Data Centers Are Here Are You Ready?

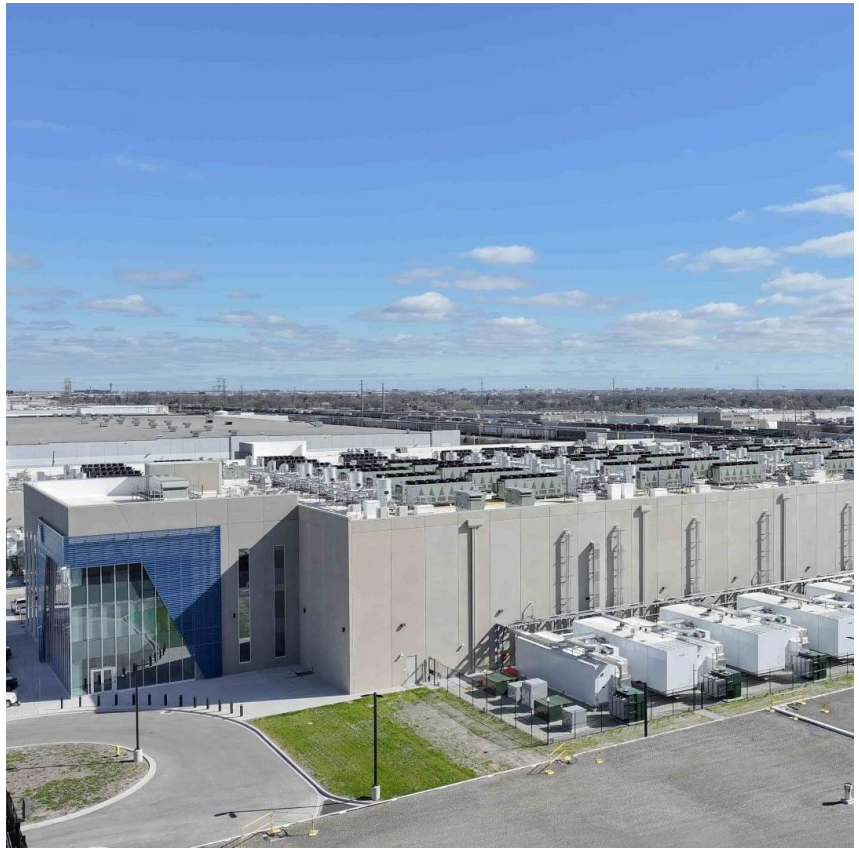
Presented by:
Erica Spolar, CWS, DECI



What is a Data Center?

A facility that houses an organization's IT infrastructure—including servers, storage systems, and networking equipment—to process, store, and manage data.

Data centers have been around for decades but have expanded rapidly in recent years.



Why are they needed?

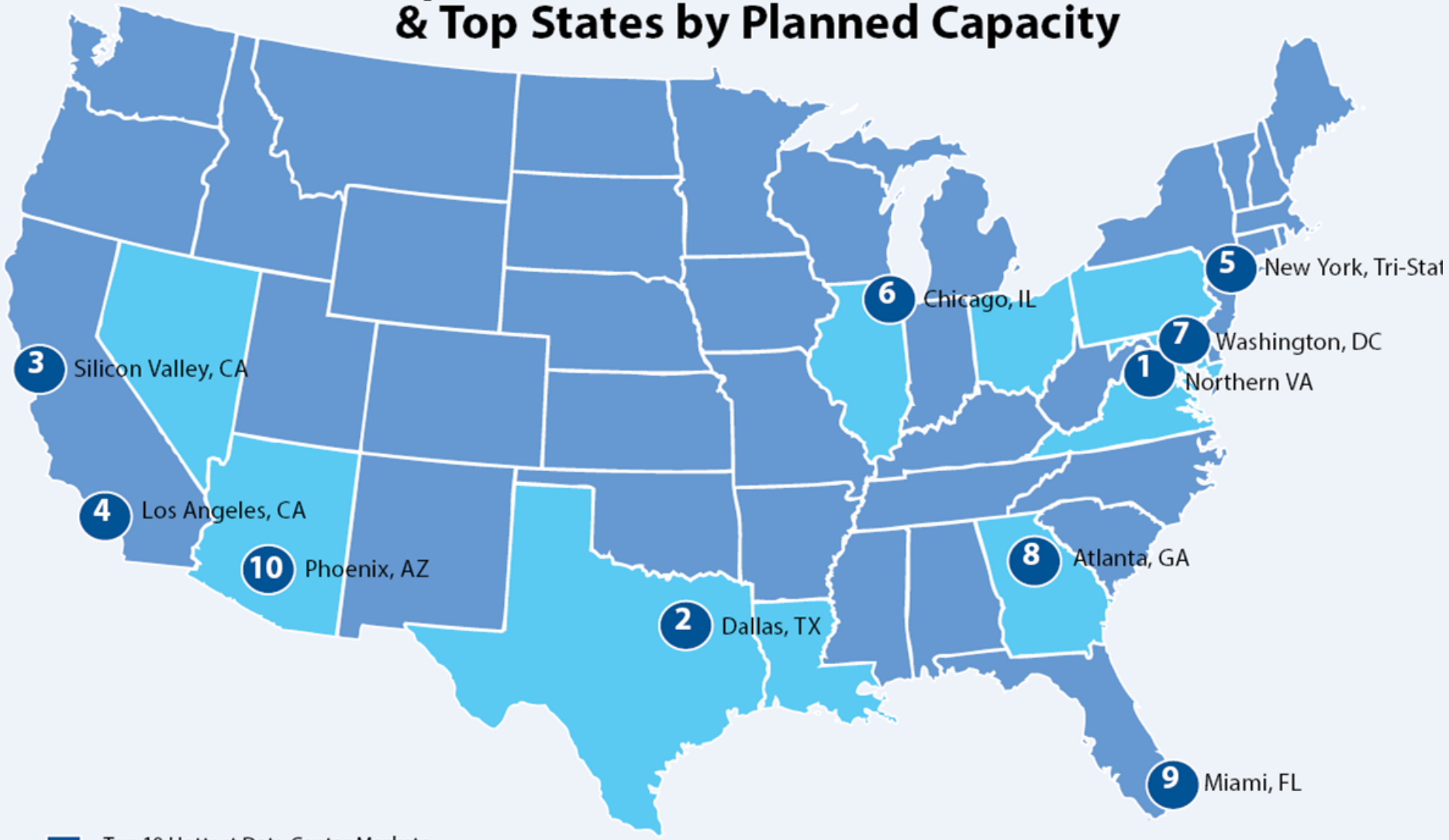
They are needed urgently due to the exponential growth of data from sources like artificial intelligence (AI), cloud computing, and rework, requiring massive amounts of processing power.

Data centers vary in type and size depending on their function.

Advantages of Data Centers

- Critical for the function of our digital world.
- They can drive economic growth by providing jobs and tax revenue in local communities.
- Data centers with onsite generation could have the potential to give power back to the grid and increase reliability in the future.
- Redundant systems and backup power prevent downtime and data loss from outages.
- Provide enhanced physical and digital security measures (i.e., access controls, firewalls).

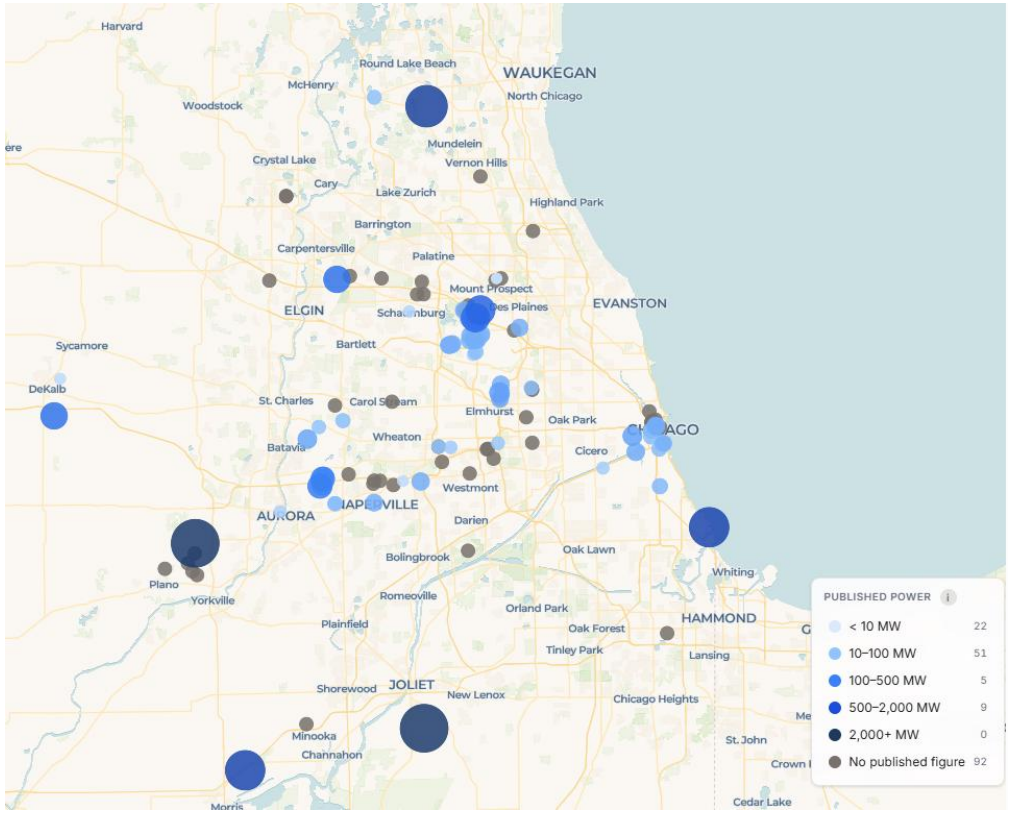
Top 10 Hottest Data Center Markets & Top States by Planned Capacity



(Sources: CoreSite & Deloitte)

Existing Data Centers

Existing data centers in the Chicago area



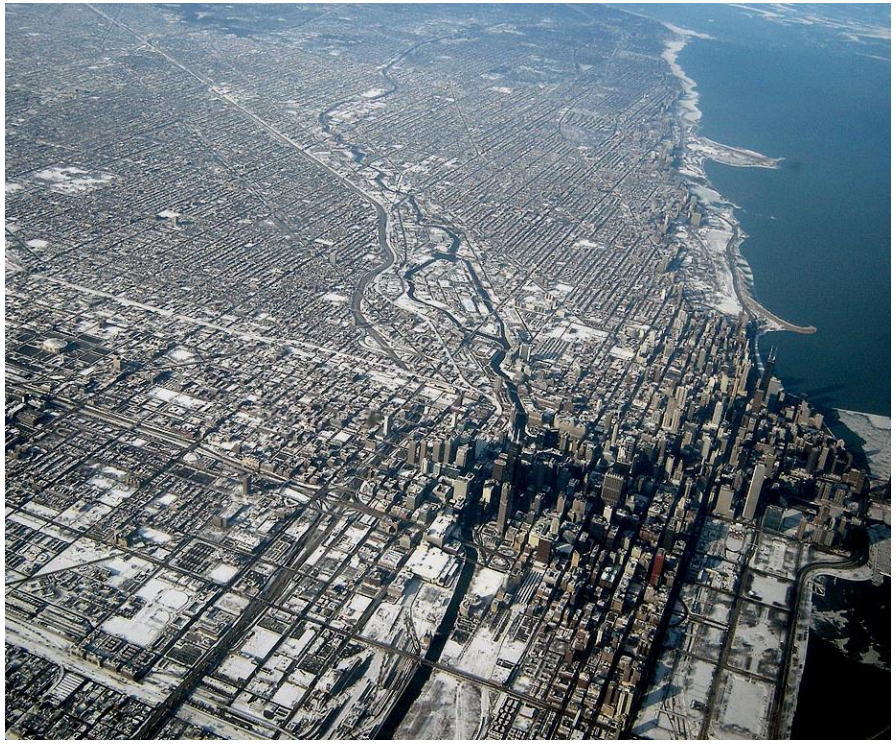
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Find existing data centers in your community.

Why Illinois?

Why is Illinois a prime location for data centers?

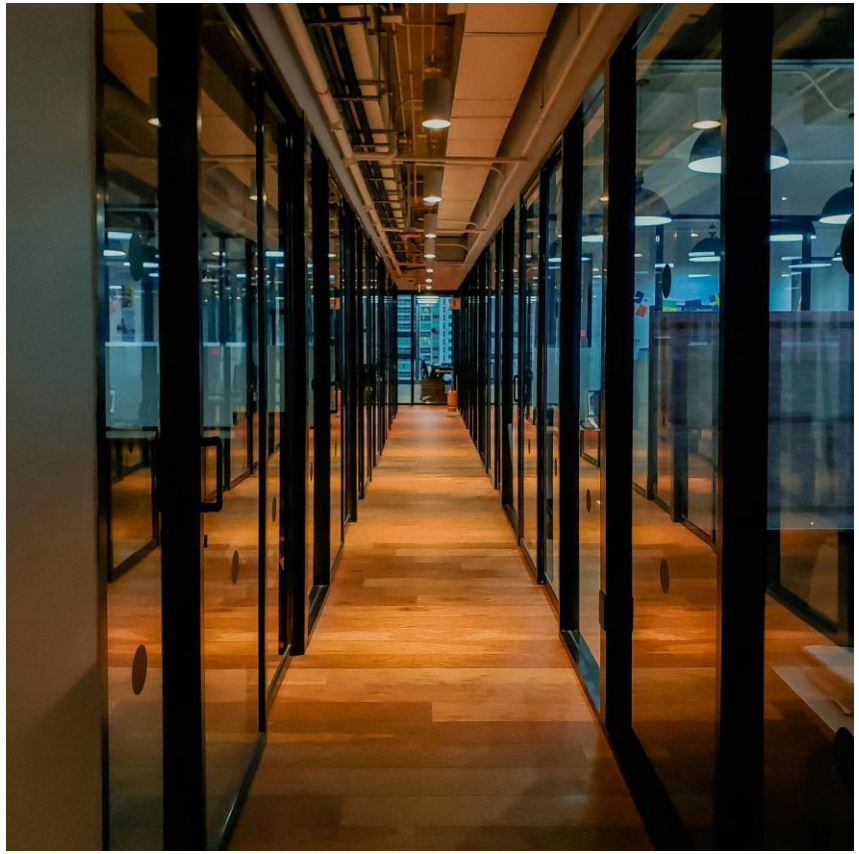
- ✓ Hub for many suppliers
- ✓ Strong grid reliability
- ✓ Data center investment tax exemptions and credits*
- ✓ Low risk of natural disasters
- ✓ Stable growth
- ✓ 25+ natural gas storage fields in Illinois
- ✓ Strong industrial groups
- ✓ Access to water



*Gov. Pritzker directed the Department of Commerce and Economic Opportunity (DCEO) to pause processing new agreements for the Data Center Investment Program starting July 1, 2026

Ideal Data Center Locations

- ✓ Site with flexibility where they can easily expand.
- ✓ Need a significant power and water source, including infrastructure to house large fiber optic ducts and water mains.
- ✓ Site needs to be developable: consider wetlands, threatened and endangered species, floodplain, special waste, and historical concerns.



Data Centers in the Media

CNN

Here's how AI data centers affect the electrical grid



The Washington Post

Sign in

Climate Weather Politics and Policy Environment Climate Solutions Dan

Why your power bill is spiking faster than a nearby data center's

As electricity prices climb, an unusual disconnect is emerging between what regular people pay — and what data centers pay.

January 15, 2026

CLIMATE · 5 MIN READ

Big tech is increasingly promising to pay for spiking power costs. But there's not much to enforce it

UPDATED 17 HR AGO

By Ella Nilsen



Bloomberg.com

OpenAI Says It Will Pay for Energy Upgrades at Stargate Sites



OpenAI unveils plan to keep data-center energy costs in check

By **Reuters**

January 20, 2026 9:02 PM CST · Updated January 20, 2026

wisconsinwatch.org

Disputes over clean energy may doom Wisconsin data center bills



The Guardian

Why Trump is worried datacenters might cost his party an election



Reuters

US power grid faces stress test amid arctic chill, data center demand



FT Financial Times

AI isn't to blame for rising US electricity bills — but it soon will be



Environmental Impacts of Data Centers



Energy

How it works

- Data centers rely on significant power inputs to operate hardware and cooling systems.
- Should be located close to reliable power sources.
- On-site substations are needed for large data centers.



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Impacts

- On average, a single data center consumes 2 MW of electricity, equivalent to the power consumption of a small town. Many consume up to 100 MW.
- Data centers consumed 4% of U.S. electricity in 2023, increasing to up to 12% by 2028.
- Data centers increase power demand, which can raise prices for consumers when that demand is not met.
- About 56% of the energy used to power data centers comes from fossil fuels.

Energy

Solutions

- ComEd announced new agreements to ensure data centers pay their fair share to use the grid (2026).
- Energy audits, performance standards, renewable energy use, and public reporting.
- Proposed Illinois Data Center Energy and Water Reporting Act.



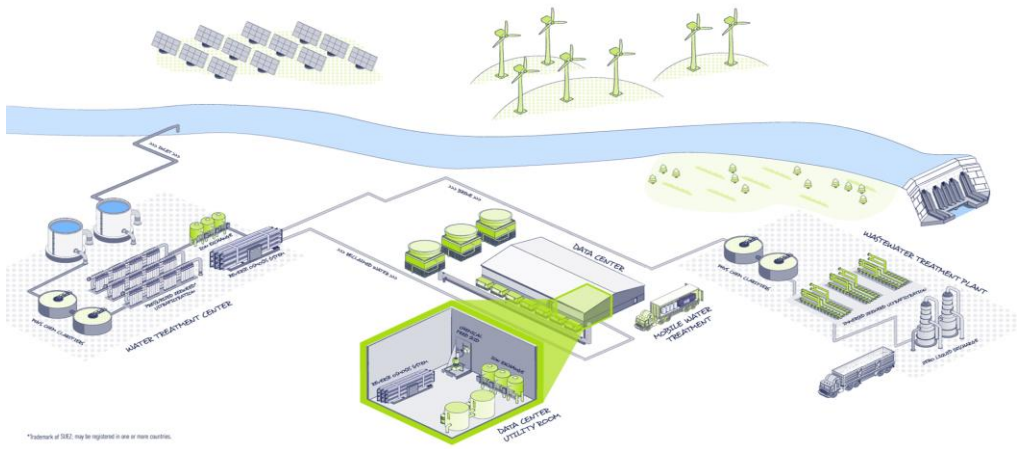
Scan for more info about energy impacts and solutions

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Water

How it works

- Data centers use water directly for cooling and indirectly through power supply.
- Some water is lost to evaporation; the rest becomes wastewater.
- Typically located close to large water mains.



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Impacts

- Larger data centers can consume up to 1.8 billion gallons annually, equivalent to a town of 10,000 to 50,000 people.
- In one local community, a proposed data center will consume 3 million gallons of water per day, compared to a total of 9 million gallons allocated after a pipeline from Lake Michigan is completed in 2030.
- High water use can increase stress on wastewater systems and introduce contaminants not always treated by typical WWTPs.

Water

Solutions

- IL P.A. 104-219 (2025) allows treated wastewater, rather than drinking water, to be used for cooling.
- New technologies, like closed-loop cooling systems and immersion cooling, use less water but more energy.



Scan for more info about water impacts and solutions

Air

How it works

- Backup diesel generators are used during power outages, peak demand, and maintenance/testing.
- IEPA issues air quality permits for data center backup generators.



Impacts

- Communities within 1 mile of data centers have particulate matter and nitrogen dioxide levels above the national median.
- These pollutants can have negative public health impacts, specifically heart and lung diseases.

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Air

Solutions

- Site data centers away from residential and community spaces.
- Use alternative backup power sources, like natural gas, hydrogen fuel cells, or battery power.
- IEPA requires air dispersion modeling for data centers within Environmental Justice Areas.



Scan for more info about air impacts and solutions

Noise

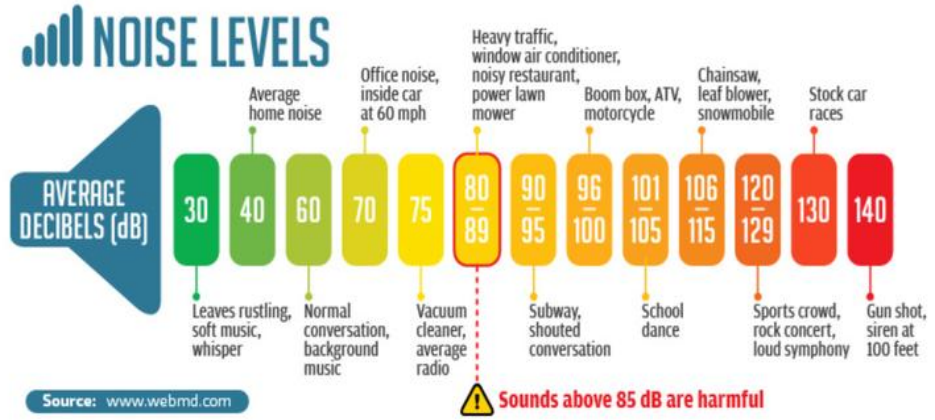
How it works

- Cooling systems and backup generators at data centers can be loud, leading to noise pollution.



Impacts

- Noise can occur 24/7.
- Impacts to homes, schools, parks, etc.
- Internal noise levels up to 96 decibels.



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Noise

Solutions

- Site data centers away from residential and community spaces.
- Install noise barriers.
- Use alternative backup power sources, like natural gas, hydrogen fuel cells, or battery power.





Scan for more info about noise impacts and solutions

Important Considerations

- Early community engagement is important to educate the public and avoid miscommunication.
- Data centers occupy large tracts of land and require significant development, so it's important that these companies understand and invest in the community.
- Very dynamic industry—new laws are being passed every day, and technology is rapidly changing.
- Spacing of the buildings to account for large duct banks and heat exchange is a concern.
- Public ROW is getting crowded very fast with all the ductwork and utilities needed for power and water.



Community Implementations

Zoning

- Classify as special/conditional use to integrate siting, design, setback, traffic, etc. requirements into zoning ordinances.
- Examples - Industrial Tech Center, modified warehouse, etc.
- Prohibiting data center development within a certain radius of residential areas

Infrastructure

- Negotiate street, traffic, or utility improvements as a condition of data center development
- Negotiate creation of parks or other community areas as a condition of data center development
- Active coordination with utilities to ensure sufficient service

Key regulation method: Implement conditional uses based on community needs

Community Implementations

Air

- Require annual reporting for backup generator testing
- Limit the number of generators that can be operated at one time
- Require alternative backup power sources, like natural gas, hydrogen fuel cells, or battery power.

Water

- Mandate data centers to submit annual water consumption reports through the development agreement
- Communities with their own water utilities can regulate water use
- Prohibit water cooled systems and require closed-loop or air cooling

Key regulation method: Implement conditional uses based on community needs

Community Implementations

Energy

- Mandate data centers to submit annual energy use reports through the development agreement
- Implement a municipal electricity tax
- Mandate adherence to 2024 International Energy Conservation Code (IECC).

Noise

- Set performance standards for noise levels at the property line
- Require monitoring and annual reports
- Siting away from residential areas
- Enforce Illinois Pollution Control Board standards.

Key regulation method: Implement conditional uses based on community needs

Future Technologies and Improvements

- Using AI to automate tasks, predict failures, and optimize power usage.
- Using liquid or immersion cooling instead of air cooling.
- Deploying smaller data centers closer to users and devices for real-time processing, reducing latency and energy for data transfer.
- Utilizing renewable energy and renewable materials.
- Reusing excess heat that is a byproduct of these facilities, repurposed to heat houses and businesses.
- BorgWarner TurboCell modular turbine generator reduces emissions and allows for flexible fuel types like natural gas, propane, diesel, and hydrogen



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Recent Policies (in progress) in Illinois

- Gov. Pritzker Pauses New Data Center Tax Incentives
- POWER Act (SB4016/HB5513)
  - Mandates water resource planning, quarterly water usage reporting, water scarcity plans, and Water Impact Permits with public hearings and renewal every 5 years
  - Requires compliance with stringent energy codes and annual energy and water reporting to the Illinois Commerce Commission
  - Requires cumulative impact assessments, public notice, and community benefits agreements for data centers
- Data Center Energy and Water Reporting Act
  - Requires data centers to report energy and water consumption on an annual basis.
  - Illinois Power Agency to conduct a comprehensive study on the impact that data centers in the State are having on rate-paying customers

These items to be reviewed at next veto session in November

Thank You

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