the current version of ANSI/ASA Standard S1.4/IEC Standard 61672-1
- **C-Weighted Sound Pressure Level** shall mean frequency-weighted sound levels, measured over the 'C' frequency range, specified in units of dB(C) or dBC and as specified in the current version of ANSI/ASA Standard S1.4/IEC Standard 61672-1

### What Changed:

- Changed Definitions section from 14.3 to 14.2
- Added Definitions as shown above and on following slides





# Draft Noise Ordinance, Updates

## 14.2 Definitions, continued

- **Commercial motor vehicle** shall mean, except for those vehicles specifically excluded in this definition, every motor vehicle, vehicle or combination of vehicles used to transport passengers or property which either: (i) has a gross vehicle weight or a gross vehicle weight rating of 26,001 or more pounds, whichever is greater; (ii) has a gross combination weight or a gross combination weight rating of 26,001 or more pounds, whichever is greater, inclusive of a towed vehicle with a gross vehicle weight rating of more than 10,000 pounds; (iii) is designed to transport 16 or more passengers including the driver; or (iv) is of any size and is used in the transportation of hazardous materials as defined in this section. Every such motor vehicle or combination of vehicles shall be considered a commercial motor vehicle whether or not it is used in a commercial or profit-making activity.

The following are excluded from the definition of commercial motor vehicle:

1. Any vehicle when used by an individual solely for his own personal purposes, such as personal recreational activities;
2. Any vehicle that (i) is controlled and operated by a farmer, whether or not it is owned by the farmer, and that is used exclusively for farm use, as provided in Code of Virginia §§ 46.2-649.3 and 46.2-698; (ii) is used to transport either agricultural products, farm machinery, or farm supplies to or from a farm; (iii) is not used in the operation of a common or contract motor carrier; and (iv) is used within 150 miles of the farmer's farm;
3. Any vehicle operated for military purposes by (i) active-duty military personnel; (ii) members of the military reserves; (iii) members of the national guard on active duty, including personnel on full-time national guard duty, personnel on part-time national guard training, and national guard military technicians (civilians who are required to wear military uniforms), but not U.S. Reserve technicians; and (iv) active-duty U.S. Coast Guard personnel; or
4. Emergency equipment operated by a member of a firefighting, rescue, or emergency entity in the performance of his official duties.

# Draft Noise Ordinance, Updates

## 14.2 Definitions, continued

- **Equivalent Continuous Sound Level ( $L_{eq}$ )** shall mean the sound level in decibels, having the same total sound energy as the fluctuating level measured over the period of measurement, calculated as ten times the logarithm to the base ten of the ratio of time-mean-square frequency-weighted sound pressure signal, to the square of the reference value for sound pressure.
  - ASA definition 3.15
- **IEC** means the International Electrotechnical Commission
- **Impulse sound** shall mean a single or multiple sound event characterized by a rapid rise to a maximum sound pressure of high intensity, followed by a somewhat slower decrease in sound pressure. The duration of an impulse sound event, which includes a combination of rise time, peak amplitude and decay, shall be no more than one second. Impulse sound shall be measured using unweighted peak dB ( $L_{peak}$ ) levels and the fast setting of a sound level meter. Impulse sound may include, but is not limited to, sound from weapons fire, pile drivers or blasting.
- **Maximum sound level ( $L_{max}$ )** shall mean the maximum noise or vibration level during a measurement period or a noise event, as measured using a slow sound level response or time-constant
  - ASA definition 3.13
- **Nighttime** means those times excluded from the definition of daytime.

# Draft Noise Ordinance, Updates

## 14.2 Definitions, continued

- **Noise** shall mean the intensity, frequency, duration or character of sounds from a single source or multiple sources that may degrade the public health, safety or welfare.
- **Noise disturbance** means any sound which:
  1. Endangers or injures the safety or health of humans; or
  2. Endangers or injures personal or real property; or
  3. Exceeds the applicable maximum permissible sound levels as they appear in the table in [section 14-4](#).
- **Residential dwelling** shall mean any structure in which one or more persons live on a permanent or temporary basis, including, but not limited to, single family dwellings, multiple family dwellings, hotels and motels.
- **Sound** shall mean an oscillation in pressure, particle displacement, particle velocity or other physical parameter, in a medium with internal forces that causes compression and rarefaction of that medium. The description of sound may include any characteristic of such sound, including duration, intensity and frequency.
  - ASA definition 2.01
- **Sound level meter** shall mean an instrument to measure sound pressure levels that meets or exceeds performance standards for a Class 1 meter as specified by the Virginia Department of General Services under Code of Virginia, § 2.2-1112.C and the latest revision of ANSI/ASA standard S1.4 and IEC standard 61672.



# Draft Noise Ordinance, Updates

## 14.2 Definitions, continued

- **Sound pressure level (SPL)** shall mean a logarithmic measure of the effective pressure of a sound relative to the threshold of human hearing (20  $\mu$ PA) measured in decibels (dB).
  - From ASA definition 2.01
- **Statistical Noise Level ( $L_n$ )** shall mean the percentile noise level where 'n' is between 0.01 and 99.9%, of the time that the stated or observed level is exceeded
- **Truck** shall mean every motor vehicle designed to transport property on its own structure independent of any other vehicle and having a registered gross weight in excess of 7,500 pounds. "Truck" does not include any pickup or panel truck.
  - Per VA § 46.2-100. Definitions.
- **Zoning district classification** is the scheme of land use classification contained in the Prince William County Zoning Ordinance.





# Draft Noise Ordinance, Updates

## 14.3 Violations of Chapter

Any person violating any provision of this chapter shall be guilty of a Class 3 to Class 1 misdemeanor.

- a. Enforcement of this chapter shall be at the direction and under the authority of the Chief of Police. The Chief of Police may direct additional County staff to assist with responding to complaints with the purpose of collecting of sound level data. County staff that are tasked with responding to complaints will be trained by a certified sound consultancy program such as Rutgers Noise Technical Assistance Center (RNTAC). Staff will be accompanied by an officer of the law for property access.
- b. Any person authorized to enforce this ordinance may use equipment deemed proper pursuant to Code of Virginia, § 2.2-1112(C), as amended from time-to-time, to determine the decibel level of any sound, including noise. The results of such determinations shall be accepted as prima facie evidence of the decibel level of the sound in any court or legal proceeding where the decibel level of the sound is at issue.
- c. The County Police Chief or designee shall have the authority to revoke, as set out in this section, any event or gathering permit, issued through a written revocation, which shall be effective immediately for the reasons below:
  1. If Permit holder has misrepresented a material fact in applying for a permit;
  2. If the permit holder is convicted twice in any calendar year of violation of this Chapter (Noise);
  3. Upon certification and documentation by the County that the premises covered by the permit are not in compliance with applicable regulations or with the permit restrictions as approved by the County



# Draft Noise Ordinance, Updates

## 14.3 Violations of Chapter, continued

### Recommendations:

- Add ability for County to require sound generators to:
  - Conduct noise impact assessment (in accordance with study template)
  - Conduct mitigation/control technology assessment
  - Implement mitigation/control technology
- In cases where a singular contributing source cannot immediately be determined, add ability to require assessments from multiple likely sources.
- In cases where a violation is the result of cumulative impacts from multiple contributing sources, each contributing source shall be held in violation (identified through methods specified in County guidance, i.e., sound study template)





# Draft Noise Ordinance, Updates



## 14.4 Maximum Permissible Sound Levels generally

(a) Except as otherwise provided, any noise which emanates from any operation, activity or source and which exceeds the maximum permissible equivalent continuous sound levels ( $L_{eq}$ ) established below in Table 14.4 is hereby prohibited, ~~except that limited duration exceedances may be deemed permissible subject to the following conditions:~~

- ~~1. Exceedances occur for no more than ten percent of any operating and/or measurement period of not less than 1 hour, in accordance with the corresponding statistical noise level ( $L_{10}$ ), and~~
- ~~2. The maximum sound level ( $L_{max}$ ) observed during any operational and/or measurement period does not exceed the maximum permissible equivalent continuous sound pressure level by more than ten decibels.—~~
- ~~3. Where ambient sound levels meet or exceed the maximum permissible equivalent continuous sound level ( $L_{eq}$ ) identified in Table 14.4, no activity or source shall result in an observed increase exceeding 3 dB over ambient levels. In such cases, no activity or source may result in an observed sound levels of 6 dB or more above prescribed levels.~~

Such levels shall be measured at the property boundary of the sound source or at any point within any other property affected by the noise. The location of the measurement shall determine the applicable zoning district classification noise limit. At property boundaries between dissimilar zoning district classifications, the limits of the more restrictive classification shall apply.

- Remove prior recommendation for allowance for exceedance of 3/6 dB in cases where ambient is equal to or greater than specified threshold, and preserve 3 dB adjustment in Section 14.7
- Remove prior recommendations for short term exceedances and replace with recommendations in Section 14.7

# Draft Noise Ordinance, Updates

## 14.4 Maximum Permissible Sound Levels generally, continued

c. Any person, with lawfully obtained permits, who between the hours of 6:00 a.m. and 10:00 p.m. weekdays and between the hours of 9:00 a.m. and 7:00 p.m. on Saturdays, Sundays and legal holidays observed by county government operates or causes to be operated any equipment used in construction, repair, alteration or demolition work on buildings, structures, alleys or appurtenances thereto in the outdoors in any residential district within 500 yards of a lawfully occupied dwelling shall ~~not~~ be subject to the Industrial threshold levels enumerated above.

d. Persons performing emergency construction of public projects, repair or maintenance work for such projects or persons performing work for private or public utilities for the repair of facilities or restoration of services shall not be subject to the levels enumerated above. (Unless otherwise restricted by Municipal or other permitting requirements)

### Recommendation:

- Add requirement to comply with noise impact assessment studies completed in support of project approval; deviations from supporting impact assessments which result in exceedance of threshold levels, or observed increases equal or greater than 2 dB beyond assessment results regardless of level, would be violations.
- Add a limit of no more than 5 dBA increase observed at sensitive receptors (parks and exterior walls of residential dwellings, hospitals and schools)





# Draft Noise Ordinance, Updates

## 14.5 Prohibitions Generally (Motor Vehicle Related)

The following acts are violations of this chapter:

### Current:

2. Operating, loading or unloading any vehicle, including but not limited to trucks, or the opening and destruction of bales, boxes, crates and containers in the outdoors in zones other than industrial within 100 yards of a lawfully occupied dwelling between the hours of 10:00 p.m. and 6:00 a.m.

### Proposed:

2. Operating, loading or unloading commercial motor vehicles, truck, trailers, or the opening and destruction of bales, boxes, crates and containers in the outdoors in zones other than industrial within 100 yards of a lawfully occupied dwelling between the hours of 10:00 p.m. and 6:00 a.m.



# Draft Noise Ordinance, Updates

## 14.7 Measurement Procedures

1. Any person authorized to enforce this ordinance may use equipment deemed proper pursuant to Code of Virginia, § 2.2-1112(C), as amended from time-to-time, to determine the decibel level of any sound, including noise. The results of such determinations shall be accepted as prima facie evidence of the decibel level of the sound in any court or legal proceeding where the decibel level of the sound is at issue.
2. The measurement of sound or noise shall be made with Class 1 sound level meters as defined in 14-2 above. The instruments shall be maintained in calibration and good working order. A calibration shall be made of the system at the time of any noise measurement, and calibration results recorded. Measurements recorded shall be taken so as to provide a proper representation of the noise source. The microphone during measurement shall be positioned so as not to create any unnatural enhancement or diminution of the measured noise. A windscreen for the microphone shall be used when required. If the ambient noise is equal to or greater than the levels set forth in section 14-4 above, three dB shall be subtracted out of the observed sound level.
3. The slow meter response of the sound level meter shall be used to determine that the average amplitude has not exceeded the dB readings or the limiting noise spectra set forth in section 14-4 above.
4. Unless otherwise specified, the measurement shall be made at the property boundary on which such noise is generated, or at any point within the receiving property affected by the noise.



# Draft Noise Ordinance, Updates

## 14.7 Measurement Procedures, continued

### Recommendations:

- Measurement procedures to include option of:
  - A minimum of three sound level readings, the geometric mean of which will be used as the average sound level.
  - A minimum of two (2) non-consecutive 15-minute observation periods for each applicable subject during any time period (daytime or nighttime)
- Specify the parameters to be collected & recorded:
  - 1/3 octave band levels
  - Leq
  - Lmax
  - Lpeak
  - Ln



# Draft Noise Ordinance, Updates

## 14.7 Measurement Procedures, continued

### Recommendations:

- Add 5 dB “penalty” to observed Leq for:
  - Tonality (level within any 1/3 octave band exceed adjacent bands by 5 or more dB)
    - ISO 1996-2, Denmark, Finland, many others
  - Impulse or intermittent sounds (Lpeak or Lmax exceeds Leq by 10 or more dB)
    - EPA, Denmark, Finland, Ireland, many others
- Add 5 dBA “penalty” to observed dBA Leq for low-frequency sources (“C-minus-A”; where dBC Leq exceeds dBA Leq by 15 or more decibels)
  - European countries, Singapore, acoustical engineering practices, music production



# Draft Noise Ordinance, Updates

## 14.8 Exemptions

Exemptions from the provisions of this chapter may be granted in accordance with the requirements below:

- 1) Any person responsible for any noise from the operating of any equipment used in construction, repair, alteration or demolition work on building structures, alleys or appurtenances thereto shall apply to the Director of Public Works for an exemption or partial exemption from the provisions of this chapter. All other requests for exemptions shall be directed to the Director of Public Works, who may grant such exemption or partial exemption if it is found that:
  - a. The noise does not endanger the public health, safety or welfare; or
  - b. Compliance with the provisions of this chapter from which an exemption is sought would cause a serious hardship without producing equal or greater benefit to the public.
- (2) In determining whether to grant such exemption the director or chief shall consider the following:
  - a. The time of day the noise will occur;
  - b. The duration of the noise;
  - c. The loudness of the noise in relation to the maximum permissible sound levels set forth in section 14-4 of this chapter, based upon sound source data and/or a noise impact analysis provided by the responsible party;
  - d. Whether the noise is intermittent or continuous; and
  - e. Such other matters as are reasonably related to the impact of the noise on the health, safety and welfare of the community and the degree of hardship which may result from the enforcement of the provisions of this chapter.

# Draft Noise Ordinance, Updates

## 14.8 Exemptions, continued

- (3) Exemptions or partial exemptions, issued pursuant to this section shall be granted for such period not to exceed 90 days. Exemptions shall be renewable at the request of the responsible party, subject to the discretion of the director or the chief. Any such exemption shall be reviewed if complaints are received by the Director and may be revoked if, when the foregoing standards are applied, circumstances no longer justify the exemption or partial exemption.
- (4) Any person aggrieved by a decision of the Director made pursuant to this section may obtain review of such decision by the county executive or his authorized agent by delivering a written statement of appeal to the office of the County Executive within ten days of the date of the decision. The county executive shall review all statements of grievances and shall, within ten days after receipt of such written statement of grievance, either affirm or set such decision aside, and make any such further determination as may be necessary to effectuate the provisions of this section. The decision of the county executive shall be final and binding.

Note: Recommendation for implementation period has been removed; alternative approach to requiring studies as indicated in 14.3



# Questions?

