

Q & A

THE POWER SHIFT: HOW ON-SITE ENERGY IS REDEFINING DATA CENTER GROWTH

A Strategic Insight Paper from Marshall & Stevens and NgenX Energy on the Power Strategies Driving Data Center Growth

WITH CHARLES MILLER

President & CEO, NgenX Energy

Interviewed by Marshall & Stevens



This Strategic Insight Paper represents a collaboration between Marshall & Stevens and NgenX Energy, uniting deep expertise in valuation, energy infrastructure, and deployment strategy to illuminate how power innovation is reshaping the data center industry.

As the digital-infrastructure sector enters a new phase of expansion fueled by AI and high-density computing, energy has become the defining constraint and opportunity for growth. This paper provides insight into how on-site and behind-the-meter power solutions are transforming project feasibility, capital efficiency, and operational resilience.

In this discussion, Fernando Sosa and Charles Miller explore the evolving intersection of power generation, modular construction, and digital infrastructure, from financing structures and deployment timelines to efficiency strategies and long-term energy planning. Their exchange offers a grounded, forward-looking perspective on how on-site energy systems are enabling the next generation of data center development and redefining the economics of scale in the digital era.



How are third-party ownership structures changing the way power is developed for data centers?

Data center operators want to focus on their core business, building and running efficient facilities, not managing power plants. But as energy demand grows, the power source has shifted from grid with intermittent backup diesel to Natural Gas Prime Movers as primary generation that must operate for years before grid connections are available.

Third-party ownership models for power generation assets are gaining wider acceptance. These structures, long used in energy markets, offer stable returns for investors while allowing data center developers to access resilient power without taking on the operational burden.



What are you seeing in terms of utility interconnection delays and their impact on project timelines?

Utilities and gas suppliers increasingly require proof that projects are real—letters of credit or secured financing—before committing infrastructure. In many major U.S. markets, interconnection queues now stretch five to eight years, some even longer.

That's driving a surge in on-site or "bridge" generation: temporary or modular power solutions that allow facilities to energize and operate years ahead of grid access or even forgo the grid all together.



Developers often call on-site generation 'bridge power.' Is that really accurate?

If you're running so-called bridge power for five years, that's not bridge, it's prime power. Many operators install behind-the-meter plants intending them as interim solutions, but they soon realize the economics justify keeping them permanently.

With utility prices rising, especially in constrained regions like PJM, on-site generation often becomes the lower-cost, long-term source.



**Q**

How are power and infrastructure being financed as part of the same project?

We're now seeing the data center asset and the power asset financed separately but integrated operationally.

When the power side is developed under an Energy Services Agreement (ESA) or EaaS structure, the responsibility shifts. Third-party specialists own, operate, and amortize generation, switchgear, and distribution assets over 10–15 years.

That structure essentially turns energy into a managed service for the data center.

The future belongs to developers who can integrate scalable, modular, power-integrated platforms that evolve with regulation and technology.

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How do you quantify the value of faster deployment for clients?

Speed to market is everything. Our analyses show that earlier energization can be worth \$0.10–\$0.40 per kWh in added value to users. For AI and GPU hosting clients, activating even a year sooner can translate to billions in incremental revenue.

That's why modular and on-site generation is no longer a niche, it's a competitive advantage.

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What's your take on repowering existing fossil-fuel plants for data center use? My experience has been that these can be tricky, but it is a viable strategy being pursued by some well-qualified parties.

That is correct, there are some well qualified parties pursuing this approach. The reason it's tricky is due primarily to the idle period associated with the repower. If a combustion turbine has been sitting for a long period and has not been well maintained, it could have damage that would incur substantial cost to overcome.

Additionally, modernizing the equipment to meet current codes and standards would take a significant engineering effort and expense. Most existing fossil plants never considered redundancy, so that cost also has to be factored into the equation. That said, existing facilities have permitting, rights of way, and infrastructure in place that can be leveraged to speed time to market and reduce other costs, so the entire asset mix needs to be evaluated on the whole.

In some instances, it can be a very viable approach. In others, it could be an integration nightmare. I guess it remains to be seen.



Q How are current tax incentives influencing investment in on-site power systems for data centers?

As of now, no fossil-fuel-based system can qualify for an Investment Tax Credit (ITC) unless construction began before January 1, 2025. Some equipment manufacturers anticipated this rule change and pre-purchased equipment for projects still under commercial negotiation. They are leveraging this stockpile of ITC-eligible assets throughout 2025, but those credits are expected to be fully utilized by January 1, 2026.

Q What new incentives or policies are being discussed that could impact future project economics?

There is significant discussion in Washington about advancing a Production Tax Credit (PTC) under the new technology-neutral framework currently being reviewed. To qualify, generation assets may need to incorporate heat recovery in a Combined Heat and Power (CHP) configuration.

Q How could these rules affect the adoption of heat recovery and cooling technologies in data centers?

Absorption chillers, which convert waste heat into cooling, have not yet been widely adopted in the data center community, largely because operators are unfamiliar with the technology. But when applied at scale within CHP systems, the advantage is substantial.

Under current performance metrics, CHP with absorption cooling can reduce electric consumption by more than 1 kW per ton of cooling. For a typical 100 MW data center, this efficiency gain can free up an additional 20–30 MW for IT load rather than cooling load. That represents a major shift in overall consumption dynamics and could dramatically enhance the ROI of on-site generation, especially if new PTC rules are enacted.

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You've said the modern data center is effectively a power plant. What do you mean by that?

Today's hyperscale data centers often include hundreds of millions of dollars in generation assets.

You're building not only compute capacity but utility-scale energy infrastructure, with all the associated permitting, maintenance, and tax implications. Operators need to think like energy companies: plan for redundancy, regulatory exposure, and long-term O&M costs.

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How are modular power strategies changing the way projects are built?

We're seeing the same modular thinking that reshaped data center design, now being applied to power.

Instead of a single 50 MW turbine, developers deploy clusters of 5–10 MW engines grouped into “power blocks.” This modularity allows phased build-outs—10 MW online quickly, then additional blocks as demand grows. It also improves redundancy and cuts time-to-revenue.

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As grid constraints persist, how do you see on-site generation evolving?

The old model, grid as primary, on-site as backup, is flipping.

In many markets, it's now cheaper and faster to run on-site generation as your main source, using the grid for redundancy. Pair that with waste-heat recovery for chilled water or absorption cooling, and your power usage effectiveness (PUE) can fall below 1.0. It's efficient, scalable, and resilient.

Q

What's your long-term outlook for energy strategy in data center growth?

Energy, cooling, and digital infrastructure are converging into a single ecosystem. The future belongs to developers who can integrate scalable, modular, power-integrated platforms that evolve with regulation and technology.

Building flexible, behind-the-meter assets is how you de-risk investment, control cost, and stay ahead of the curve.

“Modular and on-site generation is no longer a niche, it's a competitive advantage.”

Conclusion

The growth of the data center industry is now inseparable from the evolution of energy strategy. As workloads intensify and the demand for uptime and efficiency reaches new highs, developers and investors are recognizing that power is no longer a utility cost, it's a core component of value creation.

The insights shared in this paper highlight how on-site, modular, and financially flexible power solutions are transforming the economics of digital infrastructure. They not only enable projects to move faster and operate more reliably, but also give owners greater control over cost, carbon profile, and scalability.

Through this collaboration, Marshall & Stevens and NgenX Energy underscore a shared conviction: the future of data centers will be defined by the ability to integrate smart capital, advanced energy systems, and adaptive design. Together, these elements form the foundation for resilient, efficient, and sustainable digital ecosystems.

For stakeholders navigating this rapidly changing landscape, the message is clear, energy strategy is development strategy. Those who embrace it early will set the pace for the next generation of data center growth.



NgenX Energy is a U.S.-based energy-innovation company. With decades of experience in energy development, construction management, and commercial structuring, the firm designs, finances, and deploys advanced distributed-energy systems. Its portfolio includes combined heat and power (CHP), renewable integration, battery storage, and modular generation assets.

The company's value proposition centers on "energy innovation as a service." NgenX partners with technology providers, financiers, and engineering firms to deliver behind-the-meter power and thermal infrastructure through third-party ownership and Energy-as-a-Service (EaaS) models. These approaches reduce the capital burden on customers while increasing resiliency and lowering long-term energy costs.

Key markets served include:

- Data centers – Accelerating deployment, improving reliability, and reducing power-and-cooling costs through waste-heat recovery.
- Agribusiness and controlled-environment agriculture – Delivering on-site generation with heat recovery to lower operating costs and improve time-to-profitability.
- Commercial real estate and industrial facilities – Applying CHP and modular generation to enhance asset value and operational efficiency.

By combining technical innovation, financial structuring, and modular deployment, NgenX Energy positions itself as a strategic partner for large-scale users of power and thermal systems seeking to move beyond grid constraints and de-risk long-term growth. Learn more at ngenxenergy.com or contact:



Charles J Miller

CEO

NgenX Energy

cjmiller@ngenxenergy.com



Marshall & Stevens understands the complexities involved with the development and valuation of data centers. Our specialists provide valuation of early stage through operating data centers, energy generation and storage projects and other infrastructure projects, assets, real estate, and businesses enterprises.

Marshall & Stevens provides transaction advisory, valuation analyses, investigative accounting, and litigation support services to assist public and private clients with their important transactions and litigation matters.

Our diverse professionals have experience in a wide variety of valuation disciplines, public and private company transactions, and matters of dispute. Marshall & Stevens is relied upon to assist with domestic and international transactions, providing independent Fairness Opinions, Solvency Opinions, and Valuations.

For more information about our transaction advisory opinions and valuations for financial reporting, tax reporting, financing, insurance, and matters in dispute, please visit our website at marshall-stevens.com

