CITY OF ST. LOUIS
PLANNING & URBAN DESIGN AGENCY
Cara Spencer, Mayor

Informational Item

To: City of St. Louis Planning Commission

From: Don Roe, Executive Director

Date: September 8, 2025

Subject: Data Centers—Land Use, Environmental, and Economic Considerations

Introduction

The presence and proliferation of data centers and the emerging industry is an increasingly urgent topic, raising land use, environmental, and economic questions across the country and in the St. Louis region. In April of this year, the Planning Commission prioritized data center zoning regulation as one of four near-term zoning items through its new annual prioritization process, alongside minimum lot size reform (passed and enacted), regulations defining and permitting accessory dwelling units (recommended by the Planning Commission and now at the Board of Aldermen), and regulations for cannabis cafes (research underway).

Staff have not yet developed a recommended set of zoning regulations for data centers, but have begun extensive research on the topic in partnership with the Sustainability Office of the Planning & Urban Design Agency. Data centers are a very complex and dynamic issue—*staff's research is very much in process* and will benefit from further collaboration with other City and regional agencies (e.g., Office of Building Performance, Water Division, the Assessor's Office, East West Gateway Council of Governments, SLDC, and others).

This memorandum was developed to frame the topic, share preliminary findings, and offer a basis for discussion about possible directions for managing this land use.

Land Use, Environmental, and Economic Considerations

A data center is a secure facility that stores and shares applications and data using complex networking, computing, and storing infrastructure. Amid the global Artificial Intelligence (AI) boom, the computational power provided by data centers is in exceedingly high demand. Investors are racing to develop data centers across the country and world to keep up. A recent McKinsey analysis[1] predicts that by

[1] Barth, A., Arora, C., Gayatri Shenai, Noffsinger, J., & Sachdeva, P. (2025, August 8). The data center balance: How US states can navigate the opportunities and challenges. McKinsey & Company.

2030, companies will invest nearly $7 trillion in data centers and associated infrastructure globally. In both preparation and reaction, communities are rushing to manage the impact of this growing industry.

Land Use Considerations

Data centers and their functions can take many shapes and sizes; they can provide data storage, power AI, or mine cryptocurrency, and they range from a floor or two of an office building to a single use within a sprawling, industrial-scale warehouse with external cooling and power general equipment. Generally speaking, areas with low-cost energy, cheap land, and access to water and infrastructure (e.g., substations) are attractive to data center developers. Larger data centers largely tend to be located in suburban or exurban areas on greenfields or in industrial parks.

Data centers' land use impacts depend on their size. Small data center functions (e.g., a floor or two of servers) could potentially be integrated into a larger development or building, and may even be a supportive use that cross-subsidizes and/or attracts tenants in need of heavy, proximate compute power. It is unclear whether and when nearby compute power is of benefit to customers accessing compute power. This benefit is likely related to the leasing model of a data center, which can vary considerably from dedicated storage or compute power to remote access for a broad variety of users.

Larger, single-use data centers can be considered a modern industrial warehousing use, as they simply warehouse servers and associated infrastructure, and contribute little in the way of activity or interaction with surrounding uses. Creating few jobs, data centers do not meaningfully contribute to street activity. Larger data centers also require external cooling equipment and "backup" diesel generators which can create significant noise and other impacts on adjacent uses.

Early research into other cities' data center regulation shows that cities use zoning to address a mix of the following topics:

- Acceptable districts (often restricting them to industrial zones);
- Separation from residential and other sensitive uses;
- Distance separation from greenways and/or transit stations;
- Scale, height, orientation of primary faces, and compatibility with surrounding uses;
- Noise limitations;
- Screening (through landscape requirements and other means) and location of external cooling equipment, generators, substations, and loading docks;
- Reporting / disclosure on anticipated energy use, water use, infrastructure capacity, job creation;
- Energy sources (e.g., requiring some amount of renewable energy generation); and/or
- Public outreach requirements.

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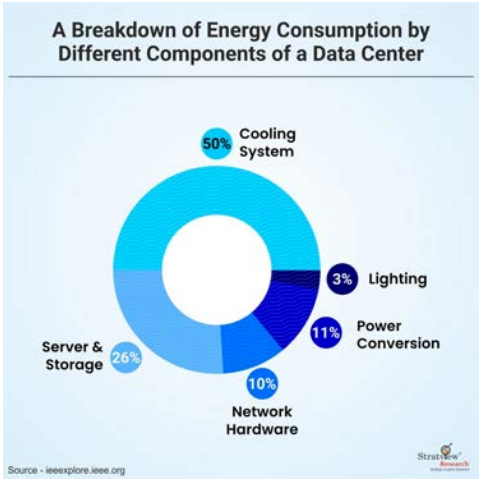
https://www.mckinsey.com/industries/public-sector/our-insights/the-data-center-balance-how-us-states-can-navigate-the-opportunities-and-challenges

Environmental and Energy Justice Considerations

Data centers have *enormous* energy needs, and often require the creation of new energy generation and transmission or substation infrastructure. In addition to powering the servers, a great deal of data center energy is to meet cooling needs. This also uses a large amount of water and refrigerants to maintain indoor temperatures at 70F or lower to keep computer equipment safely operating. A 15MW data center could use 20-30 million gallons of water per year.[2] The cooling equipment required to maintain indoor air temperatures can also create a loud buzz or hum heard in the areas surrounding a facility.



Data centers often use gas turbine generators to support energy demands during high usage periods. However, it is becoming increasingly evident that the lack of transparency around energy usage leads data centers to rely on generators regularly leading to toxic pollutants in the surrounding area.[3]

The energy use of a data center can vary dramatically depending on its function and size. For example:

- Small data centers (500-20,000 square feet) consume between 1 and 5 megawatts (MW).
- Midsize data centers (20,000-100,000 square feet) consume between 10 and 70 MW.
- Large data centers (over 100,000 square feet) can exceed 100 to 200 MW.[4]

According to recent reports about Ameren's challenges managing large-load projects (those requiring 100 MW or more), 100 MW is enough power to meet the energy needs of about 18,000 homes.[5] Put differently, a 100,000 square foot data center (such as the data center proposed in Midtown) using 70 MW[6] could require the same energy as nearly 13,000 homes—roughly the number of homes as in Shaw, Tower Grove South, and Tower Grove East combined.[7]

To provide energy to data centers, electric utilities must expand their systems with new power plants and transmission lines. Recent research published by Harvard's Energy and Environmental Law Program describes how, in many states, regular rate-paying electric consumers are in effect subsidizing the energy needs of data centers. According to their research, because utilities profit by building infrastructure, serving data centers is a

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[2] 3 Tips to Cost-Effectively Reduce Data Center Water Footprint - Chemstar WATER. (2021, April 13). Chemstar WATER. https://www.chemstarwater.com/news/tips-data-center-water-treatment-management/

[3] Kerr, D. (2025, July 3). Elon Musk's xAI gets permit for methane gas generators. The Guardian; The Guardian. https://www.theguardian.com/us-news/2025/jul/03/elon-musk-xai-pollution-memphis

[4] Trus, T. (2024, August). The Rise of Data Center Energy Demands | Integrity Energy. Integrity Energy. https://www.integrityenergy.com/blog/is-data-center-energy-usage-driving-up-my-energy-bills/

[5] Gray, B. (2025, August 29). Take a look back at July 2025. STLtoday.com. https://www.stltoday.com/news/local/business/article_d6cd1f4a-4993-461c-bee4-fb08fb98af96.html

[6] This is an estimate for illustrative purposes. The actual energy demands of the proposed facility—and all data centers in St. Louis—is not known to the City.

[7] City of St. Louis, MO. (2022). Stlouis-Mo.gov. https://www.stlouis-mo.gov/government/departments/planning/research/census/data/neighborhoods/neighborhood.cfm?number=25&censusYear=2020&comparisonYear=0

lucrative opportunity that is incentivizing utilities to offer attractive rates, which shifts the costs of new infrastructure to other ratepayers.[8]

It is not clear at this time whether specific agreements of this kind are impacting St. Louis ratepayers. However, energy bills are rapidly escalating in St. Louis, and recent changes in state utility law could further raise electric bills by at least $600 annually for the average household.[9] In part, these rate increases are a means to facilitate upgrades to the electric grid, some of which are needed to power the emergence of data centers.[10] Specifically, SB4 allowed for Construction Work In Progress (CWIP), meaning that rate payers can be charged for construction of new power plants and infrastructure before they're completed and generating energy.

Designers are exploring ways that data centers' waste heat can be used to meet the heating needs of other buildings. To date the application of these systems and innovations is limited relative to the scale and prevalence of data center development.

Economic Considerations

The local economic benefits and impacts of data centers are somewhat unclear at this time. Like any new construction project, a data center's construction will create valuable jobs for the period of construction. However, permanent jobs associated with data centers are very limited; compared to traditional industrial uses, very large data centers require only a small number of people to secure and manage the building (e.g., 10 people at any given time for a 100,000 square foot facility, or 30 jobs total for individuals working in 8 hours shifts). Staff do not yet know about the fiscal benefits of data centers (e.g., local tax revenue).

However, as alluded to above, data center functions successfully integrated into a larger building may strengthen the market position and/or viability of an office or research development. In other words, the right kind of secure, reliable compute power may be one factor that attracts or retains a tech company in a community, and/or a secondary data center use could cross-subsidize other, more desired uses (e.g., office, housing).

[8] Martin, E., & Peskoe, A. (2025). Extracting Profits from the Public: How Utility Ratepayers Are Paying for Big Tech's Power. https://eelp.law.harvard.edu/wp-content/uploads/2025/03/Harvard-ELI-Extracting-Profits-from-the-Public.pdf
[9] Erickson, K. (2025, August 28). Higher power bills, lower taxes: Here are new Missouri laws taking effect today. STLtoday.com.https://www.stltoday.com/news/local/government-politics/article_25b415f9-aafa-43e2-be49-5acd731ce6cb.html#tracking-source=home-editors-pick
[10] Gray, B. (2025, August 12). Utility bills have spiked in the St. Louis area. More rate hikes are on the way. STLtoday.com. https://www.stltoday.com/news/local/government-politics/article_527a1fff-c789-4bb7-b40b-2ff521647560.html#tracking-source=home-top-story

Data Centers in St. Louis

Example Data Center on Tucker, Downtown

There are at least 12 data centers in the city already, one proposed for a site in the St. Louis University Midtown Redevelopment Area, and several others in the region (e.g., Maryland Heights). To staff's knowledge, all existing data centers in the city have repurposed existing buildings.

Most exist Downtown, occupying former office buildings. One is on Chouteau, in a previously-vacant flex industrial/office building. While filling vacant office buildings is a partial benefit of the use, data centers contribute very little to the vibrant urban activity desired for Downtown.

Some of the recently permitted data centers are not fully built out and could double or quintuple their current operable square footage; this means both that there is existing capacity for additional computing and data storage in St. Louis, and that we may not have yet felt the full energy impact of the existing permitted data centers.

Policy Issues

Communities across the country are actively grappling with how to adapt to this new landscape; St. Louis is among them. However, it is clear that our local policies do not adequately manage the location, character, or energy impacts of data centers:

- **Zoning:** The City's Zoning Code does not have a specific definition for data centers, and there are no specific site requirements or conditions to ensure this emerging use is successfully integrated into the city. With appropriate conditions, data centers can be integrated into industrial districts or as secondary uses within larger office or research buildings.

- **Building Energy Performance Standards (BEPS):** The current BEPS ordinance does not include definitions for data centers; industrial sector buildings are exempt from BEPS, and critical communications infrastructure can apply for exemption. Other than BEPS and Buildings Energy Codes, we do not have any other energy policies in place to help mitigate negative environmental and climate impacts on high-energy users such as data centers.

  The lack of transparency around data center operations means we do not know the impact on our residents in terms of energy demand. For example: Where will needed energy come from during peak demand hours? Who is paying to build new energy generation facilities to support demand?

  Like other utilities across the country, Ameren is challenged in managing data centers' impact on the grid. If utilities are unable to lock in the right long-term guarantees for new data centers, the costs of new infrastructure could fall entirely on other customers.

Especially in light of residents' rapidly escalating utility bills and increasingly intense summer heat waves, it will be a great challenge to manage the energy demands of data centers in a way that does not exacerbate energy burdens and grid instability.

Possible Paths Forward

Data centers are a quickly evolving issue. Staff are working hard to understand their impacts and potential benefits, but new information is emerging every day. Planning staff at the East West Gateway Council of Governments are also actively working to understand the issue; their research is underway.

There are also capacity challenges and parallel projects (e.g., work to support tornado recovery, the Zoning Upgrade, the Sustainability & Climate Plan, neighborhood planning) that are competing for staff's time and which also stand to inform the City's available tools and best approach.

There are a number of general ways the city could proceed:

1. **Act rapidly to put interim zoning regulations in place:** Quickly develop regulations to address an emerging land use that was not considered under our 1950s zoning code. However, because of the current zoning code structure and the work already underway to rewrite our zoning code, this potential amendment likely would not adequately manage the full complexity of the land use concerns. But an amendment can help ensure data centers are not permitted in inappropriate locations in the interim. Note that even this strategy would be constrained by our existing zoning map, which is not aligned with the newly adopted Strategic Land Use Plan. In addition, zoning regulations alone will not address the energy concerns surrounding data centers, which is perhaps their greatest impact.

   Similarly, the City could rapidly update the Benchmarking ordinance to ensure transparency into large data centers' energy use. The BEPS ordinance could be amended or updated after this compliance cycle. However, there are other needs updates to both that would take some time to properly develop.

2. **Establish a moratorium while a full body of regulations is developed:** A time-limited moratorium would mean that no new permits would be accepted while the City develops a full understanding of the issue and develops quality land use, environmental, and other regulations. This path may very well be in the public's best interest.

   Such a moratorium could be full (like in St. Charles), or partial (e.g., excluding data centers adaptively reusing buildings, and/or under some square footage in size), and may remain in place until either the Zoning Upgrade is complete or until other regulations are adequately established. Note: New data center capacity will likely come online during the term of this moratorium, given the already-permitted developments which are not fully built out.