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Energy Supply Chain Overviews

August 21	Battery Storage
Sept 11	AI Data Centers: Power & Electrical Infrastructure
Sept. 25	Natural Gas: Upstream
Oct. 2	AI Data Centers: Advanced Cooling
Nov. 6	Geothermal
Nov. 20	AI Data Centers: Steel Infrastructure

www.wemakeithere.org/energy/

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AI Data Centers Series

- Overview
- Power & Electrical Infrastructure Manufacturing
- Advanced Cooling & Thermal Management
- Structural Steel, Racking, and Enclosures

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INDUSTRY
OVERVIEW
SEGMENTS

AI DATA CENTERS: OVERVIEW

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MENU

NEWSLETTERS

THE CAPITOL

Data center boom inspires flurry of bills from Pa. lawmakers hoping to make state an AI hub

by Abigail Hakas of Next Generation Newsroom | July 15, 2025

INDUSTRY SNAPSHOT

The U.S. Aims To Be An AI Data Center Powerhouse. Trump And Big Tech See This State As The Epicenter.

Licensing

KIT NORTON | 02:40 PM ET 07/22/2025

President Donald Trump and Big Tech intend to make Pennsylvania a major hub for artificial intelligence data centers, given a recent $92 billion funding announcement. The move positions natural gas to be the fuel backing America's AI ambitions.

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ENR Engineering News-Record

Artificial Intelligence

Power Hungry: AI-Fueled Data Center Boom Sets Energy Delivery's New Course

By Debra K. Rubin, Johanna Knapschaefer

Aligned Data Centers unveils mega-scale AI campus in Ohio

Saf Malik July 24, 2025 03:15 PM

Aligned Data Centers has revealed plans to build a major data centre campus in Central Ohio, transforming a 197-acre brownfield site into a hyperscale and AI infrastructure hub.

Project Goal

- Provide support for small and medium-sized manufacturers interested in providing components for the potential market opportunity presented by AI data centers in the region, nationwide, and globally

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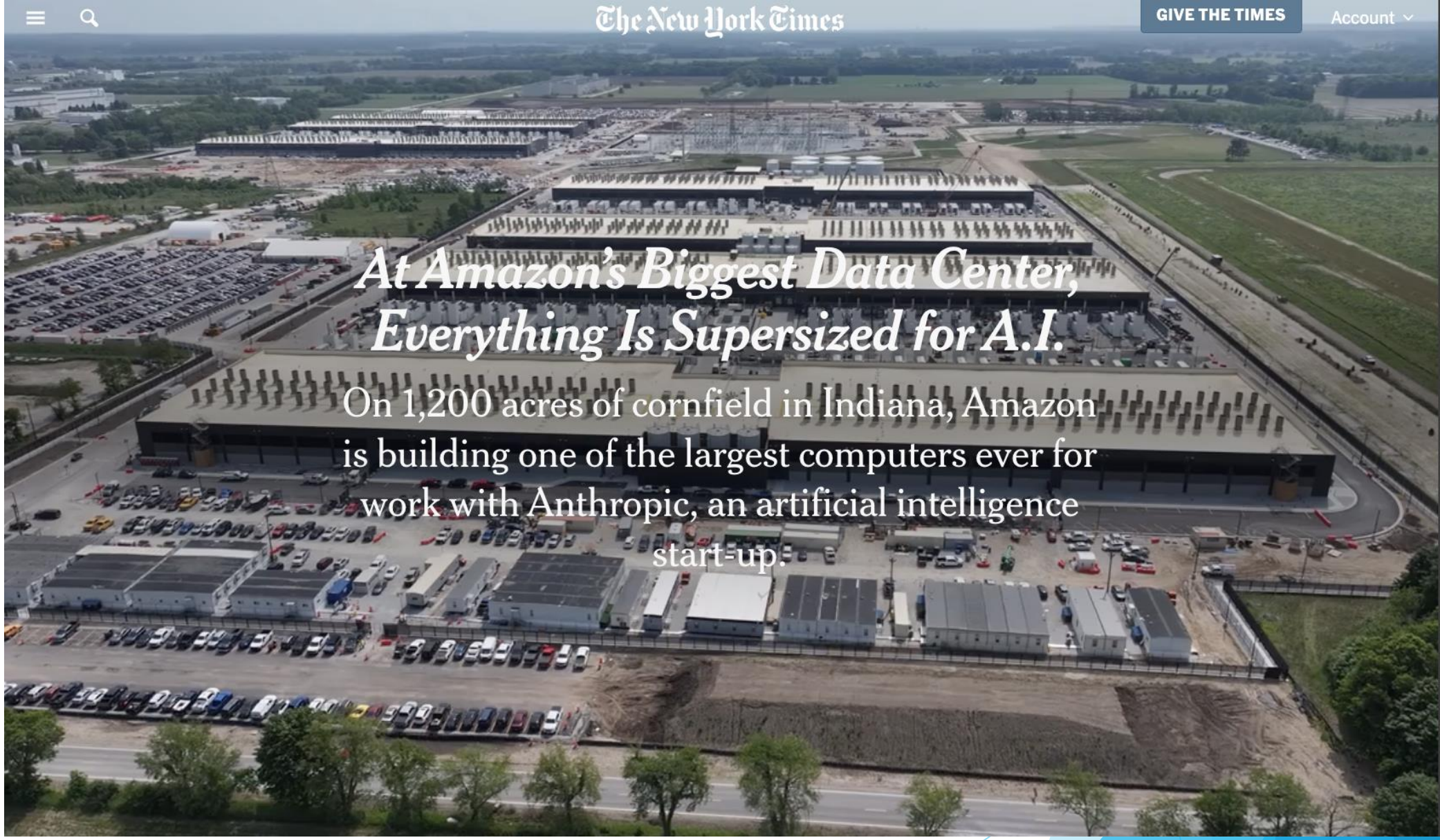
Today's Agenda

- What is an AI Data Center?
- Seven Things to Know About Data Centers
- AI Data Center Components (Computing, Energy, Building)
- Emerging Technologies
- Industry Resources
- Questions & Answers

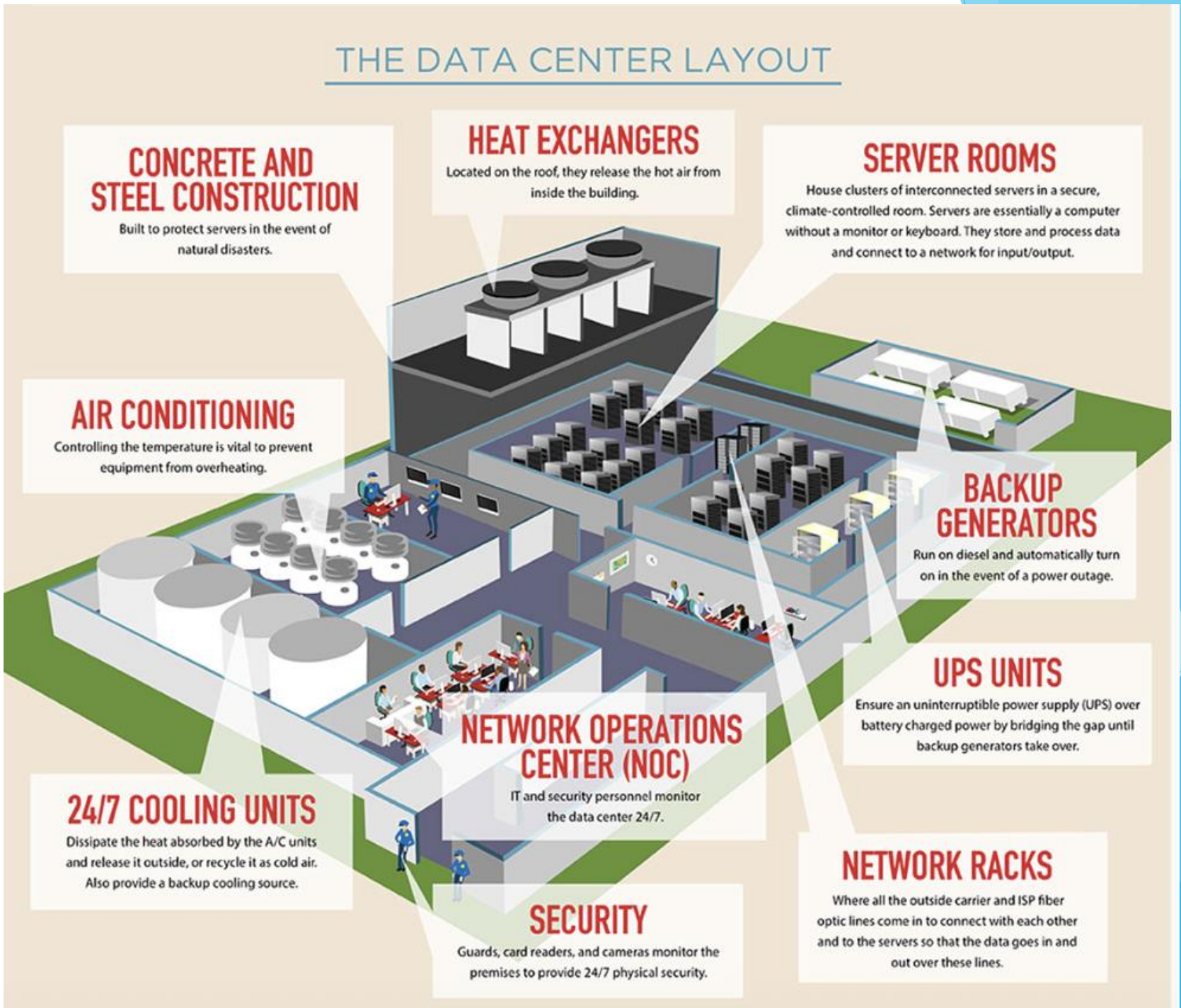
AI Data Center are specialized facilities designed to support the intensive computing and data storage needs of artificial intelligence applications.

Exterior



https://www.nytimes.com/2025/06/24/technology/amazon-ai-data-centers.html

Interior



Source: Infogrades

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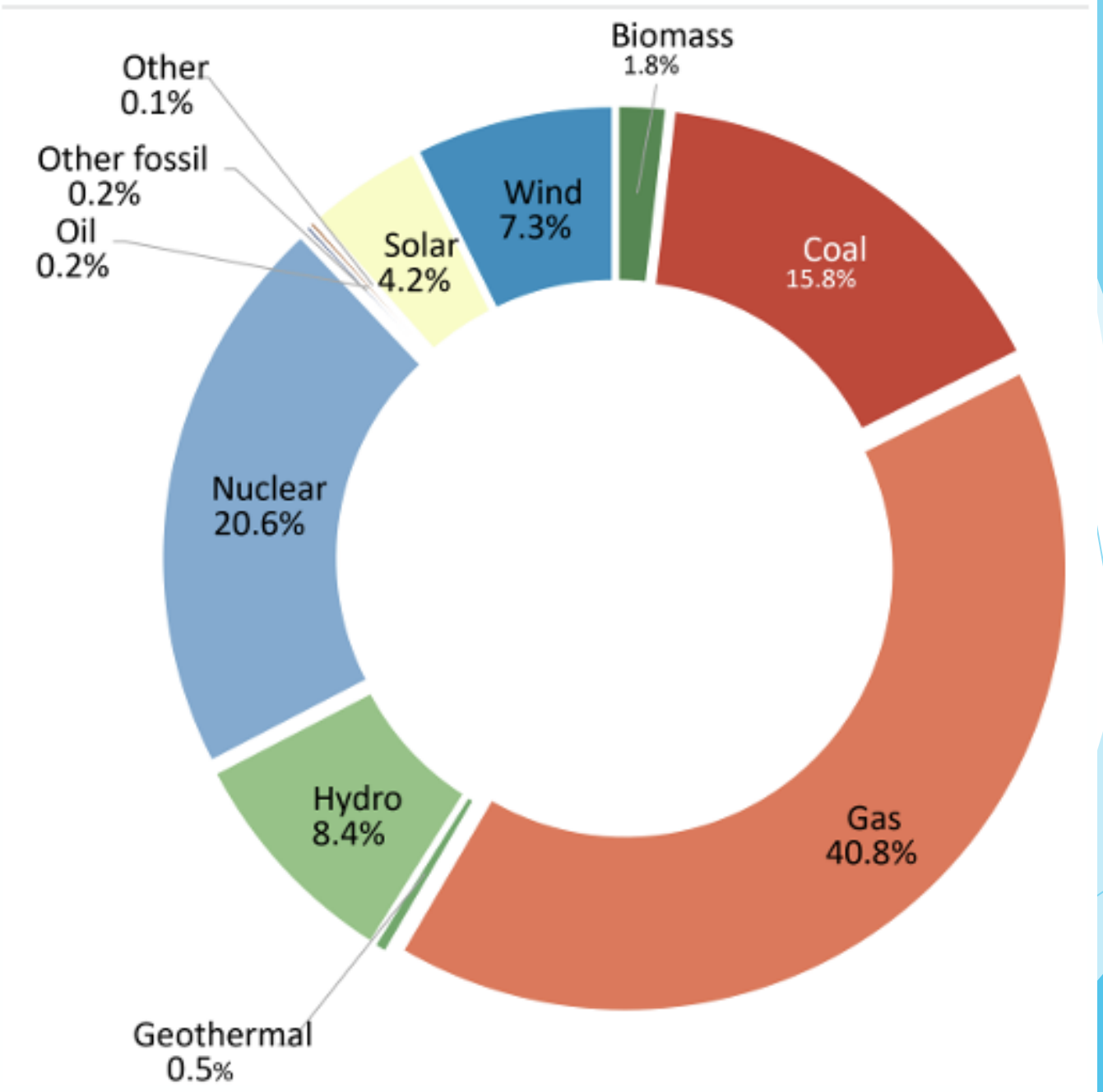
Energy



Source: Environmental Burden of United States Data Centers in the Artificial Intelligence Era, 2024

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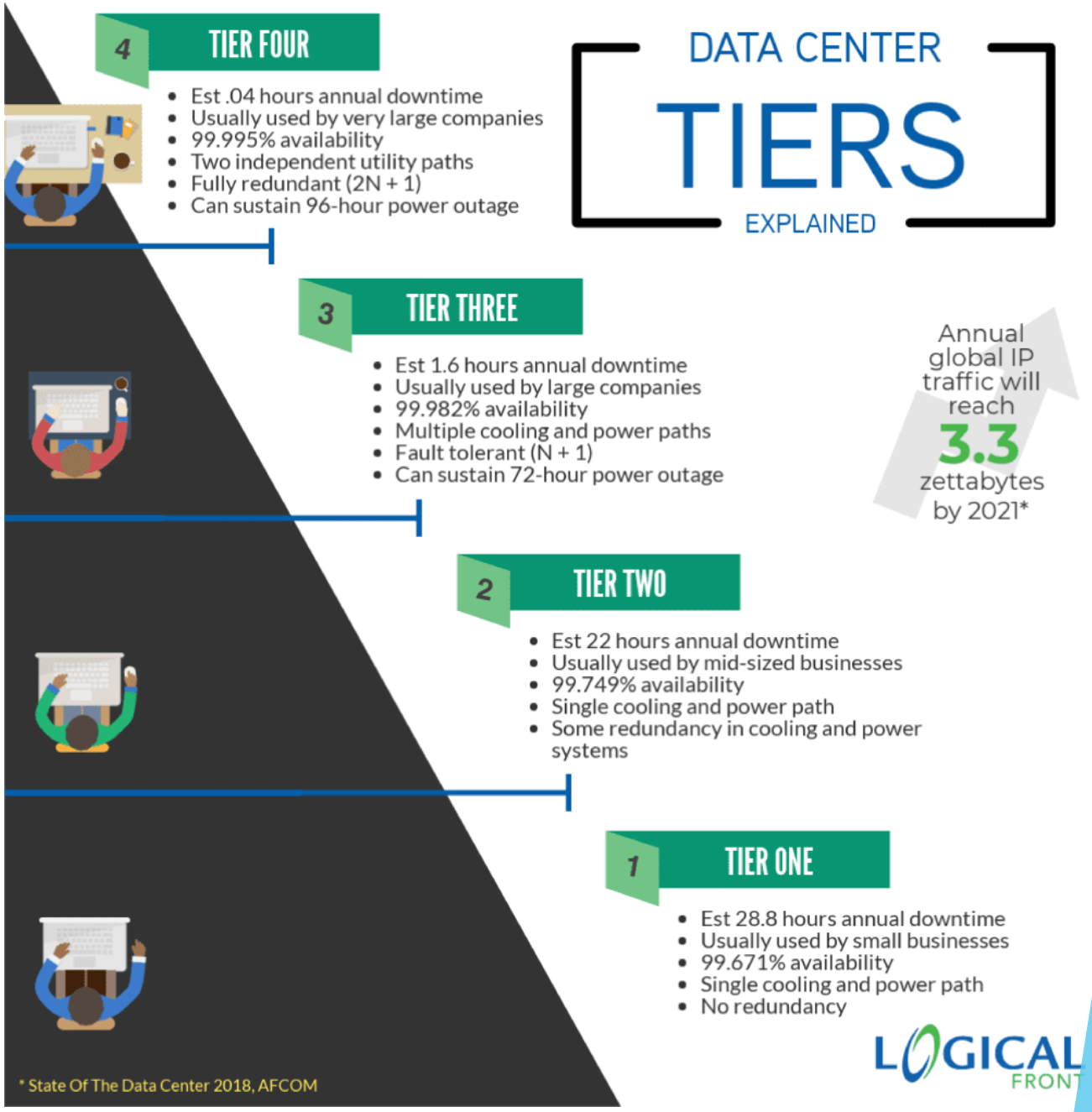
Seven Things You Need to Know about AI Data Centers

1. Varying Scale and Function
2. Surging Demand
3. Emerging Geographies
4. Fast-tracking Sites
5. Straining Grid and Power Infrastructure
6. Facing Scrutiny
7. Expanding Supply Chain Needs

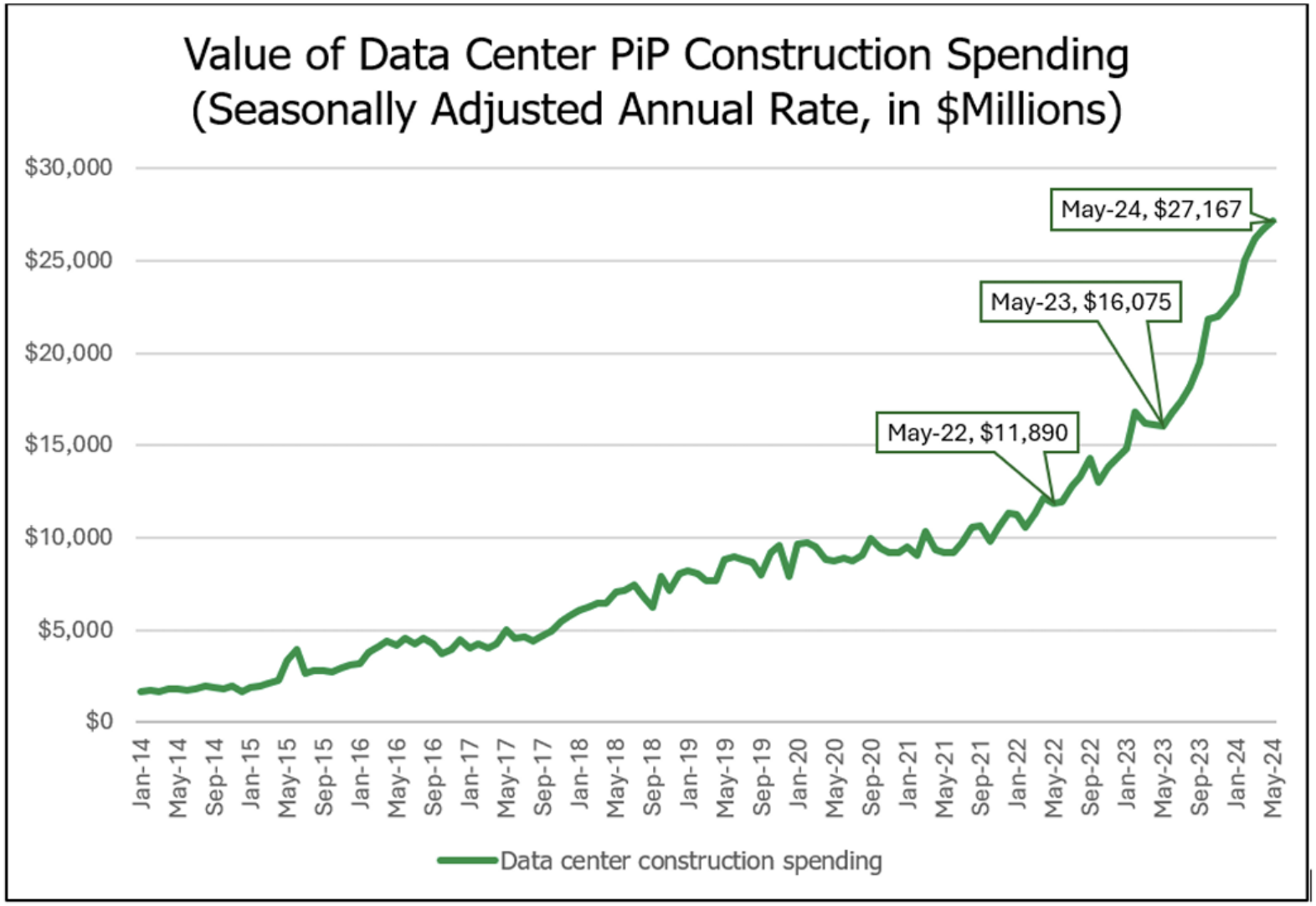
1. Varying Scale and Function

- Hyperscale
- Enterprise
- Colocation
- Edge
- Cloud



Source: Logical Front, 2025, based on Uptime Institute Tier Levels

2. Surging Demand



Source: U.S. Census Bureau Construction Spending Data: Historical Value of Private Construction Put in Place (PiP), May 2024

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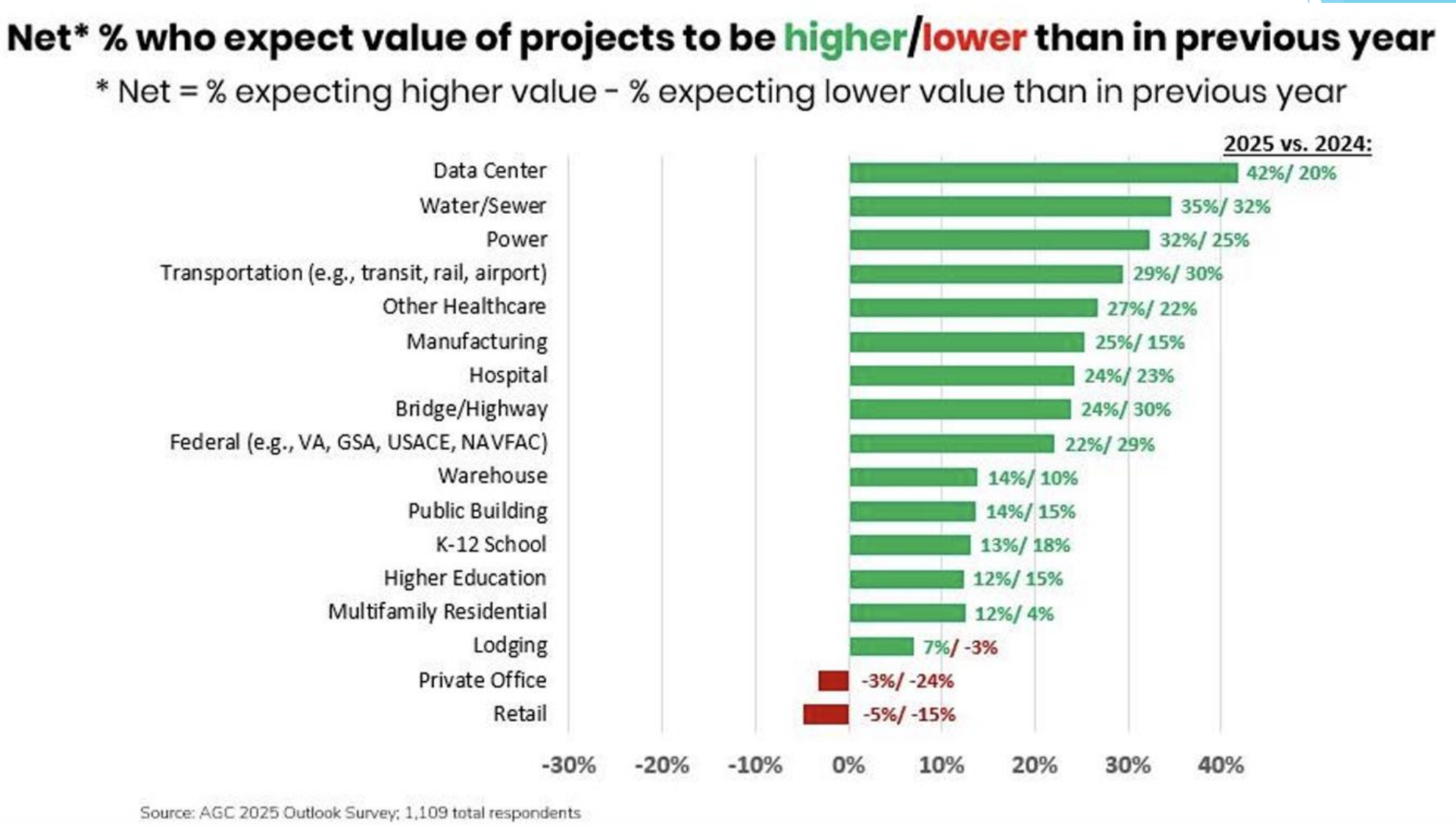
Source: Written Testimony of Josh Levi, President, Data Center Coalition Before the U.S. House of Representatives Oversight and Government Reform Subcommittee on Economic Growth, Energy Policy, and Regulatory Affairs

Survey of Contractors



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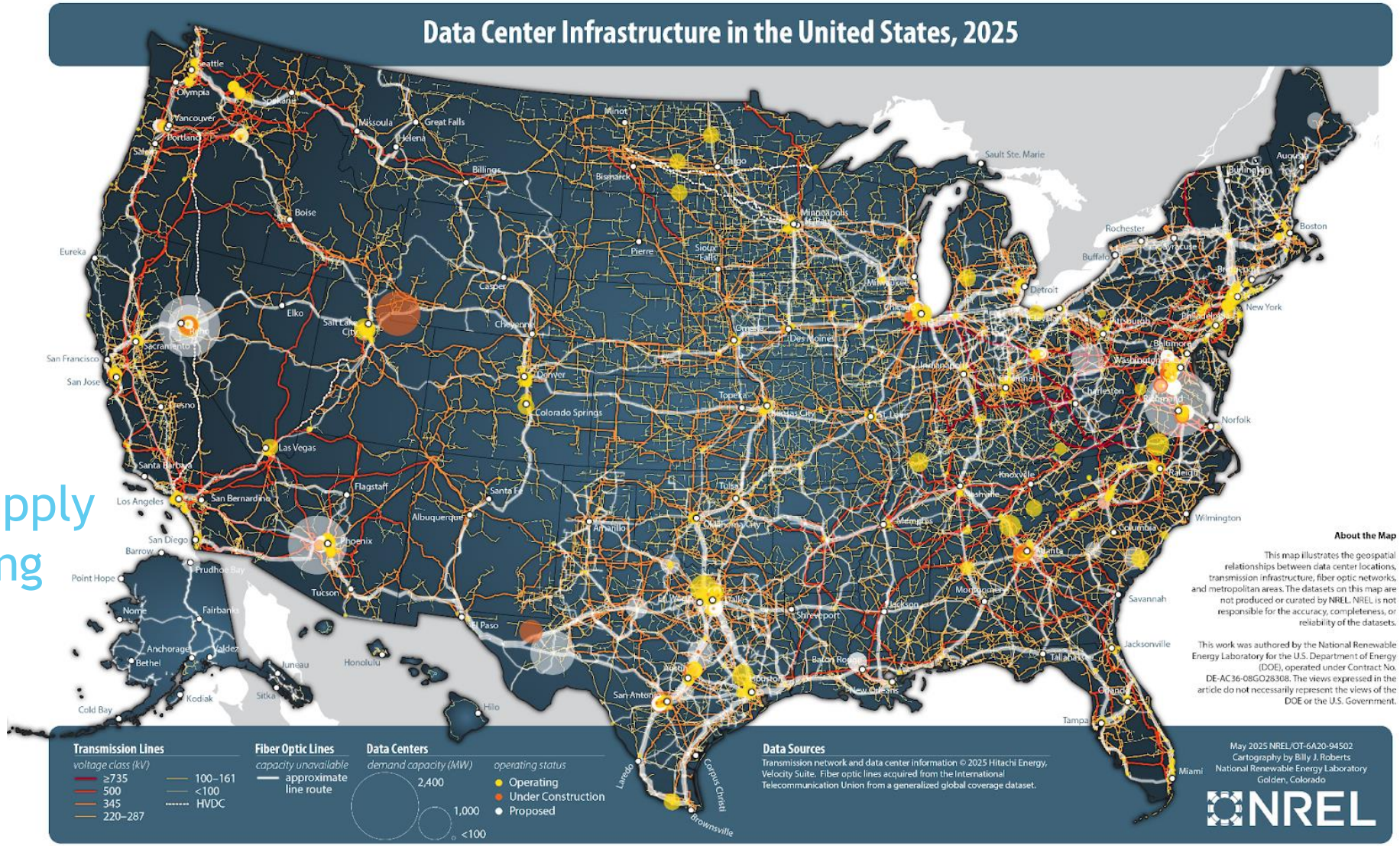
Source: Associated General Contractors of America, 2025

3. Emerging Geographies

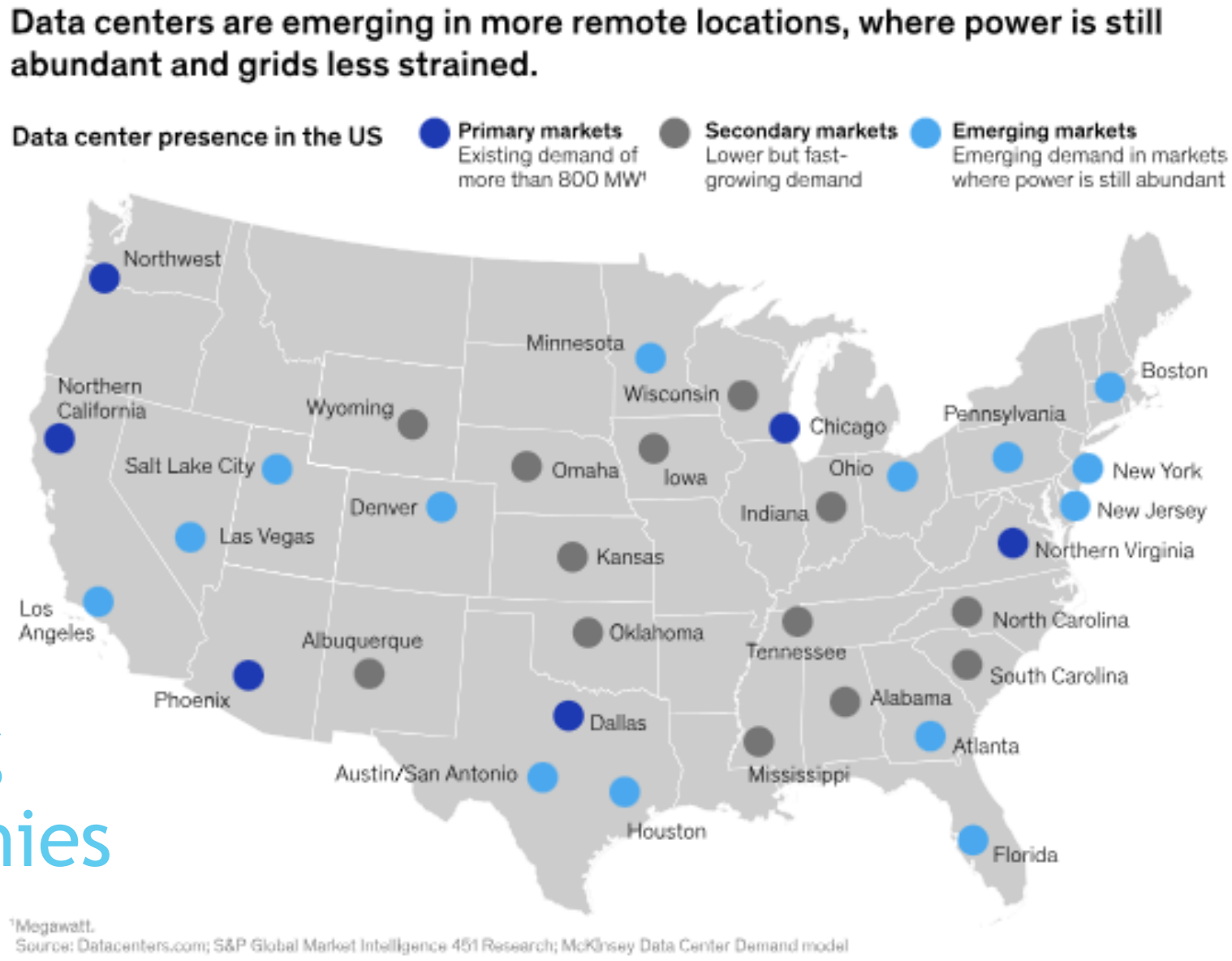
New Sites Need:

- Primary Power Supply
- Fiber Optic Cabling
- Water Supply



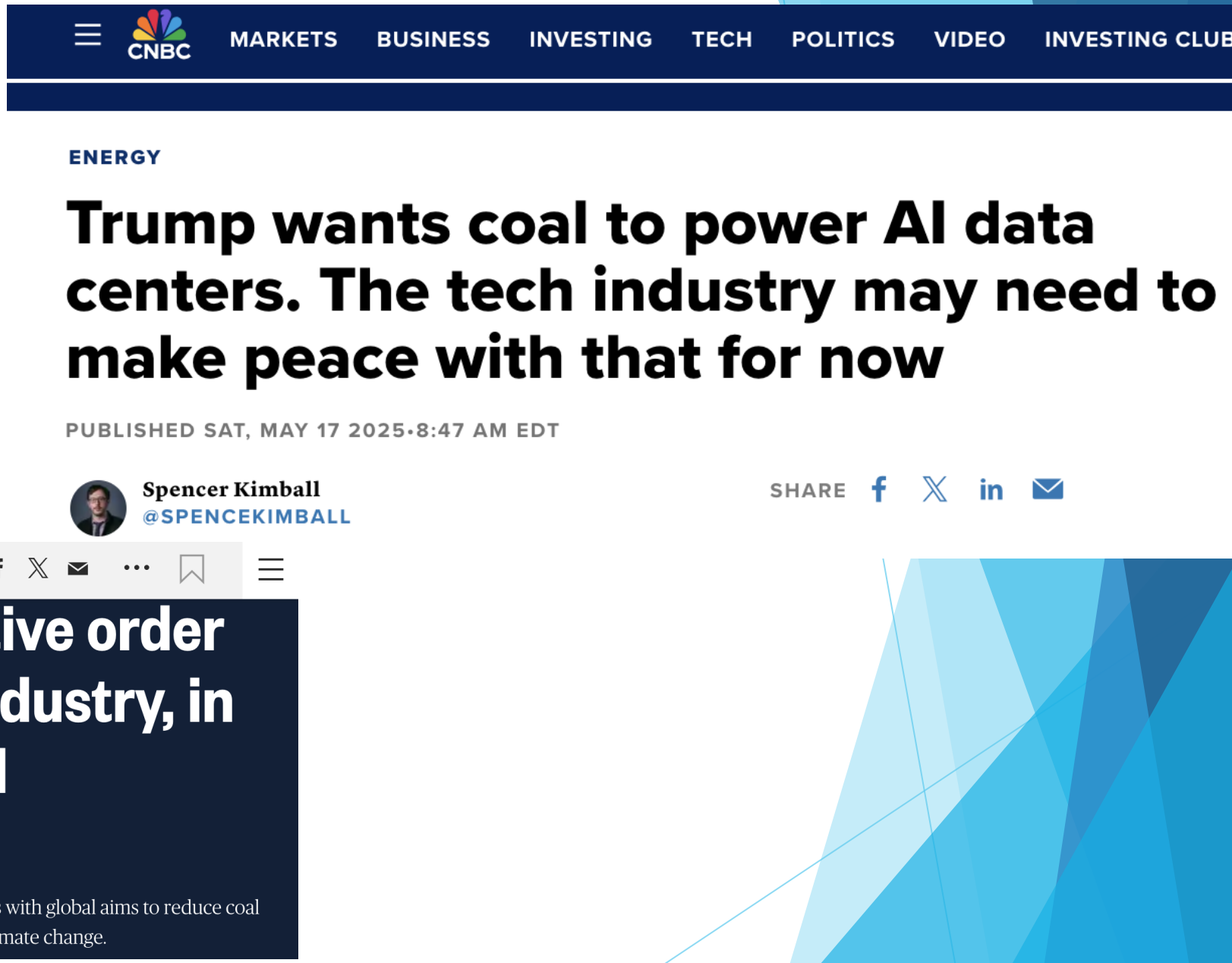
Source: National Renewable Energy Laboratory, 2025

Emerging Geographies



Source: McKinsey, 2025

4. Fast-Tracking Sites



CNBC MARKETS BUSINESS INVESTING TECH POLITICS VIDEO INVESTING CLUB

ENERGY

Trump wants coal to power AI data centers. The tech industry may need to make peace with that for now

PUBLISHED SAT, MAY 17 2025•8:47 AM EDT

Spencer Kimball
@SPENCEKIMBALL

SHARE

NBC NEWS Trump signs executive order to boost U. SHARE & SAVE

Trump signs executive order to boost U.S. coal industry, in part to fuel artificial intelligence

It's the latest move by the Trump administration that clashes with global aims to reduce coal power and cut harmful greenhouse gas emissions fueling climate change.

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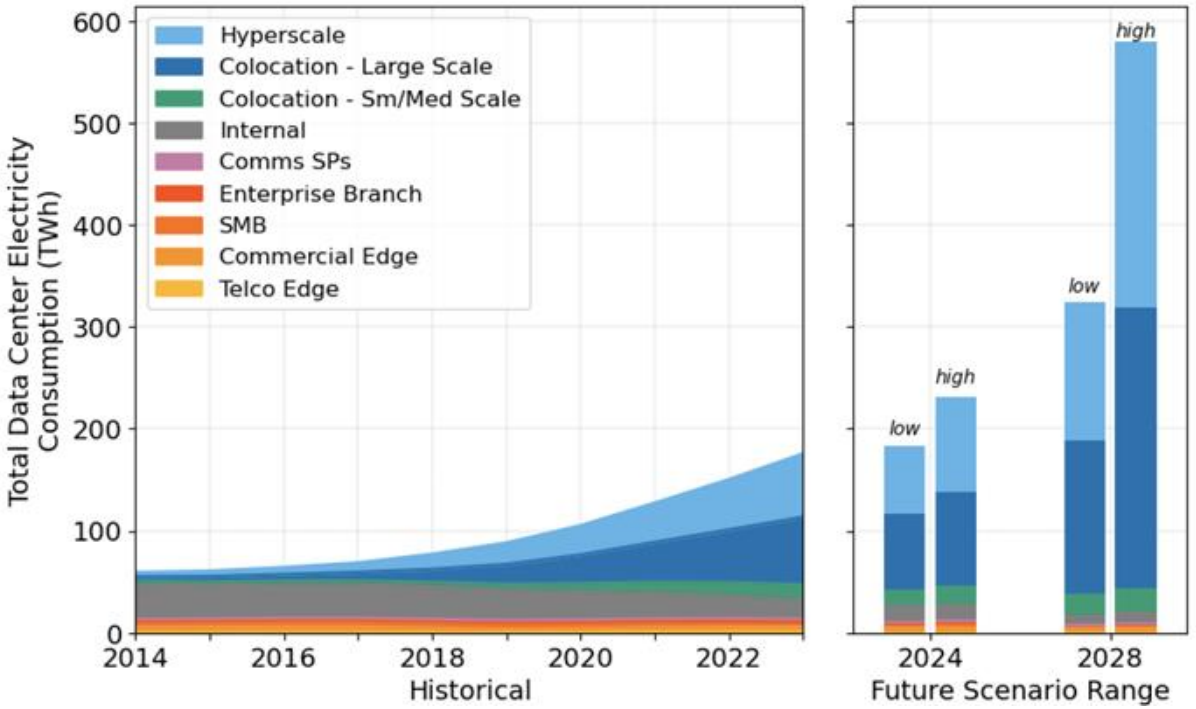
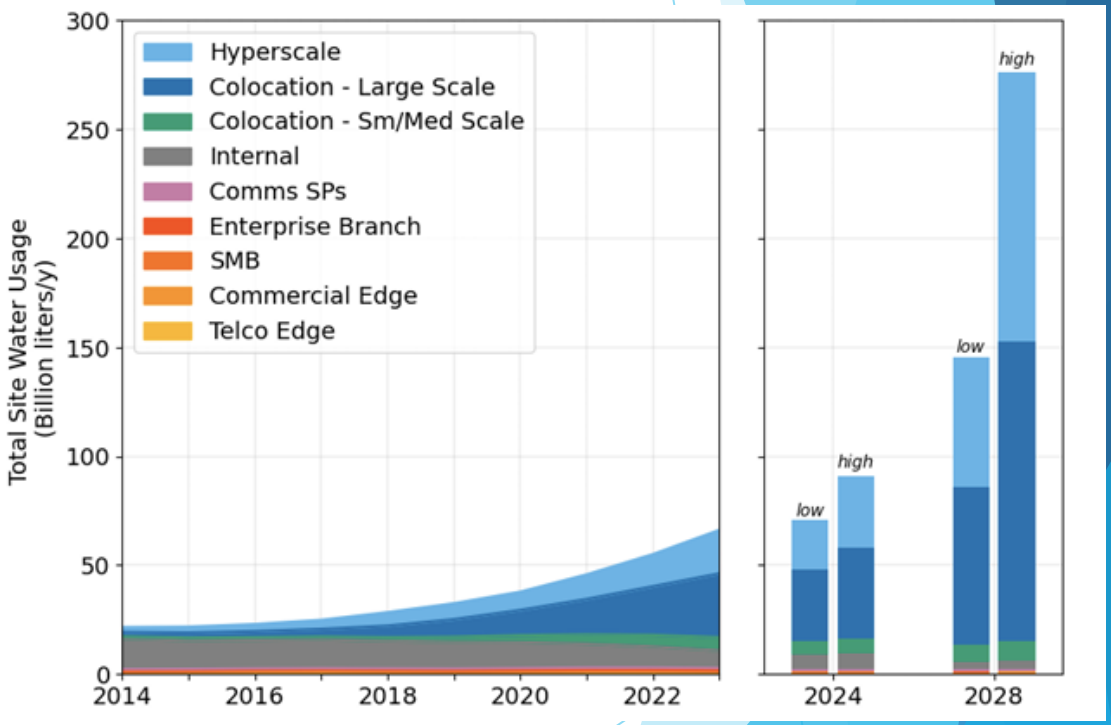
Source: CNBC, 2025; NBC, 2025

5. Straining Grid and Power Infrastructure



Total data center electricity use from 2014 through 2028 by space type



Direct water consumption by data center type.

Source: Lawrence Berkeley National Laboratory, 2024

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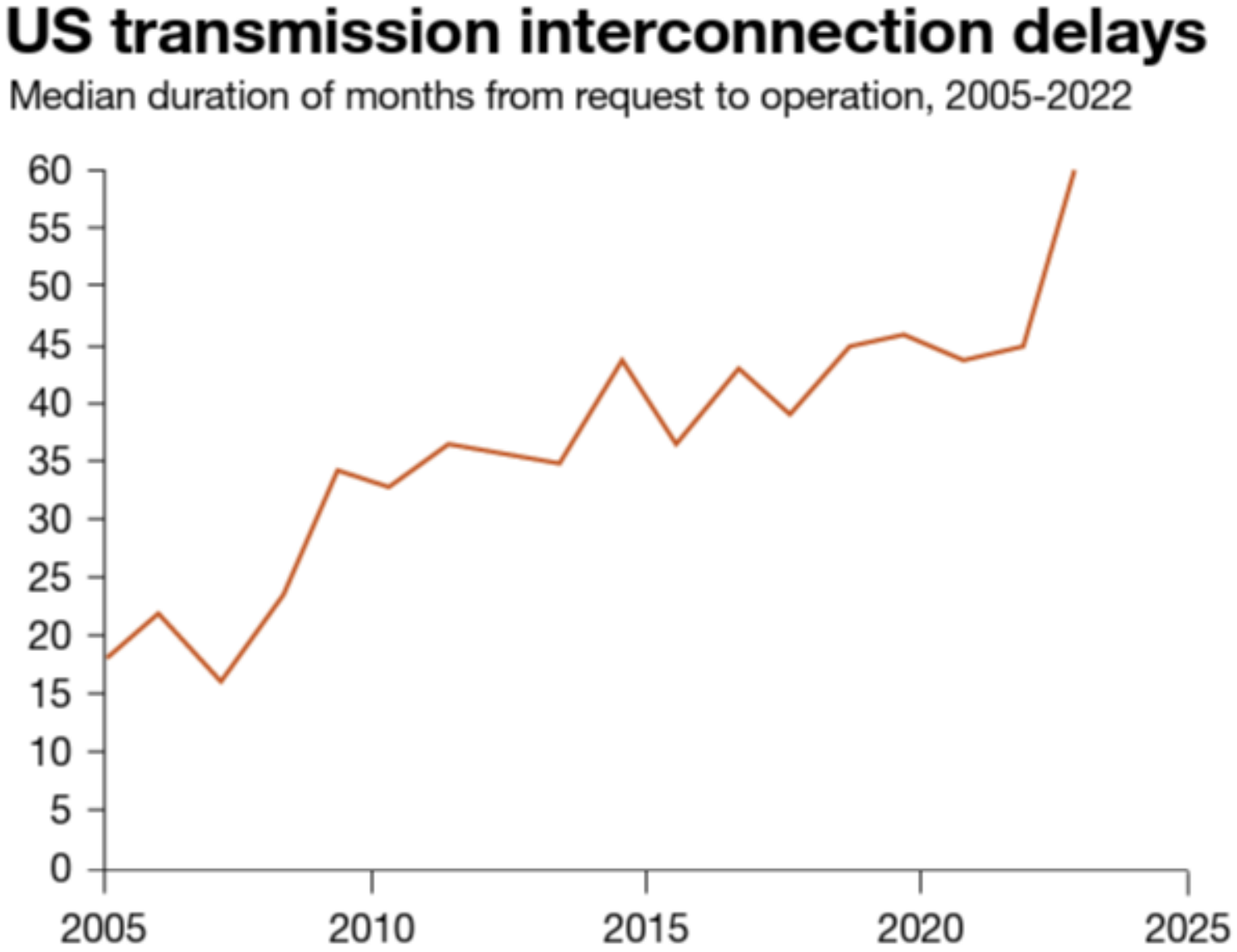
Straining Grid and Power Infrastructure



Source: PwC, 2025

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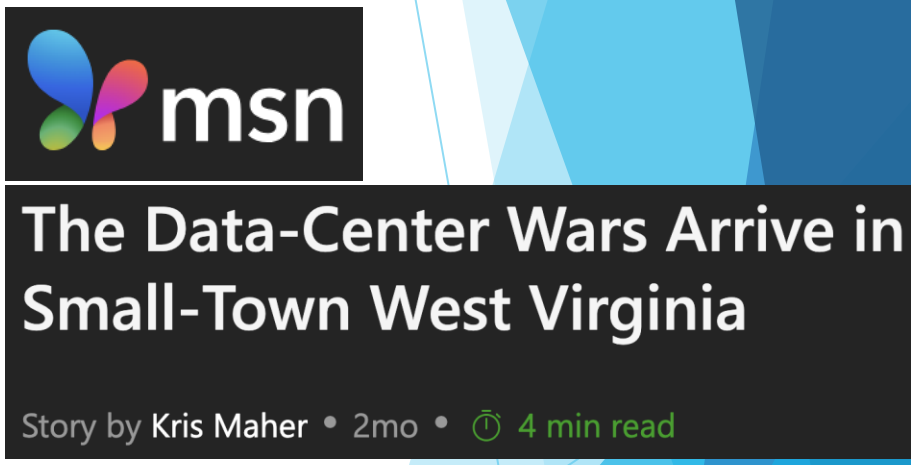
6. Facing Scrutiny



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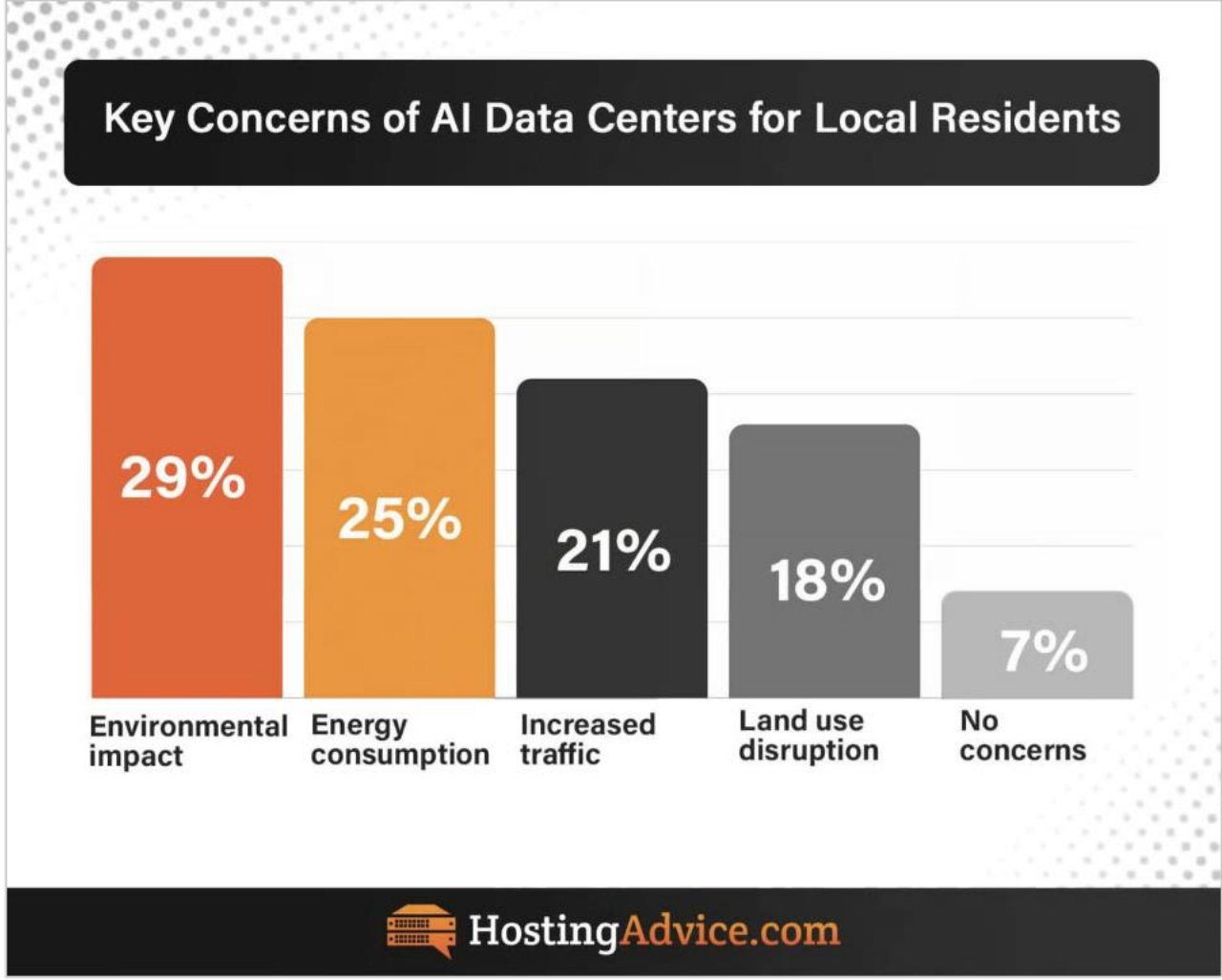
Sources: Washington Post, 2025; MSN, 2025; Daily Yonder, 2025

Survey: 93% of Americans Support AI Data Center Development—Just Not Near Them



An 800-person general population survey was executed by Pollfish and commissioned by HostingAdvice. Ages fall between 18 and 85. 50% identified as male and 50% identified as female. The population was evenly spread across the 16 states of Arizona, California, Florida, Louisiana, Maryland, Nevada, New York, Ohio, Oregon, Pennsylvania, Utah, Texas, Virginia, Washington, Wisconsin, and West Virginia.

Source: HostingAdvice.com, 2025

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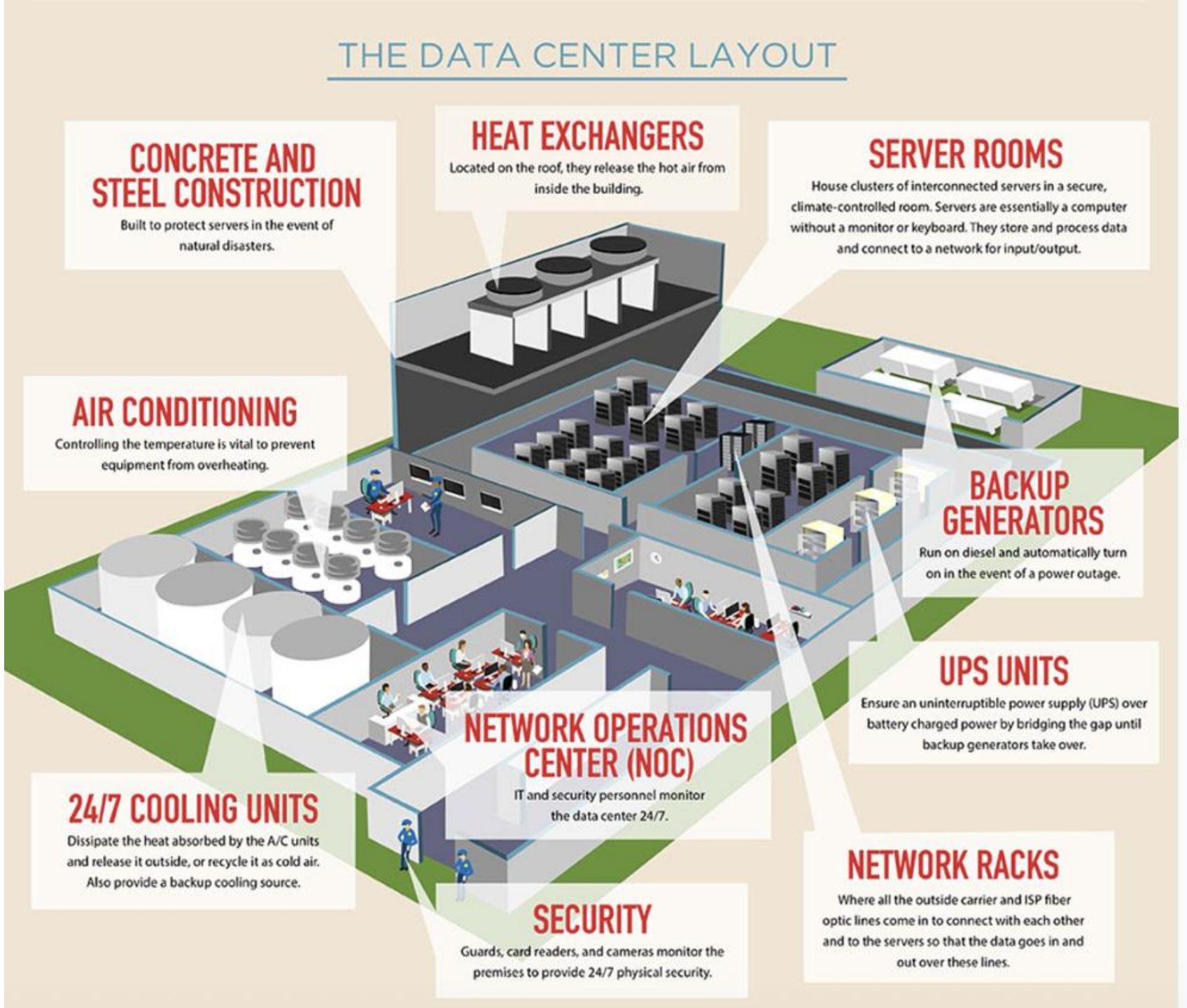
7. Expanding Supply Chain Needs



Source: Infogrades

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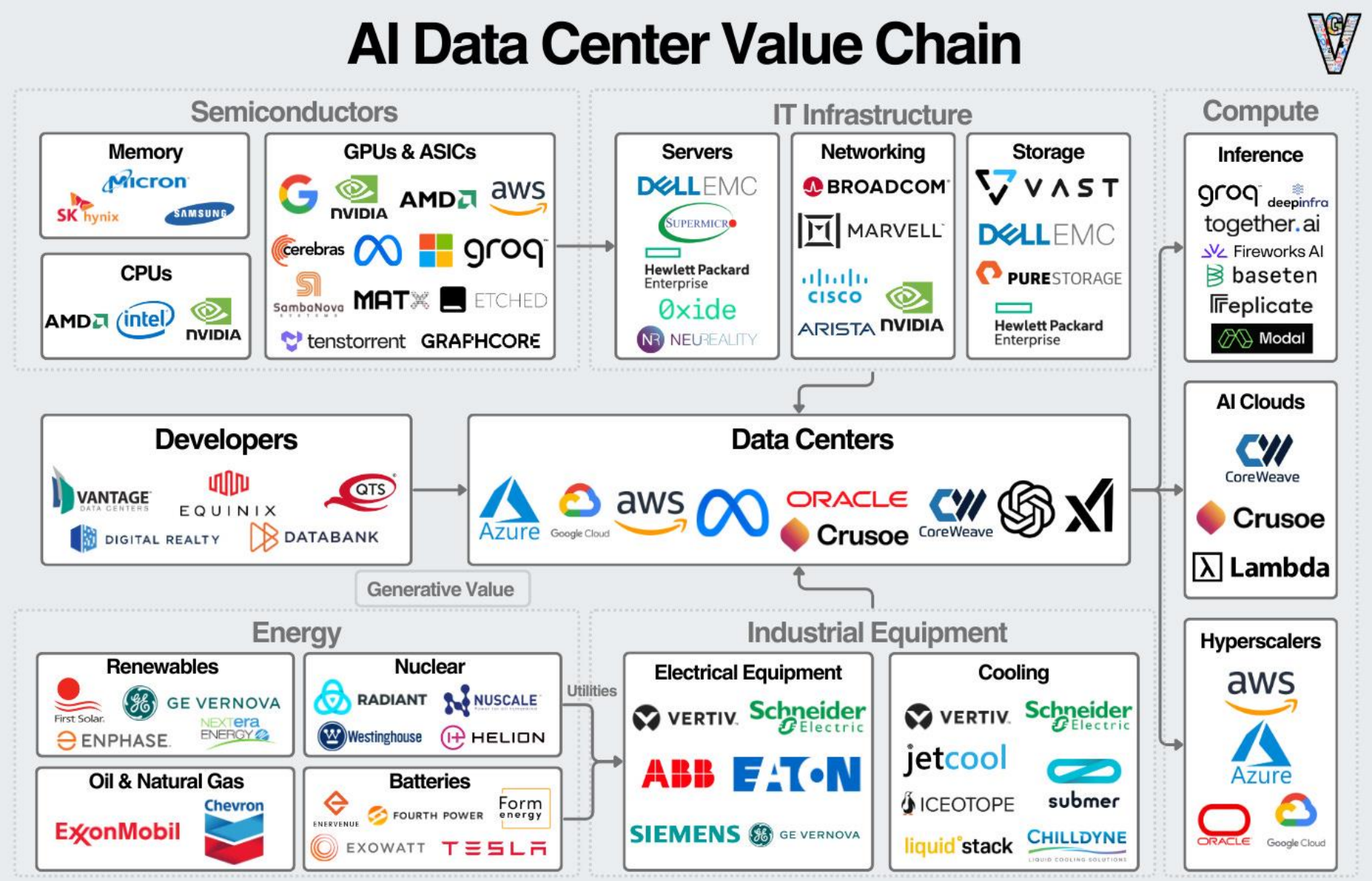
Expanding Supply Chain Needs



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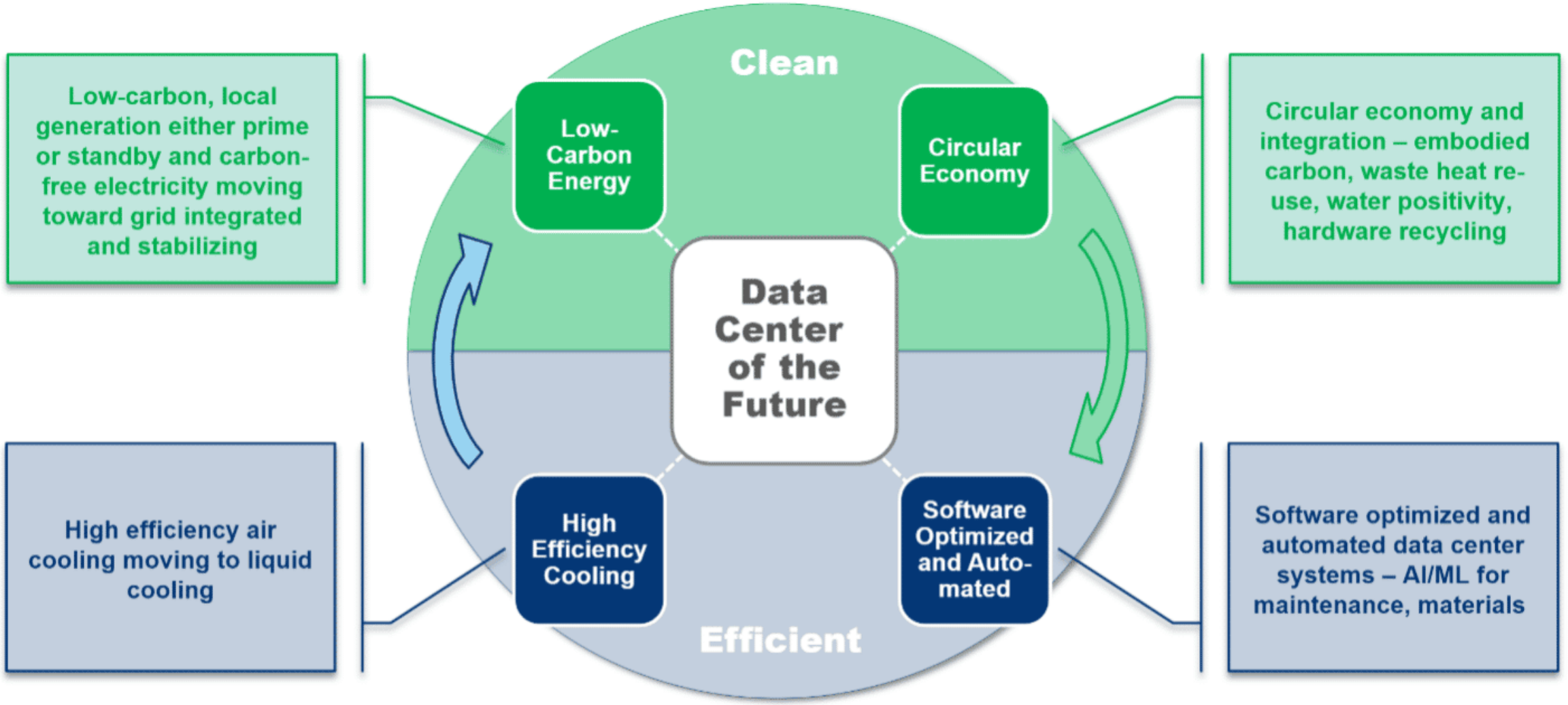
Source: Eric Flanagan, October 13, 2024

Component List of Typical AI Data Centers

COMPONENT	NAICS NUMBERS	NAICS NAME	DESCRIPTION	USE
Actuators	334512	Automatic Environmental Control Manufacturing	Devices that physically adjust HVAC or lighting components.	Enable automated adjustments to maintain optimal conditions.
Air distribution units	333415	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	Devices that distribute cooled air throughout the facility.	Ensures even cooling across all server racks.
Automatic transfer switches (ATS)	335313	Switchgear and Switchboard Apparatus Manufacturing	Switches that automatically transfer power source from the grid to the generator.	Ensures seamless transition to backup power during an outage.
Backup Power	335999	Electrical Equipment Manufacturing	Diesel/gas generators and fuel systems for emergency power.	Provides electricity during grid outages to maintain uptime for critical AI workloads.
Battery banks (lead-acid or lithium-ion)	335911	Storage Battery Manufacturing	Arrays of batteries store energy for UPS systems.	Supplies immediate power to critical loads during outages.
Biometric readers	334118	Computer Terminal and Other Computer Peripheral Equipment Manufacturing	Devices that authenticate identity via fingerprint, iris, etc.	Restricts facility access to authorized personnel only.
Building Automation	238220	Heating and Air-Conditioning Contractors	AI-driven software and IoT sensors for monitoring HVAC, lighting, and security.	Optimizes energy efficiency and environmental conditions via predictive analytics.
Busways	335311	Power, Distribution, and Specialty Transformer Mfg.	Modular metal bars for distributing power along a path.	Allows scalable and efficient power delivery to multiple racks.
Cable management arms	334419	Other Electronic Component Manufacturing	Hinged arms or trays for routing and organizing cables.	Maintains organized cabling and allows easy access for maintenance.
Cabling & Wiring	335929	Other Communication and Energy Wire Manufacturing	Conductive cables and wires for power and data transmission.	Connect and distribute power and data throughout data centers.



Emerging Technologies: Four Sustainable Design Principles

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Source: Equinix, 2022

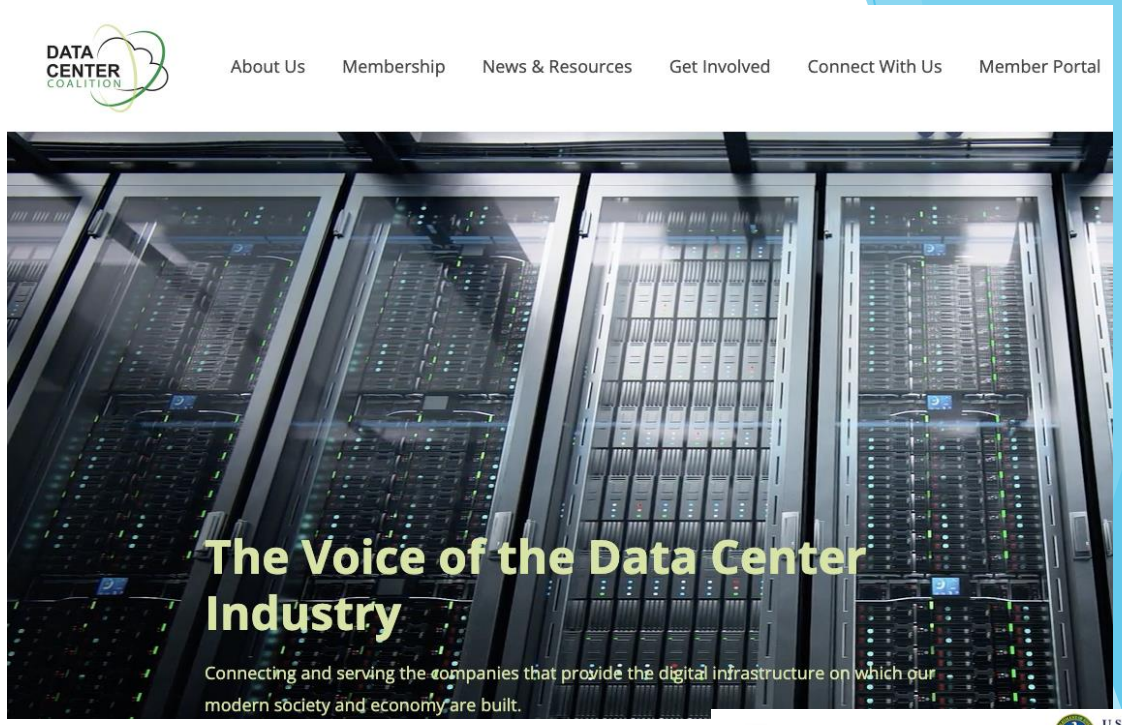
Industry Resources

Policy & Advocacy Organization

- Data Center Coalition
- The Green Grid
- Uptime Institute

Resources & Funding Opportunities

- U.S. DOE Manufacturing and Energy Supply Chains (MESC)
- ASHRAE Technical Committee 9.9, Mission Critical Facilities, Data Centers, Technology Spaces and Electronic Equipment



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ASHRAE

Mission Critical Facilities, Data Centers, Technology Spaces and Electronic Equipment

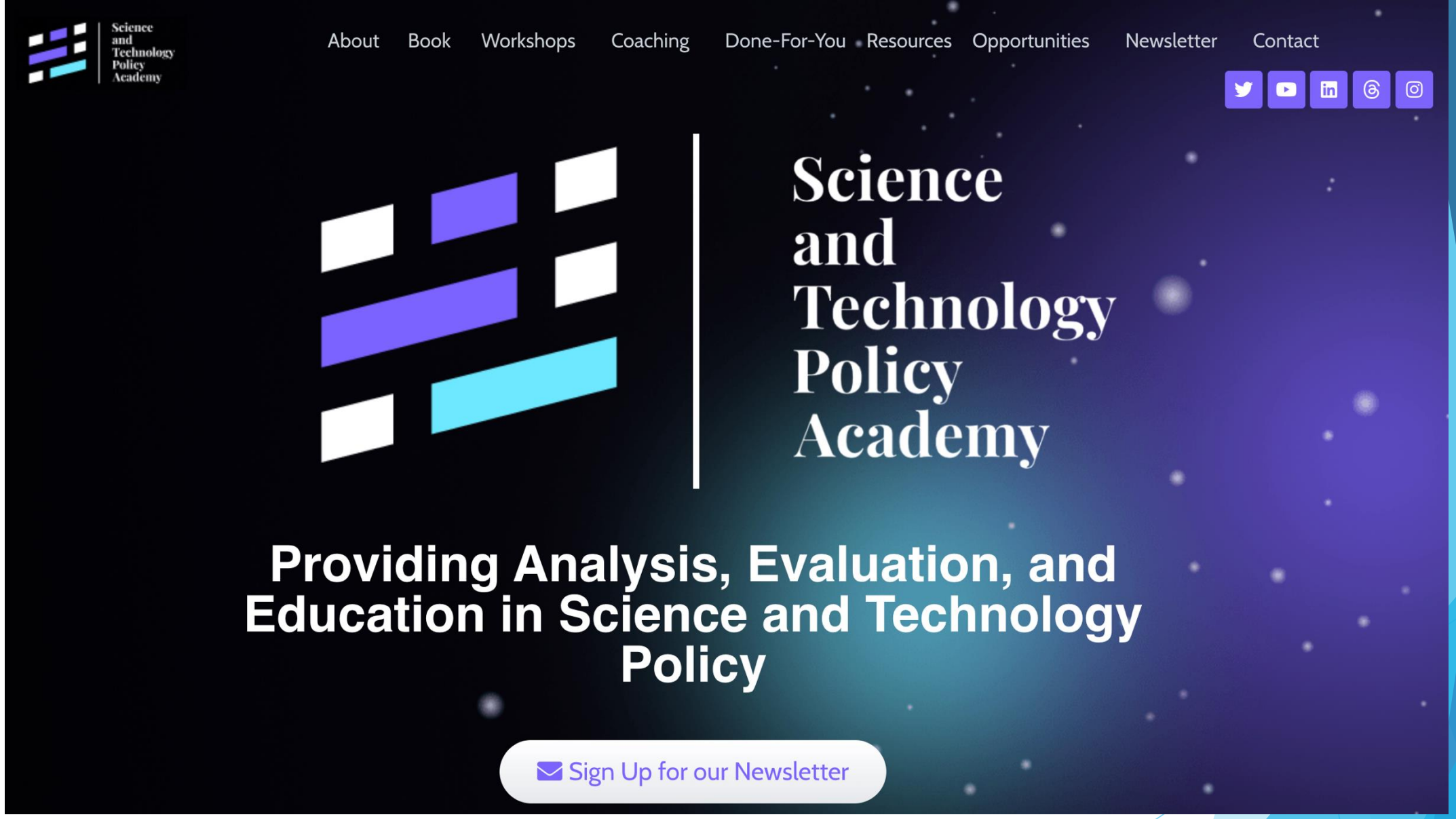
ASHRAE Technical Committee 9.9

AI Data Centers are a potential major emerging market for small and medium-sized manufacturers

Our region is a major focus of AI Data Center Investments today, but this will not last as feasible locations decline

Sprint is needed to capture market opportunity at the regional, national, and global level

Energy and environmental challenges are likely to increase though emerging technologies can mitigate the impact



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