Sustainable Data Centers Report

Recommendations from the City of Chicago Sustainable Data Centers Working Group

July 2026

CHICAGO
MAYOR BRANDON JOHNSON

Sustainable Data Centers

A Report of the City of Chicago
Sustainable Data Centers Working Group

July 9, 2026

Executive Summary

As data center development has rapidly accelerated across the country, cities have increasingly faced questions about how to accommodate this growth while protecting communities, infrastructure, and environmental resources. Advances in artificial intelligence (AI) and other data-intensive technologies have increased demand for data centers, prompting local governments to reevaluate whether their current policies and regulations are equipped to address the scale and complexity of this growing sector.

In the fall of 2024, the City of Chicago established the Sustainable Data Centers Working Group, in compliance with a new City ordinance. The Working Group was charged with examining the impacts of data center development, evaluating existing policies, and developing recommendations to ensure future projects align with the City's environmental, economic, and community priorities.

Over the past year and a half, the Working Group has met monthly to research and discuss key data center topics; hear from industry experts, utilities, environmental organizations, community stakeholders, and government agencies; and review practices from jurisdictions across the country to establish policy recommendations for the City of Chicago.

Throughout these discussions, the Working Group explored wide-ranging impacts associated with data centers. These facilities place significant demands on electricity and water infrastructure, generate noise from cooling and other systems, and affect local air quality through emissions produced by their backup power equipment, emergency diesel generators. On top of that, the electricity needed to power these facilities has, in recent years, driven up utility prices for many consumers and put critical reductions of greenhouse gas emissions targets at risk.

This report is intended to provide background information and recommendations to ensure that the City of Chicago’s policies reflect the realities of the growing demands of data centers while also balancing economic development, environmental sustainability, community quality of life, and infrastructure resiliency.

The following are key takeaways of the Working Group's research:

- Chicago's data center policies and regulations were developed for an earlier generation of facilities and do not sufficiently address the operational characteristics and potential impacts of modern facilities.
- Chicago is home to approximately 39 data centers. Most of these facilities are enterprise (stand-alone) or colocated facilities and are located downtown or along major utility corridors leading downtown.
- While Chicago is unlikely to see development of the largest hyperscale AI training campuses due to land and infrastructure constraints, continued growth in data center development within the city remains likely.
- Noise generated from cooling systems and diesel generators presents both quality-of-life and environmental issues for nearby residents. It is one of the most common community concerns associated with data centers and has resulted in numerous 311 complaints from residents of the neighborhoods surrounding these facilities.
- The sheer volume of diesel generators that support data center operations is another major concern raised by residents and other stakeholders due to the air pollution associated with generator testing and emergency operations.
- As data center demand has grown nationally, it has increased pressure on regional electric systems, and has contributed to concerns about electricity costs, grid capacity, and ability to achieve greenhouse gas reduction goals.
- The amount of water used by a data center depends on the facility's design and size but can be enormous. A typical data center uses around 300,000 gallons of water per day, while hyperscale data centers can use around 5 million gallons a day, equivalent to the needs of a town with 50,000 residents.[1]
- Data center development creates significant short-term employment during construction but typically supports a relatively small number of permanent on-site operational jobs compared to other forms of commercial or industrial development.

Based on its research and stakeholder engagement, the Working Group has developed a framework for its recommendations that centers on three policy tools: environmental permitting, zoning, and operational performance reporting. Together, these approaches are intended to ensure that data center facilities are

designed, constructed, and operated in a manner that protects public health and the environment, supports the City's sustainability goals, and provides transparency and accountability over time.

Strong Environmental Safeguards

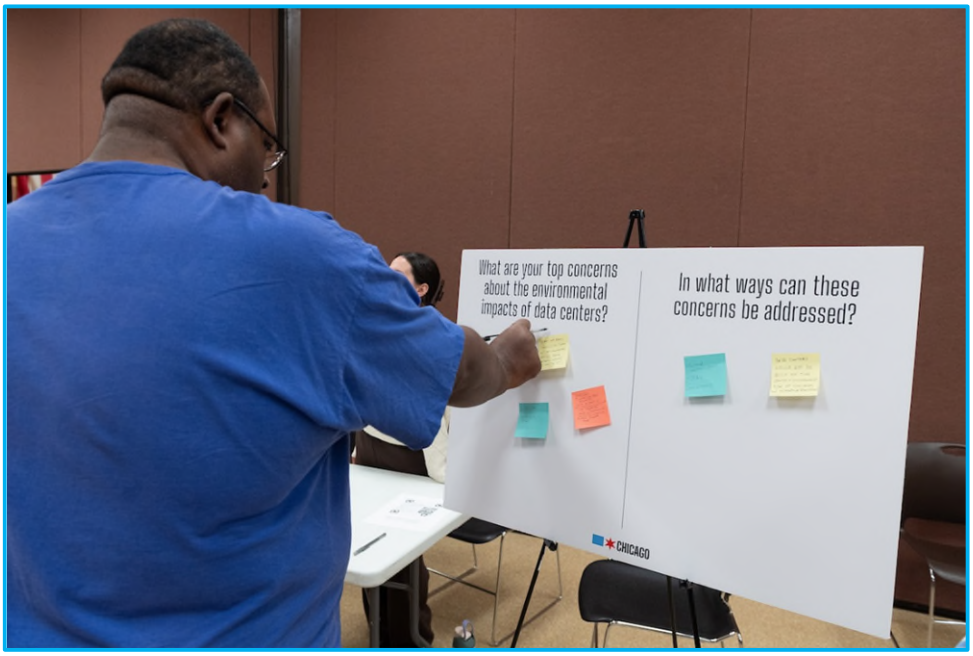
The Working Group recommends the establishment of new data center-specific environmental standards and the creation of a mechanism for reviewing, monitoring, and enforcing operational impacts. The Working Group recommends the permitting program address issues such as noise from cooling systems and emergency generators, air quality impacts from emergency diesel generators, environmental modeling, and ongoing compliance and enforcement.

Responsible Zoning and Land Use

The Working Group recommends the establishment of development standards for new and expanding data centers through the City's zoning approval process and Sustainable Development Policy. Recommended standards include requirements related to renewable energy, energy- and water-efficiency, protective equipment selection, sustainable building design, and other site-planning considerations that help reduce environmental impacts before facilities are constructed or expanded.

Transparent Data Reporting and Accountability

The Working Group recommends the expansion of the City's existing building-performance reporting framework, Chicago Energy Benchmarking, to require data centers to annually report key metrics, including energy and water consumption. This information would improve transparency, provide clearer insight into industry trends, and help inform future policy decisions.



Chicago residents examine and add feedback to posters at "A Community Conversation on Data Centers," a public event hosted by the City of Chicago in May 2026.

Working Group Overview

The Sustainable Data Centers Working Group (the Working Group) was established by City Council ordinance SO2024-000820[2], which was passed by the Chicago City Council and signed into law on September 18, 2024. The Working Group is interdepartmental in nature, and includes representatives from the Departments of Environment, Planning and Development, Public Health, and Technology and Innovation. The Working Group, per the direction of City Council, was established by Chief Sustainability Officer and Commissioner of the Department of Environment Angela Tovar.

The Working Group met on a monthly cadence, beginning in January 2025 and continuing through June 2026, to examine opportunities and challenges associated with modern data centers. While the Working Group was limited to City of Chicago staff, outside subject-matter experts representing all aspects of data center policy, including energy, water, air quality, economic development, and data center design and construction, were invited to inform its discussions.

The Working Group identified the following areas of focus:

- Reduce the noise and air pollution impacts of data centers on residents
- Mitigate increases in electricity prices due to data center growth
- Ensure continued progress towards clean energy goals
- Support innovative projects that bring environmental, economic, and/or social benefits to Chicago

Throughout the process, Working Group members met with representatives from nearly 50 organizations through one-on-one conversations, group meetings, and roundtable discussions. Additionally, the Working Group hosted a public event — "A Community Conversation on Data Centers"—at Arturo Velazquez Institute on May 19, 2026, which was attended by roughly 75 Chicago residents. An overview of all the outreach conducted by the Working Group, and key takeaways, can be found in Appendix 1.

Types of Data Centers

A data center is a facility containing computing equipment that is used to store, manipulate, or process digital information. A data center may be a stand-alone facility, or part of a mixed-use building.

There are several types of data centers, each of which has different needs, impacts, and benefits. Some of the most common types include:

Enterprise data centers

An enterprise data center is a facility that is owned, operated, and utilized by a single entity. The owners of enterprise data centers are usually large companies with significant and/or specialized computing needs.

Colocation data centers

Colocation data centers are computing facilities that are owned and/or operated by a company that also offers space to other entities who own or operate computing equipment within the same facility. These facilities generally lease out their rack space to companies or organizations.

Colocation data centers often serve an edge computing function. Edge computing seeks to speed up processing time for user-facing software by reducing the distance between servers and the applications they power, allowing for faster video streaming, messaging, data processing, and other services. This is particularly important for time-critical uses, like financial trading, real-time data interpretation, and remote equipment operation.

Many of the data centers in Chicago are colocation facilities.

Hyperscale data centers

Hyperscale data centers are defined by size, rather than use. There is no official benchmark for classifying hyperscale facilities, though they typically use 50-100MW of electricity. Aside from energy use, scalability is another key feature of hyperscale data centers. They tend to be built across large campuses with room for horizontal and/or vertical expansion, allowing them to increase in size and processing power over time.

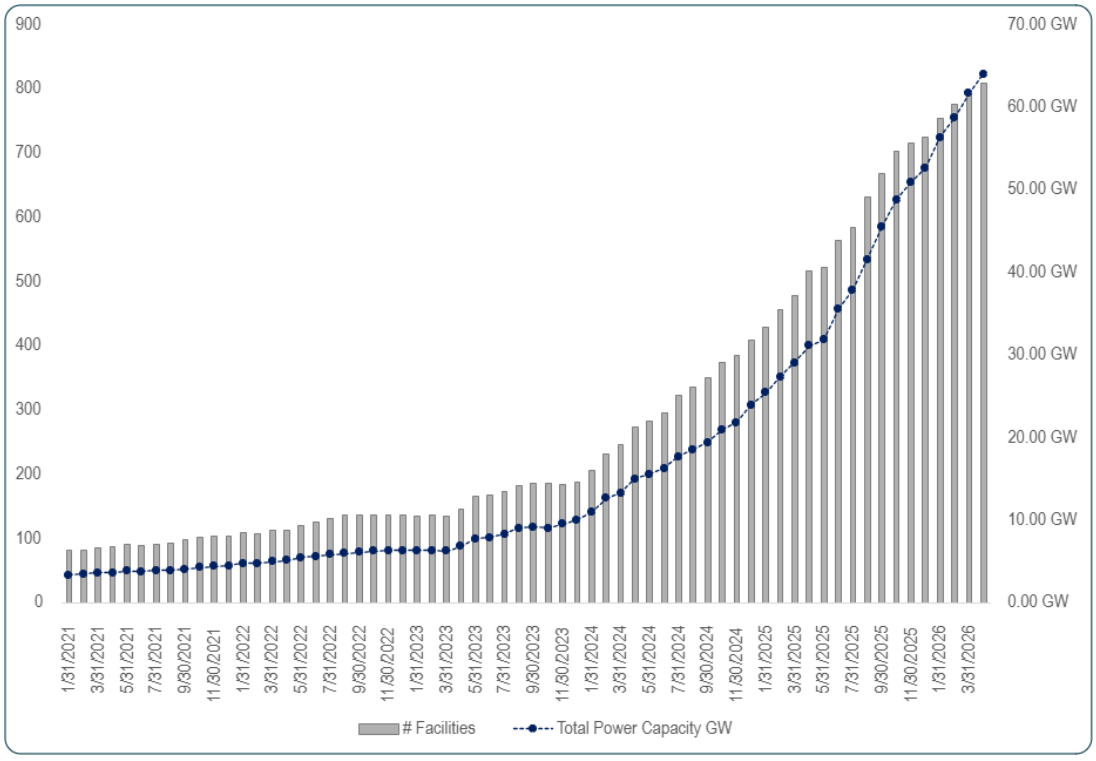
Artificial intelligence data centers (model training and inference)

There are two types of artificial intelligence data centers: those that train AI models and those that run them. AI training data centers are the largest and most energy-intensive computing facilities in operation today. They are generally built in suburban and rural areas with large amounts of developable land. AI inference data centers—facilities that run AI models—are smaller and serve an edge computing function.

Key Trends

Many cities, including Chicago, have hosted data centers providing telecom, data storage, and cloud computing services for decades. However, the scale and speed at which data centers are being built nationally have increased in recent years, a trend largely driven by the development of AI. AI training requires massive facilities running for extended periods of time, and the integration of AI into digital services requires additional, smaller data centers to run the models quickly and reliably. The use of AI tools has also increased the need for non-AI data centers to support larger amounts of data storage and processing. The result has been a boom in data centers of every size and purpose. Figure 1 shows the scale of this growth between 2021 and 2026.

Figure 1. U.S. Data Centers and Power Demand, 2021-2026



Source: Aterio, U.S. Data Centers and Power Demand

Illinois was an early leader in data center development and remains a top ten state for the total number of data centers in operation.[3] This early growth was due to a combination of the Chicago region's central location, high-quality digital and electric infrastructure, significant concentration of businesses, large population,

and state incentives. The AI boom, and new state and local incentives in other regions, has led to greater growth in other states in recent years. Virginia, which is home to "data center alley," has been the undisputed leader in global data center development throughout the industry's history.

Projecting future data center development is difficult. Much of the recent growth in data centers is directly or indirectly tied to artificial intelligence, which is a new industry with unproven applications. Both rapid growth and contraction scenarios are plausible. Market uncertainties, financing challenges, regulatory barriers, and speculation all further complicate the picture. Each year, many more data centers are announced than are actually built. In some years, the difference is significant.[4]

Estimates for future demand for new data centers vary considerably. Reputable sources range from a doubling[5] to a tripling[6] of global demand between 2025 and 2030, which would add between 100-200 gigawatts of new capacity. Local, regional, and national projections have greater levels of uncertainty, but most projections point towards continued growth.

Why Data Centers Locate in Chicago

Chicago has been a hub for data center development for much of the industry's history.[7] This remains true today, even as the current boom in hyperscale and AI training data centers is expected to continue primarily in less densely populated areas. Historically, Chicago data centers have tended to be smaller than the types of facilities that are built in less dense areas; facilities in Chicago tend to specialize in cloud computing, AI inference, and other edge computing needs.

Chicago remains an attractive market for these types of data centers for several key reasons.

Fiber optic infrastructure

Data centers send and receive vast amounts of digital information. This is done primarily through fiber optic cables. The nation's fiber optic network was built alongside existing telecommunication pathways, which follow road and rail corridors.[8] Chicago's historical role as the nation's railway hub

ensured the city was well positioned to play a similar role in the emerging digital economy.

Reliable and plentiful electricity

Due in part to the state's large fleet of nuclear power generators and rapid growth in wind and solar installations, Illinois has historically enjoyed a steady supply of affordable, reliable, and relatively clean electricity. Data centers use significant amounts of electricity, and the reliability and cost of that power are key siting considerations.

Access to electricity is also a constraint on data center development within Chicago's city limits. A modern data center typically needs access to high-capacity electricity transmission lines and a step-down substation. Building or expanding this infrastructure in dense, urban areas is difficult and expensive. This is a major reason why data centers built in Chicago are relatively smaller in size than the mega developments characteristic of suburban and rural communities with fewer land availability constraints.

Space availability

Data centers can be large facilities and require significant floor space for servers and supporting equipment. In rural areas, data center developers design sprawling campuses built over several acres. Land is more constrained in Chicago, but the city does have a significant inventory of vacant commercial and industrial buildings. Many of these buildings have reinforced floors and high ceilings that are ideal for hosting large, heavy, and complex equipment.

Skilled workforce

Data centers are precision facilities, and building them requires skilled engineers, electricians, computer technicians, and other professionals. Assembling these project teams can be difficult in rural areas, but Chicago's large and skilled workforce reduces that burden.

Plentiful water

Data centers often rely heavily on water for both onsite cooling and offsite electricity generation. The Great Lakes contain 20 percent of the world's

surface fresh water, and Chicago's direct access to this water makes the region a prime location to build a water-intensive project.

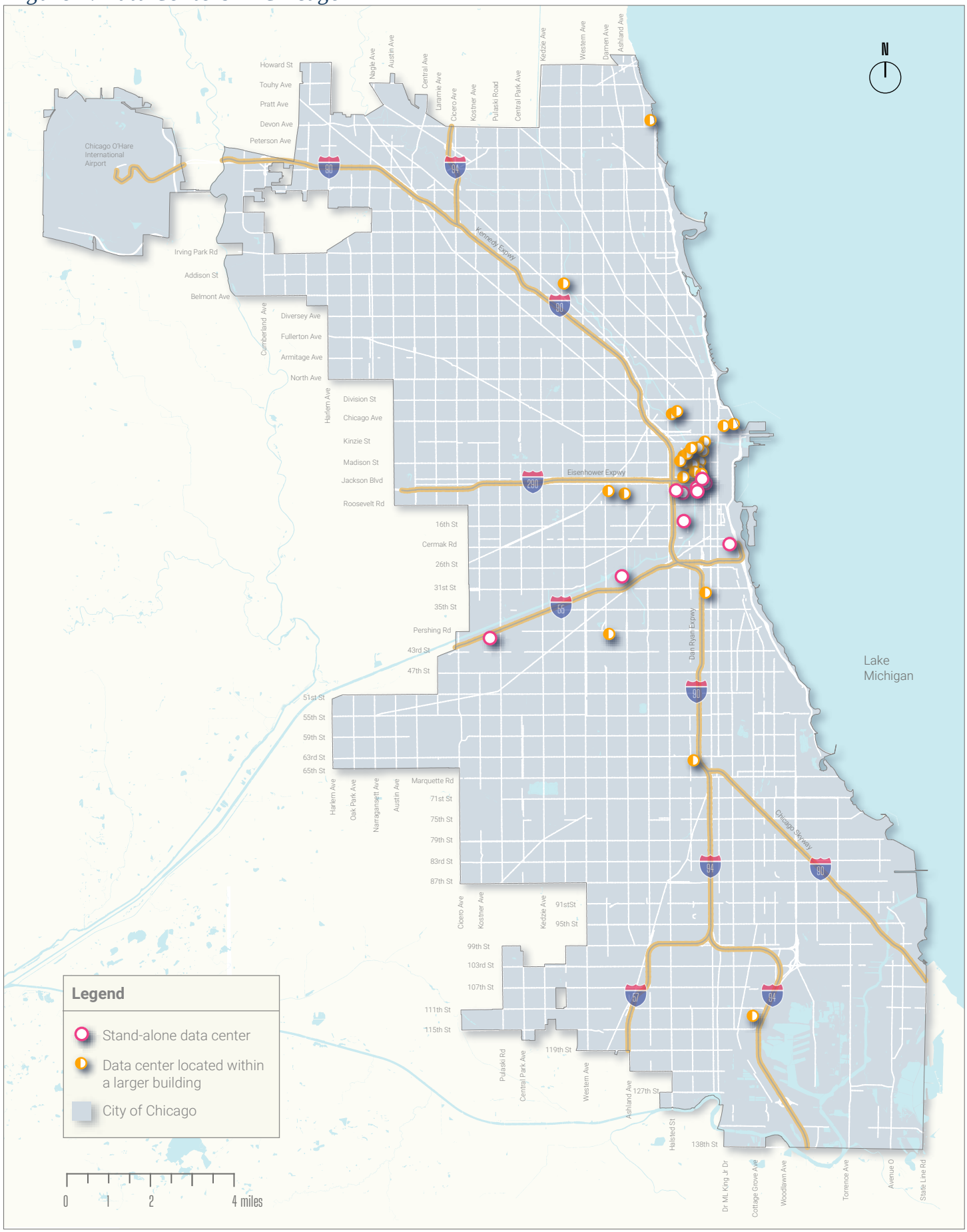
Data Center Siting & Regulations

Siting

As of 2026, there are approximately 39 data centers located within the City of Chicago. Most of these data centers are not stand-alone facilities, but rather, are housed within buildings that also serve other uses, such as housing, offices, or manufacturing.[9]

As shown in Figure 2, the majority of Chicago's data centers (of all types) are located in or near the downtown business district. This is likely due to the location of electrical and data infrastructure that is needed for center operations, in addition to the proximity to users or customers.

Figure 2. Data Centers in Chicago



Data Centers in Chicago

Sources: datacentermap.com, datacenters.com, DPD

DPD
Department of Planning and Development

Zoning

The City of Chicago's zoning ordinance classifies data centers as "Electronic Data Storage Centers," which is an Office Use.[10] The Office Use zoning category predominantly applies to facilities that are used for professional, governmental, executive, management, or administrative functions. The Electronic Data Storage Center definition includes both stand-alone facilities and data centers that are located within larger buildings.

Under the City of Chicago's zoning ordinance, Electronic Data Storage Centers are permitted by-right in all manufacturing, commercial, and non-residential downtown districts as well as most business districts. Facilities that are permitted by-right do not require additional discretionary approvals such as public hearings or special conditions.

Electronic Data Storage Centers may trigger the Planned Development (PD) process due to lot size, building size, proximity to the river, or other uses in the same building. The PD process ensures public review for certain use-types that can have local impacts, such as power plants, airports, and spectator facilities, and also prompts a requirement to abide by the Sustainable Development Policy (SDP). The SDP promotes sustainable building methods and materials by providing developers a menu of sustainable building development options that reflect best practices.[11]

The PD review process includes basic zoning controls and statements that guide facility development, requires a review of project plans before construction, and necessitates approval by the Chicago Plan Commission and City Council Committee on Zoning prior to a vote by the full City Council.[12]

*Figure 3. Electronic Data Storage Centers by Zoning District**

Zoning District	Permitted (P) or not (-)
Business (B1)	-
Business (B2)	-
Business (B3)	P
Commercial (C1)	P
Commercial (C2)	P
Commercial (C3)	P
Downtown Core (DC)	P
Downtown Mixed-Use (DX)	P
Downtown Residential (DR)	-
Downtown Service (DS)	P
Manufacturing (M)	P
Planned Manufacturing District (PMD)	P

Source: City of Chicago Zoning Ordinance

*Note: Some Planned Developments (PDs) may include this as a permitted use, however, that is determined by individual planned development ordinances.

Figure 4. Location of Electronic Data Storage Centers in Chicago by Zoning District

Type of Facility	Planned development	Downtown	Manufacturing	Business/ Commercial	Total
Stand-alone facility	2	7	1	0	10
Located in mixed-use building	19	8	2	0	29

Source: City of Chicago Department of Planning and Development

Permitting and Licensing

Data centers in Chicago require a Department of Buildings building permit and a Limited Business License from the Department of Business Affairs and Consumer Protection.

Under the Municipal Code of Chicago ("Code"), data centers also require an Air Pollution Control Permit for all diesel generators and any other Regulated Equipment or Areas to be installed or operated at the facility.[13] Air Pollution

Control Permits are only issued when a facility is not currently in violation of air pollution control standards and control equipment is appropriately sized.[14] Emergency and standby generators are exempt from DOE's annual Certificate of Operation requirements.[15]

The Code also requires permits for any diesel fuel storage tanks for generators if the tank has a volume greater than 110 gallons.[16] Permit applications for flammable liquid tanks are also reviewed by the fire protection bureau for compliance with fire safety codes.

Data centers using diesel generators may also receive a Federally Enforceable State Operating Permit (FESOP) from the Illinois Environmental Protection Agency. Holders of these permits must limit the amount of time permitted equipment is in use to stay below certain emissions thresholds.

Sound Regulation

Certain equipment used by data centers, such as generators, HVAC systems, and chillers, are currently regulated under the Code section 8-32-090, Mechanical stationary sources.

Code section 8-32-090 states that stationary mechanical equipment is limited to the below decibel levels only during the nighttime and early morning hours of 8:00 pm to 8:00 am:

- 55 dB(A) when measured at 100 feet away
- 70 dB(A) when measured at 10 feet away

Enforcement of section 8-32-090 can be difficult. City inspectors investigate complaints by arriving on-site during the regulated hours and measuring the decibel level of the reported sound. Accurately detecting sound and proving the source of the measured sound, especially in noisy or complex source environments, can be challenging. Fines range from $1,000 - $5,000 per violation, and each day of violation must be proven.

Data centers in the Chicago region

While the City of Chicago is an important hub for data center development, it is only one part of a larger regional market. In total, the greater Chicago region is home to at least 200 data centers, many of which are located in Cook and DuPage Counties.[17]

Data centers built in suburban and rural Chicagoland tend to be larger than those built in the city of Chicago. These larger facilities serve a range of AI and non-AI functions, including resource-intensive AI training. Data centers are spread throughout the region, with notable clusters in the near northwest suburbs surrounding O'Hare International Airport and in the west and southwest suburbs near Naperville, Aurora, and Joliet.

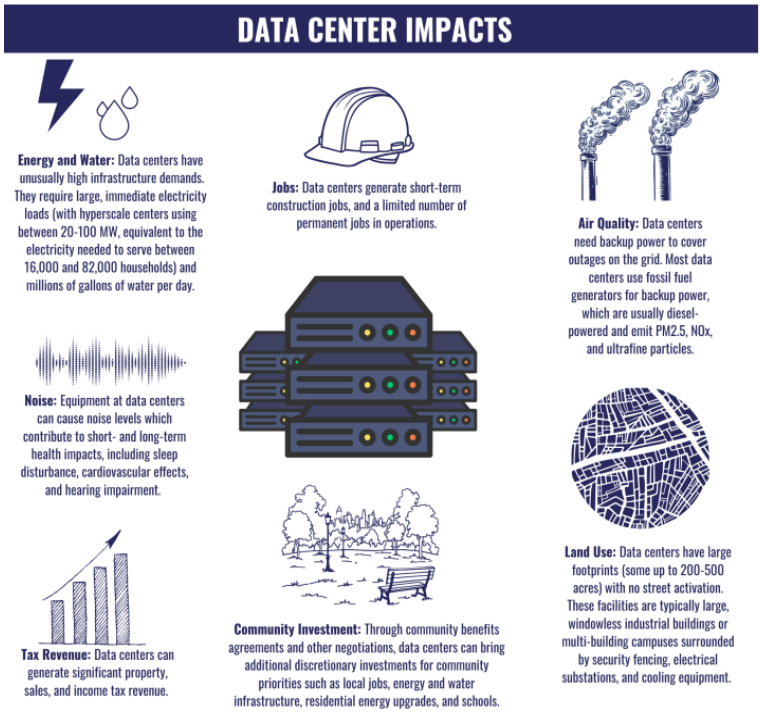
Notably, many of these facilities rely on Lake Michigan water provided by the City of Chicago Department of Water Management, while others, like those in Aurora, draw from local sources.[18]

Environmental & Community Impacts

Data centers have significant environmental and community impacts. Diesel generators used for emergency power require regular testing and produce significant sound and air pollution emissions. Data centers also use large amounts of water for cooling. Powering the computing equipment and cooling systems requires tremendous amounts of electricity, which increases energy prices for everyday consumers and generates greenhouse gas emissions.

While the negative impacts of data centers are acutely felt by local communities, their benefits are often less immediately apparent to the community. At the municipal level, tax revenue resulting from data centers can support meaningful services, and at the individual level, jobs from facility construction and operation can generate new economic opportunities. It is important to carefully weigh all possible impacts of data centers when shaping policy.

Figure 5. Data Center Impacts



Source: Climate Mayors, [Data Centers and the Climate Landscape: An Actionable Resource for U.S. Mayors]

Energy Affordability

Data centers use massive amounts of electricity. The largest data centers can use upwards of a gigawatt of power, which is comparable to a medium-sized city.[19] Accessing this power is a central consideration when locating a data center.

Substations & grid upgrades

The interconnection of data centers to the electricity grid often necessitates new transmission lines, substations, transformers, and other grid upgrades. The cost of distribution infrastructure is allocated to the new customer and other ratepayers based on complex tariffs issued by ComEd and overseen by the Illinois Commerce Commission (ICC). The ICC is currently investigating these cost-allocation and other issues regarding the impact of data centers on energy use and costs to ratepayers. The City is involved in that ICC investigation proceeding.

Electricity demand

The rapid growth of data centers in recent years has led to an increase in electricity prices throughout the country.[20]

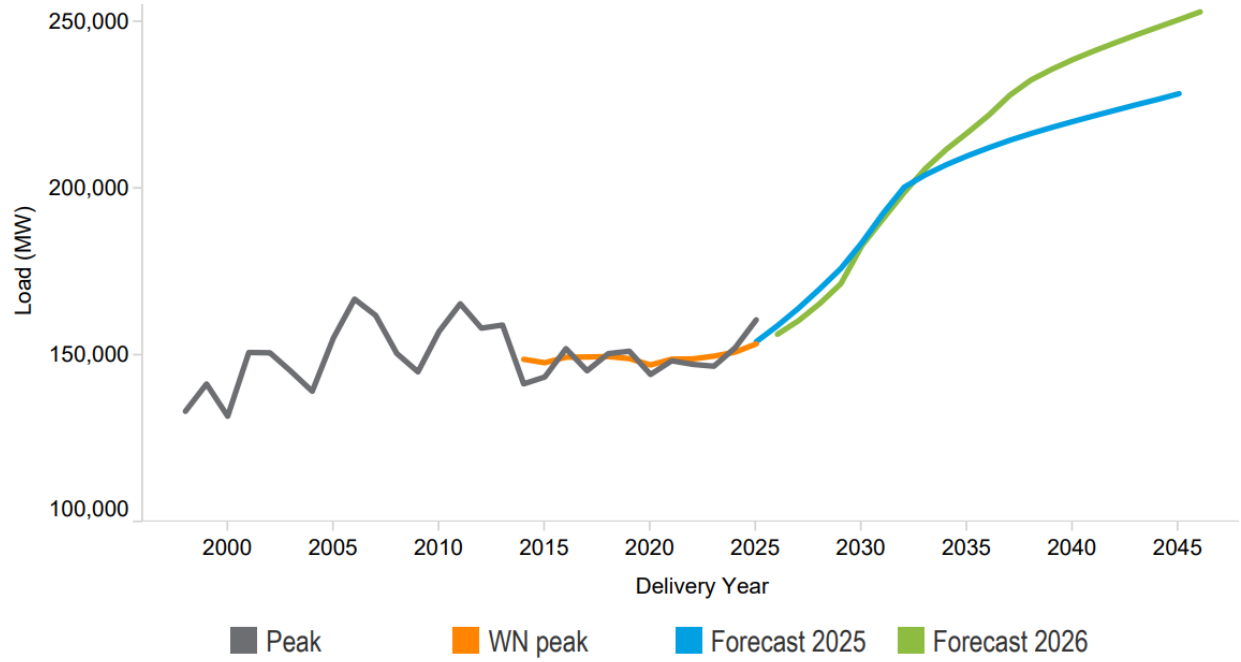
Electricity supply delivered by ComEd is initially purchased from a wholesale market managed by PJM Interconnection, the organization responsible for operating the multi-state electric grid spanning roughly from Chicago to New Jersey and Virginia. PJM's primary role is to ensure the reliable operation of the electric grid; one way it does this is coordinating energy and capacity auctions to balance supply and demand.

Data center development (observed and projected), combined with economy-wide electrification efforts, the phaseout of fossil fuel powerplants, and delays approving new renewable energy projects, has created concern about future electricity shortages (Figure 6). These projected shortfalls have led to a 110% increase in the per unit cost of electricity on the wholesale market.[21]

Assessments vary, but most sources estimate that data centers account for roughly half of all new electricity demand nationwide.[22]

These increases are significant for Chicago residents and businesses. The American Council for an Energy-Efficient Economy estimates that 20% of Chicago households are energy burdened, meaning they spend more than 6% of their income on gas and electric bills.[23]

Figure 6. Observed and Projected Peak Electricity Demand in the PJM Region



Source: PJM Interconnection, 2026 PJM Load Forecast Report

Grid reliability

As data centers put significant demand on the electric grid, concerns have risen over the reliability of supply. One operational challenge includes data centers dropping off the grid suddenly, destabilizing the power grid and potentially causing power plants to fail. Data centers may also dramatically increase or decrease their electricity demand in short time periods, causing volatility on the grid that could damage on-site utility equipment.

In the peak summer months of electricity demand, data centers can add to the risk profile of drought, fires, and hurricanes across the U.S. and pose a concern for the reliability of electric systems.[24]

Air Quality

Diesel generators

Data centers rely on emergency power systems, predominantly diesel generators, to ensure year-round, around-the-clock operation. Because Chicago has a relatively reliable grid, these generators have thus far rarely been used to power the facility. Instead, their biggest impacts are from testing. Each unit must be

tested monthly, in compliance with the National Fire Protection Association (NFPA) 110 standard.[25,26] Testing may last from minutes to hours. During testing, diesel generators create sound and air pollution.

Diesel generators' air emissions include a mix of solid and gaseous pollutants. The most concerning of these pollutants are:

- Particulate matter (PM). Particulate matter refers to microscopic solids and liquid droplets that are small enough to be inhaled. Once inhaled, these particles can enter the lungs, and in some cases, the bloodstream, leading to respiratory, cardiovascular, and neurological problems. These particles are a primary cause of reduced visibility (haze) and can be carried over long distances by the wind. The two most common forms of particulate matter are PM10, which refers to particles with diameters 10 micrometers or smaller and PM2.5, which refers to particles with diameters of less than 2.5 micrometers.[27]

- Nitrous Oxides (NOx). Exposure to ground-level nitrous oxides irritates the respiratory system, reduces lung function, and exacerbates respiratory conditions like asthma. In the atmosphere, NOx reacts with other pollutants to form toxic ground-level ozone and acid rain.[28]

- Carbon Monoxide (CO). This colorless, odorless gas reduces the body's ability to transport blood oxygen. In high concentration, carbon monoxide can cause dizziness, confusion, or death. The risk is greatest in indoor or poorly ventilated areas.

Because of these pollutants, diesel exhaust is classified as a carcinogen in humans by the International Agency for Research on Cancer (IARC).[29] The impact of these pollutants is worse in the summer and can have a cumulative effect with other sources of air pollution, such as industrial emissions and wildfire smoke.

In addition to human health impacts, diesel generators also contribute to greenhouse gas pollution by producing carbon dioxide through the combustion of hydrocarbons.

Generator emissions are regulated by the National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (NESHAP RICE, 40 CFR Part 63 Subpart ZZZZ) which, among other things, limits their non-emergency use (i.e., testing, maintenance, and demand response) to 100 hours per year. Up to 50 of these hours may be to prevent local or regional power disruption (voluntary load shedding).

The U.S. Environmental Protection Agency (U.S. EPA) classifies diesel generators into tiers, the most stringent of which is U.S. EPA Tier 4. In continuous operation, Tier 4 generators produce significantly less air pollution than units rated Tier 3 or lower. Importantly, all tiers of diesel generators create an initial plume of soot upon ignition. This is an important consideration for data center emergency power, as these generators are most often used for short periods while testing. Generators with fewer controls can be retrofitted for U.S. EPA Tier 4 emission controls.

In recent years, the U.S. Department of Energy has, on multiple occasions, granted PJM Interconnection permission to force data centers to transition to backup power.[30] This move is intended to preserve the integrity of the grid by freeing up capacity during periods of peak demand, such as a heat wave, but has the added effect, if ever utilized by PJM, of producing significant quantities of diesel emissions during a time when public health is already strained by elevated temperatures or other forms of severe weather.

Peaker plants

The large amount of electricity needed by data centers also has the potential to harm air quality through the increased use of peaker plants.[31] A peaker plant is an electricity generation station that is used only during periods of peak electricity demand to ensure adequate supply. These facilities tend to be less efficient and generate more air pollution per unit of electricity than standard power plants. Chicago is currently home to two peaker plants, which in recent years have generated power only sporadically: the Southeast Chicago Energy Project (SCEP), which is a natural gas-fired plant located in South Chicago, and Fisk Generating Station, which is an oil-fired plant located in Pilsen.

Data centers have not yet appeared to affect the use of peaker plants in Chicago, but numerous projections show that growth in electricity demand, primarily due to data centers, may lead to supply shortages in the coming years. If this were to occur, Chicago's peaker plants could be operated more frequently.

Sound

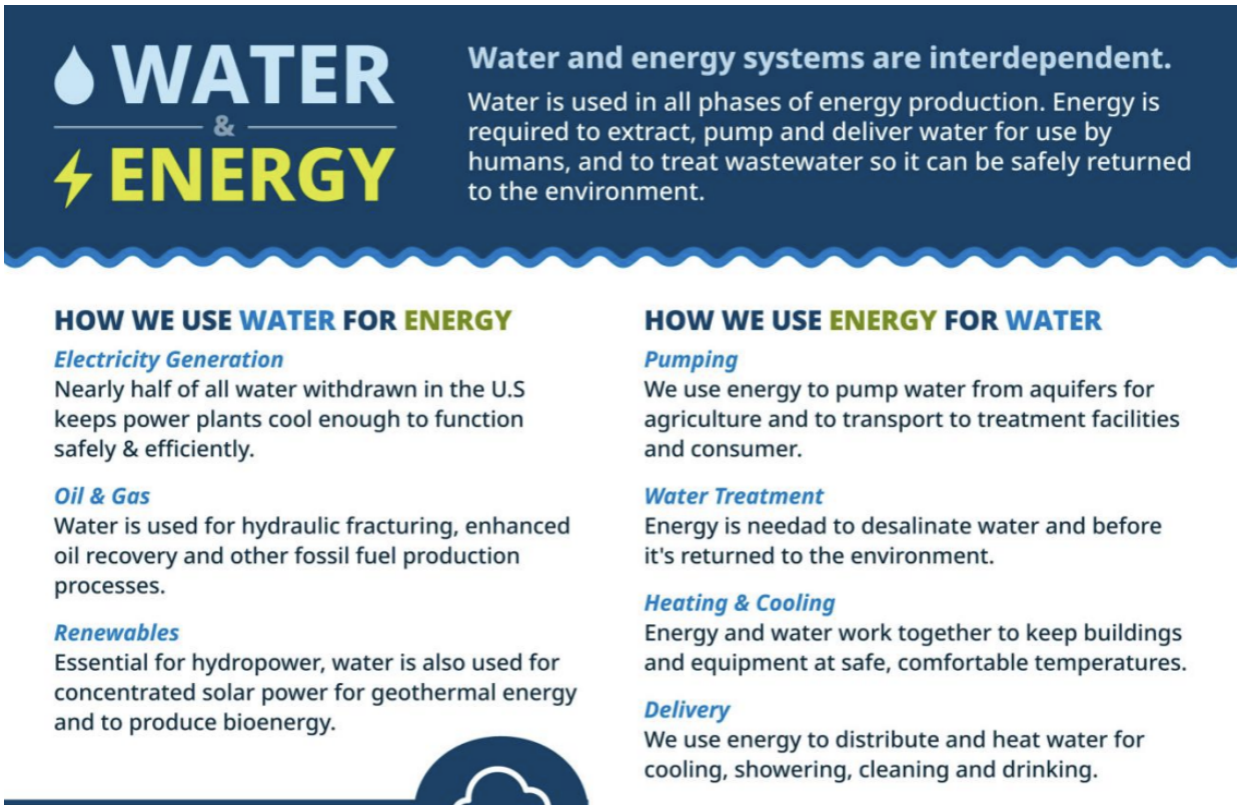
Generator testing can be very loud,[32] especially when load banks (devices that simulate the demand needed to run the facility) are used. This testing, combined with the 24-hour operation of cooling equipment, can result in elevated sound levels in the area surrounding a data center.

Sound-related complaints tend to focus on the continuous nature of the sound, rather than its absolute volume. Sleep disturbances, ear pain, hypertension, and other health concerns have been reported by those living near data centers.[33]

Water

The abundance of fresh water from Lake Michigan is a key reason why data centers are built in Chicago. Data centers use significant amounts of water both on-site for cooling equipment and off-site for electricity generation at power plants. The amount of water used by a data center varies depending on the size and design of the facility; whereas enterprise facilities use anywhere from 10,000 – 150,000 gallons of water a day, and colocation centers use up to 200,000 – 500,000 gallons a day, large hyperscale data centers with intensive cooling systems may use between one million and five million gallons of water per day, which is roughly equivalent to the daily water use of a town of 10,000 – 50,000 people.[34,35] See Appendix 2 for a detailed overview of data center cooling systems.

Figure 7. The Water and Energy Nexus



Source: Alliance for the Great Lakes, Data Center Playbook

When assessing water-efficiency policies, it is important to consider the water-energy nexus; technologies that reduce on-site water use often use more electricity, which can result in greater off-site water consumption by power plants. Natural gas, coal, and nuclear power plants all use massive amounts of water when generating electricity.

A data center using a closed-loop cooling system, for example, may consume less water but require significantly more electricity to remove and reject heat. Conversely, a facility using evaporative cooling systems may use significantly less electricity for cooling but use large quantities of water. Policies focused solely on minimizing water use may unintentionally increase greenhouse gas emissions or electricity demand, as well as off-site water demand. Balancing both water- and energy-efficiency will be important when evaluating cooling technologies and establishing sustainability requirements for data centers.

Water-use transparency

Estimates for water consumption at data centers vary widely due to limited transparency and inconsistent reporting practices. Water-use data is often not publicly available because of non-disclosure agreements (NDAs) or aggregation within broader utility accounts, making facility-level consumption difficult to assess. Additionally, measuring indirect water consumption (such as water used to generate the electricity powering data centers) adds further complexity.

Water reuse

While all data centers using evaporative cooling in Chicago currently use municipal potable water, facilities located in more water-scarce regions of the United States have explored and implemented water reuse. Treated wastewater offers an alternative source for cooling and other non-potable applications and can help reduce demand on drinking water systems while creating opportunities for long-term water resilience. In some regions, investment in reuse infrastructure has also served as an economic driver by supporting industrial growth while reducing pressure on limited freshwater resources.

In Illinois, the legal framework for water reuse expanded in August 2025 with the passage of House Bill 2391, which established clearer authority and regulatory pathways for the use of treated wastewater. In Chicago, the Metropolitan Water Reclamation District (MWRD) has the authority to pilot water reuse projects, creating an opportunity to test the potential of reclaimed water to support future industrial uses, including data center cooling.

Economic Development

Tax revenue

Data centers typically pay two types of property taxes: real property tax, which applies to data center buildings and the land on which they are built, and personal property tax, which is assessed on non-permanent assets such as the servers inside data centers. Personal property taxes can be substantial given the high value of such equipment.[36]

Sales taxes are levied on computing, cooling, and energy equipment purchased in the City of Chicago. Equipment bought outside of Chicago for use within city limits is subject to a use tax.

The State of Illinois operates the Data Center Investment Program, which provided owners and operators with a suite of exemptions for various state and local taxes for qualifying Illinois data centers. The program also provides data center owners and operators with a tax credit of 20% of wages paid for construction workers for projects located in underserved areas.[37]

From 2020 to 2025, the Illinois Department of Commerce and Economic Opportunity granted $666.6 million in tax credits to 34 data centers.[38] These agreements last up to 20 years and receive approximately a 6.25% tax benefit based on their investment commitment. The obligations for this tax credit require at least a $250 million investment, creation of at least 20 jobs with wages at a minimum 120% of the area's median wage, and obtainment of a carbon neutral or green energy certificate within two years. In Chicago, five data centers out of the 34 statewide have received the tax credit (Figure 8).

Figure 8: Chicago Data Centers Receiving Data Center State Tax Credits

Company Name	Year	Site Location	Investment Commitment	Est. Value of Tax Benefits	No. of New Jobs
Coresite, L.P.	2020	Chicago	$250,000,000	$15,625,000	20
Quality Technology Service (QTS)	2021	Chicago	$250,000,000	$15,625,000	20
MEDP Mission Critical Facility, LLC dba Metro Edge	2023	Chicago	$257,123,954	$16,070,247	20
Serverfarm LLC dba SF CH1, LLC	2023	Chicago	$285,000,000	$17,812,500	29

HydraVault LLC	2025	Chicago	$270,000,000	$16,875,000	20

Source: Capitol News Illinois

Governor Pritzker signed an executive order directing the State to pause processing applications for the Data Center Investment Program as of July 1, 2026.[39]

Jobs

Data centers are a major source of short-term construction jobs but provide a relatively small number of long-term operational jobs, especially compared to other large commercial and industrial uses.[40]

Federal and State Policy Landscape

Federal Landscape

The Trump administration and the U.S. EPA announced that the federal government will not set nationwide environmental requirements or make recommendations for regulating the data center industry.[41] To meet the energy demand from the data center boom, the U.S. EPA has rolled back certain pollution rules for coal plants, and the U.S. Department of Energy has ordered aging plants previously scheduled to close to remain open.[42] The U.S. EPA has also loosened policies around diesel generators, allowing them to be used in non-emergency situations. Purporting to spur data center development, U.S. EPA announced a proposed rule change under the Clean Air Act to allow construction of certain components of data centers prior to applying for or obtaining an air permit.[43]

In June 2026, the Federal Energy Regulatory Commission (FERC) issued an order to all six regional electric grid operators to speed the process for large load users to connect to the electric grid.[44] The order requires the regional transmission organizations (RTO) and independent system operators (ISO) to either justify why their current tariffs remain just and reasonable without provisions tailored to large loads, or to file tariff changes that address the issues the Commission identified within 60 days. In order to meet the issued order, FERC issued five categories of reform for the grid operators to address:

- Developing efficient transmission service application and study processes, including consideration of alternative transmission technologies
- Preventing cost shifting and requiring transparency regarding transmission costs
- Accommodating colocation agreements and behind-the-meter generation
- Providing new transmission services for flexible large loads
- Developing a process to study generating facilities that serve electrically proximate large loads and colocated loads

Each grid operator and its transmission owners must also, within 30 days, submit a detailed informational report describing how the grid operator intends to ensure that adequate generation will be available to serve existing and future large loads.

State-Level Data Center Existing Policies and Proposed Legislation

Illinois Data Center Investment Tax Exemptions and Credits

The State of Illinois introduced a sales tax exemption (20 ILCS 605/605-1025) and construction tax credits (35 ILCS 5/229) for data centers in 2019.[45] This incentive requires a minimum $250 million capital investment over a 60-month period and the creation of at least 20 permanent, full-time jobs. The program also provides data center owners and operators with a tax credit of 20% of wages paid to construction workers for projects located in underserved areas. This credit requires data centers to be carbon neutral or attain a sustainable building certification, such as LEED or Green Globes.

During his budget address for FY2027, Governor Pritzker proposed a two-year suspension of these tax credits, effective July 1, 2026.[46] This pause is meant to allow the state to study the impact of existing data centers on energy and the economy. The proposal failed to pass in the General Assembly during the spring legislative session and was instead implemented through an executive order on June 5, 2026.[47] This executive order also included a framework on data center policy to protect consumers and lower energy costs, which includes the following:

1. Data centers should pay their fair share
2. State tax incentives should be paused
3. Energy reliability must prioritize Illinois working families and businesses
4. Data centers should support the development of new clean energy
5. Illinois must protect its water resources
6. Illinois must maintain strong clean air protections
7. Communities deserve transparency and a meaningful voice

POWER Act

The POWER (Protecting Our Water, Energy, and Ratepayers) Act (SB4016/HB5513), aims to set guardrails on the development of large data centers (those over 50MW) through provisions such as annual water monitoring and reporting, energy reporting, and adding new clean energy and capacity to the electricity grid. The bill was introduced during Illinois' spring 2026 legislative session.[48]

In addition to water and energy provisions, the bill would also require developers to enter into community benefits agreements with neighboring residents before a facility is built. Additionally, the Act would require data center developers to pay into a restricted fund managed by DCEO and the Illinois EPA to support energy affordability and environmental justice.

The POWER Act did not pass during the spring 2026 legislative session, however, negotiations are ongoing with stakeholders such as utility companies, energy advocacy groups, labor unions, and the data center industry. Many observers expect a version of the POWER Act to be considered by the General Assembly during the fall 2026 veto session.[49]

ComEd Large Demand Tariffs

In March 2026, the ICC approved tariff amendments (Large Demand Tariffs) proposed by ComEd for new service requests for "large demand projects" (i.e., those requesting at least 50 megawatts of electrical service). ComEd sought the Large Demand Tariffs because it has recently "experienced an unprecedented surge in service applications" from businesses seeking "exceptionally large service requests."[50] Although the Large Demand Tariffs are not restricted to data centers, plans for future data centers drove ComEd's "unprecedented surge."

The Large Demand Tariffs allows ComEd to obtain security deposits from large demand project developers to cover ComEd's costs for engineering, planning, and long-lead materials. If a large demand project is not built, ComEd can rely on the security deposit, not ratepayers, to recover these costs.

The Large Demand Tariffs also allow ComEd to require large demand project developers to provide financial security for the amount of electricity that they are requesting. If the project does not, over its first 10 years, purchase the amount of energy from ComEd that the developer originally requested, ComEd can draw down the security deposit. This "revenue assurance" aspect of the Large Demand Tariffs is being challenged in an appeal to the Illinois Court of Appeals.

The ICC also found that the Large Demand Tariffs "do not fully protect Illinois ratepayers from the risks and burdens associated with" large demand projects. Thus, the ICC required an investigation "to identify, examine, and adopt appropriate ratepayer protections and cost recovery mechanisms" regarding large

demand projects. The ICC investigation is designed to "address critical issues affecting affordability and the prudence of undertaking such [large demand] projects, including ensuring that costs attributable to large loads are appropriately allocated and recovered, while preserving just and reasonable rates for existing ratepayers."

The City is a participant in the ongoing ICC investigation, which is set to conclude by the end of 2026/early 2027.

City of Chicago Tax Credits

In September 2024, in the same legislation that created this Working Group, the City Council passed a data residency requirement ordinance (MCC 2-68-050), which created an earned credit for vendors bidding on City contracts that agree to store City data in Illinois or in the City of Chicago.[51] Vendors that store City data within the State of Illinois receive a 2% earn credit or receive a 4% earn credit for data stored within the boundaries of the City.

This ordinance also requires all City data must be processed, stored, and disposed of within the United States.

Recommendations

The Working Group has developed a three-part framework that, taken together, will substantially mitigate the environmental and public health impacts of data centers in Chicago. This framework is presented in detail below and draws on three policy tools: environmental permitting, zoning, and performance reporting.

Development of these policies should include collaboration between various City departments to ensure efficiency and policy alignment across regulatory programs. Implementation of these recommendations will require policy changes and changes to aspects of the Municipal Code.

Develop a permitting program to address the environmental and health impacts of data centers

Data centers can have significant sound and air quality impacts on nearby residents and businesses. These impacts are due primarily to the equipment used in these facilities, most notably cooling systems and generators. In many cases, these impacts can be mitigated through actions, such as:

- Proactive facility design
- Implementation of best practices for equipment selection and operation
- Modeling of and monitoring for environmental impacts
- Adherence to measurable standards for air quality and sound levels
- Public transparency

An environmental permitting program specific to data centers would empower the City to ensure these actions are taken.

The Working Group recommends the City Council authorize a permitting program specifically tailored to data centers. This permit would be required for all data centers operating in the City of Chicago and would be administered by the Department of Environment. The program should, at a minimum, include the following elements:

Data center definition for environmental permitting purposes

The ordinance establishing this environmental permitting program should identify the types of facilities that will require an environmental permit as a condition of operation in the City. Factors to be considered in the definition may include:

- The quantity and use of specific equipment,
- The quantity of electricity consumed,
- The square footage of the facility, and/or
- Other physical or operational characteristics.

Special attention should be paid to differentiating between purpose-built data centers and computing equipment used as part of a business that is not devoted to computational processing. The permit program should focus on those data center operations and equipment most likely to have a significant impact on the local environment and welfare.

Permit application process

The ordinance should describe the permit application and renewal process, including required documentation, forms, submission schedules, and renewal periods.

Conditions for issuance and renewal of environmental permits

The ordinance should identify key parameters for receiving and maintaining a permit. This should include the completion of scientific studies to identify environmental impacts from the facility within the community in which the data center would operate. This should also include a framework for required equipment, operating procedures and conditions, and other strategies for addressing actual and potential impacts identified in the required studies. The permit program should be designed to provide the flexibility needed to take advantage of emerging technologies and procedures that further reduce impacts on public welfare and the environment.

Reporting, compliance verification, and inspections

The ordinance should establish processes for ensuring compliance with permit requirements. To the extent possible, compliance verification should be done through facility-provided reporting, such as by using air

and sound monitors. When possible, this information should be made public.

Permit fee structure

The environmental permitting ordinance should include a fee structure for permit application and renewal. Fees should reflect the full cost of implementing the program and mitigating impacts from data center development and operation.

Fine structure

The ordinance should provide a transparent, predictable, and robust structure for penalties, injunctive relief, and other deterrence and City cost recovery if permit requirements are violated.

While developing this program, special care should be taken to ensure all definitions, standards, and regulations align with the Code.

Update the City's zoning ordinance to address the impacts of data centers

The size and scale of data centers have evolved, and the City's zoning regulations should evolve to reflect this reality. A modern data center has unique impacts to the surrounding community above and beyond those of comparably sized office, commercial, or industrial uses. For this reason, data centers warrant special consideration.

The Working Group recommends amending the zoning code to require most Electronic Data Storage Center facilities to undergo a PD review, which includes City Council approval.

Relatedly, the Working Group recommends the City, and more specifically, the Departments of Planning and Development, Environment, Water Management, and Buildings, develop more clearly defined PD or SDP criteria and requirements that can be applied to data centers as "use standards," regardless of zoning designation. These would include definitions, use standards, siting, thresholds, sustainable development policy requirements, community meeting requirements, and more. The Working Group recommends adding these as a proposed

amendment to the municipal code, to ensure alignment with the proposed environmental permitting plan and other City permitting procedures.

Require transparent reporting of the energy and water use of data centers

Two of the most important macro-level impacts of the data center industry are electricity and water consumption, but the extent of these impacts is poorly understood due to a lack of transparency. Without a full understanding of the amount of electricity and water used by data centers, it is difficult to make long-term policy decisions regarding infrastructure investments, decarbonization, and water sustainability.

Several communities, including in the Chicago region, have sought to address this gap by requiring the public disclosure of energy and water use. The Working Group suggests following this model.

Under the Building Energy Use Benchmarking Ordinance, the Chief Sustainability Officer cannot publicly release energy and water data from buildings containing data centers.[52] The Working Group recommends removing this exemption. The Working Group further recommends mandating water reporting for data centers and making the reported data publicly available.

The Working Group further calls on other municipalities using Great Lakes water to implement comparable reporting policies to allow for a more comprehensive understanding of the impact data centers are having on the regional water system.

Topics for continued action

In addition to the three policy tools recommended above, the Working Group recommends further work to address the following topics that emerged as priorities during the research and policy development process.

Water reuse

Concern over data centers' use of potable water for cooling is a recurring theme in discussions about data center development across the United States. Today, data centers in Chicago rely on treated drinking water supplied by the Department of Water Management.

The use of treated wastewater for non-potable applications, like cooling, is increasingly common in more water-stressed regions of the U.S., and in 2025, Illinois House Bill 2391 authorized the MWRD to develop pilot water-reuse projects in Chicago. This presents an opportunity to evaluate water reuse as an alternative water source for industrial users, like data centers. Every gallon of water that is reused is one gallon less that needs to be removed from Lake Michigan, highlighting the potential impacts such a project could have on regional water sustainability.

While MWRD would likely be the lead partner for such a project, the City of Chicago should look for opportunities to encourage and support this work.

Industrial water rates

Water availability and price are key considerations for data center design. When water is scarce or expensive, data center developers typically install more efficient equipment. Relative to other, more arid parts of the U.S., Chicago water is more abundant and affordable.

The City of Chicago currently charges a uniform rate for water to all customer types. Residential users pay the same price per cubic foot as industrial users.

The Working Group recommends the City explore the feasibility of various water-pricing structures, with an emphasis on ensuring sustainability and equity through billing practices.

Waste heat reuse

The computing equipment used in data centers creates a lot of heat. In most cases, cooling systems remove this heat and release it outside of the building. In some instances, this waste heat can instead be used in nearby buildings to warm buildings' interiors, to heat water, or to power equipment.

These district energy systems are highly dependent on local conditions and are not practical or possible in all situations. Still, when built, they can provide tremendous affordability and sustainability benefits.

The Working Group recommends the City of Chicago explore opportunities for supporting the creative use of waste heat through district energy systems, with the goal of creating a pilot program.

Community benefits

Data centers often face intense resistance within communities that raise valid concerns ranging from proximity-based quality-of-life issues to broader communitywide environmental and affordability impacts. Adjacent noise and air-quality impacts, significant drain on local water supply, unchecked energy consumption, and rising electricity costs as a result of utility requirements to meet and exceed projected demand. The Working Group recommends addressing these impacts cooperatively through the consideration of community benefits agreements (CBAs) or similar mechanisms to help offset the impacts of data centers in Chicago.

One recent CBA between the City of Lancaster (PA) and a data center developer highlights an emerging approach for how local governments can advocate for their residents. The agreement outlines clean energy requirements, places limits on daily water consumption, requires vegetative buffers and "dark night" lighting, establishes e-waste protocols, and mandates a permanent workforce presence. The CBA also provides $20M in funding for two City-administered programs: the Economic Development Fund and the Sustainable Development and Clean Energy Fund.[53]

In the proposed POWER Act here in Illinois (SB4016/HB5513), community benefits are cited as a means to establish protections, particularly for those communities and ratepayers without the means to do so themselves. While it is true that most data centers in Chicago currently are not sited in environmental justice communities, the broader water and energy issues impact all Chicagoans, with

affordability issues carrying an increasing blow to already energy-burdened households. To face these issues head-on, Chicago must look to protective measures like the proposed POWER Act and take similar steps to advance transparency, safeguard public health and wellbeing, and protect our natural resources.

Appendix 1: Outreach

Engagement with Experts

Much of the Working Group's engagement work focused on discussions with organizations and associations with data center-related experience. These engagements included one-on-one meetings, small group discussions, conference sessions, and webinar presentations. The Working Group also invited a range of policy and industry experts to join Working Group meetings to share their expertise. Nearly 50 organizations were engaged in this way.

The organizations listed below helped inform this process. Inclusion in this list is not an endorsement of this report or its recommendations.

- Accelsius
- Alliance for the Great Lakes
- Alliance for the Southeast Side
- Aspen Ideas: Climate
- C40 Cities
- Chicagoland Chamber of Commerce
- Chicago Metropolitan Agency for Planning (CMAP)
- Citizens Utility Board (CUB)
- City of Aurora
- City of Philadelphia
- Climate Mayors
- ComEd
- Cook County
- CoreSite
- CWC-Tech
- Data Centers Coalition
- Digital Realty
- Environment, Transportation, Heath, and Open Space
- Fresh Coast Climate Solutions
- Green Buildings Initiative
- Illinois Clean Jobs Coalition
- Illinois Environmental Council
- Joyce Foundation
- Just Transition Northwest Indiana

- Metropolitan Mayors Caucus
- Metropolitan Planning Council
- Metropolitan Water Reclamation District
- mHUB
- Natural Resources Defense Council
- P33
- Pilsen Environmental Rights and Reform Organization (PERRO)
- PJM Cities and Communities Coalition
- Powerlines
- Sierra Club, Illinois Chapter
- Sierra Club, Virginia Chapter
- SNHA/Woolpert
- Tetra Tech
- UIC Freshwater Lab
- Urban Sustainability Directors Network
- Vote Solar
- World Resources Institute

Public Meeting Insights

The Working Group also hosted two significant public meetings.

The first meeting was an industry roundtable held at 2 N LaSalle St. on April 13, 2026. This meeting was attended by representatives from roughly 10 data center-related companies and organizations. The discussion focused on the present and future of the data center industry. Attendees stressed the important role that data centers play in the nation's economy, and the benefits that data centers can provide to Chicago, including employment opportunities, tax revenue, and secondary investments in local businesses. Attendees emphasized their commitment to the community and discussed strategies for addressing residents' concerns related to sound, air quality, and energy use.

The second meeting was a Community Conversation on Data Centers, hosted at Arturo Velasquez Institute on May 19, 2026. This meeting was attended by roughly 75 Chicagoans and included both a panel discussion and an open house.

The panel featured a wide-ranging discussion moderated by the Department of Environment. Panelists included Kavi Chintam from Vote Solar, Rachel Havrelock

from the UIC Freshwater Lab, Sarah Moskowitz from the Citizens Utility Board (CUB), and Meera Raja from P33.

The open house portion of the evening featured stations with information related to economic development and community benefits, energy and affordability, environmental impacts, and zoning and permitting. Each station was staffed by City of Chicago staff, who led attendees in conversations about each topic. The stations also had feedback posters where attendees were encouraged to leave their thoughts using sticky notes. Feedback received during the event is listed below:

Board 1: What are your top concerns around zoning and permitting regulations for data centers?

- Because the need for data centers and their construction is considered "inevitable," there seems to be a general lack of will to really interrogate their need/impact. I think the process for approval of these projects should be slowed down if not halted entirely until a better common understanding around need + impact is built.
- Data centers shouldn't be by-right. Should have a process [that] involves community.
- Having data centers too close to heavy populations of people. Infrasound can affect their health. This needs to be studied so zoning can be correctly done.
- How many town halls are planned for residents to voice concern for data centers being built in residential neighborhoods? Why is there no public dialog/agreement from Aldermen and developers?
- Keep developers from building temp. parking for a construction workforce, incentivize transit use.
- Proximity to residents, quantity in neighborhoods
- Site restrictions.
- The location of data centers should be put to a vote! in the communities where they may be built.
- We need air/water/health protections (citywide—do your job!). Not just permit-by-right for data centers.
- What are the current regulations, if any, to prevent worker pollution on our local rivers and lakes?
- Yes please [slow down development until more is known]

Board 2: How can data centers benefit Chicago?

- Data Center Projects should require a mentor/protégé program allowing small & diverse firms the opportunity for future participation in these types of projects.
- Data Centers should lower Chicagoan's utility costs as a benefit. At least heating.
- Environmental study on Quantum
- Hold developers accountable for ROI (return on investment) for taxpayer subsidies.
- Make data centers accountable. If they use water & power sustainably, even to the point of being self-sustainable, then we can invite data centers to the region, which can create revenue and local opportunities.
- Prioritize hiring from nearby neighborhoods and not remote work
- There could also be reimbursement in the form of community improvements. Subsidizing grid costs, parking and green space improvements, [and] renewable energy development.
- There should be a sustained focus on workforce development programs, preparing residents for opportunities to work on these projects.
- Transparency. Public disclosure and reporting requirements. Energy and water use. Jobs. What the data center is powering.
- What if AI infrastructure, something all of us are using, was a PUBLIC UTILITY and run, regulated by us?
- What taxes – how taxed?
- Where does Quantum fit in and where will there be a Quantum computer?

Board 3: Environmental Impacts

What are your top concerns about the environmental impacts of data centers?

- Black and Brown communities deal with environmental racism. Data centers should not add to it!
- Data Centers consume an enormous amount of power, putting pressure on utilities and increasing emissions from fossil-fueled peaker plants.
- Diesel generators – cancer risk from pollutants, harm to people with pre-existing conditions like asthma, noise disturbance causing insomnia and other health issues.
- Infrasound and the health impacts on the surrounding neighborhood

- Negative impacts on the host neighborhood or community, as defined by them.
- Water use, power grid strain, pollution

In what ways can these concerns be addressed?

- Chicago residents want air/water/health protection. Not just permit by-right for data centers.
- Community Benefit Agreements
- Data centers should NOT be built on the South + Southwest side of Chicago with history of pollution.
- Increased community engagement, CBAs, more transparency
- Zoning legislation!

Board 4: Energy and Affordability

What are your top concerns for energy and affordability?

- Can the solutions to build a stronger/strong enough grid to support the current and developing data centers in Chicago and Illinois?
- Commercial rates for high consuming data centers
- Climate applications of a potential slow of the clean energy transition due to needing more energy from fossil plants
- Data centers should shoulder the costs of increased electricity use!
- Enron again!
- How can we prep for them to come without making energy companies richer
- I'm worried about them relying on peaker plants like Fisk.
- Increased utility rates :(
- Poor people (in poor neighborhoods) being harmed the most.
- Sufficient infrastructure to support the speed of the loud growth. Taking of capacity without playing more + impact on consumers
- Taking affordable energy away from already struggling low-income residents.
- Transparency and public regulation
- Why aren't social media, AI, and AI infrastructure public utilities? We are all using them all the time.

How has electricity affordability affected you?

- Electricity bill has gone up at least 20%.

Board 5: Questions & Future Policies

What questions do you have about data centers?

- How can the City work with Community Solar Providers to support the energy transition?
- How many Data Centers does Chicago need?
- I'd like to see a map of data centers in Chicago.
- Why do we need them? The demand seems to be entirely at the corp. level and not the community level.

What would you like to see from the City's data center policies?

- AI psychosis is a thing & the general public does NOT need AI. Therefore, these data centers are an unnecessary waste of resources.
- CBA Agreements with real, actual community input
- CBA's and more community involvement/inclusion.
- City Council needs to do their jobs. Protect air/water/health of people.
- Consult with local residents! Residents are opposing the Quantum campus by South Shore!
- Data Centers should foot the bill of increased electricity costs!
- Input from other state agencies, shouldn't settle only on what benefits Chicago, inclusive of statewide input.
- Make the tech companies PAY the full cost of their developments!
- Much slower and more intentional process for reviewing/approving future projects (no by-right projects).
- Politicians should not be allowed to receive Campaign donations from data center companies nor investors of data centers.
- Renewable Energy Transition. – Lowered utility bill costs through Community Benefit.
- Require closed-loop cooling systems.
- Use restrictions on land in a way that keeps our neighborhood pleasant & walkable. noise control, aesthetic requirements, vertical infrastructure, mixed use buildings, etc.

What data center topics are most important to you?

- Data centers must pay for the cost of their infrastructure.

- Electricity use, rates for regular customers
- Excessive electricity & water use
- Forever chemicals
- Gentrification and affecting people's property taxes and rents!
- Health Impact
- Lack of consideration of community input (thinking of South Shore opposition to Quantum being ignored by City).
- Lack of transparency
- Lake Michigan impact / Wisc & Indiana
- Noise pollution
- Protecting the lake & keeping power costs stable/affordable
- Protecting water source: Lake Michigan
- Secret deals & NDAs
- Selection of which communities to "dump" data centers in (ie Northside—no, so shift to Southside).
- Water use
- Water use
- Water use
- Water use, climate impact, economic impacts on community members (energy bill, property taxes/rents).
- Water use (River and Lake)

Appendix 2: Data Center Components

The core of a data center is its computing equipment: rows of server cabinets connected through fiber optic cables and electronic components. While this equipment does use a lot of electricity, the chips and servers themselves have relatively little impact outside of the facility. However, the systems that support the computing equipment, most notably cooling and emergency power systems, do have impacts that are felt outside of the facility.

Cooling systems

Computing equipment creates a lot of heat. Managing that heat is a central challenge of data center design and operation.

The impacts a cooling system has on the surrounding area are determined by the specific system or systems used in the facility, which itself is determined by the type of computing being conducted. More advanced computing equipment generally needs more powerful cooling systems. These systems are not only complex, but also expensive to operate. By some estimates, approximately 40% of all electricity used in data centers powers the cooling systems, which is roughly equal to the amount of electricity consumed by the server systems themselves.[54]

Some of the most common cooling systems include:

Air cooling

Air cooling is the most basic form of heat management used in data centers. These systems work by pushing cooled air into warm server cabinets, dropping the temperature of the equipment.

Modern data centers use several design features to maximize the cooling potential of these systems. Server cabinets are often installed atop raised floors, which enables cooled air to travel directly to the server cabinets. Many air-cooled data centers also arrange server cabinets in an alternating pattern of enclosed “warm” and “cold” aisles to reduce air mixing and increase efficiency.

The chilled air used in these systems is generally produced using either a cooling tower (evaporative cooling) or mechanical equipment (closed loop).

Evaporative cooling

In this approach, the cooled air used in the data center is created either by pushing outside air through a water-soaked membrane to reduce its temperature (direct evaporative cooling) or by pushing air through a heat exchanger that is cooled through evaporation.

Because this approach uses the passive cooling properties of water, rather than mechanical processes, it is both energy efficient and relatively quiet (compared to other systems). Evaporative cooling does, however, use a lot of water. Data centers using evaporative cooling are among the most intensive water users today.

Closed loop

Closed loop systems use mechanical equipment, such as air compressors and fans, to create the chilled air needed for air cooling. This equipment functions similarly to a conventional building air conditioning system, but on a much larger scale. Operating this equipment requires a lot of electricity, and can generate a lot of sound, but does not use a significant amount of water on site.

Air cooling is relatively cheap to build and easy to scale but has greater electricity and/or water needs than other cooling systems, making it more expensive overtime. Almost all data centers include some amount of air cooling.

This approach is also less effective than liquid cooling. The most advanced computing equipment, such as the computer processing units (CPUs) and graphic processing units (GPUs) used for artificial intelligence, create more heat than can be removed through air cooling alone.

Direct-to-chip liquid cooling

Direct-to-chip liquid cooling takes advantage of both the increased heat transfer capacity of liquids, relative to air, and the proximity benefits of placing cooling elements directly onto the equipment that needs to be cooled.

This approach uses a two-loop system. The first coolant loop pumps a chilled liquid into cooling plates mounted directly onto computer processing

units (CPUs) and/or graphics processing units (GPUs) located inside the server cabinets. As the liquid passes through the cooling plates, it absorbs excess heat and lowers the temperature of the chips. The now warm liquid then travels out of the server cabinet and into a coolant distribution unit (CDU), where the liquid is cooled and the cycle starts over.

The second loop in a direct-to-chip liquid cooling system is used to cool the CDU itself and can use either mechanical equipment (closed loop) or cooling towers (evaporative cooling).

Direct-to-chip liquid cooling is more effective and more efficient than air cooling and is increasingly common in modern data centers. Importantly, direct-to-chip liquid cooling systems cool only the chips themselves. Supplemental cooling equipment, such as rear door heat exchangers (RDHx) or air-cooling systems are needed to cool other components within the server cabinets. These systems are complex and generally have a higher up-front cost than air cooling.

Liquid immersion cooling

This innovative cooling approach works by physically submerging computing equipment in non-conductive dielectric fluid. There are broadly two types of liquid immersion cooling, which are defined by the state(s) of the fluid that is used:

Single-phase immersion cooling

In this approach, the dielectric fluid is continuously pumped through a CDU, which is cooled using either a cooling tower or a closed loop system. The fluid remains in a liquid state throughout the process.

Two-phase immersion cooling

This approach uses a special fluid that evaporates at a low temperature. The resulting vapor then travels to a condenser, where it is converted back into water and returns to the fluid bath.

Liquid immersion cooling is among the most effective and efficient forms of cooling. It is also complex, difficult to scale, and relatively new. This approach has a lot of promise, especially at the highest levels of computing, but is not yet in widespread use.

Free cooling

Free cooling is an innovative approach that uses naturally occurring cold air or water to cool computing equipment. This can be accomplished either by pulling outside air or water into the facility to directly cool equipment using an HVAC system or indirectly using closed-loop heat exchangers. In some cases, geothermal cooling, which relies on the constant temperature of the earth's crust, may also be viable.

This approach has significant energy and cost savings, as no artificial cooling is needed. Free cooling also has significant drawbacks. Because these systems rely on outside temperatures (of air or water), they are only viable during cooler times of the year. Systems using water (from lakes or rivers) may function throughout the year but must be carefully studied to ensure local ecosystems are not impacted. These limitations mean that free cooling is generally not viable as a stand-alone cooling system. Instead, it is generally used as a supplemental energy-saving strategy in combination with conventional air or liquid cooling.

Chicago's building code requires the use of economizers in HVAC systems, which is a form of free cooling. When temperatures drop below a certain threshold, economizers automatically transition the HVAC system from running chillers to pulling in outside air.

Hybrid cooling

Hybrid cooling systems combined two or more of these approaches in a single facility. For example, a data center may feature an air-cooling system with raised floors and hot/cold aisles throughout the facility, with direct-to-chip liquid cooling installed as an additional measure for a subset of servers using the most energy-intensive chips. By combining systems, a facility is able to deploy the most efficient and effective system for each server cabinet in the facility.

Emergency power

Data centers are designed to operate around the clock, and their profitability often depends on their ability to offer uninterrupted, 24-hour access to their services. The most common target for data center reliability is "5 nines," which means

a facility is operational 99.999% of the time. That equates to no more than 5 minutes and 26 seconds of unplanned downtime each year.

Achieving this level of reliability requires one-for-one emergency power systems to ensure operations can continue uninterrupted even if the electric grid goes down. Today, that almost always means diesel generators. A detailed overview of these generators is found in the Air Quality Impacts section of this report.

Battery backup power is an increasingly viable alternative to diesel generators, though challenges with cost, scalability, and permitting remain. Recent state legislation has sought to support the development of utility scale batteries, most notably the Clean and Reliable Grid Affordability Act (CRGA), which requires the Illinois Power Agency procure at least three gigawatts of battery capacity by December 31, 2030. Similar batteries can be used to provide emergency power for data centers. And because batteries have fewer impacts on surrounding communities than generators, it is possible to use them more frequently (for example, during times of higher electricity cost), potentially turning them into a revenue-positive investment. In some cases, local zoning laws and building codes may limit the adoption of this technology.

Other emergency power options, such as natural gas generators, are constrained by the availability of the equipment needed to build them. Years long backlogs for turbines mean that it can take longer to build a natural gas generator than to build the data center itself. These systems are also costly enough that, when built, they are often used as a primary power source, rather than backup.

Access to the electricity grid

Data centers use massive amounts of electricity. The largest data centers can use upwards of a gigawatt of power, which is comparable to a medium-sized city. Accessing this power is a central consideration when deciding where to build a data center.

Local distribution power lines generally do not carry enough electricity to power a data center, so these facilities are usually located near high-capacity transmission lines. Transmission lines carry electricity at a higher voltage than can be used by a data center (or any customer), and so, step-down substations are needed to reduce

the voltage into a usable form. Substations are a basic feature of the electricity grid, and a single substation has historically been sufficient to support a neighborhood-sized area. Under procedures approved by the ICC, the cost of building substations typically is allocated to broad classes of ratepayers, not just the ratepayer whose project spurred the development of a substation. Data centers use significantly more power than almost every other use. Often, a data center will need its own dedicated substation and other grid upgrades. The allocation of infrastructure costs and their contribution to rising energy costs for all consumers is currently being investigated by the ICC.

Appendix 3. City & State Actions on Data Centers

As part of the recommendation development process, the Working Group conducted a comprehensive review of city, county, and state data center policies enacted throughout the country. These case studies were chosen based on government structures, population, the number of data centers, and recent action on data centers.

A full list of peer cities is included below, along with state-level data center regulations.

At the municipal level, special use permits are the most common form of data center regulation, with requirements for energy and water usage, noise production, and sustainability planning.

A more detailed assessment of the City of Aurora was conducted, due to its proximity and relevance to the City of Chicago.

Aurora Data Center Regulations

The City of Aurora (Aurora) passed a comprehensive suite of new data center regulations in March 2026, following a 180-day moratorium. Prior to the moratorium, Aurora had permitted data centers as a by-right warehouse use.

The new regulations include updated codes and zoning standards that require pre-development studies of sound levels, water use, and energy impacts. Aurora also requires data centers to provide enough on-site renewable energy or battery storage capacity to cover the facility's peak electricity needs (25% or 50% respectively) or purchase an equivalent amount of Renewable Energy Credits (RECs) if on-site energy is impractical. Aurora data centers also must comply with biometric data privacy safeguards and receive an annual certificate of compliance from the Aurora government. Data centers with diesel generators can only conduct testing of two generators simultaneously. Lastly, Aurora requires all proposed data centers hold public meetings and obtain City Council approval to develop the data center. All existing data centers must publicly report their noise levels, water use, and energy consumption every year.

Figure 9. City & County-level Actions

City	Governance	Population	Data Center Count	Data Center Regulations
Phoenix, AZ	Council – manager system	1,665,481 (2025 census)	178 data centers (Source)	In July 2025, the Phoenix City Council adopted zoning ordinance that introduces a special permit process to address power grid reliability, fire risk, emergency response access, and restricts noise levels at data centers. (Source)
Atlanta, GA	Strong mayor – council system	529,110 (2025 Census)	186 data centers (Source)	Created a special use permit for data centers that requires they provide the following information: 1. Water consumption plan; 2. Water conservation and sustainability plan; 3. Energy consumption plan; 4. Transmission line impact assessment; 5. Tree preservation and reforestation plan; 6. Stormwater management plan. The special use permit also creates use standards that limit data centers' square footage, proximity to another data center, design features, and ability to convert buildings that are less than 50 years old. (Link)
Aurora, IL	Mayor-council system	181,505 (2025 census)	59 data centers (Source)	In March 2026, Aurora adopted some of the strictest data center regulations in Illinois, including environmental protections, public reporting requirements, siting standards, noise controls, and operational restrictions following a city moratorium. (Source)
Memphis, TN	Strong mayor – council system	609,647 (2025 census)	13 data centers (Source)	Passed by the Memphis City Council, the Data Center Community Benefits Ordinance mandates that 25% of property taxes generated by large data centers (such as the xAI supercomputer) be reinvested directly into surrounding neighborhoods. This commitment remains in place until at least $100 million is invested into certain low-income zip codes. (Source)
Northern Virginia (Loudoun &	Board of Supervisors –	946,346	609 data centers in all	Loudoun County: All new data center proposals are required to go through a mandatory Special Exception (SPEX) process. This means developers must now seek public approval from the Loudoun County Board of Supervisors

Prince William Counties)	County Administrator	(2025 census: Loudoun, Prince William)	of VA (Source)	rather than securing administrative approval. Loudoun County is also developing new use-specific zoning standards for data centers and utility substations. (Source) Prince William County: Prince William County in Virginia strictly regulates data center development through its designated Data Center Opportunity Zone Overlay District (DCOZOD). The county has moved to eliminate by-right development for these facilities, requiring developers to obtain a Special Use Permit (SUP). The regulatory framework includes strict standards governing noise limits, substantial setbacks from residential zones, and rigorous facility decommissioning protocols. (Source; Source)
Tucson, Arizona	Council – Manager System	548,371 (2025 census)	9 data centers (Source)	After the rejection of Project Blue, Tucson passed an ordinance requiring large quantity customers to submit a conservation plan with their water service application, agree to use recycled water to offset at least 30% of water use and prove that water will not be wasted.

Figure 10. State-level Actions

State	GDP[55] (Millions of USD)	Population	Data Center Count	Data Center Regulations
California	3,388,904	39,355,309 (2025 census)	287 data centers (Source)	Mandates data centers comply with Title 24 of California Energy Code, which focuses on energy efficiency, renewable energy use, and carbon footprint management. Requires data centers to meet certain standards for heating and cooling systems, implement energy-efficient technologies, and participate in Demand Response programs that help balance grid load during peak periods. SB-57 requires the Public Utilities Commission to establish a special electricity rate for energy-intensive customers. It passed the legislature in September and was signed into law by Gov. Newsom in October 2025. SB-253 and SB-261 (which both became law in September 2023)

				require corporations to report significant climate impacts, and in some cases. Specifically, SB 253 mandates that large businesses, including data centers, disclose both direct and indirect greenhouse gas emissions.
Oregon	265,993	4,273,586 (2025 Census)	125 data centers (Source)	In June 2025, state legislators passed the POWER Act (HB 3546) to require the Oregon Public Utility Commission to create a new payment classification for high-use customers such as data centers. This will likely raise the rate from its current average of 8.2 cents per kilowatt-hour.
Minnesota	405,836	5,830,405 (2025 Census)	77 data centers (Source)	Passed by the House in June 2025, SSHF16 will establish annual fees linked to a large-scale data center's peak electricity demand of between $2 million and $5 million, extend the state's sales tax exemption for software and information technology equipment to large-scale data centers to 35 years, require pre-application evaluation of projects using more than 100 million gallons of water per year and set up permit conditions, institute prevailing wage requirements for laborers and mechanics constructing or refurbishing large-scale data centers, require data center inquiries to be referred to the Department of Employment and Economic Development's Minnesota Business First Stop program, allow the Public Utilities Commission to approve, modify or reject tariff or energy supply agreement with a data center, require each public utility to offer a clean energy and capacity tariff for commercial and industrial customers, include large-scale data centers in the state's solar energy standard, exempt large-scale data centers from requirements under an energy conservation optimization plan, and establish that large-scale data centers must attain certification under one or more sustainable design or green building standards.
Arizona	455,745	7,623,818 (2025 census)	156 data centers (Source)	The Department of Water Resources has general conservation requirements that apply to all industrial users including avoiding waste and single-pass cooling and using low-flow plumbing fixtures.

Georgia	710,412	11,302,748 (2025 census)	220 data centers (Source)	PUC approved a new rule in February 2025 addressing the energy consumption of the state's large-load customers by requiring those whose energy usage exceeds 100 megawatts (MW) to cover the transmission and distribution costs incurred during their data center's construction. Local officials negotiated with Rivian for a $1.5 billion subsidy package. Residents were not given any knowledge of the project due to NDAs and did not have anytime to organize opposition after it was revealed despite serious concerns.
Idaho	101,567	2,029,733 (2025 Census)	18 data centers (Source)	Passed HB 395 in March 2025 which will require data centers consuming more than 10 MW of power to pay for their own electric costs.
Indiana	422,438	6,973,333 (2025 census)	122 data centers (Source)	In November 2024, the Indiana Utility Regulatory Commission approved a settlement with Indiana Michigan Power, Amazon, Google, Microsoft, and consumer advocates that requires large energy customers to make long-term financial commitments for the costs of their services, prevent costs from being passed onto consumers and to develop a clean energy transition tariff to support investment in carbon-free resources and community initiatives. These large load interconnection rules were adopted in February 2025.
Kansas	185,144	2,977,220 (2025 Census)	26 data centers (Source)	SB 98, which became law in April 2025, offers significant sales and use tax exemptions for qualifying projects over $250 million, while also requiring companies to commit to energy efficiency, water conservation, and 10 years of utility electricity purchase.
Michigan	568,865	10,127,884 (2025 Census)	75 data centers (Source)	Approved sales tax exemption in April 2025 that carries some protections including requirements to use municipal utility water and clean energy, meet energy-efficiency measures, and ensure they pay for their own electricity.

Nevada	210,914	3,282,188 (2025 Census)	71 data centers (Source)	PUC approved Clean Transition Tariff that would allow Nevada Energy (NV Energy) to contract with a new clean energy resource and then pass the costs of the contract through to a specific customer with a minimum monthly load of 5 megawatts (MW). Under the CTT, the energy customer would agree to pay a premium over grid-sourced energy equal to the difference between the cost of a new clean energy resource and the "but-for" system mix that NV Energy would have deployed under regulatory least-cost constraints.
Ohio	734,365	11,900,510 (2025 Census)	210 data centers (Source)	Signed by Gov. DeWine in May 2025, HB 15 requires utilities, including those tied to large-scale users, to make new rate cases every three years to justify increased costs. PUC approved proposal from American Electric Power that would require large data centers to pay for a minimum of 85% of their subscribed energy usage as well as financial requirements and an exit fee for cancelled projects.
Utah	240,786	3,538,904 (2025 Census)	43 data centers (Source)	Passed SB 132 in April 2025 which would allow large energy users to contract directly with utilities, ensuring they bear the incremental costs of their energy, and mandates that new wind and solar power for these facilities be backed by sufficient battery storage.
West Virginia	83,170	1,766,147 (2025 Census)	9 data centers (Source)	SB 4001 and HB 2014 were passed in March 2025 to establish special microgrid districts where companies building data centers can avoid local zoning and electric rate regulations when building standalone renewable power plants. This was opposed by environmental groups.

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Members of the City of Chicago Sustainable Data Centers Working Group

Department of Environment:

- Angela Tovar
- Jared Policicchio
- Jared Patton
- Dave Graham
- Michael Enos
- Jackie Rigley
- Avigail Bailon
- Lindy Wordlaw

Department of Planning and Development:

- Bradley Roback
- Jeffrey Cohen
- Lisa Thomas

Department of Technology and Innovation:

- Deborah Anderson
- Andre Johnson

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