AGENDA
(CORRECTED 11/16/2026)
PLANNING COMMISSION - SPECIAL MEETING
CITY OF FARMINGTON HILLS
NOVEMBER 19, 2026, at 6:00 P.M.
FARMINGTON HILLS CITY HALL – COMMUNITY ROOM
31555 W. ELEVEN MILE ROAD, FARMINGTON HILLS, MICHIGAN 48336
www.fhgov.com (248) 871-2540

1. Call Meeting to Order
2. Roll Call
3. Approval of Agenda

4. Special Meeting

A. DATA CENTER RESOLUTION LANGUAGE

5. Public Comment
6. Commissioner/Staff Comments
7. Adjournment

Respectfully Submitted,

Tanji Grant, Planning Commission Secretary

Staff Contact:

Diane Mulville-Friel
City Planner
Planning and Community Development Department
(248) 871-2540
dmulville-friel@fhgov.com

NOTE: Anyone planning to attend the meeting who has need of special assistance under the Americans with Disabilities Act (ADA) is asked to contact the City Clerk's Office at (248) 871-2410 at least two (2) business days prior to the meeting, wherein arrangements/accommodations will be made. Thank you.

DATE: November 10, 2026 (Study Session - November 19, 2026)

TO: Planning Commission

FROM: Charmaine Kettler-Schmult, Director of Planning and Community Development

CC: Diane Mulville-Friel, AICP, City Planner; Ben Carlisle, Carlisle Wortman Associates; Mike Auerbach, Carlisle Wortman Associates; Kirsten Mellem, Staff Planner II; Steven P. Joppich, City Attorney; Thomas R. Schultz, Legal Counsel; Karen Mondora, PE, City Manager; Cristia Brockway, Economic Development Director

SUBJECT: Data Centers - Zoning Text Amendment (ZTA 5, 2026)

PURPOSE

This memorandum reviews Farmington Hills' temporary deferment on data center land use decisions and outlines the Planning Commission's directive to draft zoning updates managing their ecological, grid, water, and noise impacts. Fueled by state tax incentives and the AI boom, Michigan communities are actively implementing study sessions and adopting model ordinances to address these high-impact facilities.

Please review the attached reference materials before the work session to prepare for discussion on the following key questions:

- Which areas are appropriate—or inappropriate—for data centers?
- What does the community want regarding data center development?
- What are your biggest concerns?

BACKGROUND

Across Michigan, municipal boards and planning commissions are conducting study sessions, civic learning forums, and drafting deferments to navigate the influx of hyperscale data center proposals driven by the artificial intelligence boom. Communities are becoming informed through instructional seminars, local study sessions and implementing planning initiatives across the state. Planning commissions are actively compiling community impact studies and model ordinances that have been utilized for other similar Michigan communities.

FARMINGTON HILLS RESOLUTION

On October 12, 2026, the Farmington Hills City Council passed Resolution No. R-210-26 establishing a temporary deferment on data center approvals until March 31, 2027. This pause provides the Planning Commission time to modernize zoning regulations to address the impacts of hyperscale data centers.

DISCUSSION ITEMS

- Current zoning permits, as a principal use, data centers in B-3 and LI-1 districts but lacks standards for their larger physical footprints, utility including power/water usage, and potentially generated noise.
- Section 207 of the Michigan Zoning Enabling Act (MZEA) prohibits total bans on data centers due to public need.
- Temporary deferment includes a mandatory administrative relief mechanism for aggrieved landowners in order to withstand constitutional challenges.

PERFORMANCE STANDARDS UNDER REVIEW

Future zoning amendments under MZEA authority will establish reasonable thresholds covering:

1) Location and sizing limits
2) Noise and vibration attenuation
3) Power and water consumption thresholds
4) Decommissioning protocols

ACTION PLAN & TIMELINE:

- **Now – Early 2027:** Planning Commission holds study sessions and forwards draft ordinance amendments to City Council.
- **Council Study Session and Review:** City Council holds study sessions prior to consideration of draft ordinance amendments. Anticipated vote within 30–60 days of receipt.
- **Expiration:** The temporary deferral expires on March 31, 2027 (established via Resolution No. R-210-26 on October 12, 2026).

ATTACHMENTS

- Minutes City Council Study Session (September 14, 2026)
- Minutes City Council Regular Meeting (October 12, 2026)
- City of Farmington Hills Council Resolution No. R-210-26 (adopted 10/12/2026)
- What Michigan Local Governments Should Know About Data Centers – UM Graham Sustainability Institute
- Zoning Practice: The Physical Footprint of Artificial Intelligence - American Planning Association
- A Primer for Loal Governments: Understanding Data Centers – National League of Cities

# # #

Director Mahoney presented DTE's power improvements map, showing projects completed and planned within Farmington Hills over a five-year window, including 41 smart grid devices, 30 upgrade projects, and 6 tree-trimming projects.

Regional Manager Vogel reported that 8 reclosers had been installed ahead of the July 3rd storm, with 22 more planned for installation within six to eight weeks. She committed to following up with mapped data showing recloser locations and wire-down locations by address or nearest intersection.

Engineer Sanborn explained the function of reclosers and automation devices, describing how they enable sectionalizing of outages to limit impact and allow remote rerouting of power from DTE's System Operations Center in Detroit without requiring a field crew dispatch. He noted that these devices also provide more accurate outage localization.

Councilmember Knol raised concerns about the limitations of tree trimming as a long-term solution, citing the impossibility of controlling trees outside DTE's right-of-way and the difficulty of burying lines in older, fully developed communities. She asked what was being done to ensure that when a single line fails, the majority of affected customers can be rerouted.

Engineer Sanborn explained the loop structure enabled by reclosers and the sectionalizing function that limits customer impact.

Regional Manager Vogel confirmed that tree trimming in Farmington Hills operates on a five-year cycle, with the last trim completed in 2022 and the next scheduled for 2027

Mayor Rich identified the Costick Center, which includes the location of the city's cooling center and Meals on Wheels operation, and the surrounding area as having experienced a five-day outage followed by a two-day outage after restoration, and that the repeated outages have cost the city thousands of dollars and left seniors without meals. She requested that DTE give that area enhanced attention in its investment and restoration prioritization.

Mayor Rich noted that 38 downed lines during the July storm required the city to deploy firefighters to stand guard, pulling them away from emergency response duties at a time when there were active fire and medical emergencies. She stated the city is absorbing overtime and mutual aid costs to babysit DTE's lines and asked how the city would be reimbursed. Regional Manager Vogel acknowledged that there is no cost recovery program for tax-funded Police and Fire Departments. Mayor Rich characterized this as reducing DTE's incentive to respond promptly to downed lines.

Mayor Rich described instances during the July storm in which DTE field personnel told residents that the delay in restoring power was due to Farmington Hills DPW needing to remove a tree, a characterization she described as inaccurate, as city DPW does not remove trees from downed power lines. She asked that DTE address communications for crews dispatched to the city.

Mayor Rich requested that DTE representatives appear at a regular City Council meeting on either September 28th or October 12th to present specific commitments and actions taken in response to the issues raised. Director Mahoney agreed to confirm availability and respond promptly.

EDUCATIONAL PRESENTATION REGARDING DATA CENTER USES

Acting City Manager Karen Mondora introduced the item by clarifying that there are currently no data center proposals, inquiries, or applications before the city. She explained that the discussion was a follow-up to the City Council goal session held in February 2026, at which council requested ongoing monitoring of data center activity in the region, and to a legislative update provided by Senator Rosemary Bayer earlier in the summer.

Director of Planning and Community Development Charmaine Kettler-Schmult presented the current state of the city's zoning ordinance as it relates to data centers and computer processing centers. She noted that the use is currently classified as a permitted use in two zoning districts: the B-3 General Business District and the LI-1 Light Industrial District, both subject to site plan approval at a public meeting before the Planning Commission. Director Kettler-Schmult noted that two businesses currently operating in Farmington Hills engage in some level of data processing, neither approaching the scale of hyperscale data centers, and that the city's level of development makes it highly unlikely that parcels sufficient for a large-scale facility could be assembled without significant consolidation.

Councilmember Knol argued against a moratorium, expressing concern about legal exposure and citing the legal challenges facing the City of Wixom. She advocated instead for proactively initiating ordinance development.

Councilmember Knol noted that data centers exist along a wide spectrum of scale and that many businesses, including hospitals, manufacturers, and insurance companies, operate small data centers that are visually indistinguishable from standard office buildings. She urged staff to begin working through ordinance questions including appropriate zoning districts, water use requirements, and noise standards, emphasizing that inaction is functionally equivalent to a moratorium.

Councilmember Bridges expressed support for ordinance review and highlighted the importance of addressing potential impacts on the electric grid and water resources, as well as the broader economic implications of AI-driven demand for data center infrastructure.

Councilmember Dwyer agreed that a moratorium was not the appropriate path and supported an ordinance-based approach.

Councilmember Aldred expressed interest in limiting permitted data center uses to the LI-1 district only and suggested exploring size or energy consumption thresholds above which a special use permit or other heightened review would be required. He also expressed support for a short-term deferral to provide staff time to evaluate potential ordinance amendments, noting that under a deferral, applications could still be filed but decisions would be held pending the ordinance review.

City Attorney Joppich clarified the distinction between a moratorium and a deferral, referencing past deferrals related to medical and recreational marijuana uses. He noted that a moratorium involves suspending even the acceptance of applications, whereas the city's past deferrals have been narrower in scope and temporary in nature. City Attorney Joppich confirmed he would defer to his written legal memo on the relative legal risks.

Mayor Rich expressed support for a short-term deferral while staff investigates ordinance options, noting the very limited land area within the city that would currently be eligible for such uses.

The general consensus of council was to direct staff to begin the ordinance review process, with a short-term deferral serving as a protective measure in the interim.

ADJOURNMENT

Mayor Rich adjourned the meeting at 7:26pm

Respectfully submitted,

Carly Lindahl, City Clerk

Nays: NONE
Absent: NONE
Abstentions: NONE

MOTION CARRIED 7-0.

RECOMMENDED ADOPTION OF A RESOLUTION REGARDING THE STUDY AND POSSIBLE CONSIDERATION OF ZONING ORDINANCE AMENDMENTS AND THE TEMPORARY DEFERRAL AND POSTPONEMENT OF DECISIONS REGARDING DATACENTER USES.

MOTION by Aldred, support by Starkman, that the City Council of Farmington Hills hereby approves the following resolution:

STATE OF MICHIGAN
COUNTY OF OAKLAND
CITY OF FARMINGTON HILLS

RESOLUTION REGARDING THE STUDY AND POSSIBLE CONSIDERATION OF ZONING ORDINANCE AMENDMENTS AND THE TEMPORARY DEFERRAL AND POSTPONEMENT OF DECISIONS REGARDING DATACENTER USES

RESOLUTION NO. R-210-26

At a regular meeting of the City Council of the City of Farmington Hills, County of Oakland, State of Michigan, held on October 12, 2026, at 7:30 p.m., Eastern Daylight Savings Time, with those present and absent being,

PRESENT: ALDRED, BOLEWARE, BRIDGES, DWYER, KNOL, RICH, AND STARKMAN

ABSENT: NONE

the following preamble and resolution were offered by Councilperson Aldred and supported by Councilperson Starkman:

WHEREAS, for many years, the Farmington Hills Zoning Ordinance has had regulations that allow for computer processing centers or data centers (referred to in this Resolution as "data centers") in the B-3, General Business District, and LI-1, Light Industrial District, as principal permitted uses with some conditions that include Planning Commission review; and

WHEREAS, over the time period since the adoption of those Zoning Ordinance regulations, the use and construction of datacenters throughout the country and within Michigan has evolved in a manner that now sees different, multi-scale types of datacenter facilities that were not contemplated by the City's current ordinance regulations, and which in turn have become a topic of interest and concern for residents of the City and the City Council and its Planning Commission, particularly the impact such datacenters may have on the environment, public health and safety, community character and aesthetics, and other land uses; and

WHEREAS, depending on where and how they are constructed and operated, datacenters may have a large ecological footprint and cost once they are constructed and operating, including but not limited to

the potential need for a large amount of space, either vertically or horizontally, the consumption of water for cooling, electricity usage, and the use of noise-producing generators and other equipment; and

WHEREAS, the City's zoning and other ordinances currently do not contemplate or adequately address these advancements and changes in the industry related to this type of land use, nor do they adequately address the impacts on the character and types of other land uses within and surrounding the districts in which such datacenters may be permitted under current ordinances; and

WHEREAS, accordingly, the City Council, with the assistance and recommendations of the City Planning Commission and City staff, desires to ascertain the most appropriate path for the City to address issues and concerns in its ordinances relative to datacenter land uses in order to protect the public health, safety, and welfare, and the character, aesthetics, appearance, and property values of the surrounding areas and Farmington Hills as a whole; and

WHEREAS, multiple news and information sources have demonstrated a significant increase, growth, and expansion by the datacenter industry of constructing multi-scale datacenter developments in Michigan, the Great Lakes region, and other states; and

WHEREAS, it is further believed that the City's Master Plan, adopted pursuant to the Michigan Planning Enabling Act, Act 33 of 2008, has not fully contemplated or evaluated the development of properties for datacenters in the City; and

WHEREAS, in connection with the foregoing, and considering the complexity of the subject matter and the emerging nature of the datacenter industry, the City Council determines that it is necessary and appropriate that any action taken by a City entity, body, official, and/or agent regarding rezoning, special land use, site plan, change of use and other similar proposals and submissions pertaining to datacenter uses must be temporarily postponed or deferred for the following reasons:

a. It is of major importance, for the future overall development or redevelopment of Farmington Hills, to ensure that reasonable land uses are authorized and that compatible development is required in connection with land uses in the City;

b. If permitted, datacenter land uses in the City are likely to have a significant impact on the character of the areas of the City in which they are located, as well as an impact on property values and quality of life, and on the general public health, safety and welfare of the communities in the City and its residents, businesses, and property owners;

c. To promote development or redevelopment of the City, and communities within the City, over the long term in a manner that would complement the rest of those communities and the City as a whole, not undermine the overall character and planning of the City and its communities, and remain consistent with the purpose, goals and objectives of the Master Plan that is implemented by the Zoning Ordinance, including any updates or amendments to the Master Plan that are under consideration;

d. To ensure consistent, cohesive and sensible development and land uses in Farmington Hills;

e. To clear-up any uncertainty in the City's zoning and other ordinances regarding the types of datacenter land uses that are prevalent today and ascertain the most appropriate and

safest path for the City to address them in order to protect the public health, safety, and welfare;

f The consideration of deciding requests or applications for rezoning, special land use, site plan, change of use, or other similar submissions and proposals relating to datacenter land uses during the process of considering whether and how to amend the City's ordinances to address such uses in the community would be counter-productive and undermine the City's efforts to accomplish the above community-wide planning and zoning objectives and to provide for the health, safety and welfare of the City and its residents, businesses, and property owners; and

g. Under the current circumstances described above, it is within the rights of the City to establish the rules and procedures regarding postponements and deferrals for decisions to be made relative to datacenter land uses in order to protect the public health, safety, and welfare, and other legitimate and lawful land use and zoning considerations.

WHEREAS, the City's Planning Commission will be studying and reviewing potential ways to amend the City ordinances to address the types of datacenter land uses that are prevalent today; and

WHEREAS, it is anticipated that, over the course of the next several months, the Planning Commission will complete its study and review of this subject and will have draft ordinance amendments forwarded to the City Council for review and consideration, with a report and recommendation from the Planning Commission; and

WHEREAS, it is the intention of the City Council to complete its review and consideration of the Planning Commission's recommendation regarding ordinance amendments within 30-60 days of its receipt; and

NOW, THEREFORE, IT IS HEREBY RESOLVED that, for the reasons and based on the findings set forth above, the Farmington Hills City Council review and decision on whether to adopt amendments to the Code of Ordinances to address the issue of datacenter land uses should precede any development, zoning, planning or other decisions in the City pertaining to applications and submissions relating to such land uses; and, accordingly, the City Council hereby directs that any decision taken by a Farmington Hills entity, body, official, and/or agent regarding any proposal or submission for rezoning, special land use, site plan, planned unit development, change of use, and other types of proposals and submissions that include the establishment of datacenter land uses, shall be temporarily postponed and deferred, until March 31, 2027.

IT IS FURTHER RESOLVED that the City Council also recognizes that the postponement or deferral of such actions and decisions could result in inconvenience for some landowners and others desiring to engage in datacenter land uses in the City, and that such persons might claim an interference with legitimate rights, and on this basis, the City Council has determined that it is necessary to expedite the actions contemplated and necessary for completion of the review and adoption of amendments, if any, to the Code of Ordinances to address the issues relating to datacenter land uses (without compromising the quality and integrity of the results of such actions), and that it is also necessary to provide a mechanism allowing a written petition to be submitted to the City Council for relief from the postponement or deferral. Accordingly:

(1) The City officials and Planning Commission engaged in the process of reviewing and forwarding recommended amendments, if any, of the Code of Ordinances to the City

Council in connection with this matter are directed to proceed with such efforts as a top priority and without delay.

(2) Any property owner who shall feel aggrieved by the temporary postponement or deferral of decision-making may submit a written request for relief to the City Council, and upon such submission shall be entitled to a hearing for the purpose of providing an opportunity to be heard and to demonstrate to the City Council that the temporary postponement will result in the unreasonable preclusion of viable economic use of property or otherwise violate applicable provisions of State or Federal constitution or law. Such hearing shall be conducted within thirty (30) days of the City's receipt of such written request. After the conclusion of the hearing, the City Council shall make findings and conclusions. If it is demonstrated and found that the postponement or deferment has the effect of unreasonably precluding viable economic use of property, or that it violates a law or constitutional provision, the City Council will grant relief from the postponement or deferment to the degree necessary to cure the contravention.

BE IT FURTHER RESOLVED that all resolutions and parts of resolutions insofar as they conflict with the provisions of this resolution be and the same hereby are rescinded.

AYES: ALDRED, BOLEWARE, BRIDGES, DWYER, KNOL, RICH, AND STARKMAN
NAYS: NONE
ABSENT: NONE

RESOLUTION DECLARED ADOPTED.

STATE OF MICHIGAN)
) ss.
COUNTY OF OAKLAND)

I, the undersigned, the duly qualified and acting City Clerk of Farmington Hills, State of Michigan, do hereby certify that the foregoing is a true and complete copy of a Resolution adopted by the City Council of the City of Farmington Hills at a regular meeting held on October 12, 2026, the original of which resolution is on file in my office.

IN WITNESS WHEREOF, I have hereunto set my official signature, this 13th day of October, 2026.

_____
CARLY LINDAHL, Clerk
City of Farmington Hills

RECOMMENDED APPROVAL OF A SPECIAL EVENT PERMIT FOR THE UNIVERSALIST UNITARIAN CHURCH OF FARMINGTON'S TREATS ON THE TRAIL EVENT TO BE HELD ON SUNDAY, OCTOBER 25, 2026.

MOTION by Aldred, support by Starkman, that the City Council of Farmington Hills hereby approves a Special Event Permit for Universalist Unitarian Church of Farmington to hold the Treats on the Trail event on Sunday, October 25, 2026, from 10:30am to 1:00pm at Universalist Unitarian Church of Farmington, located at 25301 Halsted Road, subject to the following terms and conditions:

STATE OF MICHIGAN
COUNTY OF OAKLAND
CITY OF FARMINGTON HILLS

RESOLUTION REGARDING THE STUDY AND POSSIBLE CONSIDERATION OF ZONING ORDINANCE AMENDMENTS AND THE TEMPORARY DEFERRAL AND POSTPONEMENT OF DECISIONS REGARDING DATACENTER USES

RESOLUTION NO. R-210-26

At a regular meeting of the City Council of the City of Farmington Hills, County of Oakland, State of Michigan, held on October 12, 2026, at 7:30 p.m., Eastern Daylight Savings Time, with those present and absent being,

PRESENT: ALDRED, BOLEWARE, BRIDGES, DWYER, KNOL, RICH, AND STARKMAN

ABSENT: NONE

the following preamble and resolution were offered by Councilperson Aldred and supported by Councilperson Starkman:

WHEREAS, for many years, the Farmington Hills Zoning Ordinance has had regulations that allow for computer processing centers or data centers (referred to in this Resolution as "data centers") in the B-3, General Business District, and LI-1, Light Industrial District, as principal permitted uses with some conditions that include Planning Commission review; and

WHEREAS, over the time period since the adoption of those Zoning Ordinance regulations, the use and construction of datacenters throughout the country and within Michigan has evolved in a manner that now sees different, multi-scale types of datacenter facilities that were not contemplated by the City's current ordinance regulations, and which in turn have become a topic of interest and concern for residents of the City and the City Council and its Planning Commission, particularly the impact such datacenters may have on the environment, public health and safety, community character and aesthetics, and other land uses; and

WHEREAS, depending on where and how they are constructed and operated, datacenters may have a large ecological footprint and cost once they are constructed and operating, including but not limited to the potential need for a large amount of space, either vertically or horizontally, the consumption of water for cooling, electricity usage, and the use of noise-producing generators and other equipment; and

WHEREAS, the City's zoning and other ordinances currently do not contemplate or adequately address these advancements and changes in the industry related to this type of land use, nor do they adequately address the impacts on the character and types of other land uses within and surrounding the districts in which such datacenters may be permitted under current ordinances; and

WHEREAS, accordingly, the City Council, with the assistance and recommendations of the City Planning Commission and City staff, desires to ascertain the most appropriate path for the City to address issues and concerns in its ordinances relative to datacenter land uses in order to protect the public health, safety, and welfare, and the character, aesthetics, appearance, and property values of the surrounding areas and Farmington Hills as a whole; and

WHEREAS, multiple news and information sources have demonstrated a significant increase, growth, and expansion by the datacenter industry of constructing multi-scale datacenter developments in Michigan, the Great Lakes region, and other states; and

WHEREAS, it is further believed that the City's Master Plan, adopted pursuant to the Michigan Planning Enabling Act, Act 33 of 2008, has not fully contemplated or evaluated the development of properties for datacenters in the City; and

WHEREAS, in connection with the foregoing, and considering the complexity of the subject matter and the emerging nature of the datacenter industry, the City Council determines that it is necessary and appropriate that any action taken by a City entity, body, official, and/or agent regarding rezoning, special land use, site plan, change of use and other similar proposals and submissions pertaining to datacenter uses must be temporarily postponed or deferred for the following reasons:

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b. If permitted, datacenter land uses in the City are likely to have a significant impact on the character of the areas of the City in which they are located, as well as an impact on property values and quality of life, and on the general public health, safety and welfare of the communities in the City and its residents, businesses, and property owners;

c. To promote development or redevelopment of the City, and communities within the City, over the long term in a manner that would complement the rest of those communities and the City as a whole, not undermine the overall character and planning of the City and its communities, and remain consistent with the purpose, goals and objectives of the Master Plan that is implemented by the Zoning Ordinance, including any updates or amendments to the Master Plan that are under consideration;

d. To ensure consistent, cohesive and sensible development and land uses in Farmington Hills;

e. To clear-up any uncertainty in the City's zoning and other ordinances regarding the types of datacenter land uses that are prevalent today and ascertain the most appropriate and safest path for the City to address them in order to protect the public health, safety, and welfare;

f The consideration of deciding requests or applications for rezoning, special land use, site plan, change of use, or other similar submissions and proposals relating to datacenter land uses during the process of considering whether and how to amend the City's ordinances to address such uses in the community would be counter-productive and undermine the City's efforts to accomplish the above community-wide planning and zoning objectives and to provide for the health, safety and welfare of the City and its residents, businesses, and property owners; and

g. Under the current circumstances described above, it is within the rights of the City to establish the rules and procedures regarding postponements and deferrals for decisions to be made relative to datacenter land uses in order to protect the public health, safety, and welfare, and other legitimate and lawful land use and zoning considerations.

WHEREAS, the City's Planning Commission will be studying and reviewing potential ways to amend the City ordinances to address the types of datacenter land uses that are prevalent today; and

WHEREAS, it is anticipated that, over the course of the next several months, the Planning Commission will complete its study and review of this subject and will have draft ordinance amendments forwarded to the City Council for review and consideration, with a report and recommendation from the Planning Commission; and

WHEREAS, it is the intention of the City Council to complete its review and consideration of the Planning Commission's recommendation regarding ordinance amendments within 30-60 days of its receipt; and

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IT IS FURTHER RESOLVED that the City Council also recognizes that the postponement or deferral of such actions and decisions could result in inconvenience for some landowners and others desiring to engage in datacenter land uses in the City, and that such persons might claim an interference with legitimate rights, and on this basis, the City Council has determined that it is necessary to expedite the actions contemplated and necessary for completion of the review and adoption of amendments, if any, to the Code of Ordinances to address the issues relating to datacenter land uses (without compromising the quality and integrity of the results of such actions), and that it is also necessary to provide a mechanism allowing a written petition to be submitted to the City Council for relief from the postponement or deferral. Accordingly:

(1) The City officials and Planning Commission engaged in the process of reviewing and forwarding recommended amendments, if any, of the Code of Ordinances to the City Council in connection with this matter are directed to proceed with such efforts as a top priority and without delay.

(2) Any property owner who shall feel aggrieved by the temporary postponement or deferral of decision-making may submit a written request for relief to the City Council, and upon such submission shall be entitled to a hearing for the purpose of providing an opportunity to be heard and to demonstrate to the City Council that the temporary postponement will result in the unreasonable preclusion of viable economic use of property or otherwise violate applicable provisions of State or Federal constitution or law. Such hearing shall be conducted within thirty (30) days of the City's receipt of such written request. After the conclusion of the hearing, the City Council shall make findings and conclusions. If it is demonstrated and found that the postponement or deferment has the effect of unreasonably precluding viable economic use of property, or that it violates a law or constitutional provision, the City Council will grant relief from the postponement or deferment to the degree necessary to cure the contravention.

BE IT FURTHER RESOLVED that all resolutions and parts of resolutions insofar as they conflict with the provisions of this resolution be and the same hereby are rescinded.

AYES: ALDRED, BOLEWARE, BRIDGES, DWYER, KNOL, RICH, AND STARKMAN
NAYS: NONE
ABSENT: NONE

RESOLUTION DECLARED ADOPTED.

STATE OF MICHIGAN)
) ss.
COUNTY OF OAKLAND)

I, the undersigned, the duly qualified and acting City Clerk of Farmington Hills, State of Michigan, do hereby certify that the foregoing is a true and complete copy of a Resolution adopted by the City Council of the City of Farmington Hills at a regular meeting held on October 12, 2026, the original of which resolution is on file in my office.

IN WITNESS WHEREOF, I have hereunto set my official signature, this 13th day of October, 2026.

CARLY LINDAHL, Clerk
City of Farmington Hills



WHAT MICHIGAN LOCAL GOVERNMENTS SHOULD KNOW ABOUT DATA CENTERS

February 2026

GRAHAM SUSTAINABILITY INSTITUTE
CENTER FOR EMPOWERING COMMUNITIES
UNIVERSITY OF MICHIGAN

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Background & Purpose

While data centers have operated in Michigan for some time,[1] they have largely existed without debate or public scrutiny. With the growth of AI and cloud computing, however, demand for larger, more resource-intensive data center facilities has surged. Following the recent expansion of state-level tax incentives for data centers, developers have begun looking to Michigan to identify new siting opportunities for significantly larger facilities.

Much has been written about the opportunities and risks that AI and data centers pose to society at large.[2] **This guide is not intended to resolve or mediate this society-wide debate; instead, it focuses on local-level considerations.** Like all land uses, data centers bring both positive and negative local impacts to the communities that host them. These impacts can vary depending on the specific technology used within a data center, the state regulations that shape its development, and its location within the host community. For example, there is a trade-off between the amount of water and energy a data center consumes, which depends heavily on the cooling technology used. State and local policy can also shape data center impacts on water and energy, as well as the direct economic impacts on the host community, including property taxes and job creation.

This guide is intended to provide Michigan local government officials and planners, particularly those with zoning authority, with the information they need to effectively participate in data center siting conversations. The first section of this guide provides a basic introduction to the environmental and economic impacts of data centers and links them to the current Michigan policy context. In the second section, we offer planning and zoning recommendations applicable not just to data centers but to a range of industrial land uses. Wherever possible, we draw on lessons from data center development in other states and from other industrial development, including our own expertise with large-scale renewable energy projects. **Since policies, technologies, and best practices for data center siting are rapidly evolving, readers should treat this guide as a working document. We plan to revise it or add supplementary guides as we learn more.**

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[1] Estimates range on the number of data centers currently in Michigan, likely due to the broad definition of what constitutes a data center. The U.S. Department of Energy's Office of Scientific and Technical Information's Data Center Atlas lists nine data centers in Michigan. Recent local reporting has noted approximately 44 data centers in the state. Mongird, K., Thurber, T., Vernon, C., Burleyson, C., Akdemir, K. Z., & Rice, J. (2025). *Im3 open source data center atlas*. Pacific Northwest National Lab (United States). https://doi.org/10.57931/2550666; *Your guide to Michigan's data center boom—And the growing backlash*. (2025, November 18). WKAR Public Media. https://www.wkar.org/wkar-news/2025-11-17/your-guide-to-michigans-data-center-boom-and-the-growing-backlash

[2] *Data centers are amazing. Everyone hates them.* (n.d.). MIT Technology Review. Retrieved February 5, 2026, from https://www.technologyreview.com/2026/01/14/1131253/data-centers-are-amazing-everyone-hates-them/; Copley, M. (2025, October 14). Data centers are booming. But there are big energy and environmental risks. *NPR*. https://www.npr.org/2025/10/14/nx-s1-5565147/google-ai-data-centers-growth-environment-electricity

Data Center Basics

A data center is any physical room or facility that houses information technology infrastructure. Many data centers provide computing services that keep websites running, enable video streaming, and support the software used by banks, hospitals, and human resources departments. With the rise of technologies such as cloud-based services and the Internet of Things (e.g., “smart” appliances, building systems, and other equipment that send data and can be controlled via the internet), we have seen the construction of newer, larger data centers to accommodate these increasingly popular technologies.[3] In particular, the advent of generative artificial intelligence (genAI) and large language models (LLMs) has driven the development of very large data centers.

A data center’s infrastructure includes not just the servers (i.e., computers) that store and process information, but also networking equipment to get information to and from the internet, power supply equipment to protect the computers against fluctuations in electricity, and environmental control equipment to cool and maintain humidity.[4] The graphic on the next page includes a useful depiction of the components of a data center.

While a data center supporting a small business’s operations, for example, may be as small as a closet, most of the current attention – and the rest of this guide – focuses on large, “hyperscale” data centers. Hyperscale data centers house over 5,000 servers, and have a footprint ranging in size from 10,000 to millions of square feet.[5] Generally, the digital services enabled by hyperscale data centers benefit a national or multi-region customer base rather than just the community or business property where the facility is located.

Data center companies choose sites for new development based on a variety of factors. In addition to needing to find a site with enough land to house the data center, they also require sites near an electric transmission line with sufficient capacity to provide power to the facility and high-capacity, low-latency fiber-optic cable to connect to the internet.[6] [7] If the data center plans to use water for cooling, it must also be sited near an adequate water source. From a financial perspective, developers are also more likely to build new facilities in localities that offer tax exemptions or other financial incentives.

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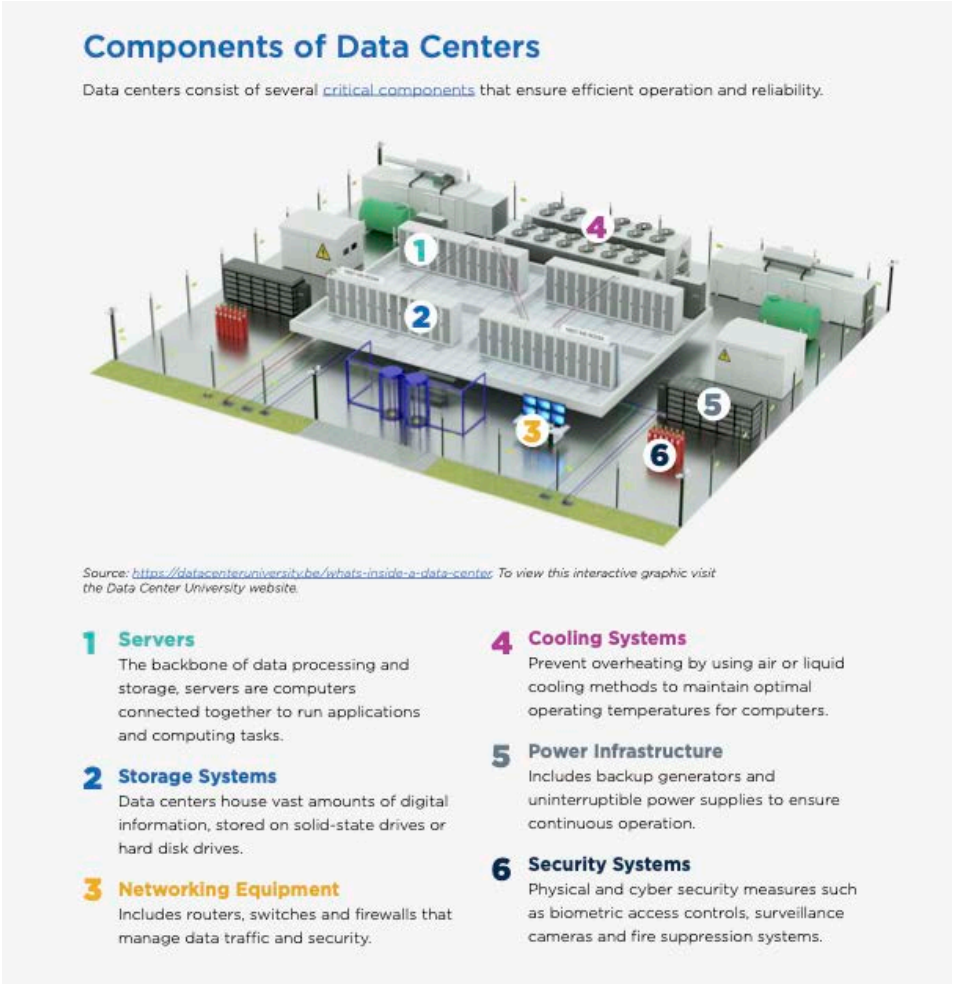
[3] Center for Sustainable Systems, University of Michigan. 2025. "Artificial Intelligence Factsheet." Pub No. CSS25-22. https://css.umich.edu/publications/factsheets/built-environment/artificial-intelligence-factsheet

[4] *What is a data center?* | *ibm*.

[5] *What is a hyperscale data center?* | *IBM*. (2024, March 21). https://www.ibm.com/think/topics/hyperscale-data-center

[6] CallisonRTKL, R. B., Vice President and Director, Mission Critical Group. (2015, January 19). *Parameters to consider in the data center location decision*. Area Development. https://www.areadevelopment.com/data-centers/data-centers-q1-2015/data-center-location-decision-parameters-46734866.shtml

[7] A recent trend in hyperscale data center development is for hyperscalers to build their own privately-owned, low-latency fiber networks if their preferred site lacks reasonable access to backbone fiber. Datacenters.com. (2025, September 3). *Who’s Building the Next 200MW Colocation Campuses—And Why?* . https://www.datacenters.com/news/who-s-building-the-next-200mw-colocation-campuses-and-why



Source: National League of Cities

Environmental Impacts and Michigan Policies

This section details a summary of key environmental impacts; generally, the most environmentally-friendly data centers are those that:

- Use water- and energy-efficient equipment and practices within the data center
- Are powered by electricity sources that have low water use and reduced emissions[8]
- Have thoughtful site selection that avoids important habitats and sensitive lands
- Commit to decommissioning - removing infrastructure at the end of the facility's useful life

Energy and Water Consumption

Questions about water and energy consumption frequently arise in data center discussions. Because the numbers associated with data center resource consumption are so large, it may be helpful to put them in context. Some of the most water-intensive hyperscale data centers, for example, can require up to five million gallons of water per day.[9] Putting this into perspective within Michigan's context, the Great Lakes Water Authority's five freshwater treatment plants have maximum rated capacities between 240 and 540 million gallons per day, and currently have an estimated combined maximum demand of 1 billion gallons per day.[10] Using an example within the context of Michigan's energy consumption, the proposed data center in Saline Township would require 1,400 megawatts of power capacity. By comparison, the state's total generation capacity in 2024 was just over 32,000 megawatts.[11]

Energy and water consumption are presented here together because they are linked. While there is currently a gap in publicly available data on energy and water use by specific computing and cooling technologies,[12] we do know that there is typically a trade-off between energy and water use. Technologies like evaporative cooling are more energy-efficient but more water-intensive. Meanwhile, air-cooled or closed-loop chillers use minimal to no water, but are energy-intensive.[13] Both types of cooling systems are common, and often the developer may choose between them based on availability of water and cost; the water-efficient closed-loop systems are currently more costly than open-loop evaporative cooling.[14] As noted in this document's state-level tax abatement section, the sales and use tax exemptions for "enterprise" data centers, which were

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[8] Xiao, T., Nerini, F.F., Matthews, H.D. *et al.* Environmental impact and net-zero pathways for sustainable artificial intelligence servers in the USA. *Nat Sustain* 8, 1541–1553 (2025). https://doi.org/10.1038/s41893-025-01681-y

[9] Wroth, K. (2025, October 17). *Data drain: The land and water impacts of the ai boom*. Lincoln Institute of Land Policy. https://www.lincolninst.edu/publications/land-lines-magazine/articles/land-water-impacts-data-centers/

[10] GLWA 2022—2026 CIP Appendix D: System Background Information. (n.d.). Great Lakes Water Authority. https://www.glwater.org/wp-content/uploads/2020/12/GLWA-2022-2026-CIP_AppendixD.pdf

[11] https://www.eia.gov/electricity/state/michigan/

[12] Shehabi, A., Smith, S.J., Hubbard, A., Newkirk, A., Lei, N., Siddik, M.A.B., Holecek, B., Koomey, J., Masanet, E., Sartor, D. 2024. 2024 United States Data Center Energy Usage Report. Lawrence Berkeley National Laboratory, Berkeley, California. LBNL-2001637. https://escholarship.org/content/qt32d6m0d1/qt32d6m0d1.pdf

[13] *Google's Water Risk Framework Assessing watershed health in data center communities*. (2023, December).

[14] *Chilling out: Data centers find new ways to reduce cooling costs | news & insights*. (n.d.). Gray. Retrieved February 4, 2026, from https://www.gray.com/insights/chilling-out-data-centers-find-new-ways-to-reduce-cooling-costs/

signed last year, include requirements related to water and energy. However, these same provisions are not required for the “qualified” data center exemption category, which has been available since 2015.

When thinking about a data center’s sustainability, something to note is that even in data centers that have minimal *direct* use of water for cooling, there may still be *indirect* use of water. That is because most U.S. power plants are thermoelectric[15] and require significant amounts of water to operate.[16] This indirect water impact is no different from that of other high-demand electricity users, and can be minimized when data centers are located in electricity grids that have less reliance on thermoelectric power plants or when the data centers themselves are powered by electricity sources that do not require water for operations (e.g., wind and solar power). Consequently, this water use is rarely in the community hosting the data center, but rather in communities that host power plants that supply electricity to the grid. While Michigan’s electricity fleet has been reducing its reliance on thermoelectric power plants as it adds renewables to the grid, in 2024, Michigan’s electric power plants withdrew roughly 5.4 billion gallons of water per day for power plant cooling.[17]

Like the federal government, Michigan does not have policies specifically governing data center energy use.[18] However, the Michigan Public Service Commission (MPSC, also known as the Commission) regulates several policies relevant to data centers. Primarily, the MPSC regulates both the investor-owned utilities that charge data centers for electricity and natural gas and the terms of service under which those utilities operate. The Commission also requires all entities that provide electricity to customers in Michigan, including investor-owned utilities, cooperatives, municipal utilities, and alternative electric suppliers, to prove each year that they have adequate resources planned four years ahead to meet their customers' electricity needs.[19] Furthermore, the Commission has the power to require additional customer protections in special contract requests submitted by investor-owned utilities seeking to work with data centers, and to attach conditions to any approval it grants. However, the Commission cannot control where data centers are built, approve their construction, or issue permits related to their water consumption.[20]

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[15] A thermoelectric power plant uses an energy source (e.g., coal, natural gas, or nuclear) to heat water to create high-power steam which is then used to spin a turbine to generate electricity.

[16] In 2023, data centers directly consumed approximately 17 billion gallons of water in their operations and indirectly consumed 211 billion gallons through their energy use. Sadasivam, N. (2025, November 24). *How to make data centers less thirsty*. Grist. https://grist.org/energy/how-to-make-data-centers-less-thirsty/

[17] Annual Report of the Great Lakes Regional Water Use Database. (2024). Great Lakes Commission. https://cms.waterusedata.glc.org/media/2024-Water-Use-Report-FINAL.pdf

[18] There is currently federal guidance (not requirements) on data centers used by the federal government. Offutt, M., & Zhu, L. (2025). *Data Centers and Their Energy Consumption: Frequently Asked Questions*. Library of Congress. https://www.congress.gov/crs-product/R48646#fn59

[19] *Resource planning*. (n.d.). Retrieved January 4, 2026, from https://www.michigan.gov/mpsc/regulatory/electricity/resource-planning

[20] *Issue Brief:Case No. U-21990, DTE Electric’s Application for Approval of Special Contracts*. (2025, December 18). Michigan Public Service Commission. https://www.michigan.gov/mpsc/-/media/Project/Websites/mpsc/consumer/info/briefs/Issue_Brief_U_21990_DTE_12_18_25-(002).pdf

The MPSC also manages the implementation of Michigan's clean energy standard, legislation that shapes the types of power plants that provide electricity to Michigan utilities.[21] This law requires utilities to obtain 15% of their power from renewable energy resources each year through 2029, and then 50% in 2030. In 2035, an 80% clean energy standard will take effect, with a target of 100% in 2040. During this transitional period, the MPSC is responsible for reviewing each utility's renewable energy plan to ensure compliance with the standard and for approving cost-recovery mechanisms for regulated utilities. The Commission also has the ability to grant a utility an extension for compliance under certain circumstances.[22]

While the MPSC has jurisdiction over the state's utility rates and customer protections, the Department of Environment, Great Lakes, and Energy (EGLE) regulates water withdrawals. Within EGLE, the Geologic Resources Management Division (GRMD) oversees Michigan's regulation of large quantity water withdrawals, with the goal of protecting the state's environment from significant impacts caused by large-volume water consumers. Specifically, Michigan landowners, such as a data center using traditional evaporative cooling, must obtain prior approval before operating pumps capable of withdrawing at least 70 gallons per minute.[23] The permitting process relies on GRMD's Water Withdrawal Assessment Tool (WWAT) for wells or surface water intakes from streams, rivers, or ponds with less than five acres of surface area. GRMD grants approval when no Adverse Resource Impact (ARI) on nearby streams and rivers is determined, resulting in a Water Withdrawal Registration that becomes void if the withdrawal isn't operational within 18 months.[24] Further permitting is required in sensitive areas or when large-quantity withdrawal owners seek new or increased withdrawals exceeding 2,000,000 gallons per day (pumps with flow rates of 1,389 gallons per minute or more).[25] These regulations apply to any on-site water producers in the state, from agriculture to public water supplies, and would apply whether a data center seeks to withdraw water via a well or if its increased demand would prompt a public water supply to increase its water withdrawals.

In the case of a data center seeking supply through a public water utility, Michigan's Safe Drinking Water Act requires these facilities maintain adequate capacity and reliability for existing customers.[26] Further, EGLE will reject water treatment plant construction permits if capacity assessments reveal a proposed expansion or alteration will leave a system with inadequate technical, financial, or managerial capacity to meet requirements.[27]

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[21] *Clean energy standard*. (n.d.). Retrieved January 4, 2026, from https://www.michigan.gov/mpsc/commission/workgroups/2023-energy-legislation/clean-energy-standard
[22] MCL 460.1032 (2). https://legislature.mi.gov/documents/mcl/pdf/MCL-ACT-295-OF-2008.pdf
[23] *Wwat*. (n.d.). Retrieved October 7, 2025, from https://www.egle.state.mi.us/wwat/home
[24] *Wwat*. (n.d.). Retrieved October 7, 2025, from https://www.egle.state.mi.us/wwat/home
[25] *Wwat*. (n.d.). Retrieved October 7, 2025, from https://www.egle.state.mi.us/wwat/home
[26] Safe Drinking Water Act, Mich. Comp. Laws § 325.1005(1)(e) (1976).
[27] Safe Drinking Water Act § 325.1004(2), (7).

Wastewater

Data center cooling systems influence not only water consumption but also the overall quality and volume of wastewater produced. Some cooling systems, like evaporative cooling, can generate wastewater with altered pH, and high concentrations of conditioning chemicals and biocides that are used to reduce the growth of bacteria such as *legionella*.[28] While these chemicals are important for minimizing
public health risks, they could strain local treatment plants that are not equipped to handle them. Other next-generation data center designs, such as closed-loop and dry cooling, are moving toward minimal or near-zero wastewater discharge.

EGLE's Water Resources Division (WRD) regulates waste or wastewater discharging into the waters of the state. Waters of the state are defined in law as groundwaters, lakes, rivers, and streams, along with all other watercourses and waters, including the Great Lakes. The regulations applicable to wastewater discharges can be divided into three permitting categories: discharges directly into surface water, discharges directly onto the ground or subsurface into the groundwater, and indirect discharges into nearby municipal wastewater treatment systems.

The first category applies to anyone discharging, or proposing to discharge, waste or wastewater into the state's surface waters. This type of permit is required by law under the National Pollution Discharge Elimination System (NPDES) program. This applies to any type of wastewater, including commercial, industrial, and sanitary sewage. The NPDES program is intended to control direct discharge into the surface waters of the state by imposing effluent limitations and other conditions to meet state and federal requirements.

The second category applies to anyone discharging, or proposing to discharge, waste or wastewater directly onto the ground or into groundwater. This type of discharge would require a Groundwater Discharge Permit or an exemption. A groundwater discharge permit imposes effluent limitations and/or groundwater limits set to protect the groundwater for the intended purposes. The intended purposes include protecting nearby drinking water wells, along with groundwater seeping into nearby surface water, to ensure the groundwater is safe for all who use it. This permit type applies to any wastewater, including commercial, industrial, and sanitary sewage. There are other regulating authorities, such as the Local Health Departments, that may become involved through the issuance of construction permits for discharges containing only sanitary sewage generating less than 10,000 gallons per day.

The third category applies to any indirect discharges (those who discharge to a municipal wastewater treatment facility via a sanitary sewer) and does not require an NPDES or groundwater discharge permit. Discharge to a separate storm sewer (i.e., does not go to a municipal wastewater treatment facility) is considered a direct discharge and may require either

[28] CDC. (2024, May 8). *Strategies for identifying cooling towers*. Investigating Legionnaires' Disease. https://www.cdc.gov/investigate-legionella/php/public-heaMichiganlth-strategy/identifying-cooling-towers.html

an NPDES or a groundwater discharge permit. Discharge to a municipal wastewater treatment facility may require a permit from the municipality under the Industrial Pretreatment Program.

Air Quality

The main air quality impact of data centers stems from emissions associated with electricity production, specifically nitrogen oxides and fine particulate matter (PM2.5).[29] Data centers typically draw most of their power from the grid, so the majority of these emissions are generated off-site in the communities hosting the power plants serving the power grid at large. Thus, when data centers are built in regions with cleaner power plants, these air emissions are lower. This impact can be furthered through the adoption of flexible operational strategies, such as load shifting, dynamic scheduling, and participation in virtual power plant (VPP) programs, which can help reduce emissions during peak demand periods. While these strategies are not yet widespread, research indicates that they most effectively reduce emissions when utilized in regions where renewables are already abundant and cost-competitive.[30]

Even when connected to the grid, data centers have on-site back-up generators, typically fueled by natural gas or diesel, to maintain operations during outages.[31] Actual emissions at the data center will depend on the number of generators, their size, and permitted runtime hours, and will vary based on individual data center operational standards. In Michigan, EGLE's Air Quality Division (AQD) requires air use and installation permits for equipment emitting air contaminants unless exempted explicitly under Part 2 of the air quality rules (Rules 277-291). While Rule 285(g) exempts the sort of small internal combustion engines that might be used in emergency back-up generators, data centers must also comply with Rule 278, which prohibits using exemptions when total project emissions exceed significance thresholds (e.g., 40 tons/year of nitrogen oxides, 100 tons/year of carbon monoxide, or 10 tons/year of particulate matter 2.5 micrometers or smaller). If aggregate emissions from all back-up generators exceed these thresholds, individual engine exemptions become invalid, and the site must obtain a permit for the entire fleet of generators on-site and any other air-emitting equipment.[32]

Land

As with other land uses, the environmental impact of a data center on its site largely depends on site characteristics, the land management practices used during construction, and what happens to the site at the end of the facility's lifespan.

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[29] Mitigating the public health impacts of ai data centers. (2025, November 5). *Harvard Business Review*. https://hbr.org/2025/11/mitigating-the-public-health-impacts-of-ai-data-centers

[30] Tran, T. (2025, October 29). Flexible data centers and the grid: Lower costs, higher emissions? -. *CEEPR*. https://ceepr.mit.edu/flexible-data-centers-and-the-grid-lower-costs-higher-emissions/

[31] *A primer for local governments: Understanding data centers*. (2025, April). National League of Cities. https://www.nlc.org/wp-content/uploads/2025/04/Data-Centers-Fact-Sheet.pdf

[32] Insights from Liesl Clark, Director of Climate Action Engagement at the University of Michigan

Data centers may cause environmental harm if sited in areas with sensitive natural features, such as steep slopes, wetlands, floodplains, and unique habitats. Construction activities, such as grading or heavy equipment use, can lead to soil compaction, topsoil removal, and changes in natural water flow, which can hinder the site's future plant growth and water-holding capacity.[33] Furthermore, if infrastructure is abandoned at the end of the project's life, it may result in the creation of a brownfield or make future redevelopment challenging. Such impacts, however, are not unique to data center development, and there are already state and local policies in place to address these common concerns with other industrial developments.

Sometimes there is a concern about whether data centers will impact other land uses, for example, by converting agricultural land. Even if many data centers are constructed, at the national- or state-level, they are only expected to be a minuscule fraction of total land area.[34] At the local level, however, there could be noticeable impacts if multiple large data centers are built in close proximity, or if data center development is combined with land-use changes from other sectors (e.g., housing development, energy infrastructure).

Quality of Life

In addition to direct impacts on land, data centers can raise several quality-of-life concerns for neighboring properties. Drawing on lessons from data centers in both Loudoun County, Virginia's "Data Center Alley," and Linn County, Iowa, we have learned that many of these issues can be mitigated through attentive siting.

Many quality-of-life concerns arise from other similar types of industrial development. Construction activities, for example, often have exceptionally high levels of disruption for neighbors, with heavy truck traffic, construction-related noise, and dust.[35] When foundations are being constructed, the developers may need to dewater, raising concerns of temporary impacts on local water tables or soil erosion.[36] As with other construction activities, soil erosion permits issued by the county or municipality would be required for "any earth change activity that disturbs one or more acres of land or which is within 500 feet of a lake or stream."[37] Similarly, when data centers or other industrial activities are developed on previously undeveloped sites,

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[33] Augst, T., Fierke-Gmazel, H., Gould, M. C., Krol, M., Mills, S., Neumann, B., Reilly, M., & Stoetzer, O. (2025). Planning and Zoning for Solar Energy Systems: A Guide for Michigan Local Governments (Updated ed.). Michigan State University Extension, Michigan State University School of Planning, Design and Construction, and University of Michigan Center for EmPowering Communities.

[34] Power Play: The Emerging Powered Land Opportunity (n.d.) Hines. Retrieved January 5, 2026,https://www.hines.com/powered-land/power-play-full-report

[35] *Data Centers in Virginia*. (2024). [Report to the Governor and the General Assembly of Virginia]. Joint Legislative Audit and Review Commission. https://jlarc.virginia.gov/pdfs/reports/Rpt598.pdf

[36] *$750m iowa data center's unpermitted wells draw $20k fine against dewatering contractor | engineering news-record*. (n.d.). Retrieved February 4, 2026, from https://www.enr.com/articles/61162-750m-iowa-data-centers-unpermitted-wells-draw-20k-fine-against-dewatering-contractor

[37] Soil Erosion and Sedimentation Control Program (SESC). (n.d.). Retrieved February 6, 2026 from https://www.michigan.gov/egle/about/organization/water-resources/soil-erosion/sesc-overview

there is a visual change to the landscape. This is apparent not just during the day, but also at night when parking lot and security lighting may create a notable change to the nighttime character of the property.

Other impacts, though, are more unique to data centers. One of the primary complaints of existing data centers in Loudoun County, for example, is the associated noise.[38] Unlike many industrial facilities with variable operational patterns, data centers operate continuously, producing consistent noise that can be problematically disruptive for neighboring residents. In particular, Loudon County found that inaudible low-frequency sounds were a nuisance to some data center neighbors.[39]

[38] *Data Centers in Virginia*. (2024)
[39] *Data Centers in Virginia*. (2024).

Economic Impacts and Michigan Policies

The primary draw of data centers as a land use, at both the state and local levels, is the economic activity they generate. There are, however, concerns about whether data centers will increase electricity costs for consumers. Here, we outline the potential economic impacts of data centers and the policies in Michigan that shape them.

State-level Tax Abatements to Attract Industry

Data centers, like other industries, drive economic activity in the states and communities where they are located. This includes, notably, the direct economic impacts of the surge in construction activity and the initial investment in data center equipment. But it also includes indirect economic benefits to the suppliers of the equipment and other materials that go into data centers, as well as induced effects when data center workers spend their wages on goods and services.[40] While new economic activity in a state expands the tax base and can fund state and local government services, states often reduce certain taxes to attract industry. Today, 36 states have laws approving state tax incentives for new data center development.[41]

For the past decade, the state of Michigan has offered a state-level sales and use tax exemption for "qualified" data centers, with new legislation adopted in 2024 aimed primarily at attracting hyperscale or "enterprise" data centers. The policies governing the sales and use tax exemption are from three key pairs of laws:

- Effective December 23, 2015, **PA 251 and 252 of 2015** added Michigan Compiled Law (MCL) 205.54ee and MCL 205.94cc to Michigan's General Sales Tax Act and Use Tax Act to create sales and use tax exemptions through December 31, 2035, for the sale, use, or consumption of data center equipment for qualified data centers. Under these Acts, a "qualified data center" is "facilities of one or more buildings located in Michigan that are owned or operated by an entity whose primary business is operating a data center for itself and colocated businesses; the entity must also receive 75% or more of its revenue from unaffiliated colocated businesses." The Acts required the creation of 400 new data center-related jobs by January 1, 2022, and 1,000 by January 1, 2026. Data center-related jobs include "jobs created at qualified data centers, by colocated businesses, and by contractors making improvements to realty that constitute a qualified data center."[42]

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[40] *DataCenters-JoyceFoundation_2026-01-13_Final.pdf | Powered by Box*. (n.d.). Retrieved February 4, 2026, from https://virginia.app.box.com/s/8qq2ggbdgwhf4atrorghtrcqsq64wd74

[41] *An overview of state data center-related tax incentives | naiop | commercial real estate development association*. (n.d.). Retrieved January 12, 2026, from https://www.naiop.org/research-and-publications/magazine/2024/Winter-2024-2025/development-ownership/an-overview-of-state-data-center-related-tax-incentives/

[42] *Notice Regarding Data Center Exemption*. (2016, March 14). State of Michigan Department of Treasury. https://www.michigan.gov/treasury/-/media/Project/Websites/taxes/Notices/Data_center_exemption_notice.pdf?rev=e6f7d971f9bd4eccba3f208b3fe9d862&hash=DF4CBADC90F299058E7F2F3358A823A2

- Effective February 13, 2020, **PA 29 and 30 of 2020** amended MCL 205.54ee and MCL 205.94cc to establish reporting obligations for sales and use tax exemption claims regarding the sale or purchase of data center equipment.[43] Under these Acts, persons seeking exemptions in a particular calendar year must file Form 5726 by January 31 of the following year. Form 5726 requires information on the sales or purchase price of all exempt equipment, and any information needed by the Department of Treasury to calculate School Aid Fund revenue loss as a result of tax exemption claims.
- Effective April 2025, **PA 181 and 207 of 2024** amended MCL 205.54ee and MCL 205.94cc to extend the original tax exemption period from 2035 to 2050 (and to 2065 for data centers built on brownfields), and to establish a new "enterprise data center" facility type that must meet more stringent requirements compared to "qualified data centers" to receive tax exemptions.[44] In August 2025, the Michigan Strategic Fund (MSF) published formal implementation guidelines for the new amendments, including related to clean energy, water, and green building standards.[45] Since then, several organizations have submitted comments to the MSF Board requesting changes, particularly related to the interpretation of the clean energy requirements, asking for that standard to be applied from the outset of the data center's operations rather than a future date.[46, 47]

Table 1 summarizes key features of these incentives. While both incentive categories have job-creation requirements, their other requirements vary considerably. While smaller, non-hyperscale data centers may only meet the definition of a "qualified" data center, many of the current larger data center development proposals may meet both definitions. Notably, while "enterprise" data centers have many more requirements than "qualified" data centers, the certification process provides greater certainty for developers because the certificate is granted by MSF before they purchase the equipment. By contrast, the "qualified" data center incentive is provided by the retailer at the point of sale, but subject to a Treasury audit which introduces some risk that the exemptions may have been invalid. It is difficult to determine which of the two exemptions data center developers will seek.

[43] *Notice: Report for qualified data center exemptions - form 5726*. (n.d.). Retrieved from https://www.michigan.gov/treasury/reference/taxpayer-notices/notice-report-for-qualified-data-center-exemptions-form-5726

[44] *Enterprise Data Center Sales & Use Tax Exemption*. (2025, August 26). Michigan Economic Development Corporation. https://www.michiganbusiness.org/globalassets/documents/data-center/enterprise_data_center_information.pdf

[45] *Enterprise Data Center Sales & Use Tax Exemption*. (n.d.). Michigan Economic Development Corporation. https://www.michiganbusiness.org/services/data-centerreitissuegulate/

[46] *2025-11-13 letter to msf re data center tax exemption guidelines*. (n.d.). Retrieved from https://www.documentcloud.org/documents/26285411-20.25-11-13-letter-to-msf-re-data-center-tax-exemption-guidelines/

[47] Lyijynen, N. (2025, December 11). *Comments on data center generation » mieibc*. MIEIBC. https://www.mieibc.org/comments-on-data-center-generation/

Table 1. Summary of Sales and Use Tax Exemptions for Qualified and Enterprise Data Centers

	Qualified Data Center	**Enterprise Data Center**
Key definitional feature	Must receive 75% or more of revenue from colocated businesses that are not affiliates of the owner/operator	Must have a minimum of $250M equipment investment
Job Requirements	400-1,000 aggregate statewide	30 per facility at 150% median prosperity wage
Clean Energy	No requirements	90% of usage (interpretation unclear, see below)
Green Building Standards	No requirements	One or more certified standards within 3 years
Water Source	No requirements	Municipal
Property Tax	No requirements	Cannot receive sunset, state, or local property tax benefits without local approval
Certification Requirements/Details	To claim the exemption when purchasing eligible data center equipment, the purchaser must provide a completed Michigan Sales and Use Tax Certificate of Exemption (Form 3372) to its seller. Must also file Form 5726	Must receive Michigan Strategic Fund certification before making purchases that are qualified for the exemption. No new certifications after December 31, 2029.
Revocation	No requirements	If certification is revoked, repayment of all related tax exemptions is required (if the revocation occurs 10 years after certification, 50% of the tax exemptions must be repaid).

Local Taxes and Employment

Job creation is a primary focus of state-level tax incentives. While state-level estimates of Michigan-specific job creation suggest there will be significant employment opportunities,[48] it is unclear how many direct or indirect data center jobs could be filled by residents of the host community. The vast majority of direct data center jobs are temporary construction positions. Once completed, there would be on-site operational and security positions, but estimates of how many range from dozens[49] to hundreds.

The more significant economic incentive for the host community would likely be the property taxes paid by the data center developer and operator. Because data center equipment is costly, data centers can significantly increase the property tax base. However, these increases may shift year-to-year.

The State Tax Commission lists data centers as a commercial use,[50] and the equipment within the data center would be taxed as commercial personal property. Most of the equipment, including servers and networking equipment, would likely be reported in Section F of the Personal Property Statement, which has a relatively fast depreciation.[51] The 2026 multipliers for Section F assess true cash value at 60% of the installed cost of that equipment in year 1, but just 8% of the true cash value when that equipment is 7 years old. As older equipment in the data center is replaced with newer equipment, that new equipment would again start out at a 60% multiplier, but–as is the case with many classes of personal property–there may be years when the taxable value of the personal property is less than the previous year. If there is a large increase in the real property on the site (for example, from new buildings or significant site improvements), these swings in tax revenue may be more muted. Regardless, local governments may need to think strategically about how to utilize these new personal property tax revenues. Lessons might be gleaned from our recent guide on renewable energy revenue streams.[52]

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[48] Group, T. B. (n.d.). *Michigan data center jobs 2026: Openai stargate hiring update*. Retrieved February 4, 2026, from https://thebirmgroup.com/michigan-data-center-jobs-2026-stargate-project-brings-thousands-of-opportunities-to-washtenaw-county/; *Gov. Whitmer submits public comment in support of stargate project, creating thousands of jobs, meeting strong environmental standards*. (n.d.). Retrieved February 4, 2026, from https://www.michigan.gov/whitmer/news/press-releases/2025/12/03/whitmer-submits-public-comment-in-support-of-stargate-project-creating-thousands-of-jobs

[49] Chung, W. (2025, October 6). *Data center staffing levels: How many people does a facility need?* Broadstaff. https://broadstaffglobal.com/data-center-staffing-levels-how-many-people-does-a-facility-need

[50] Michigan State Tax Commission Property Classification MCL 211.34c. (2018) https://www.michigan.gov/treasury/-/media/Project/Websites/treasury/MISC_4/ClassificationRealProperty.pdf?rev=efb8cc4963494e1393d2675b4fab9092&hash=B7240AE93E5ABE808D0CDC7FD8AB38BE

[51] 2026 Personal Property Statement (Form L-4175), https://www.michigan.gov/taxes/-/media/Project/Websites/taxes/Forms/Property-Tax/632/632_ty2026.pdf?rev=9bd5f68f4fda4d828cc4306ea6ba749b&hash=F72987A0B2EC0E2795E0C065E33E265D

[52] Stoetzer, O., Krol, M., & Mills, S. (2025). Strategies for Renewable Energy Revenue: A Guide for Michigan Local Governments. University of Michigan Center for EmPowering Communities. https://graham.umich.edu/project/renewable-energy-revenue

Local governments do have discretion to offer data center property tax incentives, including via PA 198 agreements.[53] In certain situations, data centers may also be eligible for property tax exemptions via the Michigan Renaissance Zone Act, which are not approved at the local level but instead approved by the Michigan Strategic Fund.[54] In order to qualify for the "enterprise" data center sales and use tax exemption, however, any local property tax incentive must be approved by each local unit of government affected by the incentive. This is not a provision to qualify for the "qualified" data center sales and use tax exemption.

Impacts on Electricity Rates

Another common data center question is whether they will increase electricity costs, given the reports on electricity rate increases in some states like Virginia and Ohio that have undergone significant data center development.[55, 56] There is also, however, nationwide data finding the opposite impact: that looking across all states, those that had increased electricity load typically saw decreases in electricity rates compared to the others.[57]

There are multiple reasons that conflicting observations can be true at the same time. One key point is that it is challenging to assess what would have happened to electricity rates in the absence of data center load growth. Across the country, U.S. average retail electricity prices have been rising faster than inflation for residential consumers due to costs associated with grid maintenance and capacity expansion.[58] On the one hand, the load growth that data centers bring can help spread these fixed grid-related costs over more kilowatt-hours of electricity consumed, thereby reducing increases or the rates themselves for residential customers. On the other hand, if grid expansion is only needed to bring data center load online, data centers may be contributing to cost increases.

In Michigan, customer utility rates and ratemaking policy are set by the MPSC. By statute, Michigan abides by cost-of-service ratemaking, which means that utility rates assign "costs to customer classes based on usage patterns."[59] Additionally, Michigan's recent legislation on enterprise data center use and sales tax exemptions dictates that these data centers can only qualify if they use an electric service rate that prevents residential customers from subsidizing

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[53] 1974 PA 198, MCL 207.551 to 207.572
[54] 1996 PA 376, MCL 125.2681 to 125.2696
[55]As data centers for AI strain the power grid, bills rise for everyday customers. (n.d.). Washington Post. https://www.washingtonpost.com/business/2024/11/01/ai-data-centers-electricity-bills-google-amazon/
[56] Saul, J. Nicoletti, L. Pogkas, D. Bass, D. and Malik, N. (2025, September 29) AI data centers are sending power bills soaring. Bloomberg Technology. https://www.bloomberg.com/graphics/2025-ai-data-centers-electricity-prices/
[57] Wiser, R., O'Shaughnessy, E, Barbose, G., Cappers, P., & Gorman, W. (2025) Factors influencing recent trends in retail electricity prices in the United States. The Electricity Journal. https://www.sciencedirect.com/science/article/pii/S1040619025000612#sec0020
[58]New Berkeley Lab report summarizes trends in retail electricity prices and price drivers. (2025, January 6). Energy Markets & Planning Berkeley Lab; Lawrence Berkeley National Laboratory. https://emp.lbl.gov/news/new-berkeley-lab-report-summarizes-trends-retail-electricity-prices-and-price-drivers
[59]Putnam, C. (n.d.). Cost of Service Ratemaking. Michigan Public Service Commission Department of Licensing and Regulatory Affairs. https://pubs.naruc.org/pub.cfm?id=53889A44-2354-D714-5158-979D43EA47CF

their facilities' electric costs.[60] Some of the Commission's recent decisions were designed to ensure that large-load customers, such as data centers, contribute significantly to the new and embedded costs associated with expanding Michigan's electric grid.

[60]Enterprise Data Center Sales and Use Tax Exemption Guidelines. (2025).

Considerations for Local Government Policy-Making

The primary tool that local governments have to shape data center development is zoning. The Michigan Zoning Enabling Act (MZEA) sets out the minimum procedures that local governments must follow when making amendments.[61] It, along with past state and federal court cases, also sets parameters for zoning authority. For example, the MZEA states that local zoning ordinances "shall not have the effect of totally prohibiting the establishment of a land use," with only a few rare exceptions.[62] While local governments have broad latitude to direct land uses to particular districts and set development standards or conditions on land uses, those standards and conditions must be reasonable and should be based on facts.[63]

Furthermore, while there is much attention to the significant community benefits that a data center may be able to bring (e.g., financial contributions to park or open-space funds, fire departments, or other community priorities), there are limitations to making these agreements required as part of zoning approval, or enforcing them if the developer decides not to make-good on the agreement.[64] Agreements with developers for community benefits are more solidly enforceable if entered into in exchange for a public subsidy of the project, such as a local property tax abatement or some other publicly-funded improvement that will benefit the project.[65] As a result, we also briefly discuss property tax abatements below. Enforceable community benefits may also result from settling a lawsuit with the data center developer, but that path comes along with additional legal fees for the local government.[66]

We offer the following considerations for local governments, but advise municipal officials to consult their local planner and municipal attorney before making any changes to their plans or zoning ordinances.

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[61] Michigan Zoning Enabling Act, MCL 125.3101 to 125.3702 (2006). https://www.legislature.mi.gov/documents/mcl/pdf/mcl-Act-110-of-2006.pdf

[62] MCL § 125.3207

[63] MCL § 125.3504

[64] Review, T. R., & Elia, E. (2024, July 18). *Legislative exactions | the regulatory review*. https://www.theregreview.org/2024/07/18/elia-legislative-exactions/

[65]Community Benefit Planning and Agreements: A Summary Overview. (2024). Michigan State University Center for Community and Economic Development. https://ced.msu.edu/upload/community%20benefits/Community%20Benefits%20Brief_FinalVersion.pdf

[66] Consent Judgment, RD Michigan Property Owner I LLC v. Saline Township, No. 2025-001577-CZ (Washtenaw County Circuit Court Oct. 15, 2025). https://salinetownship.org/uploads/notices/SalineDataCenterConsentJudgmentFinalExecutionCopy492124804975v1.pdf

#1: Consider whether your industrial zone is appropriate for data centers

The footprint of a data center and the state regulations that apply to this land use are not significantly different from those of other large industrial activities, so it may be logical for local governments to use their approach to industrial development as a starting point for data center policymaking. However, given limited greenfield industrial development in Michigan over the last three decades and the comparatively large footprint of data centers relative to other light industrial uses, we recognize that few Michigan communities have had robust conversations about their industrial zones. Now is the time for such a conversation.

The first step should be to review the spatial footprint of your industrial district(s) and the infrastructure capacity to serve them. Many industrial uses–not just data centers–require electricity infrastructure and access to water (even if only a well). Your community's master plan (sometimes called a comprehensive plan) may have already considered where infrastructure is most suitable for industrial development, and so you should compare the spatial extent of your current industrial zoning with what is suggested in the Master Plan. This will help you determine whether it is appropriate to expand your industrial district.

In addition to dictating where industrial uses may be permitted in your community, zoning also lays out which processes developers must follow if they wish to develop their properties. It is very common to allow industrial development "by-right" in industrial zones - that is, with limited discretion by the planning commission or Township board / City Council, so long as the developer meets all of the standards in the zoning ordinance (see Consideration #2). Given the increased scale of industrial developments, it may be appropriate to treat larger industrial uses (e.g., those greater than 15,000 square feet, or whatever has been typical in your community) as special land uses, which affords the Planning Commission and board the opportunity to give proposals additional review and apply conditions to their approval.

#2: Include quality-of-life impacts in industrial zoning regulation

Historically, industrial uses have been concentrated near other industrial uses to minimize impacts on surrounding land uses from emissions, noise, and light pollution. Industrial districts were commonly buffered from residential districts either through public infrastructure, such as roads or waterways, or through less sensitive uses, such as office or commercial zones. But in communities that have seen limited industrial activity, or in those where existing industrial zones are not large enough to accommodate new industrial activity like data centers, there may not be ample space to buffer from other land uses. As a result, a community might consider updating the standards in industrial zones to ensure that any new industrial activity–data centers included–is protecting quality-of-life in neighboring districts. Your community's most important quality-of-life

impacts to regulate may be informed by your comprehensive plan. Common considerations might include:

- Visual screening: While it is common to require vegetative screening in some districts, this requirement may not apply in industrial districts, particularly if your zoning ordinance did not anticipate that an industrial district would expand to abut residential areas.
- Sound: Some communities have community-wide sound standards that exist outside of zoning codes. These often apply to all noise emitters and may differentiate sound levels by time of day or day of the week (with a higher expectation of quiet on weekends). This approach sets a constant expectation for all land uses, not just industrial uses. If this is not practical, it is also possible to include sound standards for specific land uses or land-use classes. Standards that apply to large-scale renewable energy projects may be a useful starting point, as sound standards are common in the regulation of these facilities.[67]
- Light: Another common concern about industrial activities, particularly in rural areas, is the light pollution they may cause, especially when they are developed in areas without streetlights. Some communities, including Emmet County,[68] have dark-sky ordinances that limit light pollution from all land uses. These same concepts can be applied specifically to industrial uses if that is the concern. Another option is to require dark-sky-compliant light fixtures for all proposed site plans.
- Decommissioning: Many industrial facilities have specialized designs with limited opportunities for reuse at the end of their life. From our brownfield experience, when a company is no longer in business or decommissioning the facility is too costly, these facilities are sometimes abandoned, creating an eyesore and public health hazard in the community and increasing redevelopment costs. As a result, it is increasingly common that industrial facilities enter into a decommissioning agreement that includes a financial guarantee that the facility, and any infrastructure that no longer has a useful purpose, will be removed at the end of its life. Again, it may be instructive to look to large-scale renewable energy projects for sample language.

These regulations would be in addition to the setbacks, height, lot-area coverage, and parking standards that are common in most zoning ordinances. While it is possible to use these more customary regulations to help buffer or minimize the impacts of industrial uses, there may be unintended consequences (e.g., industrial uses actually requiring more land to comply with large setback requirements) and so you may wish consider directly addressing the quality-of-life concern (e.g., sound, visual impact, light), rather than using setbacks as a proxy for those concerns.

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[67] Krol, M., and Mills, S. (2024). Planning & Zoning for Battery Energy Storage Systems: A Guide for Michigan Local Governments. University of Michigan Center for EmPowering Communities. https://graham.umich.edu/project/bess-guide; Augst, T., Fierke-Gmazel, H., Gould, M. C., Krol, M., Mills, S., Neumann, B., Reilly, M., & Stoetzer, O. (2025). Planning and Zoning for Solar Energy Systems: A Guide for Michigan Local Governments (Updated ed.).

[68] Emmet County. (2023). *Emmet County zoning ordinance* (Ordinance No. 15-1, updated through April 28, 2023). https://www.emmetcounty.org/UserFiles/Servers/Server_3942756/File/Ordinances,%20Bylaws%20&%20Rules/Zoning%20Ordinance/Emmet-County-Zoning-Ordinance-4_28_2023.pdf

#3: Get commitments in writing

While it is ideal to use your zoning ordinance to set clear standards and thresholds that apply to data centers or industrial districts, you may be able to get some commitments or added specificity on particular impacts in writing. For example, if your community wants on-site generators to only run during power outages or for weekly testing, it may be beneficial to obtain that commitment in writing and specify permitted operating hours to minimize noise impacts on residents. If there are other commitments that matter to your community, such as delivery truck routes or transparency on water or energy usage, etc., consider getting them in writing as well.

The appropriate mechanism to secure written commitments for your community will depend on the specific agreement at hand and whether it is tied to zoning (for example, special land-use conditions or willingly offered terms by the developer as part of a conditional rezoning), a development agreement, or a discretionary property tax incentive. A municipal attorney can help identify the most appropriate mechanism, though guidance from the Michigan Municipal League is instructive for municipalities seeking community benefits commitments.[69]

#4: Request a Property Tax Guarantee

A primary community-wide benefit of hosting a data center is the increase in the property tax base that accompanies the project. It is not uncommon, however, for the personal property tax tables to change over the life of an industrial project such as a data center, which can prompt disputes between the local government and the taxpayer over the property tax valuation. Having a written commitment that the developer will pay the property tax revenues they discuss during the permitting process may help reassure the community that these benefits will materialize.

This approach has proven successful in Dickinson County, which accepted a Property Tax Guarantee from the developers of the Groveland Mine Solar project.[70] In the guarantee, the developer committed to a floor for property tax payments to the local governments. If the tax tables change in a way that reduces their required payments, they will still pay the committed amount. If, however, the tax tables change in favor of the local government, the developer is still responsible for paying the higher taxes.

#5: Explore data center integration with other industrial infrastructure

While a data center developer likely views the heat generated by their facility as a waste stream, other industries see it as an input and invest in generating it. Thus, there may be local

[69] *Handbook for General Law Village Officials* (p. 71). (2024). Michigan Municipal League . https://mml.org/wp-content/uploads/2024/07/CH-14-Planning-and-Zoning.pdf
[70] Stoetzer, O., Krol, M., & Mills, S. (2025). Strategies for Renewable Energy Revenue: A Guide for Michigan Local Governments.

opportunities for the data center to create a circular economy and put at least some of that heat to beneficial use. Opportunities include greenhouses, other industrial processes, and district heating systems, as is being proposed in Lansing.[71] Your local government can encourage the use of this waste stream by proactively identifying existing land uses in your community that require heat and sharing those with potential data center developers.

Similarly, local governments can explore with the data center developer the possibility of co-locating data centers with electricity infrastructure, like solar or battery energy storage. While a data center is unlikely to be able to fully power itself with on-site energy generation due to a mismatch between the footprints of large-scale renewables and data center technologies, siting some infrastructure on-site at the data center can reduce the need to build power plants elsewhere. Furthermore, this electricity infrastructure might boost the local property tax base.

[71]Kaplan, L. V. (2025, November 5). *Proposed downtown data center focused on sustainability*. City Pulse. https://www.lansingcitypulse.com/stories/proposed-downtown-data-center-focused-on-sustainability,164052

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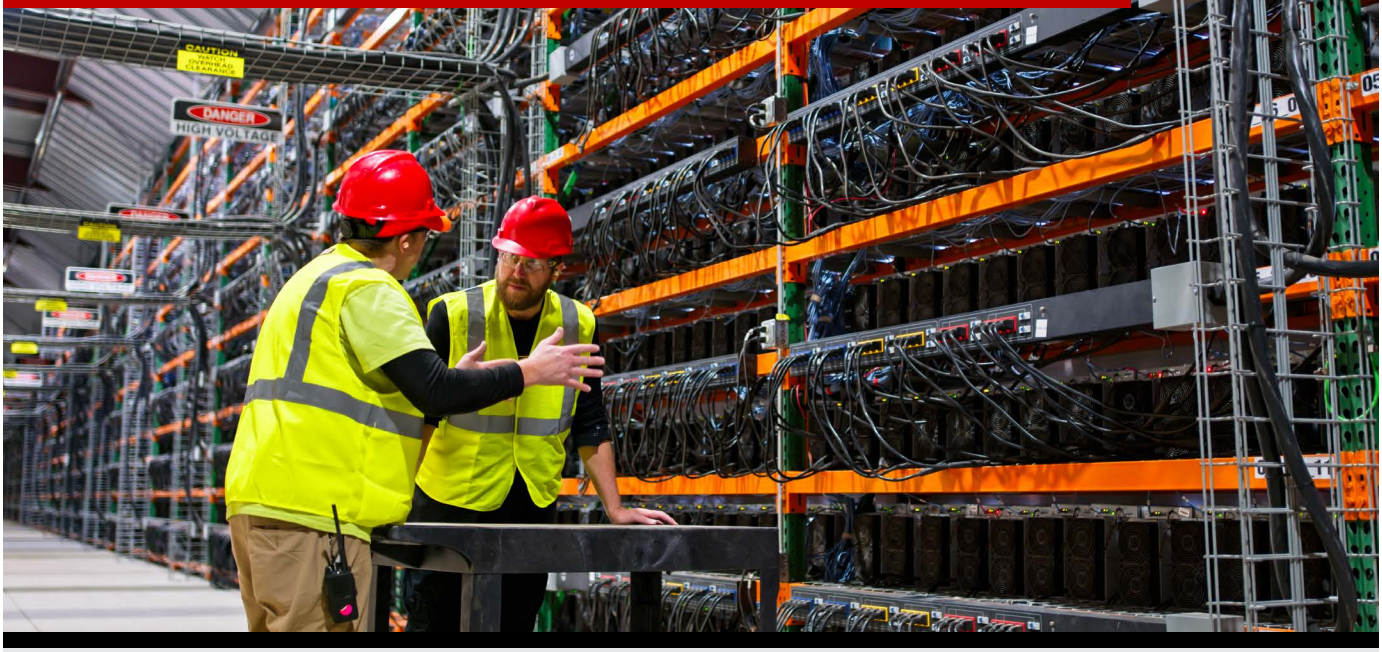
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ZONING PRACTICE

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The Physical Footprint of Artificial Intelligence



In this Issue: What Are the Physical Needs of AI? | How Is AI Infrastructure Regulated (or Not)? | What Should Planners Be Thinking About? | Where Can Planners Learn More?

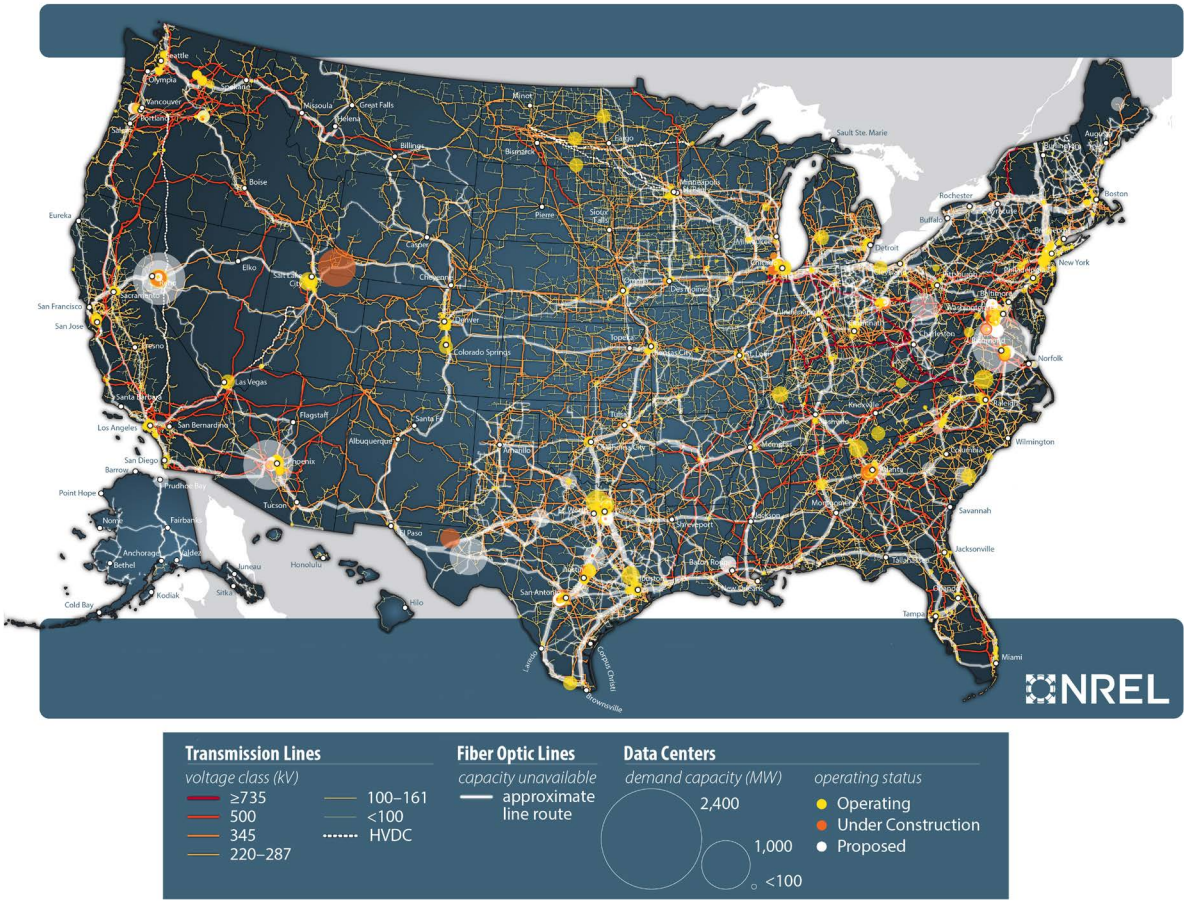
The Physical Footprint of Artificial Intelligence

By Charlie Nichols, AICP

Every time you ask ChatGPT, Gemini, or Claude a question, you are tapping into a sprawling, power-hungry network of machines. Somewhere, a data center's processors are whirring, fans are spinning, and megawatts of electricity are flowing.

Artificial intelligence (AI) may feel virtual, but its footprint is intensely physical. Behind every chatbot interaction, predictive algorithm, or autonomous system lies a vast network of data centers, power generators, and electricity transmission and distribution infrastructure. As vast as it is now, the demand for computing power is growing at an exponential rate, and local zoning is on the front lines.

This issue of *Zoning Practice* explores the physical effects of AI deployment and highlights core considerations for local planning and zoning. It begins with a summary of the land use characteristics of the system of data centers that host and serve contemporary AI models before highlighting noteworthy regulatory approaches and areas of opportunity for zoning updates and land use decision-making processes.



Data center infrastructure in the United States, 2025 (Credit: NREL)

What Are the Physical Needs of AI?

When we think about artificial intelligence, we often imagine abstract ideas or algorithms, software, or maybe a chat assistant or a robot. But AI is deeply physical. It runs on powerful hardware that lives in large buildings, draws enormous amounts of electricity, and requires robust infrastructure to keep it cool and operational. These needs are shaping land use decisions in ways many communities have never dealt with before.

AI Lives in Data Centers

The primary home of AI is the data center. These are large, sometimes windowless, buildings filled with servers, networking equipment, and backup systems. While some are sleek and high-tech, many look like simple warehouses. But inside, the technology is anything but simple.

AI workloads require far more computational power than traditional cloud computing. That means more servers packed with graphics processing units (GPUs), which are optimized for machine learning tasks. These GPUs are energy-intensive and generate a significant amount of heat (Shehabi et al. 2024; Casey 2025).

This is why the design, location, and infrastructure of data centers have become such a big deal. For example, Meta's Altoona, Iowa, data-center campus has more than five million square feet of space and is still growing (Miller 2022).

Data centers themselves fall into several distinct categories. Edge or micro facilities are the smallest, often modular container-sized enclosures ranging from a few hundred to a few thousand square feet. Enterprise data centers, typically operated by corporations or universities, can range from about 5,000 to 50,000 square feet, sometimes larger. Colocation facilities lease space to multiple tenants and often fall between 50,000 and 600,000 square feet, with many averaging around 150,000 square feet. At the largest scale are hyperscale data centers, typically built by major cloud or AI providers, which can easily reach hundreds of thousands of square feet per building and exceed one million square feet across a campus (Zhang 2023).

While many forecasts focus on power demand rather than square footage, it is possible to translate one into the other. Deloitte estimates that AI-driven data centers could require up to 123 gigawatts (GW) of capacity in the U.S. by 2035, compared to roughly 4 GW today (Stansbury et al. 2025). Real-world projects suggest that every megawatt of IT load requires between 5,000 and 12,000 square feet of total building area. Applying that ratio to 123 GW implies a national buildout of 615 million to 1.48 billion square feet of data center space, equivalent to about 22 to 53 square miles. Land use estimates point in a similar direction, with 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 (Stansbury et al. 2025).



A proposed 612-acre hyperscale data center campus in Cedar Rapids, Iowa (Credit: QTS)

AI Needs Lots of Electricity

Power demand is one of the most critical limiting factors in scaling AI. The U.S. Department of Energy's Secretary of Energy Advisory Board notes that legacy hyperscale data centers have typically connected at 20–50 megawatts (MW), but utilities are now receiving AI-driven connection requests for single campuses of 300–1,000 MW (2024). 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 (calculated

with the U.S. EIA average of 10,500 kWh per household). These unprecedented loads are forcing planners, utilities, and regulators to rethink siting, transmission capacity, and community-impact mitigation.

This demand is driving data centers to locate near existing transmission infrastructure, substations, or power plants. In some cases, new substations or transmission lines are being proposed just to support AI infrastructure. Local planners are being asked to approve not just buildings, but energy projects with regional impacts.

There is also growing concern about the climate impacts of AI. Researchers estimate that the cumulative carbon emissions from AI models could reach 3.66 to 8.72 million tons in the U.S. alone—the equivalent of driving an average gasoline-powered car nine to 22 billion miles (Ding et al. 2025; USEPA 2024). This has led to pressure for data centers to run on renewable energy, adding another layer of land use complexity as solar or wind farms are proposed nearby or colocated together with data centers.

AI Needs Water and Cooling

All that power generates heat, and that heat has to go somewhere. Most data centers use a combination of air- and watercooling systems. Some of the largest AIfocused facilities can consume hundreds of thousands of gallons of water per day for evaporative cooling (Lei et al. 2025; Shehabi et al. 2024; Selsky 2022). That's raising concerns in water-scarce regions or places where water infrastructure is already stretched thin.

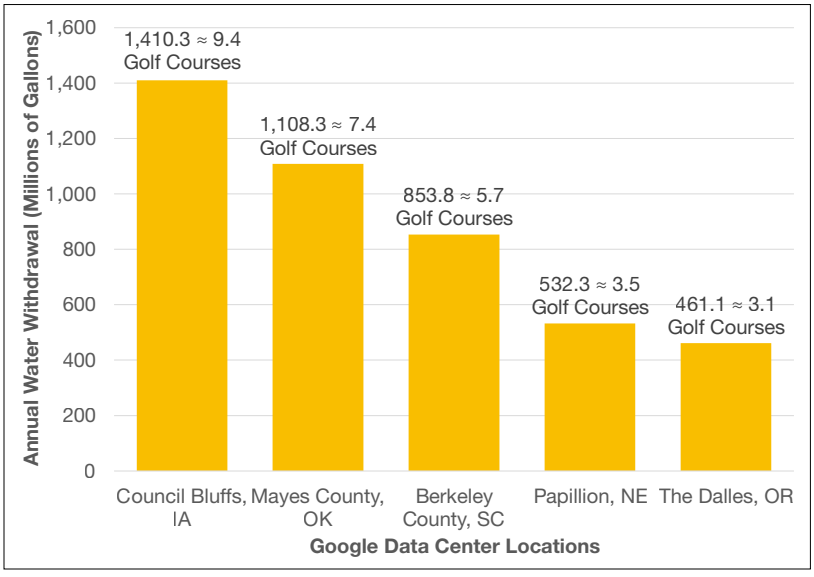
For example, in The Dalles, Oregon, a dispute between Google and the city over water use became national news when the city council approved a water agreement to support Google's data center expansion, despite local concerns about long-term water availability (Selsky 2022).

Water and cooling infrastructure also raise siting questions. Should data centers be allowed in areas with limited water supply? What happens when a tech company becomes one of the largest users of municipal water? These questions are starting to reach planning commissions and city councils.

AI Needs Fiber and Connectivity

Finally, AI infrastructure depends on high-speed fiberoptic connections. Training models and delivering AI services both require fast, reliable data transmission. This can drive the need for new fiber lines, telecom infrastructure, or even small-cell installations in rural or suburban areas (RVA LLC 2025; Walker 2024).

It's not just big cities seeing these investments. Some rural areas are gaining interest from AI developers because they offer space, lower land costs, and cooperative local governments—provided they can offer fiber access and a willing utility partner.



Top-five U.S. Google data centers by annual water withdrawals, 2024 (Credit: Google's 2025 Environmental Report)

How Is AI Infrastructure Regulated (or Not)?

If your city or county does not already have a data center, just wait. The odds are increasing that a tech company, or the utility that serves them, will soon come knocking. Yet most local governments are not fully prepared to regulate AI infrastructure. In many places, the regulatory framework is either nonexistent or built for a different era of technology.

Zoning Codes Rarely Mention AI or Data Centers

Many zoning codes still make no explicit reference to "artificial intelligence" or even to "data centers." Where definitions are

absent, planners may choose to slot these facilities into broad buckets such as warehousing, light-industrial, or public-utility uses, even though the buildings may be packed wall-to-wall with servers instead of pallets.

Yet these facilities behave very differently from the categories they're often shoehorned into, and there are many reasons why local governments may want to specifically define data center uses (Morley 2022). Their continuous operation demands megawatts of electricity and, in many climates, hundreds of thousands of gallons of cooling water per day; the equipment generates heat and noise; and the employment footprint is minimal. When such impacts are overlooked, communities can be blindsided—as happened in Prince William County, Virginia, where approval of a massive datacenter corridor sparked backlash over noise, power delivery, and land use compatibility.

Recognizing this mismatch, an increasing number of jurisdictions have begun to write data-center-specific rules. Loudoun County, Virginia, imposes façade, screening, lighting, and pedestrian-connectivity standards on by-right data centers to blunt visual impacts while leveraging their tax base (§4.06.02). Prince William County uses a Data Center Opportunity Zone Overlay to funnel projects to infrastructure-served parcels and require design review (§32-509). Missoula County, Montana, offers a different model. The county's ordinance, crafted for cryptocurrency mines, confines those operations to industrial zones and requires them to offset 100 percent of their electricity use with renewable energy (§5.10). Because cryptocurrency mines and large-scale data centers both run continuously, draw high-density power, and employ few on-site workers, planners can adapt the same toolkit—clear land use definitions, targeted overlay districts, and energy-focused performance standards—to data centers when communities want comparable safeguards.

Looking ahead, AI training clusters dwarf the loads discussed in 2022, with utilities now fielding single-campus interconnection requests of 300 MW and more. The zoning fundamentals remain the same, but the stakes are higher. Without proactive definitions, locational criteria, and impact standards, local governments risk conceding critical decisions about land, water, and grid capacity to developers' timetables rather than community goals.



Data Center Alley in Loudoun County, Virginia (Credit: Gerville/iStock/Getty Images Plus)

Many AI Facilities Are Allowed by Right

In areas that do allow data centers by right, local officials often have little authority to influence their design or siting (Morley 2022). Developers may be able to build massive facilities with only administrative approval. If the project complies with the basic zoning and building code, it can move forward, even if it brings significant impacts to neighboring properties or the local infrastructure system.

This hands-off, by-right approach can leave neighbors in the dark when a campus that draws 100 MW or more of power is permitted the same way a warehouse is. Such facilities may also require hundreds of thousands of gallons of cooling water per day and generate continuous low-frequency noise from chillers, pumps, and backup generators (Van Geet and Sickinger 2024). Without a public-hearing trigger, residents may not learn what is coming until the bulldozers roll.

That said, relying on discretionary use permits alone is not a perfect fix. Case-by-case approvals can introduce uncertainty, increase timelines, and duplicate reviews that utilities already perform when they decide whether to supply the necessary electricity and water. A more balanced strategy is to embed objective, use-specific standards (e.g., caps on sound at the property line, requirements for renewable-energy procurement, and

water-recycling targets) directly into the zoning code. Guidance from the Urban Land Institute shows how clear definitions, overlay districts, and measurable performance thresholds can give developers predictability while still protecting community interests (Miet 2024). By pairing these standards with early coordination among planners, utilities, and residents, communities can address local impacts without resorting to duplicative or open-ended discretionary reviews.

Infrastructure Approvals May Be Handled Separately

Adding to the complexity, the infrastructure needed to support AI such as transmission lines, substations, power generation facilities, battery energy storage. and fiber installations is often regulated under different frameworks. Utilities may have their own review and siting authority at the state level, which can bypass local land use processes entirely.

Large solar or wind projects, for example, are pre-empted from local control in more than 20 U.S. states, leaving local governments to vet the data-center building, while the power generation facility that feeds it is debated elsewhere (Gomez and Morley 2023; Morley 2025). Fragmented approvals make it hard for planners to tally cumulative effects such as substations, access roads, or groundwater withdrawals.

Battery-energy-storage systems (BESS) create another layer of complexity, and a clear trend of data centers colocating BESS on-site is accelerating (ZincFive 2024). Some states exempt utility-scale BESS that are colocated with generation assets, while others treat them as industrial equipment needing only an electrical permit. Where local authority does apply, recent guidance recommends clear definitions, district regulations, and objective safety standards, thermal-runaway monitoring, minimum setbacks, and emergency-response plans to avoid ad-hoc hearings (Ross and Vadali 2024).

Developers are now bundling data centers with on-site renewables and storage in microgrid "energy parks," aiming to bypass long interconnection queues and control energy costs. Recent projects in Texas and Virginia pair hundreds of megawatts of generation and storage with adjacent server halls, creating hybrid campuses that straddle state energy-facility review, regional transmission rules, and local zoning (DiGangi 2025). To keep pace, planners can identify jurisdictional triggers early, embed measurable performance standards (e.g., noise caps, screening, or renewable-energy sourcing) in their codes,



The Eland Solar-plus-Storage Center in Kern County, California (Credit: The Desert Photo/iStock/Getty Images Plus)

and coordinate with utilities so local and state reviews proceed on aligned timelines.

Environmental Review Is Inconsistent

Environmental review of AI infrastructure also varies widely. In states that require environmental impact statements (EIS), large-scale data centers may undergo detailed scrutiny. But in states without EIS laws, or for smaller projects, there may be minimal analysis of water use, energy consumption, or greenhouse gas emissions (Morris 2024).

Even where review is required, the focus may be on the building itself, rather than the full ecosystem of impacts. For example, if a local code does not require review of off-site power infrastructure or supporting utility upgrades, critical issues related to energy delivery, environmental impact, or long-term capacity may fall through the cracks.

Local Governments Are Starting to Catch Up

Local governments are no longer standing still while hyperscale campuses spring up at the edge of town. Since 2023, a wave of city councils, county boards, and planning commissions have begun moving data centers out of catch-all industrial categories and into their own, better-defined regulatory boxes. Some jurisdictions, such as Atlanta, now require special-use permits tied to energy, water, and noise studies (Ordinance 25-O-1063). Others, such as Cedar Rapids, Iowa, leverage community-benefit agreements to ensure local reinvestment when a project wins approval (Pratt 2025).

Approaches vary, but the trend is unmistakable: Communities are adopting objective, use-specific standards rather than relying solely on ad-hoc discretionary permits. Some ordinances steer projects into infrastructure-served corridors, others set caps on sound and water use, and a growing number link approvals to renewable energy procurement or on-site battery storage. Table 1 highlights seven recent examples illustrating the breadth of new zoning language, overlay districts, and design guidelines that together show local governments are indeed catching up.

Table 1. Examples of Recent Local Regulatory Updates for Data Centers

Jurisdiction	How it regulates data-center impacts
Atlanta, GA	Requires a special-use permit for every new data center and empowers the city council to review water-consumption, energy-efficiency, and noise-mitigation plans (Ordinance 25O1063, 2024)
Brainerd, MN	Prohibits data centers unless the planning commission approves a conditional-use permit that addresses cooling noise and utility demand (Ordinance No. 1581, 2025)
Chandler, AZ	Adds a data center use category; limits the use to Planned Area Development zones and sets size, generator-testing and water-recycling standards (Ordinance No. 5033, 2022)
Tempe, AZ	Requires a water use plan and enhanced setbacks next to homes and schools, and "innovation hubs" (Ordinance No. O2025-23, 2025)
Phoenix, AZ	Defines "data center," restricts locations, and introduces design standards such as façade articulation and noise studies (Ordinance G-7396, 2025)
Sugar Grove, IL	Creates a dedicated district with height limits, façade screening, and a master-utility-plan requirement (Ordinance No. 2022-1206B, 2022)
Frederick County, MD	Establishes an overlay zone that limits where data centers can be built (Bill No. 25-05, 2025)

What Should Planners Be Thinking About?

Artificial intelligence may sound futuristic, but the decisions that shape its physical footprint are being made today. Local governments that wait too long to prepare may find themselves reacting to projects rather than guiding them. So what should planners be thinking about now?

Think About Scale

AI infrastructure often hides in plain sight until its true footprint emerges. What looks like a single "warehouse" can blossom into a portfolio buildout—multiple server

halls, two substations, a battery yard, and a 30-inch water main, all staged over a decade (USDOE SEAB 2024). To avoid approving these megaprojects one slice at a time, some jurisdictions now demand a phased master plan up front. For example, Loudoun County, Virginia, requires every data-center rezoning to include a "Data Center Development Plan" showing the full buildout of power feeds, cooling infrastructure, and utility corridors before the first site plan is approved (2025).

Regional utilities are following suit by running scenario-based load models to test whether transmission and groundwater supplies can keep up. A 2024 white paper by Energy + Environmental Economics describes how such models informed Portland (Oregon) General Electric's latest integrated-resource plan and helped local planners identify future right-of-way corridors for two new 230-kV lines (Riu et al. 2024). By asking for phased utility exhibits and participating in utility load-growth scenarios, planners can make sure each new server hall fits into a system-wide picture rather than becoming an isolated surprise.

Many comprehensive plans still treat "technology infrastructure" as an afterthought, yet data center proposals are now shaping decisions on land supply, energy policy, water allocation, and broadband.

Think About Alignment With Your Plans

Many comprehensive plans still treat "technology infrastructure" as an afterthought, yet data-center proposals are now shaping decisions on land supply, energy policy, water allocation, and broadband. Start by inventorying where AI-related facilities touch existing plan elements—utilities, environmental stewardship, economic development—and flag the gaps.

One emerging best practice is to link data-center approvals directly to community climate goals. Embedding such benchmarks in comprehensive plans or codes gives planners clear decision criteria and ensures that new AI infrastructure advances, rather than conflicts with, local resiliency objectives.

Plans can also weave data-center growth into broadband and workforce strategies. The U.S. Department of Energy's 2024 report on AI infrastructure recommends that local governments coordinate land-use designations with state broadband-expansion maps so that fiber corridors serving data centers double as backbone routes for underserved neighborhoods (USDOE SEAB 2024). Aligning these layers up front helps planners negotiate public-benefit clauses—such as dark-fiber setasides or training programs, rather than scrambling for concessions late in the process.

Updating your plan first and then adopting measurable standards that flow from it gives applicants clarity, while ensuring projects advance the community's long-term vision.

Think About Infrastructure Capacity

AI campuses can overwhelm local utilities faster than many other land uses. Virginia's Joint Legislative Audit and Review Commission estimates that data centers will require 11 gigawatts (GW) of new electric generation and transmission in that state alone by 2035, roughly one-third of Dominion Energy's entire current system (VJLARC 2024). National modeling by Energy + Environmental Economics shows a similar surge, with some balancingareas seeing load grow 25 percent in a single decade under an "AI-high" scenario (Riu et al. 2024).

Water systems face parallel stress. At Google's complex in The Dalles, Oregon, public records show cooling demand could top one-quarter of the city's current supply, prompting a 2023 agreement that pauses future phases unless new wells come online (Selsky 2022). Quincy, Washington, responded to similar pressures by creating a special water rate class and meter fee for data centers to fund infrastructure upgrades (2025). These examples point to tools planners can



The Three Mile Island nuclear power plant in Middleton, Pennsylvania, which is coming back online to power Microsoft data centers (Credit: gsheldon/ iStock Editorial/ Getty Images Plus)

adopt: cumulative-demand studies embedded in utility master plans, tiered rate structures that recover capital costs, and permit conditions that link new construction to confirmed water-capacity projects.

Electric and water systems are only part of the picture. Broadband providers may need additional conduit banks, and public works departments often discover that construction traffic surpasses road-design volumes. Objective, use-specific standards, such as requiring a utilityinfrastructure plan that maps ultimate substations, mains, and fiber routes, plus haul-route and pavement-repair agreements, give planners leverage without duplicating state or utility reviews.

Think About Cumulative Impacts

A single 30 MW data center can feel benign, yet clusters of 10 or more along one corridor may push peak electric load past a gigawatt, double truck traffic during construction, and raise ambient sound by up to 10 dBA at nearby homes (VJLARC 2024). Project-by-project review often misses these system-level effects, so several jurisdictions now require applicants to look beyond their parcel lines.

Clustering can also amplify benefits if managed deliberately. Developers in Texas and Virginia now pair multiple server halls with a shared microgrid that combines on-site solar, wind, and battery storage—an "energy-park" model that eases interconnection delays and helps regions meet renewable-energy goals (DiGangi 2025). By mapping preferred corridors for both data centers and their supporting infrastructure, planners can steer growth to areas where capacity, compatibility, and community returns align.

Think About Equity and Community Benefits

Data-center projects promise major capital investment but generate few long-term jobs and can offload noise, truck traffic, and resource use onto nearby neighborhoods. Additionally, new cost analyses show that ordinary ratepayers are already footing most of the bill for AI's voracious appetite for electricity.

Monitoring Analytics, the independent market monitor for PJM Interconnection, the largest regional transmission organization in the U.S., calculated that between 2024 and 2025 data-center electricity demand added about $25 to the typical household's monthly bill (Biryukov 2025). PJM now projects that AI and data-center

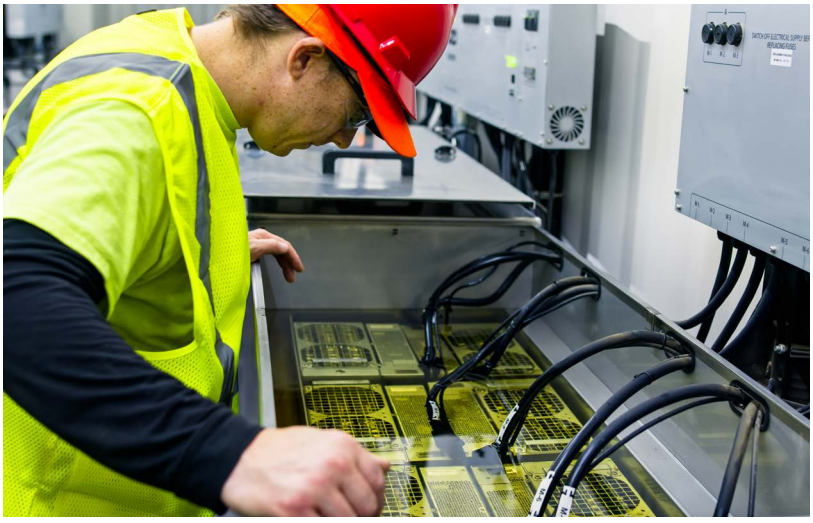
demand will double the region's energy use by 2033, whereas growth would have been only 15 percent by 2040 without new campuses (JLARC 2024).

In response to this and other similar projections of effects on ratepayers, lawmakers in New Jersey (AB 5466), Oregon (HB 3546), and other states have introduced bills or tariffs to place data centers in a separate rate class or require them to "bring their own clean power," so everyday customers are not forced to subsidize the electricity needs of trillion-dollar tech companies (Levy 2025). More communities are also moving to tie approvals to arrangements that deliver measurable local benefits.

For example, Cedar Rapids, Iowa, required QTS to sign a community benefits agreement (CBA) that will return about $18 million over 20 years for workforce training, broadband expansion, and green-infrastructure projects (Pratt 2025). Legal guidance stresses clear milestones, third-party verification, and enforcement clauses to keep such agreements credible (Eisenson 2023).

Meanwhile, Quincy, Washington, created a special water rate class for data centers in 2024, adding higher volumetric charges and meter fees earmarked for new wells and main upgrades. Targeted surcharges turn one user's high demand into system-wide resilience.

By weaving CBAs and host-community fees into zoning approvals or development agreements, planners can ensure that AI infrastructure acts as a catalyst for broader community gain rather than an enclave of private benefit.



A North Dakota data center using nonconductive fluid to cool servers rather than air or water cooling systems (Credit: halbergman/E+)

Where Can Planners Learn More?

As artificial intelligence infrastructure expands, planners have a growing need to stay informed about what these facilities are, how they function, and how to plan for them thoughtfully. The good news is that several helpful resources already exist, and more are emerging every year.

Follow the Energy

Many AI-related land use challenges stem from energy demand. That means energy planning organizations are a good place to start. Resources from the U.S. Department of Energy, National Renewable Energy Laboratory, and Lawrence Berkeley National Laboratory offer insights into data center energy use, grid impacts, and cooling technologies (Shehabi et al. 2024; USDOE SEAB 2024; Van Geet and Sickinger 2024).

State and regional energy offices are also useful partners. They can help planners understand energy trends, forecasted demand, and opportunities to align AI-related development with state energy goals.

Watch the Water

Water use is another key issue, especially in places facing drought or groundwater depletion. Reports from the U.S. Environmental Protection Agency, as well as local water utilities and watershed management agencies, can help assess water-related impacts of AI infrastructure.

Planners can also look to academic and journalistic research on water use in cooling systems, which varies significantly based on the type of cooling and climate zone (Berreby 2024).

Track Technology and Land Use Trends

For a broad view of how technology affects land use, the Lincoln Institute of Land Policy and the Urban Land Institute have both published helpful materials. These organizations explore how emerging technologies from AI to autonomous vehicles are reshaping cities, infrastructure, and land markets.

Local case studies can also be instructive. Some jurisdictions have started sharing lessons learned from planning for large-scale data centers or tech campuses. For example, Loudoun (2024; 2025) and Fairfax (2024) Counties in Virginia offer planning documents and staff reports that shed light on real-world challenges and solutions.

Build Cross-Sector Relationships

Planning for AI infrastructure requires collaboration. It touches on land use, utilities, economic development, and environmental protection. Building relationships with energy providers, water utilities, economic development groups, and regional planning agencies can help planners spot opportunities and anticipate challenges.

Conferences like the American Planning Association's National Planning Conference, Grid Forward, or Smart Cities Connect often include sessions on technology infrastructure. These events are a great way to hear from peers and industry experts.

AI infrastructure is no longer a far-off idea; it's already shaping land use decisions in communities across the country. For planners, this presents both challenges and opportunities. By understanding what AI infrastructure is, what it requires, and how it fits into broader planning goals, local governments can prepare for development that is sustainable, equitable, and forward-looking.

As with many emerging trends, the best path forward is to stay curious, build partnerships, and think holistically. AI may be powered by algorithms, but the future it creates will depend on human decisions, including the choices planners make today.

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A PRIMER FOR LOCAL GOVERNMENTS:

UNDERSTANDING DATA CENTERS

What is a Data Center?

Data centers are facilities that provide critical infrastructure to power modern digital services. There are different types of data centers, often shaped by the primary function(s) of the facility. Most data centers house servers (connected computers) and data storage systems capable of vast numbers of calculations and computing applications. Often referred to as "the cloud," data centers provide the necessary hardware for internet connectivity, large scale software systems, and the computational demands of traditional and generative artificial intelligence (AI).

Why Talk about Data Centers?

Significant increases in the use of AI, and to a lesser extent, cloud computing and other digital services, is driving greater demand for the physical infrastructure that supports these services and technologies. Data centers are the unseen backbone of our digital economy, yet their presence and impacts, both positive and negative, are often overlooked in local governance discussions. In fact, data center facilities can provide significant benefits for communities, including tax revenue, enhanced digital connectivity and new jobs, but also present challenges such as increased energy demand, water usage and land use considerations.

Local leaders can take a proactive approach to planning data center development by addressing sustainability, zoning and infrastructure concerns to shape these facilities so that they are designed and operated to best serve community interests. This fact sheet outlines basic elements of data centers to help policymakers begin these discussions.

Types of Data Centers

Enterprise & Internal Data Centers
Privately owned and operated, these facilities manage proprietary information technology (IT). The average on-site data center typically houses between 2,000 and 5,000 servers on a site ranging from 20,000 to 100,000 square feet. They draw around 100 megawatts (MW) of power.[1]

Colocation Centers
These third-party facilities lease out space, power and cooling infrastructure to multiple organizations. Businesses use these centers to reduce infrastructure costs.[2]

Hyperscale Data Centers
Built by major technology companies such as Amazon, Google and Microsoft, these large-scale centers handle enormous computing demands, including AI and cloud services. A hyperscale data center is defined as containing at least 5,000 servers, occupying at least 10,000 square feet of physical space and having an energy draw of over 100 MW of power.[3]

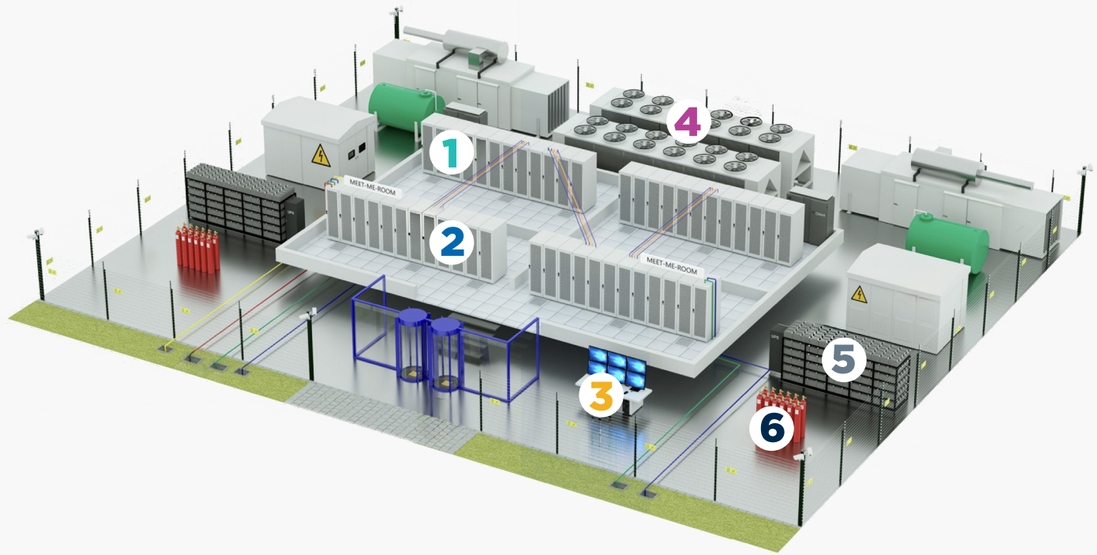
Design Features of Data Centers

Data centers are typically located near necessary infrastructure like high-voltage power lines and high-speed fiber optic networks. They can also require substantial land use. This means you can often find data centers in suburban or rural areas, or industrial zones, where these needs can be met. In addition to proximity to power sources, proximity to end-users helps reduce delays in data transfer and can improve the speed of cloud and AI-powered service delivery. Climate can be another influential factor for the location of data centers. Because servers require cooling, differences in environment can increase the strain on air-conditioning or water-based cooling systems.

In terms of their appearance, data centers tend to resemble warehouses[4] — large and windowless — to support a highly controlled environment optimized for equipment performance, energy efficiency, and physical security. Flat roofs are common and necessary for housing mechanical equipment like HVAC units, but also offer opportunities for sustainability features such as solar panels or reflective coatings. While functional needs inform design choices, local leaders can consider the impact these facilities have on the character of their community.

Components of Data Centers

Data centers consist of several critical components that ensure efficient operation and reliability.



Source: https://datacenteruniversity.be/whats-inside-a-data-center. To view this interactive graphic visit the Data Center University website.

1 Servers
The backbone of data processing and storage, servers are computers connected together to run applications and computing tasks.

2 Storage Systems
Data centers house vast amounts of digital information, stored on solid-state drives or hard disk drives.

3 Networking Equipment
Includes routers, switches and firewalls that manage data traffic and security.

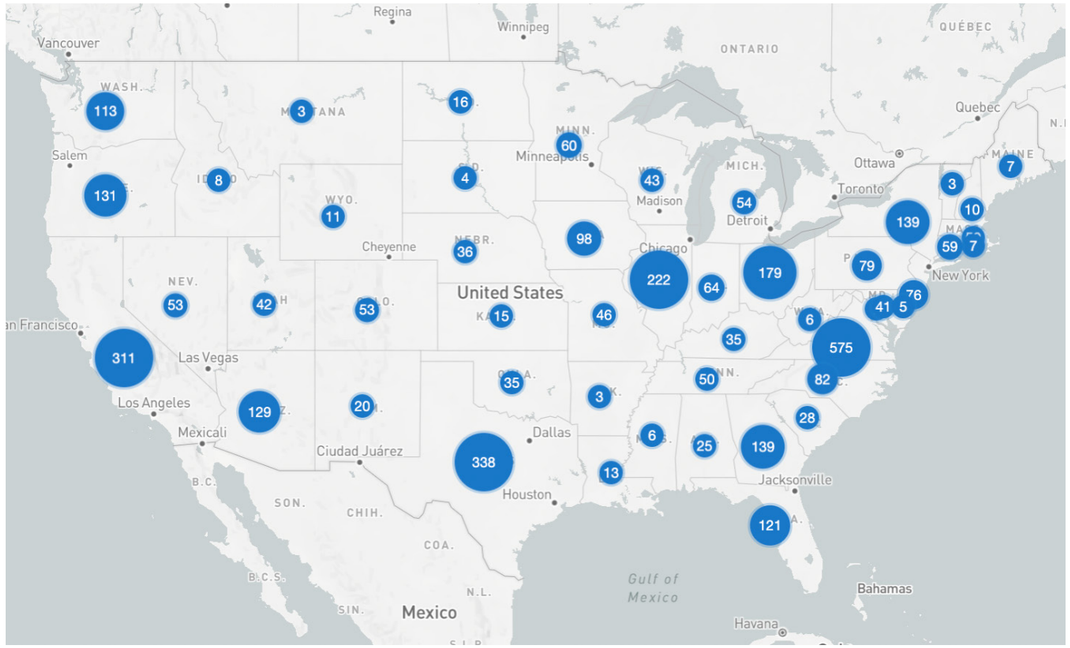
4 Cooling Systems
Prevent overheating by using air or liquid cooling methods to maintain optimal operating temperatures for computers.

5 Power Infrastructure
Includes backup generators and uninterruptible power supplies to ensure continuous operation.

6 Security Systems
Physical and cyber security measures such as biometric access controls, surveillance cameras and fire suppression systems.

Growth and Impact of Data Centers

USA Data Centers



Source: https://www.datacentermap.com/usa. To view the interactive map, visit the USA Data Center website.

Global demand for data center capacity is expected to surge, driven largely by the rapid growth of AI workloads. Demand for AI-capable data centers — which need more computing power and energy — is expected to rise sharply. Demand could grow by 22 percent annually, potentially reaching an energy demand of 219 gigawatts (GW) in 2030 compared to 60 GW in 2024. By 2030, 70 percent of all data center needs could be tied to supporting advanced AI applications and use cases.[5] Innovation in cooling technologies, energy efficiency, AI algorithms and semiconductor design could alter current projects.

The global data center industry is projected to grow from $269 billion in 2025 to more than $580 billion by 2032, with an annual growth rate of 11.7 percent.[6] There are more than 3,000 data centers in the U.S. It is estimated that of the roughly 1,100 hyperscale data centers globally, over half are located in the U.S. as of late 2024.[7]

There is a growing strain on infrastructure as AI-driven demand accelerates. Within the U.S., states like Virginia and Texas are seeing the fastest growth in data center construction. These same states are also experiencing some of the sharpest increases in commercial energy consumption.[8]

Preparing for the Future

As digital infrastructure continues to expand to accommodate demand, city leaders are increasingly likely to encounter proposals for new data center development. Local leaders may need to coordinate with state regulators, utilities and tech companies when considering data center development. Additional considerations for city leaders include looking at the environmental impacts of data centers, as well as zoning, permitting and integration into community development plans.

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