



Planning Advice: Data Centers

Data Centers

A data center is a facility that houses networked computers (servers) and related IT equipment used to store, process, and distribute data. While many businesses once operated small, onsite “enterprise” data centers, demand for internet services, e-commerce, cloud computing, and now artificial intelligence has led to the rapid growth of large, offsite facilities.

This publication focuses on large-scale data centers—not small server rooms within existing businesses. Although no specific size threshold is defined, these facilities typically require multiple acres of land and substantial building footprints. As this emerging industry expands across Pennsylvania and the region, municipalities in Berks County should prepare for their potential development, similar to how communities have addressed large-scale warehouses and logistics centers in recent years.

Pennsylvania is increasingly viewed as a competitive location for data center investment due to market access, available power capacity, and supportive policy discussions at the state level. As interest grows, municipalities should proactively consider planning and zoning strategies.

Large-scale data centers can resemble warehouse campuses in scale and intensity. The location of data centers should be prioritized in designated growth and existing development areas and should be avoided in prime agricultural soils and sensitive natural resources. These facilities may also place significant demands on energy and water infrastructure, making coordination among municipalities, utility providers, and authorities essential.

After reviewing guidance from planning resources, municipal ordinances, and professional organizations, the Berks County Planning Commission (BCPC) recommends that municipalities consider best practices for regulating large-scale data centers through municipal or multi-municipal comprehensive plans, zoning ordinances, subdivision and land development regulations, and related policies.



BCPC STAFF RECOMMENDATIONS

Each Municipality Should:

1. Update municipal and multi-municipal comprehensive plans to identify appropriate locations and conditions for data centers within the community.
2. Consider utilizing multi-municipal (joint) planning/zoning to approach data centers.
3. Designate data centers as a conditional use in zoning districts capable of accommodating necessary utility infrastructure and water demands, subject to conditions that mitigate adverse impacts.
4. Consider overlay zoning to direct data centers to areas with adequate infrastructure
5. Encourage the rehabilitation and reuse of existing development for data centers.
6. Clearly define “Data Center”, including related uses such as “Data Center Campuses” and “Data Center Accessory Uses”, and outline associated operational impacts.
7. Require timely notification of ownership changes to the municipality for taxation, maintenance, emergency, and decommissioning purposes.
8. Require baseline environmental and infrastructure assessments, including but not limited to the identification of energy and water sources, written confirmation from providers whether adequate capacity exists, and any other noted environmental or infrastructure-related adverse impacts that would result from the data center use. On-site power generation provisions are also encouraged.
9. Establish standards for lighting, buffering, noise, vibration, stormwater, and landscaping to minimize impacts on adjacent properties. (For example, a municipality may wish to consider requiring that native species and green stormwater infrastructure be used where feasible.)
10. Establish a minimum buffer between data centers and other uses, especially residential areas. (For example, a municipality may wish to require a 1,000 ft. buffer between the facility and residential uses).
11. Require the applicant to conduct a noise impact study, which includes a low-frequency noise analysis, to address adverse impacts associated with sound. (For example, a municipality may wish to permit a maximum noise level of 55db at property lines).
12. Require the use of renewable energy to the greatest extent possible and encourage rooftop solar installations on large buildings.
13. Require that data centers utilize recycled or reclaimed water for cooling operations where feasible.
14. Require submission of a Continuity of Operations Plan (COOP) addressing worst-case scenarios related to utility availability (e.g., drought, electrical brownouts), and establish backup power standards (e.g., Tier-4 Generator Usage, etc.)
15. Require a facility emergency management plan for on/off-site emergency responses at the data center which includes coordination with the County of Berks Department of Emergency Services (DES), and any other applicable local, state, and federal regulatory authorities. This plan shall be approved by the local emergency (fire/police/ambulance agencies). The plan should include, but not be limited to, the identification, warning, protection of the surrounding population and consideration of special risk occupancies. (For example, if a data center applicant proposed to have nuclear energy, including small modular reactor units, a municipality may wish to include specific provisions that address this energy source.)
16. Require mitigation measures for excessive heat generated by operations.
17. Encourage a pre-application meeting with municipal officials for all data center proposals.
18. Engage in communication with developers to identify potential risks and benefits to the community that may be associated with the proposed development. Developers may be open to community benefits agreements (CBAs) that provide support for local infrastructure improvements, workforce development and training opportunities, renewable or resilient energy systems, or other solutions to ensure the project strengthens local resources.
19. Require the submission of a decommissioning plan prepared by a qualified professional, and a decommissioning agreement between the applicant and municipality. The plan could include, but not be limited to procedures for safe shutdown, removal of equipment, disposal or recycling of materials, site restoration, a decommissioning bond, and language which includes a process for the review of decommissioning costs every 5 years.
20. Monitor local, state, and federal regulations on data centers and update ordinances accordingly.



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Each Project Should:

1. Avoid Prime Agricultural Soils (Class I-III) and lands designated for Agricultural Preservation in the BCPC Comprehensive Plan Future Land Use (FLU) Map.
2. Avoid impacts to High Quality (HQ) and Exceptional Value (EV) streams, wetlands, floodplains, steep slopes, and other environmentally sensitive areas.
3. Minimize land disturbances through phased site clearing and the preservation of mature trees.
4. Conduct pre- and post-construction environmental and infrastructure assessments. (For example, pre- and post-noise studies that may include perceived and low-frequency analysis).
5. Minimize creation of net-new impervious surface coverage.
6. Provide adequate site access for emergency management services.
7. Avoid adverse impacts to local water supplies.
8. Have adequate stormwater management plans.
9. To the greatest extent possible, be located within an area that has sufficient energy capabilities, or where the impact of upgrading energy capability is minimal to avoid adverse impacts on other existing uses in the area.
10. To the greatest extent possible, be located where there is sufficient access to broadband infrastructure and fiber routes or can be upgraded to have sufficient broadband infrastructure and fiber routes with minimal adverse impacts.
11. Regarding water usage:
 - a. Utilize recycled/closed-loop water/evaporative cooling systems and renewable energy sources to the extent possible
 - b. Identify how reclaimed water and wastewater will be managed after useful life, and how pollutants will be handled.
 - c. Be required to report its water usage.
12. Comply with all applicable local, state, and federal laws and regulations.

Types of Data Centers

The following descriptions are provided as general guidance only. The information provided here is not intended as legal advice to municipalities, individuals, or other entities.

1. Enterprise

This is a facility for a single entity and is the traditional understanding of data centers. Enterprise facilities may be inside a company's headquarters or may be a standalone facility collecting and sharing data across multiple sites for the same company. Many companies still rely on Enterprise type facilities for internal business purposes.

2. Colocation

This is an emerging term. Colocation has referred to a facility that is more than likely hyperscale in size but was not "Enterprise" in that it would be owned and operated by a third-party and the server space rented to others. The data on the hard drive might be for another user or some other platform, but the physical facility is owned and operated by a different user. Colocation has started to take on a new meaning recently, being used to refer to a data center and its proximity to its power source.

3. Edge

This facility is based on its location in relation to the rest of the network and not necessarily the size or computing power of the facility. Edge facilities are popular with social media firms, cell phone providers, video conferencing, and similar users in that they can place these facility types at the "edge" of their network and increase the response time of the network in a particular area.

4. Micro

This facility, like Hyperscale, is more defined by its size and computing power. These types of facilities would best be recognized as the large server room at a local bank or similar establishment.

5. Modular

Modular facilities are a sub-type of Micro facility that are best described as a self-contained portable micro center. Mostly housed in shipping containers, these facility types are equipped with everything they need for cooling, they just need a stable power source. This type of unit might be seen at a hospital or airport where they need the computing ability but don't have the physical building space for a facility.

6. Hyperscale

This is a facility that can either be for a single entity in an Enterprise type capacity or can have multiple tenants using digital space. These facilities range in size from hundreds to millions of square feet. This type is based more on the size and computing power of the facility and not the ownership or server occupancy.

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¹ <https://blog.enconnex.com/6-types-of-data-centers>