INDUSTRY ANALYSIS · MARCH 2026

POWER BEFORE COMPUTE.

Why energy now sets the pace for AI infrastructure

Power Access	Delivery Certainty	Integrated Execution
Now sets the pace	Shapes market value	Protects future density

PUBLISHER
DARKNX LTD

FOCUS
AI Infrastructure

WEBSITE
darknx.com

EXECUTIVE SUMMARY

The Physical Layer Now Sets the Schedule

The AI infrastructure market is being shaped by a slower constraint than software, chips, or capital cycles. Power can only be secured in certain places, on certain timelines, and under conditions less flexible than the demand profile of modern compute.

Capacity now needs to be understood as secured energy translated into usable compute on a credible timetable. Square footage still matters. Rack counts still matter. But those numbers carry less weight when the underlying power position is uncertain, delayed, or poorly matched to the thermal profile of the next hardware cycle.

This shift is changing how serious buyers evaluate opportunities — how developers plan expansion, how operators think about deployment speed, and how investors distinguish theoretical scale from infrastructure that can actually come online without repeated redesign.

WHAT THE MARKET NOW REWARDS	WHY IT MATTERS
Visible power delivery schedule	A project that can energize on a clear timeline carries more commercial weight than one with a large but uncertain end state.
Thermal readiness for higher density	Cooling assumptions now shape revenue potential because future hardware generations arrive faster than major site retrofits.
Repeatable deployment model	Standardized delivery reduces commissioning risk, compresses expansion timelines, and makes new capacity easier to trust.
Integrated operating controls	Power, cooling, and controls increasingly need to behave as one system when density rises and fault tolerance becomes less forgiving.

WHY THIS MATTERS NOW

The market remains focused on models, chips, and capital deployment. Those factors matter, but they move faster than utilities, substations, transmission planning, and major infrastructure delivery. As compute demand accelerates, the gap between digital ambition and physical readiness is becoming harder to ignore.

THE CONSTRAINT HAS MOVED UPSTREAM

The Governing Bottleneck Is No Longer the Rack

For much of the last cycle, demand growth could be met with a familiar playbook — more space, more hardware, more capital. That cadence is now under pressure because the gating factor sits further upstream than the rack.

Power delivery works on a different clock from chips, capital, and software. Utility planning is slower. Substation work is slower. Transmission and distribution timelines are slower. The result is straightforward: compute demand can accelerate far more quickly than physical capacity can be energized.

> AN INTERPRETATION OF CAPACITY
> In the current market, capacity means more than what can fit on a floor plan. It means what can be energized, cooled, commissioned, and operated without a hidden redesign cycle.

CAPACITY NOW BEGINS WITH THE GRID

US Power Demand From Data Centres Expected to More Than Double

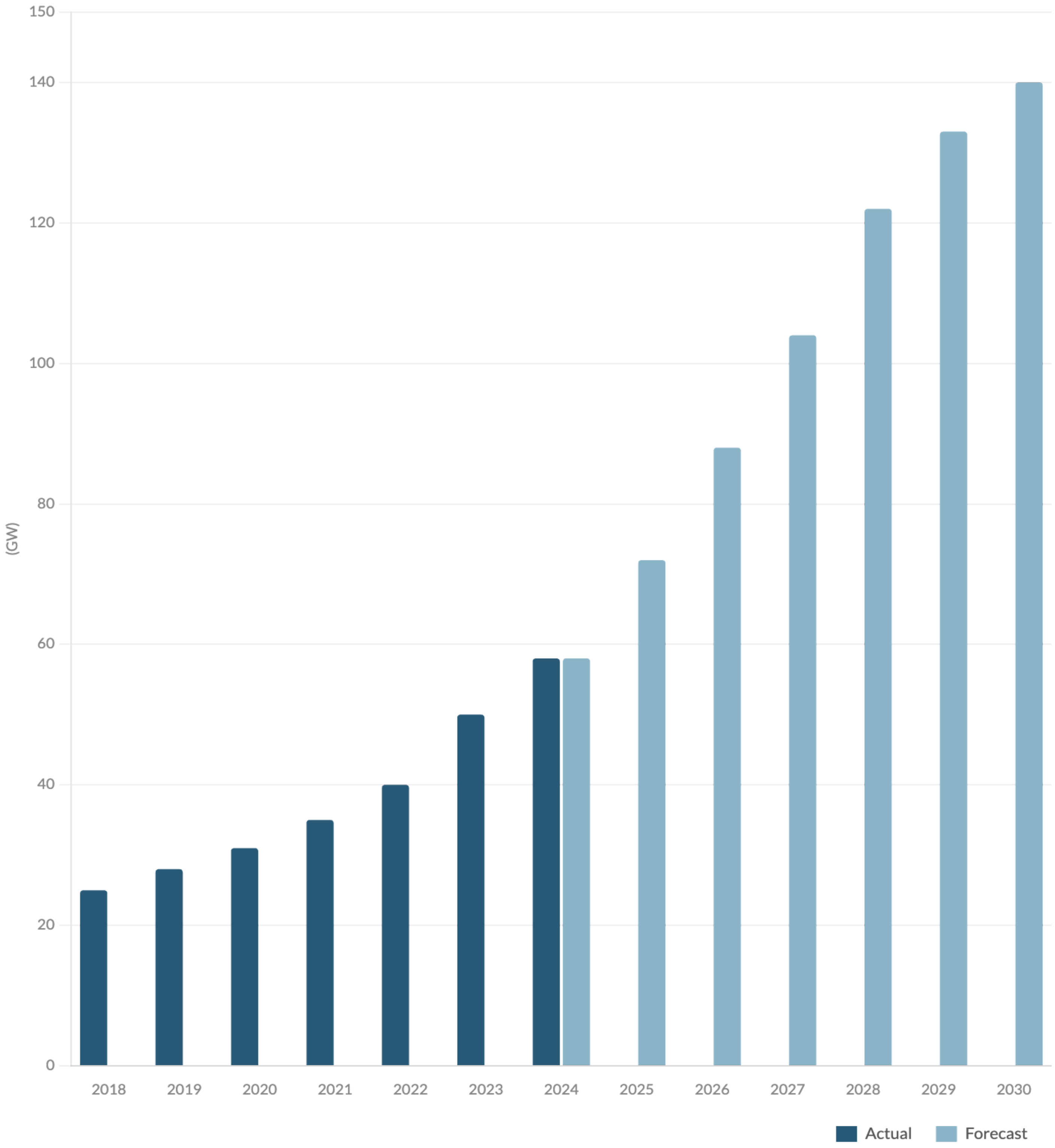
In the United States, data centres used approximately 176 TWh of electricity in 2023 — roughly 4.4 percent of total national power demand. Berkeley Lab projects that figure could rise to 325–580 TWh by 2028, or 6.7 to 12 percent of total U.S. electricity use. At the global level, the IEA expects data centre electricity demand to reach approximately 945 TWh by 2030, nearly double 2024 levels.

176 TWh	580 TWh	945 TWh
US data centre electricity use in 2023 — 4.4% of national demand	Berkeley Lab upper projection for US data centres by 2028	IEA global data centre demand forecast by 2030

Source: S&P Global Market Intelligence and 451 Research, Data Center Services & Infrastructure Market Monitor & Forecast: US Focused, September 2025. Lawrence Berkeley National Laboratory, January 2025. IEA.

CAPACITY NOW BEGINS WITH THE GRID

US Power Demand From Data Centres Expected to More Than Double From Current Levels



Utility power represents actual and forecasted total electricity supplied to data centres from the power grid, including IT equipment, cooling, lighting, offices, and security systems. Source: S&P Global Market Intelligence and 451 Research, Data Center Services & Infrastructure Market Monitor & Forecast: US Focused, released September 24, 2025.

NEW GEOGRAPHY OF COMPUTE

Location Strategy Is Shifting With the Bottleneck

In a higher-density market, legacy factors — network history, real estate habits, and demand patterns — are being reprioritized against a harder question: where can power be delivered on a usable timeline. In North America, vacancy fell to a record low 1.6 percent in H1 2025, and 74.3 percent of capacity under construction was already preleased.

LEGACY LENS	CURRENT LENS	COMMERCIAL IMPLICATION
Network history	Energy availability on a credible timeline	Markets with slower power delivery lose relevance even if they remain familiar.
Large end-state claims	Staged energization with visible milestones	Buyers place more weight on near-term certainty than distant headline capacity.
Generic facility assumptions	Thermal readiness aligned to future density	A site that can absorb denser hardware protects revenue continuity.
Expansion by site size	Expansion by coordinated delivery model	Replication and commissioning discipline matter more than footprint alone.

WHAT DO BUYERS LOOK FOR?

The strongest buyers are screening for infrastructure credibility. When density rises and delivery windows tighten, weak coordination stops being a minor execution issue and starts becoming a commercial problem.

BUYER QUESTION	WHY IT NOW MATTERS
Is power already contracted and staged?	Energy certainty carries more value when compute demand is immediate and utility timelines are uneven.
Can the site support higher density without rework?	Thermal and electrical assumptions now determine whether future hardware can be deployed cleanly.
Is expansion repeatable, or does each phase reopen the design?	Projects that depend on repeated redesign create more schedule risk and less confidence.
Can operations see power, cooling, and controls together?	Integrated visibility becomes more important as infrastructure behaves like one coupled operating system.

CHANGES IN INFRASTRUCTURE DESIGN

Power-Led Design Demands Integration

When power leads the conversation, infrastructure design becomes more integrated. Electrical decisions can no longer sit in one lane while cooling sits in another and commissioning is left to reconcile the gap at the end.

Higher density leaves less room for disconnected planning, late scope changes, and field-level improvisation. The strongest modern designs treat power delivery, thermal architecture, controls logic, and deployment sequencing as one system. That is how new megawatts are translated into stable capacity without losing time to avoidable redesign.

CONSTRAINT	DESIGN CONSEQUENCE
Power delivery	Projects need electrical pathways, staged energization logic, and monitoring that remain useful as density rises.
Thermal management	Cooling assumptions have to be made with future processor heat flux in mind, not just with current hardware in view.
Deployment speed	Factory-integrated or repeatable delivery models reduce field coordination burden and compress time to revenue.
Operational visibility	Power, cooling, and critical controls need shared monitoring context because faults increasingly cross system boundaries.

The physical layer can no longer be treated as a background condition. It now determines **where compute can be built, when it can be delivered**, and how much density can be absorbed before a site stops scaling cleanly.

HOW DARKNX ADDRESSES THE CONSTRAINT

Vertical Integration Across the Delivery Chain

The market increasingly rewards operators that can move from power strategy to live capacity without relying on fragmented handoffs. DARKNX addresses that requirement through vertical integration across sourcing, manufacturing, design coordination, and deployment of critical infrastructure systems.

That operating model is especially relevant where utility timelines are uneven, self-generation strategy must be resolved early, and backup generation has become a critical lead-time risk.

CAPABILITY	HOW DARKNX OPERATES	WHY IT MATTERS COMMERCIALLY
Vertical integration	Direct oversight across sourcing, manufacturing, design coordination, and deployment of critical infrastructure systems.	Critical-path interfaces are brought forward and schedule exposure to fragmented suppliers is reduced.
Utility & self-generation	Utility planning and self-generation strategy resolved as part of one infrastructure programme.	Capacity is tied to a clearer energization path and a more resilient route to live operations.
Generator procurement	Backup generation managed directly in a market where equipment demand and lead times remain consequential.	One of the most common delivery risks in power-constrained projects is handled earlier and with greater control.
Integrated design authority	Power, cooling, controls, and deployment sequencing governed together rather than traded across separate scopes.	Density can rise without the same level of redesign friction and commissioning uncertainty.
Structured commissioning	Validation treated as part of the delivery model, not as a late-stage check.	Operational readiness becomes easier to trust when systems are tested against the intended performance envelope.

THE EMERGING DELIVERY PREMIUM

In North America, vacancy fell to a record low 1.6 percent in H1 2025, 74.3 percent of capacity under construction was already preleased, and pricing for larger 10 MW-plus deployments rose by as much as 19 percent in supply-constrained markets. That premium is likely to widen because demand is rising faster than the grid can respond.

CONCLUSION

Power Remains the Governing Constraint

The next chapter of data-centre infrastructure will be shaped by who can secure power, deliver it on time, and keep building around it without losing momentum. Ambition still matters. Coordination matters more.

ABOUT THE PUBLISHER

At DARKNX, we develop and deliver high-density data-centre infrastructure for AI, HPC, and enterprise environments. Our approach combines modular deployment, greenfield development, brownfield redevelopment, and in-house manufacturing of critical infrastructure systems. We place particular emphasis on supply-chain control, utility coordination, self-generation strategy, and direct control over generator procurement.

EMAIL
info@darknx.com

PHONE
+1 647 850 6315

WEBSITE
darknx.com

OFFICES
Seattle, WA & Toronto, ON

REFERENCES

CBRE. North America Data Center Figures, H1 2025. · Lawrence Berkeley National Laboratory, January 2025. · S&P Global Market Intelligence and 451 Research, Data Center Services & Infrastructure Market Monitor & Forecast: US Focused, September 2025. · IEA, Electricity 2024.