A PROTECT OXMOOR PUBLIC INTEREST GUIDE

Not All Data Centers are the same.

*A plain-language guide to the seven very different things **all** called "data centers" — and the questions every neighborhood and policymaker should be asking before approving one.*

***Including:** why your hospital's server room and a 3-million-square-foot AI Factory should probably not be regulated by the same paragraph.*

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INTRODUCTION

What is a data center, really?

Why the same two words now cover seven completely different things.

WHY THIS GUIDE EXISTS

The phrase **"data center"** is used to describe seven wildly different kinds of buildings that have almost nothing in common with one another. The server room at your local hospital is called a data center. So is a 3-million-square-foot **AI Factory** that draws as much electricity as every home in the city combined. So is a Bitcoin mining warehouse. The same two words — *data center* — cover all of them. Which is roughly like using one word for "bicycle, semi-truck, and aircraft carrier."

The differences matter enormously — for your power bill, your water supply, your neighborhood, and your tax dollars.

This guide separates the seven types using plain English, so the public and policymakers can ask the right question when a new project is announced: ***which kind of data center is this, really?***

PART 1

What Kind of "Data Center" Is It Really?

If a project is described as a "data center," the most useful first question is: what is it actually comparable to? The honest answer changes the policy conversation completely.

Type of "Data Center"	Actually Comparable To
Private server room *Enterprise / hospital / bank*	Office IT infrastructure
Edge / Neighborhood Relay *Telecom node / 5G hub*	Utility cabinet or telecom shed
Shared Data Center *Colocation / "colo" facility*	Conventional industrial warehouse
Government Data Center *NSA, IRS, military, state systems*	Secure federal or state facility
Crypto Mining Data Center *Bitcoin / blockchain facility*	Industrial electrical load with no local product
Hyperscale Data Center *Cloud campus (AWS, Azure, Google Cloud)*	Major utility-scale infrastructure
AI Factory *AI Data Center / AI Computing Campus*	**Industrial megaproject — comparable in scale to a steel mill, refinery, or power plant**

The bottom row is what is currently proposed for Oxmoor Valley. If a steel mill, refinery, or power plant were being sited within one mile of homes, schools, and churches in Birmingham, no one would suggest skipping the public hearing. The question worth asking is whether the existing zoning category for "data centers" was ever designed for a facility on that scale.

PART 2

Why Existing Zoning Codes Struggle With This

The strongest governance argument is also the most reasonable one: the rules were not written for the thing now being proposed under them.

Most municipal zoning ordinances were written before hyperscale AI infrastructure existed. As a result, many cities are now attempting to regulate facilities with *city-scale* power and water demand using ordinances originally written for conventional office technology uses.

The Birmingham Zoning Ordinance recognizes a category called "Data Center." That single category currently covers:

- a hospital storing patient records,
- a colocation building leasing rack space to several local businesses,
- a cloud campus serving global digital services,
- and an AI Factory that may consume more electricity than every home in the city combined.

These facilities have almost nothing in common except that they all contain computers. Regulating them under a single category is not a technical problem — it is a fairness and public-process problem. The ordinary public protections that apply to industrial megaprojects — environmental review, water and grid impact analysis, binding setbacks, decommissioning bonds, and a real public hearing — do not automatically attach to something called a "data center" under current zoning.

This is the governance question worth raising at every public hearing, in every records request, and in every conversation with elected officials:

> ***"Is the Birmingham Zoning Ordinance, in its current form, capable of distinguishing between a hospital server room and a 300-megawatt industrial AI Factory — and if not, should it be approving the latter under rules written for the former?"***

PART 3

Why This Matters at Your Kitchen Table

If you only lose power during storms, you may be wondering why any of this matters to you. Here are four things every Birmingham resident should understand.

1. The grid is one shared pie.

Your electricity does not come from your house. It comes from the same regional power grid that serves every home, hospital, school, traffic light, and business around you.

That grid was built for the customers already here. There is no spare warehouse of electricity sitting in reserve.

When a giant new customer plugs in, it does not bring its own power. It takes a slice of the same pie everyone else is eating from.

2. Somebody pays to widen the grid — and it's usually you.

To serve a 300-megawatt customer, Alabama Power needs new power plants, new substations, and new transmission lines. Those cost billions.

Under current law, those costs go into the "rate base" — the pool of expenses recovered from all customers through monthly bills.

The new neighbor may pay for their own driveway (substation). They do not pay to widen the highway (the grid).

That is exactly why Alabama Senate Bill 270 and House Bill 403 were filed this year by bipartisan legislators — to change that.

3. Water is the question nobody answers directly.

Cooling-system technology matters. "Closed-loop" cooling uses far less water day-to-day than older evaporative systems, but it does not eliminate water use.

Closed loops still require: initial charging (millions of gallons to fill the system); periodic blowdown discharge (water replaced as it accumulates contaminants); makeup water for losses; and emergency evaporative supplements that some ordinances permit in hot weather.

The right policy question is not "how many gallons?" — it is "what is the binding cap, in writing, and what counts as an emergency exception?"

Without a binding numerical cap and an enforceable discharge agreement, "closed-loop" is a design choice — not a guarantee.

4. Heat and noise do not disappear.

A facility this size exhausts the heat of a small city, around the clock. That waste heat can raise surrounding nighttime temperatures and residential cooling demand.

Households within roughly a mile may see higher summer cooling costs as a result.

Industrial cooling fans run continuously. The result is a constant low-frequency sound at the property line — closer in character to a distant highway than to ordinary commercial noise.

Constant industrial sound has documented effects on wildlife, pets, and livestock, often before people consciously notice it.

Bottom line: when you hear that a facility "powers 300,000 homes' worth of computing," the right reaction is not *"sounds productive."* The right question is: ***where is that electricity coming from, and who is paying to deliver it?***

PUTTING THE NUMBERS IN HUMAN TERMS

A proposed 300 megawatt, like the one proposed for Oxmoor Valley would use in one year:

186,000 - 230,000 Alabama homes' worth of electricity, running 24 hours a day, every day.	**≈ 2x** the total annual residential electricity use of the entire City of Birmingham.	**Unknown** binding daily water cap. The ordinance requires closed-loop cooling but sets no enforceable consumption limit, no public reporting requirement, and broad emergency exceptions.

Sources: *Average Alabama residential electricity use ≈ 14,000 kWh/year (U.S. Energy Information Administration). Birmingham residential household count ≈ 90,000 (U.S. Census). Birmingham Zoning Ordinance Amendments, Section 5 D, paragraphs 15–17. Greene and Butler v. Nebius, et al., Complaint, Circuit Court of Jefferson County (May 13, 2026).*

"BUT THE DEVELOPER IS PAYING FOR THEIR OWN SUBSTATION."

This is the standard utility talking point. It is also incomplete. The substation is the ***driveway*** — the on-ramp connecting one customer to the grid. The substation does not generate one watt of electricity. It just lets the new customer pull power *from the system that already exists.*

The **grid itself** — the power plants, the high-voltage transmission, the regional network — was sized for the customers already here. Adding a customer that uses the equivalent of every home in Birmingham requires new generation. Under regulated rates, the cost of that new generation goes into the rate base, which is recovered from ***all*** customers — residential included — through monthly bills.

That is exactly why Alabama State Senator Lance Bell (R-Pell City) introduced **Senate Bill 270**, and State Representative Neil Rafferty (D-Birmingham) introduced **House Bill 403** in February 2026 — to require data center operators to pay the *full* cost of grid infrastructure upgrades. In Senator Bell's words: *"Alabama families and businesses should never foot the bill for someone else's private profit."*

If the utility's assurance were already true, those bills would not be necessary. Watch what the utility and the data center industry do with that legislation. The answer is in their lobbying — not in their press releases.

"BUT THE FACILITY USES CLOSED-LOOP COOLING."

Closed-loop cooling is a meaningful improvement over older evaporative systems. It is ***not*** a guarantee that the facility has no water or heat impact on the surrounding community. Three points the public deserves to understand:

1. **The heat still leaves the building.** A closed loop circulates water through the facility, picks up heat from the GPU chips, then transfers that heat to the outside air through chillers, dry coolers, or cooling towers. The water stays in the loop. The heat does not. "Closed-loop" and "no heat island" are not the same thing.

2. **The water still has to be changed.** Closed loops require initial charging (millions of gallons to fill the system), routine makeup water, and periodic blowdown discharge as the loop accumulates contaminants, scale, and biological growth. The Birmingham amended ordinance

itself acknowledges this in paragraph 17, requiring procedures for "cleaning, flushing, or blowdown activities" and prohibiting "uncontrolled discharge to stormwater systems, surface waters, or adjacent properties." If the discharge were trivial, no such procedure would be needed.

3. The ordinance permits evaporative supplements. Section 5 D, paragraph 15 of the amended ordinance limits potable water use for cooling to "initial system charging, system maintenance, *emergency operations*, or other limited circumstances approved by the City." What counts as an emergency, how long it can last, and how much water it can require are not defined in the ordinance. During a heat wave — the exact time the public water supply is most stressed — the facility may be permitted to switch into water-intensive evaporative mode.

The honest summary: closed-loop cooling is a design choice that *can* reduce day-to-day water consumption significantly. Whether it actually does, in any specific facility, depends on engineering specifications, binding consumption caps, enforceable discharge rules, and a defined limit on emergency exceptions — none of which currently exist in the ordinance as binding numerical requirements.

PART 4

The Seven Categories at a Glance

A quick visual reference for distinguishing data center types by community impact. (If your eye lands on a row full of red — that is the point.)

Type of Data Center	Power	Water	Jobs	Tax Abatement	Community Impact
AI Factory *AI Data Center / AI Computing Campus*	EXTREME	EXTREME	MODERATE	HIGH	Greatest grid, water, heat, noise, and infrastructure exposure of any facility type.
Hyperscale *Cloud Computing Campus*	HIGH	HIGH	MODERATE	HIGH	Major grid and water demands. Heavy abatement requests.
Crypto Mining *Cryptocurrency Data Center*	EXTREME	HIGH	MIN.	LOW	Highest scrutiny: extreme power use, almost no local benefit.
Shared (Colo) *Colocation Facility*	MODERATE	MODERATE	MODERATE	MODERATE	Conventional industrial use. Standard zoning review.
Government *Government Data Center*	MODERATE	MODERATE	HIGH	MODERATE	Strong, stable employment. Limited tax base.
Private *Enterprise Server Room*	LOW	MIN.	LOW	LOW	Minimal community impact. Standard building permit.
Edge *Neighborhood Relay Facility*	LOW	MIN.	MIN.	LOW	Small footprint. Cooling-fan noise is the main concern.

Note: Impact ratings reflect typical conditions for the category. Specific projects vary based on size, technology, design, and conditions imposed by local government.

PART 5

Each Data Center Type in Detail

Beginning with the AI Factory — the category currently driving the largest public-policy decisions, and the type proposed for Oxmoor Valley.

★ FLAGSHIP CATEGORY ★

AI Factory

also known as: AI Data Center / AI Computing Campus / a specialized type of "hyperscale" data center

WHAT IT IS

A specialized industrial facility purpose-built to train and run artificial intelligence systems. Uses high-power GPU chips that generate extreme heat and require massive cooling. This is the type of facility currently proposed for Oxmoor Valley.

WHAT IT DOES

Trains large AI models and runs AI tools (chatbot services, image generators, autonomous-system back-ends) continuously at full capacity, 24 hours a day.

SIZE & SCALE

Very large to enormous — 1 million to 5+ million sq ft, and growing.

REAL-WORLD EXAMPLES

Proposed Nebius Birmingham AI Factory (79+ acres, 300 MW). OpenAI / Microsoft AI campuses. Meta AI training facilities. xAI Memphis.

POLICY IMPACT AT A GLANCE

POWER	WATER	LOCAL JOBS	TAX IMPACT
EXTREME	HIGH	MODERATE	HIGH
500 to 2,000+ megawatts. May require a dedicated power plant or substation. Can exceed the total residential power demand of an entire mid-sized city.	Cooling water demand depends on system design. Closed-loop cooling (required by the Birmingham amended ordinance) reduces day-to-day consumption substantially compared to evaporative systems, but does not eliminate it. Initial charging, makeup water, blowdown discharge, and emergency evaporative supplements remain.	Highly automated. Fewer permanent jobs than the size suggests; construction jobs are temporary. Job counts often quoted include construction-phase headcount.	Large nominal investment value, but aggressive tax incentive requests are common. Net public benefit depends entirely on the terms negotiated.

KEY QUESTIONS FOR POLICYMAKERS

- GRID & INFRASTRUCTURE — Will any new power plants, transmission lines, or substations be required anywhere in the utility's service territory, and will those costs be added to the rate base recovered from all customers? Reminder: TVA imposed its first-ever rolling blackouts in north Alabama during Winter Storm Elliott (Dec. 2022). The grid does not have unlimited spare capacity.
- CAPACITY VS. OPERATING LOAD — What is the binding, enforceable maximum operating capacity — not the engineered build-out capacity? Will the developer agree, in writing, that the facility will not operate above its initially-approved capacity for the life of the project without a new public hearing? If yes, no harm. If no, the policy question is: what is actually being approved?
- HEAT ISLAND — What is the projected ambient temperature increase for homes, schools, and businesses within one mile? Industrial cooling exhausts waste heat continuously, which can raise local nighttime temperatures and increase residential cooling demand for adjacent properties. "Closed-loop" cooling does not eliminate the heat — it rejects the same heat to the surrounding air through chillers, dry coolers, or cooling towers. The heat still leaves the building.
- NOISE — What are the documented decibel levels at the property line, day and night? Cooling fans, transformers, and generator testing produce constant low-frequency sound that affects sleep, wildlife, pets, and livestock. Has a pre-construction and post-construction acoustic study been required and made public?
- WATER (BINDING CAP) — What is the binding daily and annual water consumption cap, in gallons, written into the development agreement? Without a numerical cap, "closed-loop cooling" is a design preference rather than an enforceable protection.
- WATER (CHANGE-OUT & DISCHARGE) — What is the projected frequency and volume of cooling-system blowdown discharge? Where does it go — municipal sewer, surface water, or private treatment? What chemicals (biocides, corrosion inhibitors, anti-scaling agents) will be in the discharge, and at what concentrations?
- WATER (EMERGENCY EVAPORATIVE MODE) — Under what specific conditions would the facility switch from closed-loop to evaporative cooling? Is there a binding cap on duration? Is the City required to be notified in advance? During the hottest week of a drought year, when residential customers are most at risk, what protects the public water supply?
- JOBS & WAGES — What is the binding, enforceable commitment on permanent local jobs and wages, separated from construction-phase headcount and marketing estimates?
- INCENTIVES — What tax abatements, utility rate concessions, infrastructure cost-shifting, or other public subsidies are being granted, and what is the calculated public return per dollar foregone?
- ENVIRONMENTAL REVIEW — What air quality, stormwater, emissions, and (where on-site power generation is proposed, including fuel cells) combustion review has been required?
- DECOMMISSIONING — When this technology becomes obsolete or the operator leaves Birmingham, who is legally responsible for tearing down the facility and cleaning up the site? Is a decommissioning bond required? At what amount? Held by whom? Without a bond, the answer is: the public.

Hyperscale Data Center

also known as: Cloud Computing Campus — the back-end of services like Amazon Web Services, Google Cloud, Microsoft Azure

WHAT IT IS

A massive campus of buildings built and owned by a major tech company to power global digital services. (An AI Factory is a specialized type of hyperscale data center.)

WHAT IT DOES

Runs cloud storage, streaming video, email, business software, and consumer apps used worldwide, 24/7.

SIZE & SCALE

Very large — multiple warehouse-sized buildings, 500,000 to 3+ million sq ft.

REAL-WORLD EXAMPLES

Amazon Web Services. Microsoft Azure. Google Cloud. Apple iCloud infrastructure.

POLICY IMPACT AT A GLANCE

POWER	WATER	LOCAL JOBS	TAX IMPACT
HIGH	HIGH	MODERATE	HIGH
100 to 1,000+ megawatts. Can strain regional grids.	Millions of gallons per day for cooling systems.	200 to 500 permanent jobs despite massive footprint. Highly automated.	Large potential property tax base, but major abatements are frequently requested.

KEY QUESTIONS FOR POLICYMAKERS

- GRID & INFRASTRUCTURE — Does utility capacity exist without grid upgrades that get socialized across all ratepayers?
- HEAT ISLAND — Same questions as for AI Factory; the waste heat is comparable.
- NOISE — Acoustic studies and binding sound-level limits at the property line.
- WATER — Supply agreements, drought protocols, and impact on residential pressure.
- INCENTIVES — Are tax abatements proportionate to the small number of permanent jobs actually created?
- DECOMMISSIONING — Bond required for eventual site cleanup and equipment removal?

Crypto Mining Data Center

also known as: Cryptocurrency or Blockchain Data Center — in plain English, a Bitcoin mining facility

WHAT IT IS

A facility filled with computers running continuously to validate cryptocurrency transactions — a process called “mining.”

WHAT IT DOES

Records blockchain transactions (Bitcoin and similar). Produces no product or service for the local community — it earns cryptocurrency as a reward.

SIZE & SCALE

Varies — single warehouse to large campus.

REAL-WORLD EXAMPLES

Bitcoin mining operations in Texas, Wyoming, and abroad. Frequently subject to local opposition and state-level moratoriums.

POLICY IMPACT AT A GLANCE

POWER	WATER	LOCAL JOBS	TAX IMPACT
EXTREME	HIGH	MINIMAL	LOW
Maximum constant draw — power consumption is the entire business model.	Significant cooling required.	Highly automated. Very few jobs per megawatt of power consumed.	Grid strain can raise rates for other ratepayers. Produces no local product or service.

KEY QUESTIONS FOR POLICYMAKERS

- Is there any local economic benefit proportionate to the grid strain?
- Will residential and small-business electricity rates rise?
- Has a moratorium been considered, as in other states?
- Same heat, noise, water, and decommissioning questions as larger facilities apply.

Shared Data Center

also known as: Colocation Facility or "Colo" — a building where multiple companies rent server space

WHAT IT IS

A building where many different companies rent space to store their own servers side by side.

WHAT IT DOES

Acts like a landlord for servers — provides space, power, cooling, and internet. Each tenant manages its own equipment.

SIZE & SCALE

Medium to large — 50,000 to 500,000 sq ft.

REAL-WORLD EXAMPLES

Equinix. Digital Realty. A local bank and a regional retailer might share the same building.

POLICY IMPACT AT A GLANCE

POWER	WATER	LOCAL JOBS	TAX IMPACT
MODERATE	MODERATE	MODERATE	MODERATE
10 to 100 megawatts.	Cooling systems required, at conventional industrial scale.	50 to 300 permanent jobs. Construction-phase employment in addition.	Property tax revenue; some localities offer abatements.

KEY QUESTIONS FOR POLICYMAKERS

- Is the site properly zoned industrial?
- What is the truck and vendor traffic impact?
- Are tax abatements being requested, and are they justified?
- Noise and decommissioning provisions should still be in writing.

Government Data Center

also known as: Government or Military Computing Facility

WHAT IT IS

Owned and operated by a government agency or military branch. Subject to strict security and legal requirements. Funded by taxpayers.

WHAT IT DOES

Stores classified information, government records, tax data, military systems, and critical national infrastructure.

SIZE & SCALE

Varies widely — small offices to large secure campuses.

REAL-WORLD EXAMPLES

NSA data centers. IRS systems. Department of Defense networks. State benefits and licensing systems.

POLICY IMPACT AT A GLANCE

POWER	WATER	LOCAL JOBS	TAX IMPACT
MODERATE	MODERATE	HIGH	MODERATE
Moderate to high, depending on classification level and function.	Conventional cooling.	Well-paid, stable, long-term jobs. Clearance requirements keep employment local.	Federal facilities may be tax-exempt; state and local vary.

KEY QUESTIONS FOR POLICYMAKERS

- Federal facility = limited local leverage. State or local = real negotiating room.
- Workforce pipeline agreements are the highest-leverage ask.
- Stable, secure employment generally outweighs limited tax base concerns.

Private Data Center

also known as: Enterprise Data Center or Company Server Room — a facility for one company's internal use

WHAT IT IS

A room or building owned by one company for its own internal use only. No outside customers.

WHAT IT DOES

Stores the company's own files, email, payroll, patient records, and internal software.

SIZE & SCALE

Small — often one room or one building, sometimes inside an existing facility.

REAL-WORLD EXAMPLES

A hospital storing patient records. A bank running internal systems. A university managing student data.

POLICY IMPACT AT A GLANCE

POWER	WATER	LOCAL JOBS	TAX IMPACT
LOW	MINIMAL	LOW	LOW
Predictable, stable draw.	Conventional building cooling.	Mostly internal IT staff.	Internal cost center; no new tax base.

KEY QUESTIONS FOR POLICYMAKERS

- Standard building permits. No special zoning typically required.
- Minimal community impact. This is the kind of "data center" that probably belongs near other commercial uses.

Edge Data Center

also known as: Neighborhood Relay Facility — small, located close to where people live

WHAT IT IS

A small facility located close to where people live or work, designed to deliver fast response times for nearby users.

WHAT IT DOES

Reduces delay people experience when streaming video, using apps, or connecting to autonomous systems like self-driving vehicles.

SIZE & SCALE

Very small — closet-sized to a small utility building.

REAL-WORLD EXAMPLES

Small facilities near hospitals for real-time data. Telecom-owned nodes. 5G network support hubs.

POLICY IMPACT AT A GLANCE

POWER	WATER	LOCAL JOBS	TAX IMPACT
LOW	MINIMAL	MINIMAL	LOW
1 to 10 megawatts.	Minimal.	Often unmanned; remote-managed.	Minimal tax base; often on existing telecom or utility property.

KEY QUESTIONS FOR POLICYMAKERS

- Siting near residential areas is the most common policy issue.
- Cooling-equipment noise can be a real nuisance concern at residential property lines.

THE BOTTOM LINE

When a project is described to the public as "just a data center," the first question is: **which kind?**

A neighborhood relay node and an AI Factory are both "data centers" in name only. One serves the surrounding community with minimal impact. The other can draw electricity comparable to every home in the city combined, consume millions of gallons of water per day, exhaust the waste heat of a small city, and operate within sight and earshot of homes, schools, and churches — around the clock, for the operating life of the facility.

The legal frameworks, public hearings, and incentives appropriate for one are not appropriate for the other. Treating them as interchangeable is how communities end up with industrial infrastructure they were never asked to approve.

Plain language. Real questions. Honest answers. That is the entire point of this guide.