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DEFINING DATA CENTERS:

A Reference Guide for Central Pines Member Communities

CENTRAL PINES
REGIONAL COUNCIL

Defining Data Centers

A Reference Sheet for
Central Pines Regional Council Member Communities

As interest in data centers continues to increase across North Carolina and our region, this document aims to define what a data center is, provides a concise overview of key considerations and impacts on operations, and offers resources and potential strategies for local governments as they navigate development requests.

Central Pines Regional Council is actively learning alongside our member communities as interest in data centers grows in North Carolina. While we are not positioning ourselves as subject-matter experts, we are committed to helping local governments think through their approach, connect with reputable state and national resources, and identify the questions that matter most when evaluating potential projects.

Member communities are welcome to reach out to discuss emerging issues, request support in gathering information or responding to development requests, explore opportunities for coordinated regional planning.

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Understanding the Types of Data Centers

Hyper Scale Data Centers
Hyperscale data centers are very large facilities designed to support thousands of servers and the massive computing, storage, and networking needs of major cloud and technology companies (IBM). They rely on highly scalable power, cooling, and network systems that allow them to expand quickly and operate with continuous reliability.

- Hyper-scale data centers are large, multi-building campuses built out over long timeframes that require large amounts of land (Figure 1) and energy. They have steady and predictable power use and can add billions of dollars to the tax base. Construction activity is significant, but ongoing employment is typically limited to a small number of high-skill positions. Hyperscale operators value clear zoning, reliable timelines, and communities that have already done foundational planning work.

- Legacy hyperscale data centers typically connected at 20 - 50 megawatts (MW), but utilities are now receiving AI-driven connection requests for data center campuses of 300 - 1,000 MW (The U.S. Department of Energy's Secretary of Energy Advisory Board). To put the low end of that new range in context, a 300 MW facility running around the clock would consume about 2.6 terawatt-hours a year, roughly the annual electricity use of 250,000 U.S. homes.

Co-location Data Centers
Co-location data centers are facilities built and operated by a provider that leases space to multiple tenants such as law firms, technology companies, and smaller governments. These centers rely on strong network connectivity and are typically located near metropolitan areas. Their presence can

support broader broadband investment.

AI and High-Density Computing Centers
These computing centers are smaller in square footage but dense in computing activity. They require more intensive cooling and create less stable power loads that rise and fall rapidly. Water availability and grid stability are major planning considerations.

Figure 1. This image compares the physical footprint of a hyperscale data center to a familiar regional landmark at the same scale. On the left is the Colossus 1 Data Center in Memphis, Tennessee. On the right is the Lenovo Center and Carter-Finley Stadium complex in Raleigh, North Carolina. Shown at the same scale, the comparison illustrates that a single hyperscale data center can occupy an area comparable to, or larger than, a major sports and entertainment complex.

Economic and Infrastructure Considerations

Direct Benefits

- Significant property tax value, long-term utility revenue, construction employment, and improvements in regional fiber networks.
- Property tax valuation remains ever-changing with these developments.

Property Tax Case Studies

Loudoun County, Virginia | Source
Loudoun County shows the upside. Data centers have added billions of dollars to the commercial tax base and now provide a major share of county property tax revenue. Because Virginia taxes both buildings and equipment, Loudoun has seen sustained growth in data center valuations rather than rapid decline.

Nebraska rural counties |Source
In parts of Nebraska, data centers generate property tax revenue that is more than 100

times higher than what the same land produced as agricultural property. This demonstrates how a single data center campus can dramatically increase a rural county's tax base, even though the long-term value depends on how equipment is assessed.

Odessa, Texas |Source
Odessa highlights the broader fiscal impact. Data centers there are tied not just to property taxes but also to long-term utility revenue and local economic activity. However, as in many states, much of the taxable value comes from equipment that can depreciate, which makes long-term revenue more uncertain without clear assessment rules.

Industry Context

- Land use estimates from recent projects averaging 0.5 to 1.5 acres per MW, which would translate to roughly 96 to 288 square miles of U.S. land devoted to AI-related data center campuses by 2035.
- Data centers are capital intensive rather than labor intensive. Communities should not expect traditional job creation patterns.

Process Tips for Local Governments

1. **Be proactive**
   Assess community standards and expectations around data center development ahead of time. Communities that proactively define these expectations in their zoning and development ordinances give themselves clearer guardrails and processes when proposals emerge.

   - **Urban Land Institute** | *Local Guidelines for Data Center Development*
     The Urban Land Institute provides local governments with a proactive framework for regulating data centers before proposals arrive. It recommends treating data centers as a distinct form of industrial use and establishing clear zoning categories and performance standards that reflect their unique infrastructure and community impacts. The guidance helps communities anticipate issues related to site selection, power and water demand, and long-term land use so that expectations are set in advance through zoning and development ordinances, rather than negotiated reactively once a developer applies.

There are existing examples of zoning best practices from local governments with significant data center activity. Some are included below.

- Loudoun County, Virginia, regulates data centers through zoning ordinance amendments (ZOAM 2024 0001) that now require a Special Exception in most industrial districts. The county's Data Center Standards and Locations project outlines siting criteria, compatibility expectations, and infrastructure requirements. Source
- Prince William County, Virginia, uses a Data Center Opportunity Zone Overlay District (codified in PART 509 of its zoning ordinance) to identify eligible areas and ensure adequate electrical service, buffering, and transportation access. This framework is widely referenced because of the county's rapid growth in hyperscale development. Source
- Frederick County, Maryland, is developing a Critical Digital Infrastructure Overlay Zone that designates appropriate locations, reduces conflict with residential areas, and aligns buildout with available utilities. Legislative packets and draft standards are available publicly. Source
- Mesa, Arizona, adopted Section 11 31 36 of its zoning code to regulate data centers through the Planned Area Development process. This requires applicants to demonstrate utility capacity, site compatibility, and compliance with operational standards before approval. Source
- Dublin, Ohio, evaluates large technology and data-intensive facilities through its Planned Development process and Innovation District development standards. These requirements address setbacks, screening, utility capacity, and compatibility with nearby uses. Source

2. **Understand viable site qualities and identify best locations**
   A viable data center site is one that already has, or can reasonably support, the power, land, fiber, water, and transportation needs associated with large-scale facilities. Identify

suitable/viable sites ahead of time, evaluate infrastructure limits, and brief elected officials before any proposals. Early preparation helps reduce confusion and misinformation.

3. **Access to power is the driving factor**
   Developers seek clarity regarding available power, delivery timelines, and phased buildout. Communities should expect a ramp schedule that outlines power needs over time. Requests for extremely large immediate loads are generally unreliable indicators of project seriousness. *Local governments should be aware that Duke Energy has an established process for evaluating and responding to large-load power requests. Communities should take time to understand this process and connect with Duke Energy early in any potential project, so they have accurate information, realistic timelines, and coordinated planning as proposals develop.*

4. **Designate a single point of contact for your community, county, or region**
   A central and well-informed coordinator can help streamline communication between utilities, planning staff, elected officials, and external partners. Some communities and regions choose to designate a central coordinator or partner organization to serve as the primary point of contact for data center inquiries and development coordination. For example, Catawba County has worked with its Economic Development Corporation to lead data center recruitment and engagement with major corporate partners, coordinate between municipalities and utilities, and provide a consistent interface for prospective developers.

5. **Be transparent about timelines**
   Overly optimistic estimates often create avoidable conflict later.

6. **Evaluate the project before negotiating incentives**
   Communities should first understand who the developer is, what companies will occupy the data center, how the project will be financed, how many permanent jobs will be created, and what long-term commitments are being made to the community. In some cases, speculative development groups approach local governments before they have secured any tenants, using promises of incentives and economic impact to make their proposals seem difficult to refuse. By separating incentives from the initial evaluation of the project, communities can better assess whether a data center proposal is financially, operationally, and strategically sound before considering any public subsidies.

7. **Confirm project readiness through the zoning process**
   Communities can use their zoning and development approval processes to make sure a proposed data center is real, ready, and likely to move forward. This includes requiring site plans, infrastructure plans, and clear timelines for when construction must begin. Approvals can also include expiration dates so that if a project does not move ahead, the zoning rights do not stay in place indefinitely. These steps help prevent land from being tied up by speculative proposals while still treating all applicants fairly and consistently.

Water and Wastewater Planning

Data centers can range from minimal water use to several million gallons per day, depending on their method of cooling. Utilities must also evaluate both water draw and wastewater return.

Key considerations include:

- Whether cooling systems are open or closed loop.

- Whether demand is constant or highly variable.
- The potential for rapid expansion may outpace utility capacity.
- The possibility that water use will decline sharply due to changing technology.

Utilities should protect themselves through full cost recovery, system development charges, take-or-pay agreements, volumetric rate structures, and/or contract provisions that allow for periodic re-evaluation.

Data Center Water Efficiency Resources:

- **Urban Land Institute** | *Local Guideline for Data Center Development*
  This white paper provides a single, comprehensive guide for communities preparing for data center development. It goes into depth about how data center's function, including a visual tour of a hyperscale data center to illustrate scale and infrastructure needs, and offers practice guidance on zoning, site design, and community impacts. The report also included case studies and model ordinance language that local governments can adapt when developing their own data center policies. This resource includes a highly effective glossary of terms essential for understanding data centers.

- **U.S. Environmental Protection Agency** | *WaterSense Cooling Tower Guidance*
  EPA's WaterSense program provides detailed best practices for operating cooling towers in commercial and industrial settings, including data centers. Section 6.3 of *WaterSense at Work* outlines strategies for reducing water loss, improving concentration cycles, monitoring water chemistry, and incorporating reclaimed water where feasible. This guidance helps utilities and large customers understand how cooling tower management directly affects water demand, wastewater return, and long-term system sustainability.

- **U.S. Environmental Protection Agency** | *Water Reuse Resources*
  EPA provides national frameworks and recommended practices for using reclaimed water in industrial cooling applications. These resources help utilities evaluate regulatory requirements, treatment levels, and operational considerations for substituting reclaimed water for potable supply in high demand cooling systems.

- **American Water Works Association** | *AWWA*
  AWWA outlines considerations for utilities planning for large water-using industries, including methods to forecast water demand, compare cooling technologies, and manage long-term supply impacts. Its data-center-focused white paper helps communities understand the infrastructure and policy decisions involved.

- **WateReuse Association** | *Industrial and Commercial Reuse*
  WateReuse provides national guidance on when and how reclaimed water can be used for industrial processes, including cooling systems. Its resources help utilities assess feasibility, evaluate treatment needs, and design reuse programs that can support high-volume users such as data centers.

- **North Carolina Department of Environmental Quality** | *Water Reuse and Reclamation*
  NC DEQ offers state-specific guidance on reclaimed water programs, permitting pathways, and industrial applications. These materials help utilities understand the regulatory steps required for using reclaimed water in cooling operations within North Carolina.

- **Lawrence Berkeley National Laboratory** | *Data Center Water Efficiency*
  LBNL provides practical guidance for improving water efficiency in data centers, including cooling technology comparisons, water usage metrics, and strategies to reduce potable water dependence. These resources help utilities and operators plan for sustainable long-term water management.

Relevant Organizations

- **Urban Land Institute**
  ULI provides practical guidance for local governments on how to regulate and site large facilities like data centers through zoning and development standards. Its resources are useful when a community is considering ordinance updates, special use permits, or design requirements to manage scale, buffering, and compatibility.

- **UNC School of Government**
  The UNC School of Government helps North Carolina communities understand their legal authority under Chapter 160D. Its guidance is useful when staff or elected officials need clarity on what can be regulated through zoning, conditional approvals, or quasi-judicial decisions related to data center proposals.

- **North Carolina Utilities Commission**
  The North Carolina Utilities Commission oversees how electric utilities plan for and recover the costs of serving very large power users. Its work is relevant when communities are trying to understand who pays for infrastructure upgrades and how hyperscale power requests affect ratepayers.

- **National Renewable Energy Laboratory**
  NREL provides technical research on energy efficiency, grid impacts, and large electricity loads. Local governments can use these resources to better understand energy claims made by developers and to frame informed conversations with utilities and state agencies.

- **Uptime Institute**
  The Uptime Institute explains how data centers are designed to maintain reliability and continuous operation. Its resources help local governments understand terms commonly used by developers, such as redundancy and resilience, and how those design choices affect infrastructure needs.

- **Georgetown Climate Center**
  Georgetown Climate Center examines how local governments use land use and policy tools

to manage high impact development. Its work is helpful for communities considering how data center growth intersects with long-term planning, sustainability goals, and climate resilience.

- **NC Clean Energy Technology Center**
  The NC Clean Energy Technology Center tracks energy policy and grid trends affecting North Carolina. Its analysis helps communities stay informed about how large new electricity users fit into statewide energy planning and regulatory discussions.

- **International Council on Clean Transportation**
  ICCT conducts research on electricity demand growth and infrastructure impacts from large users. Local governments may find this useful when thinking about long-term grid capacity and the cumulative effects of multiple large power-intensive facilities.

Sources

- American Water Works Association. (n.d.). AWWA white paper on planning for data centers. *https://www.awwa.org/AWWA-Articles/awwa-releases-white-paper-to-help-water-utilities-plan-for-data-centers*

- Catawba County Economic Development Corporation. (n.d.). *Data centers*. CatawbaEDC. *https://www.catawbaedc.org/data-centers*

- Central Pines Regional Council staff attended the North Carolina League of Municipalities and ElectriCities webinar, *Demystifying Data Centers: Insights for Municipal Leaders* (December 9, 2025), to inform the analysis and information presented here. Full webinar is available.

- City of Odessa, Texas. (2025). Data centers drive long-term tax gain potential and economic growth in Odessa. *https://www.odessatex.com/media-center/news/p/item/65164/data-centers-drive-longterm-tax-gain-potential-and-economic-growth-in-odessa*

- Frederick County, MD. (n.d.). Data centers. *https://www.frederickcountymd.gov/9122/Data-Centers*

- Loudoun County, Virginia. (n.d.). What is the benefit of the data center industry to the county? *https://www.loudoun.gov/faq.aspx?QID=1799*

- Lupetini, C. (2022). *The impact of data centers on the Nebraska economy*. NetChoice. *https://netchoice.org/wp-content/uploads/2022/08/Nebraska-Data-Center-Report-03222211-Caroline-Lupetini.pdf*

- Loudoun County, VA. (n.d.). Phase 1 project plan for data center station area. *https://www.loudoun.gov/6221/Phase-1-Project-Plan-for-Data-Center-Sta*

- North Carolina Department of Environmental Quality. (n.d.). Water supply planning. https://www.deq.nc.gov/about/divisions/water-resources/water-planning/water-supply-planning
- Prince William County, VA. (n.d.). Data center overlay district comprehensive review. https://www.pwcva.gov/department/planning-office/data-center-overlay-district-comprehensive-review/
- Urban Land Institute. (2024). *Local guidelines for data center development.* https://knowledge.uli.org/-/media/files/research-reports/2024/uli-data-center-whitepaper_hm_2024-11-12_final-final-round.pdf
- WateReuse Association. (n.d.). Industrial reuse. https://watereuse.org/educate/types-of-reuse/industrial-reuse/