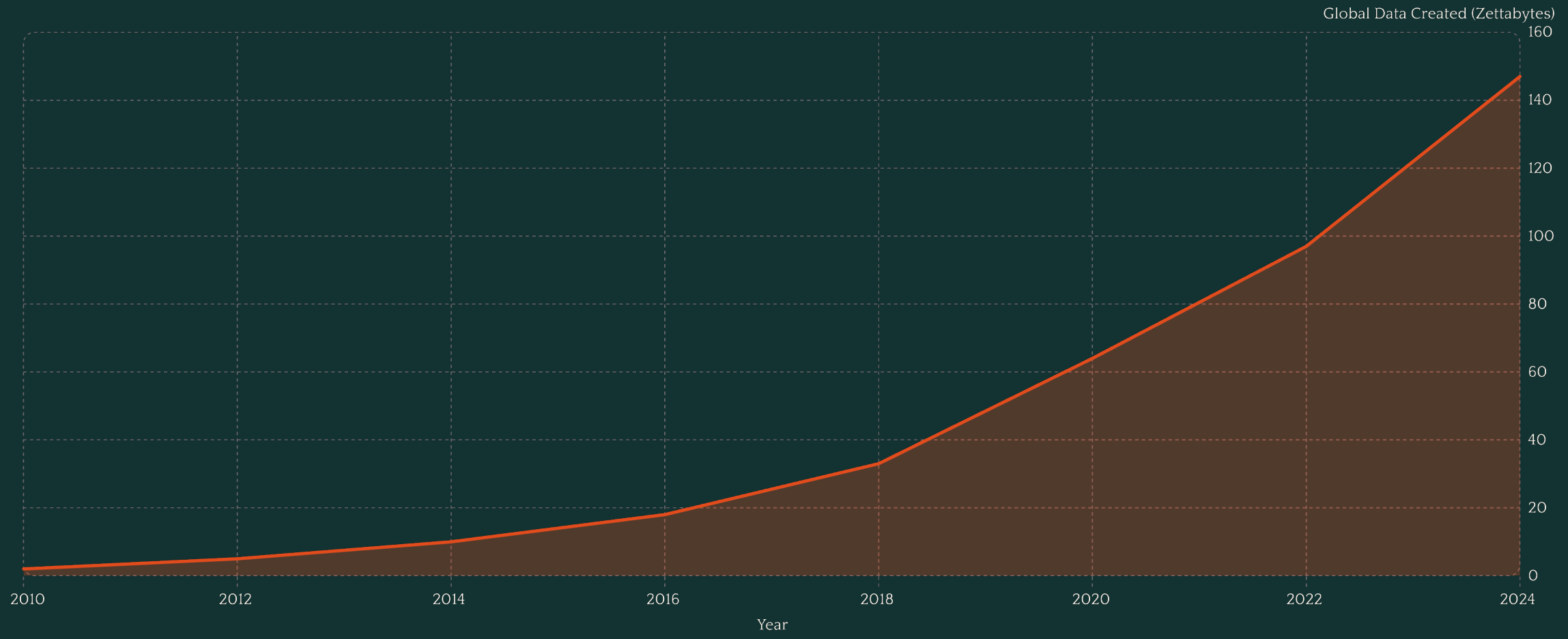
Planning for Data Center Development

Franklin County Planning Department



The Data Explosion Is Accelerating



Source: IDC Global DataSphere Report estimates

Why Data Creation Is Accelerating

AI & Automation

Generative AI and machine learning workloads demand massive, continuous compute power.

Always-On Connectivity

Streaming, e-commerce, and remote work require 24/7 uptime and low-latency infrastructure.

Digital Transformation

Corporate and government migration to cloud platforms is driving sustained facility investment.

IoT Expansion

Billions of connected devices —from smart cities to industrial sensors — generate continuous data streams.



Defining a Data Center?

A data center is a dedicated facility housing computing infrastructure —servers, storage, and networking —that stores, processes, and distributes digital data. They vary by scale and purpose.



Hyperscale

Massive facilities (100,000+ sq ft) operated by cloud giants like AWS, Google, and Microsoft.



Enterprise

On-premise facilities serving a single organization's internal IT needs.



Edge

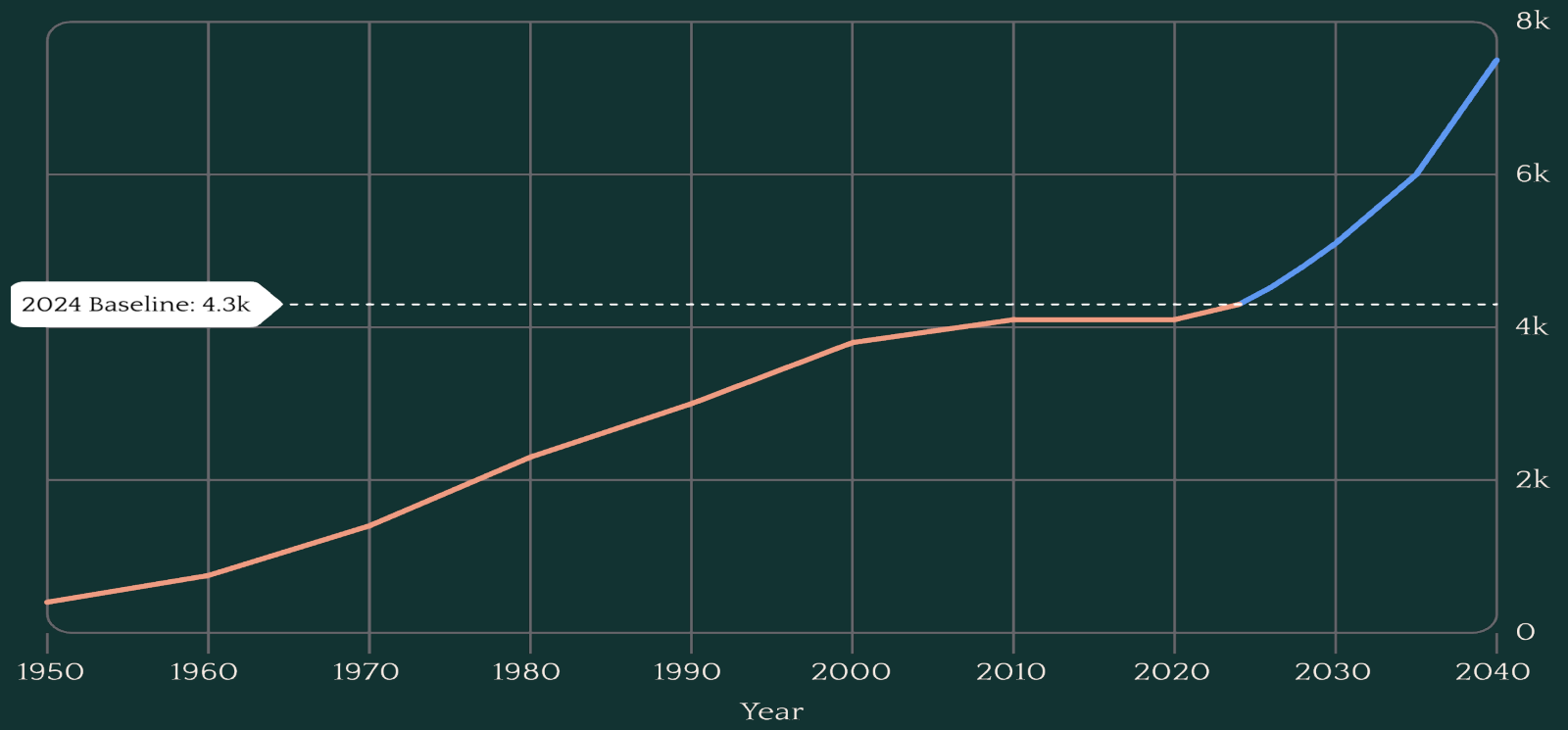
Smaller, distributed sites near end users to reduce latency for real-time applications.



Micro

Compact, modular units deployed in dense urban areas or remote locations.

Power Constraints



Historical data from EIA. Projections assume ~3.5% annual growth driven by AI/data center buildout, EV adoption, and industrial electrification

Concerns

Regional Grid Pressure

New generation on the PJM grid is not keeping pace with decommissioning and additional demand.

Resident Impacts

Rate and reliability impacts from large load power consumption compounding existing grid limitations.

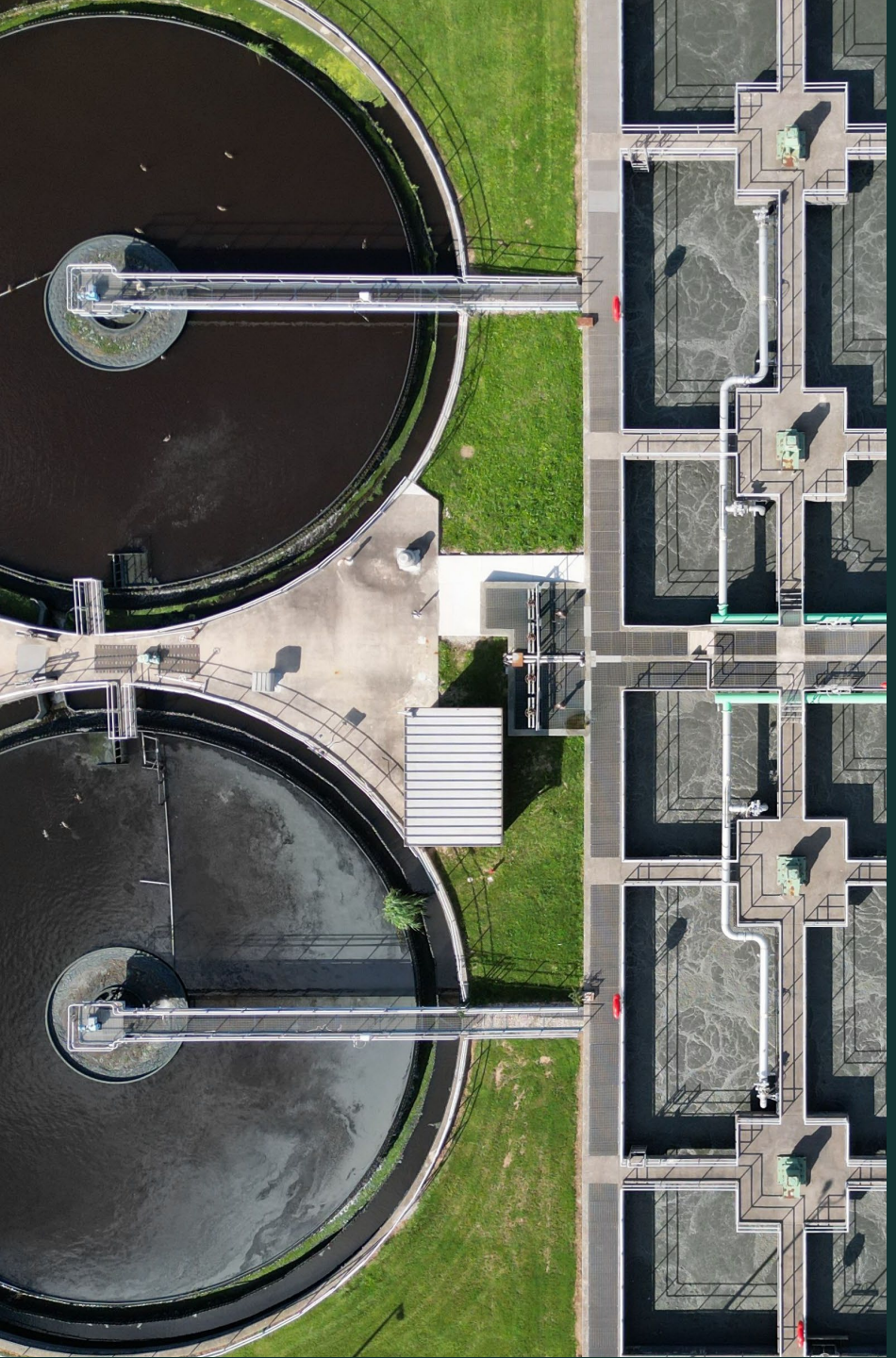
Considerations

On-Site Power Generation

Allow for context-appropriate on-site power generation to limit impacts to the grid.

Back Up Generators

Consider benefits and burdens of back up generator use during power outages and extreme heat and cold events.



Water Use & Discharge

Water Consumption

Evaporative cooling systems can consume millions of gallons of water per day.

Water-Stressed Regions

Significant concerns in water-stressed regions.

Strain on Infrastructure

Potential strain on municipal water supply and sewer systems.

Discharge Impacts

Discharge temperature, chemical treatments, and impacts on local waterways.

Required Assessments

Planning commissions should require water use and discharge impact assessments.

Regulatory Considerations

Water recycling, alternative cooling technologies, and drought contingency plans.

Cumulative Demand

Importance of evaluating cumulative water demand from multiple facilities in a region.

Noise Considerations

Noise Sources

Cooling equipment, generators, and rooftop fans create continuous mechanical noise. Backup generator use and testing adds an additional level of periodic noise.

Low-Frequency Impact

Low-frequency (dBC) noise travels farther and penetrates buildings, particularly impacting nighttime conditions and wildlife.

Community Impact

Continuous operation of cooling towers, HVAC units, and backup generators can significantly impact neighboring communities.

Planning Requirements

Ordinances should require acoustical studies and set enforceable noise limits at various dB bands measured at property boundaries.

Design Standards

Design standards should include sound barriers, equipment placement, and operational restrictions.

Planning & Regulatory Considerations

Decommissioning

Data centers contain highly specialized infrastructure —raised access floors, high-voltage switchgear, custom cooling loops, and chemical refrigerants —that is costly and complex to remove. Decommissioning plans are recommended as a condition of approval, including financial assurance mechanisms (such as bonds or escrow) to ensure the operator —not the community — bears the cost of removal, site remediation, and restoration.

Setbacks & Land Use

Buffer distances from sensitive uses; screening and visual design standards. Appropriate setbacks protect nearby residences, schools, and parks from noise, light, and visual impacts while also providing safety buffers for high-voltage infrastructure. Design review should address building massing, exterior materials, landscaping, and lighting to ensure facilities are compatible with surrounding land uses and community character.

Air Quality & Emissions

Diesel generator testing and emergency use can affect local and regional air quality. Large facilities may operate dozens of diesel generators for backup power, each requiring regular load-bank testing that produces particulate matter, NOx, and other pollutants. Planners should coordinate with air quality management districts to ensure permits reflect cumulative emissions from all generators, and to establish limits on testing hours and frequency.

Planning & Regulatory Considerations (continued)



General Zoning

Overlay vs. Existing District – By right vs. Conditional Use



Emergency Services

Coordinate with local fire, police, and EMS for effective response, including specialized training and materials for data center facilities.



Accessory Structures/Equipment

Consider appropriate locations, setbacks, and screening for accessory equipment (generators, cooling units, substations).



Transparency

Ensure the process builds public trust.



Community Benefits & Mitigation

Identify opportunities for economic development, local infrastructure upgrades, and strategies to offset any adverse impacts.



Summary

Proactive communication builds public trust. Address concerns about noise, power, water, and aesthetics through transparency and clear design standards.

Growth Pressure

Data demand will continue driving facility investment for the foreseeable future.

Benefits

Jobs, tax revenue, and tech-sector attraction offer meaningful local value.

Regulatory Role

Thoughtful zoning, infrastructure coordination, and performance standards protect communities while enabling responsible development.

Questions?