

# The New Data Center Equation

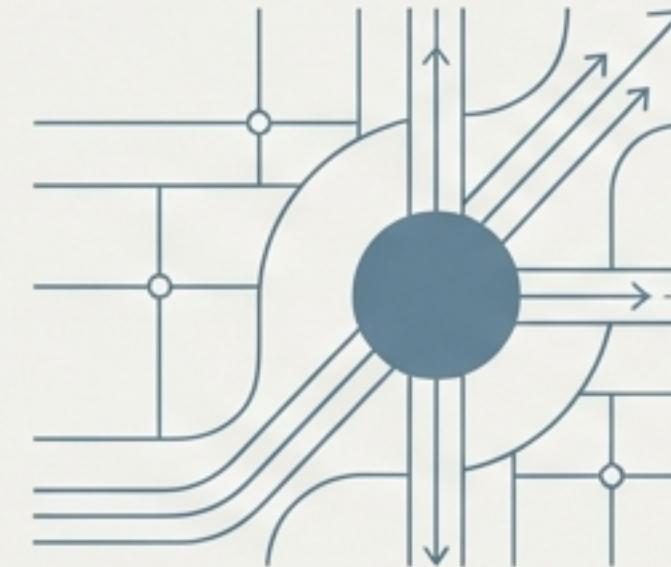
Navigating the AI-Driven Shift in U.S. Market Dynamics



# The Landscape is Being Redrawn by Two Unstoppable Forces

## 1. The AI Demand Shock

An unprecedented wave of AI and hyperscale demand is creating power requirements measured in gigawatts, overwhelming grid capacity and planning. Yesterday's 30-50 MW projects have become today's 700-800 MW campuses.



## 2. The Infrastructure Bottleneck

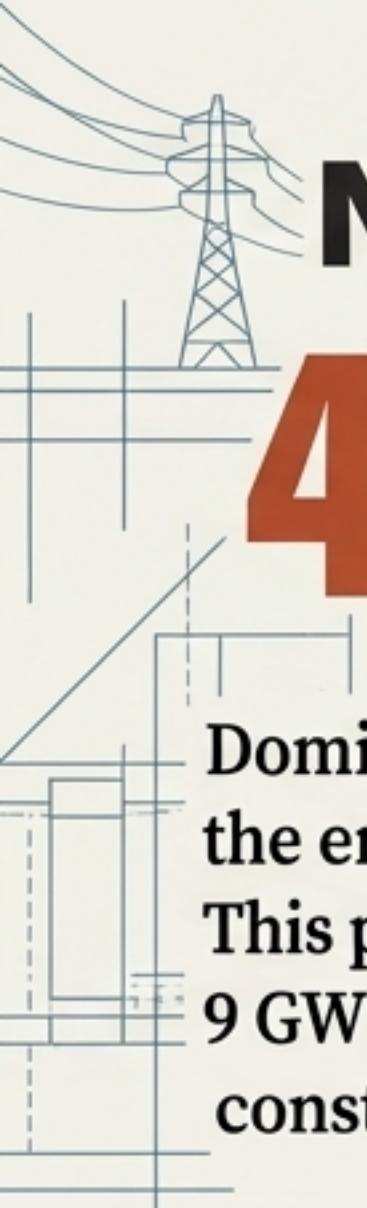
Power availability and land with favorable zoning are now the primary constraints on growth. The legacy advantages of fiber and connectivity, while still critical, have become table stakes. Markets that can deliver scalable power and land are winning.



## A New Market Hierarchy Has Emerged

This presentation analyzes the top U.S. data center hubs through a new framework, categorizing them into strategic archetypes defined by their ability to solve this new equation: from the constrained giant to the hyper-growth challengers and specialized niche players.

# The Power Demand Pipeline Has Reached Astronomical Scale



Northern Virginia

## 40,000 MW

Dominion Energy's data center load pipeline at the end of 2024, an 88% jump in just six months. This pipeline includes 26 GW in early engineering, 9 GW with service agreements, and 5 GW under construction. (Source: Dominion Energy, 2025)



Dallas-Fort Worth

## 186,000 MW



Volume of interconnection requests from data centers in Oncor's queue as of mid-2025. While only a fraction will be built, the sheer volume is forcing more than \$12 billion in potential grid investment planning. (Source: Oncor, 2025)

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The average data center load today is 700–800 MW, versus 30–50 MW historically. A single campus can now rival a city's power needs.  
(Source: Dallas Morning News, 2025)

# Evaluating Markets Through the Four Pillars of Site Selection



## Power

The availability, cost, and timeline for securing multi-hundred-megawatt utility service. This is now the primary gating factor for hyperscale development.



## Connectivity

The density of long-haul and metro fiber, proximity to major internet exchange points (IXPs), and low-latency routes to cloud on-ramps and end-users.



## Land & Regulation

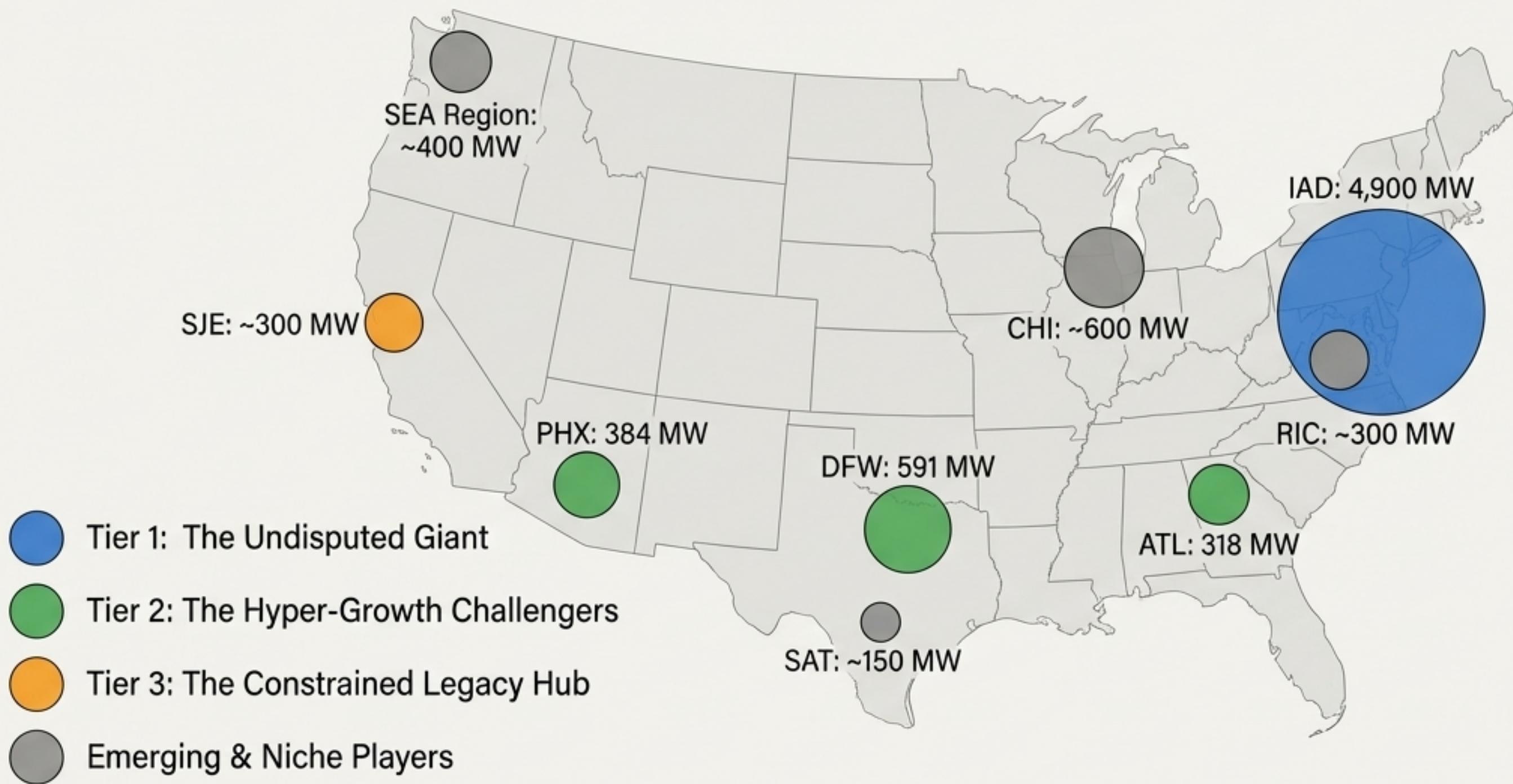
The supply of entitled or 'znable' land for large campuses, and the political climate influencing permitting speed, community opposition, and land use policy.



## Incentives & Cost

The total cost of ownership, heavily influenced by state and local tax exemptions on equipment, favorable property tax abatements, and competitive power rates.

# The U.S. Data Center Ecosystem: A Nation of Specialized Hubs



## Key Insight Box

While Northern Virginia remains dominant in scale, the most significant growth pipelines are now concentrated in the “Hyper-Growth” markets. These markets are the “Hyper-Growth” markets, which are poised to collectively double their capacity by 2026.

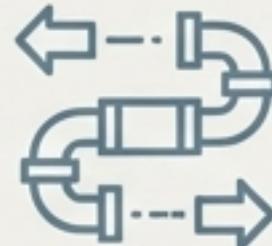
# The Undisputed Giant: Northern Virginia (IAD) Manages Hyper-Scale

**~4,900 MW Inventory — 5x Larger Than Any Other U.S. Market (Source: JLL, 2025)**

## Unmatched Dominance



**Connectivity Epicenter:** Home to “Data Center Alley,” where an estimated 70% of global internet traffic passes through. (Source: VEDP, 2019)



**Massive Pipeline:** An additional 1,100 MW is under construction, with 5,500 MW more planned. 90% of future supply is already pre-committed through 2028. (Source: JLL, 2025)

## The Emerging Constraints



**Power Limitations:** Dominion Energy is racing to add 6,000 MW of capacity via new 500 kV transmission lines, but the 40,000 MW demand pipeline is straining the grid to its absolute limits.



**Regulatory Headwinds:** In 2025, Loudoun County ended by-right development, moving new data centers to a more stringent conditional/special permit process to manage community impacts and land use. (Source: Blue Ridge Leader, 2025)

# The Hyper-Growth Challengers: Scaling at Unprecedented Speed

## Dallas-Fort Worth (DFW)

*The Epicenter of AI-Scale Demand*

- **Inventory:** 591 MW
- **Under Construction:** A record 605.6 MW (poised to double market size by 2026).
- **Key Strengths:** Proactive suburban zoning (e.g., Grand Prairie's 450-acre campus), robust state tax incentives, and a central location with 135+ networks at the Infomart.
- **Key Challenge:** Managing the 186 GW power request queue without destabilizing the grid.

## Phoenix (PHX)

*Hyperscale Growth Meets Resource Scrutiny*

- **Inventory:** 384 MW
- **Under Construction:** 450+ MW (will more than double market size).
- **Key Strengths:** Attractive tax exemptions, proximity to West Coast markets (~10ms to LA), and strong utility investment in new substations.
- **Key Challenge:** Balancing growth with extreme water scarcity; a large data center can use 1-5 million gallons of water per day for cooling.

## Atlanta (ATL)

*The Booming Southeast Hub*

- **Inventory:** 318 MW
- **Under Construction:** 200+ MW (poised to reach ~600 MW by 2026).
- **Key Strengths:** The Southeast's primary connectivity hub (182 networks at 56 Marietta), ample water supply, and competitive state incentives (for projects ≥\$250M).
- **Key Challenge:** Power delivery timelines are a growing watch factor as Southern Co. manages a 50+ GW pipeline of new large loads.

# The Constrained Legacy Hub: Silicon Valley (SJE) Hits the Wall

**Effectively 0% Vacancy.** Silicon Valley Power hit its capacity cap, forcing a pause on new approvals as 500 MW of requests wait for grid upgrades. (Source: San José Spotlight, 2025)

## The Power & Land Crunch



**Power:** Santa Clara's utility (SVP) is **maxed out at ~720 MW peak load**. Major transmission upgrades are not expected until 2029, stalling new projects.



**Land:** With 58 data centers, city officials are questioning the devotion of scarce land to industrial uses over housing, signaling potential moratoria or stricter limits.

## Enduring Strengths & The Path Forward



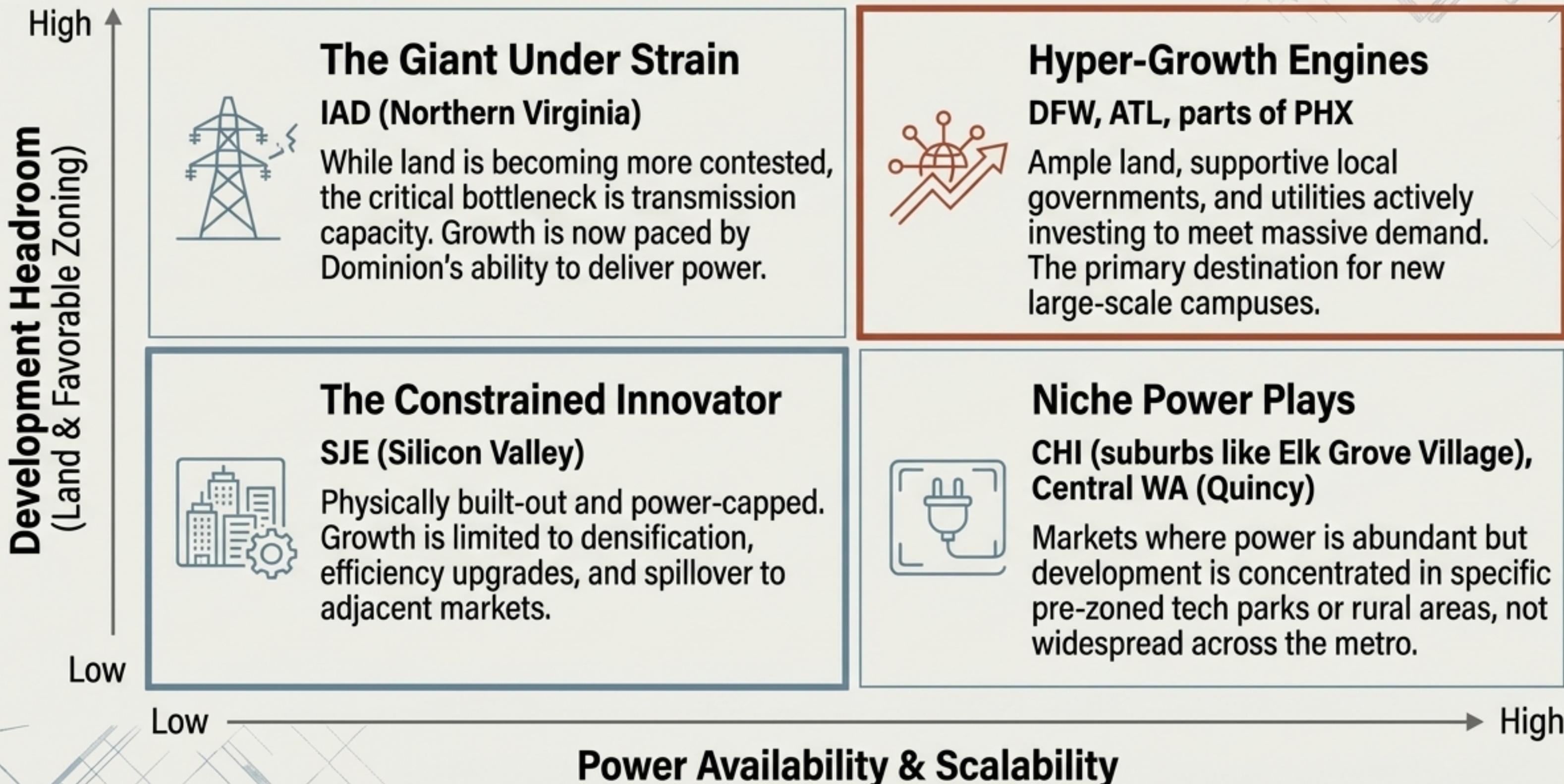
**Connectivity:** Remains a key advantage, with data centers clustered on a '**mission-critical fiber backbone**' offering unparalleled density and ultra-low latency (<2ms) to the Bay Area tech ecosystem.



**Innovation in Efficiency:** In response to constraints, **31 data centers** in Santa Clara now use **recycled water** for cooling, a model for sustainable operation in a high-cost, resource-scarce environment.

Silicon Valley's value is now in density and interconnection, not greenfield growth. Its constraints are a primary driver of expansion into markets like Phoenix and even Sacramento.

# The New Competitive Matrix: Plotting Power Availability vs. Development Headroom



# Niche Players & Strategic Hubs: Finding Unique Value Propositions

## Chicago (CHI) – The Incentive-Fueled Resurgence

Illinois' 2019 tax incentive was a game-changer, driving over \$4.2B in investment by 2022 and doubling market capacity.



### Proof Point:

ComEd is now building a dedicated 260 MW substation for a single campus in Elk Grove, a testament to the new scale of projects.

## Seattle Region (SEA) – Hydropower & Asia Gateway

A market of two halves: small edge/cloud sites in metro Seattle, and massive hydro-powered campuses in Central WA (Quincy).



### Proof Point:

Low-cost hydropower (~3-5¢/kWh) in Quincy attracts hyperscalers, while Seattle's Westin Building (200+ carriers) serves as a key low-latency gateway to Asia.

## Richmond (RIC) – NoVA Spillover & Subsea Gateway

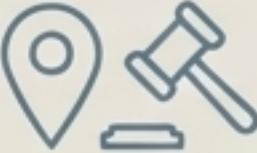
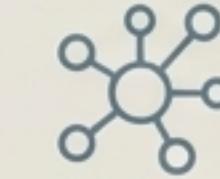
Henrico County's proactive zoning and ultra-low tax rate (\$0.40/\$100) created a 300 MW market from scratch in 5 years.



### Proof Point:

Its QTS campus connects directly to the MAREA/BRUSA subsea cables, offering ~65ms latency to Europe and creating a global interconnect node just 3-4ms from Ashburn.

# The Four Pillars: A Cross-Market Scorecard

MARKET Source Serif Pro	 POWER Utility pipeline/constraint.	 LAND & ZONING Key policy/headroom.	 CONNECTIVITY Key hub/carrier count.	 INCENTIVES Key state offer.
IAD	40GW pipeline; severe transmission constraints.	By-right ended; special permits now required.	Global epicenter; ~70% of internet traffic.	20-yr sales tax exemption ( $\geq \$150M$ ).
DFW	186GW requests; massive grid expansion needed.	Proactive suburban zoning for large campuses.	#1 Central hub; 135+ networks at Infomart.	10-15 yr sales tax exemption ( $\geq \$200M$ ).
PHX	Proactive utility investment; water-for-cooling is a factor.	New special permits required for health/safety.	Emerging hub; 60+ networks, DE-CIX IX.	10-20 yr sales tax exemption ( $\geq \$50M$ ).
ATL	50GW pipeline; delivery timelines extending.	Data center overlay zones to concentrate development.	#1 SE hub; 182 networks at 56 Marietta.	Full sales tax exemption ( $\geq \$250M$ ).
SJE	Capped at ~720MW; no new capacity until 2029.	Land scarce; officials considering moratoria.	Legacy density; mission-critical fiber backbones.	No statewide sales tax exemption.
CHI	Strong utility investment (e.g., 260MW substation).	Pre-zoned tech parks enable rapid builds.	#1 Midwest hub; 119 networks at 350 Cermak.	20-yr sales tax exemption ( $\geq \$250M$ ).

# A New Factor in the Equation: Sustainability & Resource Management

As campuses scale to the size of cities, their environmental impact is facing intense scrutiny.

## The Arid West – Water as a Gating Item



Phoenix, AZ

**A large data center can consume 1-5 million gallons of water per day, equivalent to a city of 10,000-50,000 people.** (Source: Washington Post, 2023)

Cities like Mesa are now mandating the use of reclaimed water and stricter design standards to mitigate impact amid megadroughts.

## The Constrained Innovator – Efficiency as a Solution



Santa Clara, CA

**31 data centers in the city are connected to the recycled water system for cooling, demonstrating a proactive industry response to water scarcity.** (Source: San José Spotlight, 2025)

**Key Insight:** Markets with abundant water and power (like Chicago with Lake Michigan, or the Pacific Northwest with hydropower) are beginning to market these as key competitive advantages.

# Synthesis: The New Data Center Equation

The equation illustrates the synthesis of data center market drivers:

$$(\text{AI-Driven Demand} \times \text{Power & Land Constraints}) + \text{Sustainability Pressure} = \text{A New Market Hierarchy}$$

The fundamental drivers of data center market success have been rewritten.

**PAST:** Success was defined by fiber density and network proximity. The core question was, “Where is the lowest latency?”

**PRESENT:** Success is defined by the ability to secure gigawatt-scale power and entitled land. The core question is now, “Where can we find 500 MW of power with a clear path to development?”

**CONCLUSION:** This paradigm shift favors markets with scalable infrastructure and proactive governance, forcing a move from single-market concentration to a diversified portfolio strategy across different market archetypes.

# Strategic Imperatives for the New Era

## 1. Power is the New Apex Predator.

Investment decisions are now led by utility partnerships and transmission timelines. The ability to navigate complex energy procurement and grid interconnection is the most critical competitive advantage.

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## 2. Local Policy is a Decisive Factor.

Proactive zoning (like in DFW's suburbs or Virginia's Henrico County) creates massive opportunities, while reactive tightening (Loudoun, Santa Clara) introduces significant risk and cost. Deep understanding of local political landscapes is essential.

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## 3. Portfolio Diversification is Non-Negotiable.

Reliance on a single, constrained Tier 1 market is no longer a viable long-term strategy. The new playbook requires a balanced and resilient portfolio that leverages the unique strengths of Hyper-Growth, Niche, and Legacy hubs to manage risk and capture opportunity.

# Key Source Reference

## Market & Power Analysis

- Dominion Energy Q4 2024 Earnings Call (via DCD)
- Oncor Mid-2025 Interconnection Queue Report (via Utility Dive)
- Southern Company Q2 2025 Earnings Call (via DCD)
- CBRE North America Data Center Trends H2 2024 (Market Profiles: IAD, DFW, PHX, ATL)
- ComEd Elk Grove Substation Report (via DCD)



## Regulation & Policy

- Loudoun County Zoning Amendments (via Blue Ridge Leader, 2025)
- “Counties try to keep data center development in bounds” (National Association of Counties, 2024)
- City of Phoenix Zoning Update Press Release (July 2025)
- Illinois Data Center Investment Program Annual Report (DCEO, 2023)
- “Santa Clara data centers hit max energy capacity” (San José Spotlight, 2025)



## Sustainability & Thematic Insights

- “A new front in the water wars: Thirsty, giant data centers” (The Washington Post, 2023)
- Henrico County Tax Rate Analysis (via Virginia Business, 2021)
- “The Dawn of Data” (VA Economic Development Partnership, 2019)
- DE-CIX Phoenix Exchange Launch Analysis (via DE-CIX.net)