



# DATA CENTERS 101

## *What Community Leaders Need to Know*

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*A practical briefing for policymakers,  
local officials, and residents*

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# THE SCALE OF AI INVESTMENT

**\$241B**

Big 5 tech capex  
in 2024 alone

**\$320B**

Projected 2025 spend  
(~1.3% of U.S. GDP)

**\$2.5T**

Forecast worldwide  
AI spending in 2026



## How AI Investment Compares to History's Biggest Bets

- Total corporate AI investment 2013–2024: \$1.6 trillion (Stanford HAI) — exceeding the Manhattan Project, Apollo program, and the Interstate Highway System combined (inflation-adjusted)
- At current pace, AI capex exceeds peak annual spending during any investment boom since WWII — only 19th-century railroad buildout (6% of GDP) was larger
- U.S. private AI investment in 2024: \$109 billion — 12x China, 24x the U.K.
- Unlike past mega-projects, AI investment is primarily private-sector funded — financed from cash flows of the most profitable companies in history
- AI spending was a major driver of U.S. GDP growth in 2024–25
- Data center construction spending now exceeds all U.S. office construction combined

# WHY AI MATTERS: A ONCE-IN-A-GENERATION TECHNOLOGY

*Economists classify AI as a General-Purpose Technology (GPT) — a category reserved for innovations so fundamental they reshape entire economies across multiple generations.*



## Steam Engine

1760s–1840s

Powered factories & rail; took 60+ years to transform the economy



## Railroads

1830s–1900s

Connected markets, moved people & goods; created new industries and cities



## Electricity

1880s–1940s

Factories took 30 years to redesign around electric motors; then productivity soared



## Computing

1950s–2000s

Solow Paradox: computers were everywhere but productivity — until the internet arrived



## AI

2020s–?

Could raise global GDP by 7% (\$7T) over a decade; accessible via natural language to all



**The Pattern:** Every GPT initially seemed expensive and disruptive. Steam required coal mines; railroads required land grants; electrification required new power plants. **AI requires data centers.** The question is not whether AI will transform the economy — it's whether your community can leverage this technology to transform itself

# WHAT IS A DATA CENTER?



## What a Data Center IS

- A secure facility housing computer servers, storage systems, and networking equipment
- The physical backbone of the internet, cloud computing, AI, and digital services
- An industrial-scale operation requiring reliable power, cooling, and water
- Critical infrastructure for banking, healthcare, government, and everyday apps



## What it is NOT

- NOT a traditional office — typically only 30–50 full-time employees operate on-site
- NOT a factory — no physical products are manufactured or shipped
- Environmental impact — energy & water demands can rival entire neighborhoods

*As of 2026, there are over 4,500 active data centers in the U.S. with 700+ more under construction across 38 states.*

*Sources: Electric Choice (2026); EESI (2025); Congressional Research Service, R48646 (2025); WRI (2025); Heatmap News (2026)*

# TYPES OF DATA CENTERS



## Enterprise

Owned by one company (e.g., a bank or hospital) for its own IT needs. Smaller scale, on-site or nearby.

**1–10 MW**



## Colocation

Shared facility where many businesses rent space for their servers. Think of it as an "industrial office park" for computing.

**5–50 MW**



## Hyperscale

Massive campuses run by Amazon, Google, Microsoft, or Meta. These are the facilities most likely proposed in your community.

**100–1,000+ MW**



## Edge

Small, distributed sites close to users for low-latency applications like autonomous vehicles and real-time AI.

**Under 1 MW**

*MW = Megawatts of power capacity. For reference, 1 MW powers roughly 800 homes.*

*Sources: Dgtl Infra, "Types of Data Centers" (2024); Splunk, "Data Centers Explained" (2025); Congressional Research Service, R48646 (2025)*

# ENERGY DEMAND: THE #1 ISSUE

## 183 TWh

~17 million households'  
worth of electricity

U.S. data center electricity  
consumed in 2024

## 4.4%

of total U.S. electricity  
demand (2023)

## Up to 12%

projected share of U.S.  
electricity by 2028

*For reference: 1 TWh powers roughly 95,000 U.S. households per year (EIA avg: 10,500 kWh/household)*



## What This Means for Your Community

- A single large hyperscale data center can consume as much electricity as 100,000 households
- Data centers drove half of all U.S. electricity demand growth in 2025 (IEA); rate hikes of 8–25% projected in some markets by 2030
- Active Demand Response: modern facilities operate as flexible loads — they can drop power usage or shift workloads during peak hours to protect the grid
- In Loudoun County, VA, data centers consumed 21% of total power in 2023, surpassing all residential use (18%)
- Backup diesel generators at large campuses can produce significant air quality impacts
- Indiana HEA 1007: requires data centers to cover at least 80% of new power generation costs; Amazon pays own infrastructure, saving NIPSCO ratepayers ~\$1B over 15 years

# BEYOND ELECTRICITY: WATER, NOISE & LAND



## Water Consumption

- U.S. data centers consumed 17.4 billion gallons for cooling in 2023; projected 38–73 billion by 2028
- An average AI data center can use about 1.8 billion gallons per year, nearly twice the water of a town of 10,000 people
- Closed-loop cooling can cut water use by 50–70%; immersion cooling (servers submerged in dielectric fluids) eliminates water entirely but uses more electricity
- Microsoft, Oracle, and others deploying zero-water systems (e.g., direct-to-chip liquid and dry coolers using ambient air) in 2026–27 — but most existing centers still use evaporative cooling



## Noise & Air Quality

- Cooling systems produce constant noise of 55–85 dB — near EPA thresholds for impairing sleep, work, and outdoor activity
- Backup diesel generators can reach 110 dB (rock concert level) and emit significant air pollutants
- In 2024, 60 Fairfax County, VA data centers switched to backup generators simultaneously
- Residents report avoiding outdoor spaces; health impacts from chronic low-frequency noise



## Land Use & Character

- Average site: 224 acres (2024), up 144% since 2022; largest exceed 1,000 acres
- Structures reach 95+ feet tall with minimal windows
- Often targets land near green spaces and rural areas — converting open space to industrial zones diminishes health benefits
- Prince William County, VA: 2,400 acres of protected Rural Crescent proposed for data centers

# ECONOMIC TRADEOFFS

## Potential Benefits

- Loudoun County, VA: \$895M in 2025 taxes (95% of county budget); property taxes cut 10 years running
- Louisiana: Meta construction boosted sales tax 2,000%, funding \$50K teacher bonuses in one of the state's poorest parishes
- Construction jobs during multi-year build-out (Meta: 45,000+ construction jobs since 2011)
- 30–50 permanent, well-paying operations jobs per facility
- Workforce pipelines: Meta's \$115M Workforce Academy, Google's Skilled Trades, Amazon pre-apprenticeships
- Community grants: Meta's \$94M+ since inception; Google's \$75M AI Opportunity Fund

## Risks & Concerns

- Tax incentives can substantially reduce actual revenue — states rolling back abatements
- Virginia: residential bills could rise \$14–\$37/month by 2040 (9–25%)
- During operations, no net county job growth — existing workers shifted within the Information sector rather than new positions being created (Hicks, 2025)
- Infrastructure costs (water, substations, roads) may outlast the facility
- E-waste: AI chips burn out in <2 years; toxic heavy metals; most landfills unprepared
- Transparency: some developers require officials to sign NDAs before showing plans
- 14+ states have enacted temporary development pauses as of 2026

Sources: American Edge Project (Jun 2026); The Conversation (Jun 2026); POTs and PANs (May 2026); Hicks/Ball State (Nov 2025); Heatmap News (2026); MultiState (2026)



**Key principle: Separate the promises from binding, enforceable commitments.**

# THE SHIFT: TRAINING VS. INFERENCE

## Training = Building the brain

- Teaching AI by processing massive datasets — needs huge power bursts
- Concentrated in a few hyperscale campuses (rural, cheap land & power)
- High energy per session, but happens infrequently
- One training run for a frontier model: 10–100 GWh (enough to power a small city for weeks)



## Inference = Using the brain

- Every prompt, every AI search, every fraud detection check — runs 24/7 at massive scale
- Already 60–70% of AI compute spending (Deloitte); will dominate by 2030 (McKinsey)
- AI inference chips draw 700–1,000 watts each vs. 150–300 watts for traditional cloud chips
- Needs to be close to users (cities, metro areas) for fast response times

## What the Shift Means for Communities

- Training → remote/rural sites with cheap power — fewer permanent jobs, massive footprint
- Inference → pushing into populated areas — more communities will face proposals as AI adoption grows
- Indiana's position: central location, fiber backbone, and relatively affordable power make it attractive for BOTH workloads
- Modern inference facilities can be designed as flexible grid assets — ramping down during peak hours (Demand Response)

# NOT SMOKESTACK CHASING: WHY THIS IS DIFFERENT

## Traditional Smokestack Chasing

- Communities compete on tax breaks — race to the bottom
- Firms can relocate when incentives expire
- Little leverage after deal is signed

## Data Centers: Communities Have Leverage

- AI increasing demand requires more data centers
- Ongoing power, water, and fiber contracts lock them in
- Communities control what data centers need most: land, power, water, permits
- Binding CBAs can require workforce investment, environmental protections, and fiscal transparency
- Texas counties that offered tax breaks without binding commitments saw no net job growth from data centers — the lesson isn't to avoid data centers, but to negotiate proactively

## Case Study: SE Wisconsin — Building Prosperity Before the Data Center Arrives

- Racine County proactively built a regional consortium: workforce board, community college, K–12 pipeline, small business network
- Strategy: use the data center as a catalyst for broader economic development — not an end in itself
- Focused on credibility of spillover effects: STEM education, trades training, local supplier development
- Result: a model for turning a capital-intensive, labor-light industry into a platform for long-term regional prosperity

# WHAT A STRONG CBA LOOKS LIKE

A Community Benefit Agreement (CBA) is a legally binding contract between a developer/company and the community. Brookings recommends six core pillars:



## Workforce

Local hiring targets, apprenticeship programs, community college partnerships, STEM pipeline for K-12



## Fiscal Transparency

Public dashboards tracking tax revenue, jobs created, resource consumption — updated regularly



## Environmental

Water usage caps, noise limits, air quality monitoring, e-waste disposal plans, renewable energy commitments



## Community Investment

Broadband expansion, STEM education funding, small business grants, public infrastructure improvements



## Accountability

Binding terms (not voluntary pledges), clawback provisions if commitments aren't met, regular public reporting



## Ongoing Engagement

Community advisory boards with real authority, annual public hearings, dispute resolution mechanisms



**The goal: transform a capital-intensive project into a lasting platform for community prosperity.**



# QUESTIONS EVERY COMMUNITY SHOULD ASK



How much electricity will this facility consume and who pays for grid upgrades?



How many permanent local jobs will be created, and what qualifications are needed?



What is the projected water demand, and what is the source? Will it compete with residential supply?



What happens to infrastructure costs if the operator downsizes or leaves?



What specific tax revenue will the community receive — net of any incentives or abatements?



Will the developer agree to a binding Community Benefit Agreement (CBA) with public reporting?



**Brookings recommends legally binding CBAs with public dashboards tracking jobs, tax revenue, and resource use.**