

Data Center Working Group: Sustainability Subgroup

Draft Recommendation on Noise

Revised Submission on 1/21/2024

Scope

Data centers generate noise from their operations both inside the facility and outside. The focus of this recommendation is the noise generated outside the facility primarily from equipment maintained by the data center operator. However, with the Eastalco site, where there will be a Planned Data Center Community Manager, some of their actions may contribute to the generation of noise OR abatement of noise from the property. The ordinance should distinguish and make clear all roles that influence the level of noise generated by a single facility as well as noise on the development overall. All actions on the property should be recognized for either their contribution or abatement of noise.

Key Factors

- Outside noise factors include the operation of generators, chillers, condensers, compressors, fans and more.
- Many of these pieces of equipment run 24/7 and therefore generate noise on a constant and consistent basis. The impact of constant versus intermittent noise has a variety of health effects; many of which are still being explored
- While sound diminishes over distances, it can travel up to 2.5 miles from its source

Considerations

- In 2023, Chandler, Arizona approved an amendment to their zoning code. In it, a section was created specifically for data centers where of the many requirements placed on data centers, it stipulates the following:
 - o A pre-construction sound study conducted by a 3rd-party sound engineer is required to establish a baseline with results to be shared with residents prior to a scheduled neighborhood meeting
 - o Requires sound mitigation measures to ensure noise from the data center does not exceed levels observed during the baseline study
 - o Requires the data center to conduct an annual noise study during peak operation times for 5 years after post-construction
 - o Establishes backup generator routine maintenance and testing time limitations, including notification protocol.
- Source: Public Information Officer,
<https://www.chandleraz.gov/news-center/chandlers-data-center-ordinance-now-effect> , Jan 11, 2023

- Prince William County, VA in February 2023 extended its existing noise restriction of 55dBA during the day and evening to 24 hours of the day dependent on what is nearby such as residential developments.
- In developments where there is a site developer or master planned community manager, the ordinance language needs to recognize the potential for at least four distinct roles, with some being combined depending on how the services are offered:
 - o Data Center Community Manager
 - o Data Center Owner/Builder
 - o Data Center Operator
 - o Customer.
- The above distinctions are important in the instance of Eastalco, a Master Planned Data Center Community developed by Quantum Loophole because some features of the planned community (focused on other objectives such as carbon sequestration may have an abatement effect on noise). The combined effect of each organization's actions should be accounted for in the overall noise assessment solution.
- The ordinance should recognize differences between a planned, multi-site development under one management organization and singular site developments in how they can affect solutions at the site. For example, a multi-site development managed by a planned data center community manager on an ongoing basis can have a different level and combination of solutions for power requirements such as renewables, transmission, and/or sourcing (including onsite generation) as well as possibilities for carbon sequestration than a single site.
- Noise above 85 dB can lead to hearing loss and OSHA requires hearing protection above 85 dB. What level should be considered safe for those neighboring the facility? Sound studies should be suggested by the ordinance to identify proper sound levels by an independent sound engineer.
- What other operations in the area will contribute to noise levels within a 2.5-mile radius – the distance attributed to the distance sound can travel? What will be the cumulative effect especially for anything pre-existing? What level is safe considering other surrounding noise? In other words, do we allow for a cumulative assessment?
- How will the county protect sensitive facilities already near the data center site and the location of any new sensitive facilities. How will sensitive facilities be defined—hospitals, schools – public and private, day care centers – for children and seniors etc.

Recommendation/s

- Any noise requirement should have a stipulation for a regular testing, monitoring, and reporting regime. A suite of metrics should be specified for base reporting that all data centers must meet, allowing them to go beyond in providing more detailed information, if they so choose. A specified interval for reporting should be cited with consideration given at minimum to annual reporting and its continuation for a specified time into the future. There is technology for continuous monitoring of outside sound and the county should determine what level of monitoring is sufficient to meet public health standards—intermittent versus continuous. Any continuous or intermittent monitoring still needs a clear requirement for reporting and public notification of extreme events. Depending on the extent of the base reporting, all or a subset of metrics should be released to the public.
- The county should retain the right to call for additional testing and reporting should reasonable complaints arise from the surrounding property owners.
- Consideration should be given to a penalty for ongoing neglect to address cited violation of the ordinance. Those proceeds should be placed in a noise abatement fund—see below.
- There should also be consideration given to a procedure to exceed noise level requirements for a short period of time for situations like construction outside the facility. However, these elevated levels should not exceed 55 to 65 dBA (a determination should be established by the county to sufficiently protect citizens working, schooling, or living near the data center/s) and temporary preventive measures should be put in place to mitigate any noise levels exceeding it.
- Restrict sensitive facilities to 2.5 miles from the perimeter of the data center. For existing facilities that predate the development, data center operators and developers should be required to contribute to a noise abatement fund (based on size and features of their operations) that would allow those neighboring existing sensitive facilities to retrofit the proper technology to reduce data center noise around their property.
- The Planning Commission should request data centers operators and developers to submit their overall approach to noise abatement and specify the abatement technologies being considered with noise reduction projections included for site approval.
- Noise should be limited to no more than 55 dB consistent with other jurisdictions

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- County should plan for staff training and/or expansion to conduct separate monitoring efforts, especially for complaint investigations.