

Data Centers & the AI Revolution

A Conversational Presentation for Curious Minds

What Is a Data Center?

Section 1: Demystifying the digital machinery

A Factory for Answers

- A building full of powerful chips (**GPUs**) doing billions of computations.
- Each calculation needs power — a large center uses as much as a **small city**.
- This intense computing creates heat — cooling uses **30–40%** of total energy.

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Interactive Deep Dive

Let's Discuss: Real-World Impacts

-  Show of hands — who used any kind of AI assistant in the last week, even without realizing it?
-  What did you think was happening when you asked Alexa or Google a question?
-  Does it surprise you that cooling takes as much energy as the computing itself?

Training vs. Inference

Section 2: Two fundamentally different computing jobs

Two Very Different Jobs

TRAINING

Happens Once

Reads billions of pages to learn and form pathways. This phase takes months & costs millions.

Equivalent to: Going to college.

INFERENCE

Happens Daily

Every prompt or question answered in real time. This demand is instant and never stops growing.

Equivalent to: Going to work, forever.

Interactive Deep Dive

Let's Discuss: Behind the Interface

- 💬 Did you realize that every time you use ChatGPT, a server does specialized computation just for you, in real time?
- 💬 Does it change how you think about AI to know that most of the energy is consumed answering questions — not learning?

Why So Many Facilities?

Section 3: Driving the everyday AI transition

Everyday AI Tasks At Scale



Emails

Drafts and sends personalized customer replies.



Scheduling

Manages calendars and books meetings automatically.



Proposals

Writes contextually tailored marketing copy and bids.



Videos

Generates instruction videos without film crews.

Every one of these tasks relies on continuous **inference** running on remote AI servers.

| Accelerating Drug Discovery

Traditional drug discovery takes over 10 years.
AI agents compress this timeline to months.

- **Compound Analysis:** Reviews millions of chemical candidates instantly.
- **Safety Simulation:** Runs deep biological test simulations.
- **Metabolic Predictions:** Models how human systems process drugs.

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| Predictive Disease Cures

AI synthesizes medical history, genetics, and habits to discover complex disease patterns early.

- **Global Syntheses:** Correlates diverse health and medical records.
- **Risk Modeling:** Identifies potential conditions 5–10 years early.
- **Preemptive Action:** Automatically flags targeted therapies.

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Interactive Deep Dive

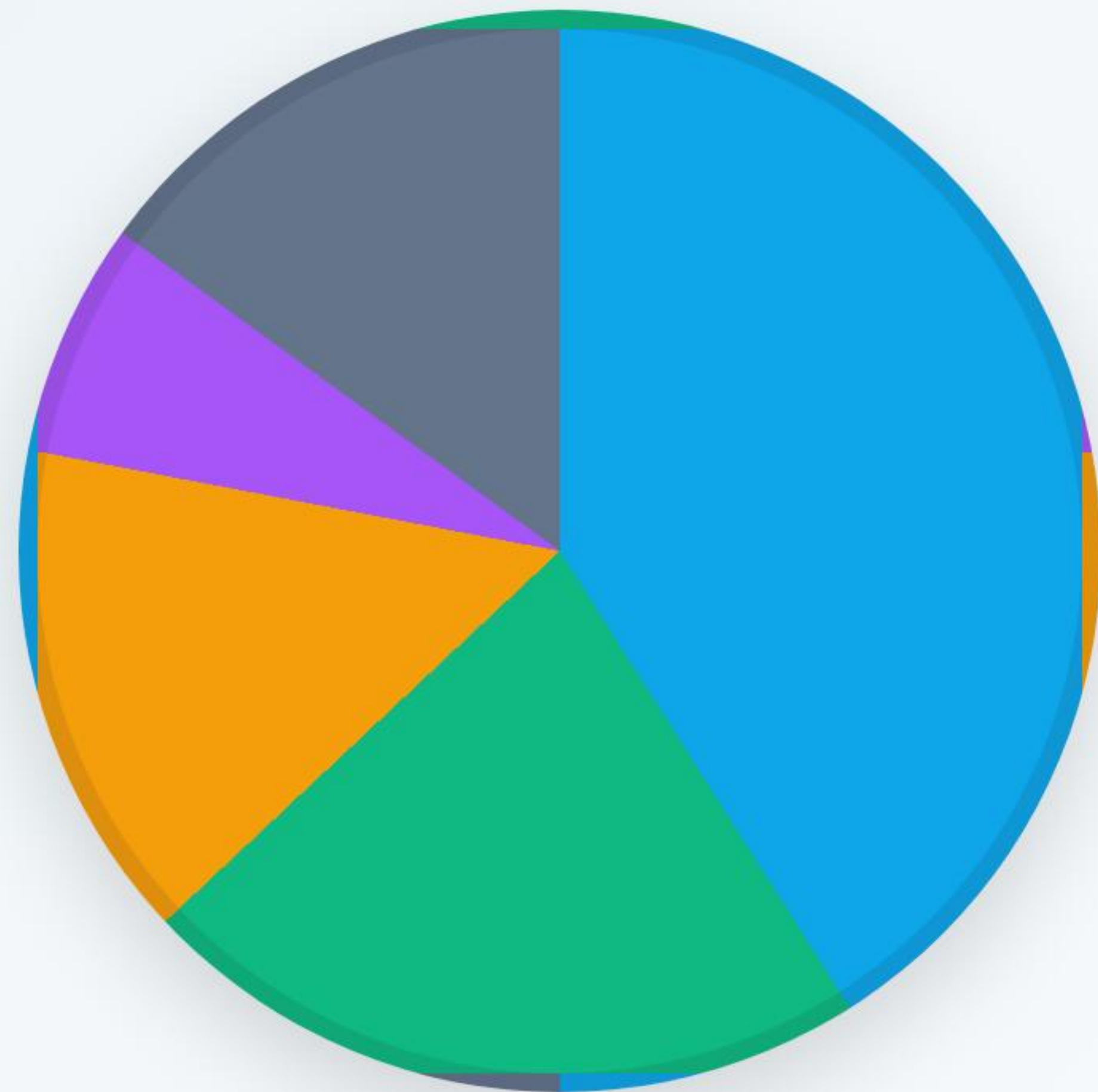
Let's Discuss: High Stakes vs. High Costs

-  Has anyone gotten an automated message recently that felt polished, yet strangely impersonal?
-  If AI could predict a severe illness risk 10 years in advance, would you want to receive that notification?
-  Does potential therapeutic progress justify massive localized infrastructure expansion?

The Memphis Colossus

Section 4: A deep case study on infrastructure impact

The Power Source Matrix



TVA Power Generation Mix

- **Nuclear** (41%)
- **Natural Gas** (22%)
- **Coal** (15%)
- **Hydroelectric** (7%)
- **Other Sources** (15%)

The Core Tension

Memphis Siting Concerns

Global Benefits: Decentralized computing breakthroughs that help medicine globally.

Local Costs: Local neighborhood burdens like toxic turbine noise and emissions in South Memphis.

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South Memphis Confrontation

GRID PRESSURE

Developers initially installed 35 unpermitted gas turbines to power the massive supercomputer array rapidly, bypassing conventional local reviews.

CIVIC BACKLASH

Public outcry over localized toxic nitrogen oxide emissions prompted legal challenges, forcing a transition to standard grid power.

Interactive Deep Dive

Let's Discuss: Accountability & Power

- 🗨️ Does it alter your perspective to know that data centers and private homes draw from the same electricity grid?
- 🗨️ Do you think the local community in South Memphis was treated fairly? What should have occurred differently?
- 🗨️ Who should have the final say in data center siting — corporations, municipal leaders, or local neighbors?

Is This All Necessary?

Section 5: Forecasting the actual demand horizon

The Scale of Siting Realities



Projections

Current rapid infrastructure curves are forecasts — not immutable facts.



Panic Buying

Some utility building is fueled by competitive fear, not actual need.



Efficiency

Algorithmic gains could slash energy requirements significantly.

Compare this buildout to the **Fiber Bubble** of 2000: years of overcapacity followed the hype.

| A Genuine Inflection Point

“We are at a genuine inflection point. The technology being built inside these data centers could transform medicine. But the way we build for that future — who bears the burden, who gets the benefit — is a choice society is making right now, largely without public conversation. That’s worth changing.” ”

Questions & Discussion

The floor is open for your thoughts.