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Why AI Data Centres Are Turning to Off-Grid Gas Solutions

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As new data centres race to support the AI boom, access to power has become the industry's biggest challenge. Across the US, developers are grappling with lengthy grid interconnection queues that threaten to substantially delay deployment schedules.

Industry analysis suggests it now takes, on average, more than four years to connect a new data centre to the grid. While those timelines may have been manageable for previous generations of facilities, they are increasingly incompatible with the pace at which hyperscalers and developers are looking to bring new capacity online.

As a result, developers are exploring alternative ways to secure reliable, dispatchable electricity, with load and generation being co-located where the campus operates as an "island" and is not connected to the local grid.

By generating and consuming electricity independently, these "island" mode configurations are emerging as one of the most practical near-term solutions to clogged grid interconnection timelines, allowing construction and operational schedules to stay on track.

In the near-term, interconnection timelines have caused developers to focus even more on speed to power. Many developers are placing greater weight on securing electricity at scale to meet accelerated timelines for energising new facilities, with eventual grid interconnection and the carbon emissions of the generation source becoming a less important consideration.

That isn't to say that grid connection and emissions considerations have disappeared; the immediate focus is less about the amount of carbon emitted and more about the state and, potentially, federal considerations in obtaining air permits for gas fired generation.

ISLAND MODE GENERATION MOVES INTO THE MAINSTREAM

Rather than waiting for sufficient grid capacity to become available, an increasing number of projects are incorporating dedicated islands, with proximate generation capable of serving the facility independently, before potentially connecting to the wider transmission network at a later date.

According to research firm Cleanview, there were 59 dedicated off-grid power projects proposed or under construction for US data centres as of June 2026, with more than 90% announced since the beginning of 2025. The figures reflect just how quickly the market has shifted as developers look for practical ways to overcome power constraints.

Natural gas turbines have become a key part of the industry's response to today's operational realities, capable of delivering reliable, dispatchable power at the scale and speed AI requires. Supported by an established fuel network and technology that is already proven at commercial scale, gas generation can generally be deployed far sooner than waiting for access to new or existing transmission infrastructure or grid upgrades.

For developers under pressure to deliver capacity quickly, that combination has made natural gas one of the most commercially attractive options currently available. Further, gas generators are being paired with other reliability solutions such as inertial compensators, BESS and other UPS solutions in attempts to achieve reliability solutions.

THE ROLE OF RENEWABLES IN A CHANGING ENERGY MIX

Most developers continue to view renewable generation as a central part of their long-term energy strategies, with solar and wind, supported by battery storage, expected to play an increasingly important role. Small modular reactors are also attracting interest despite their relatively small size as a potential source of low-carbon baseload power.

However, intermittent resources alone cannot typically provide the continuous, 24/7 power required by data centers at the scale developers need due to land requirements and intermittency issues. While small modular reactors hold promise, they have yet to reach commercial deployment at scale, and are still viewed with caution in certain circles.

For now, off-grid natural-gas-fueled power provides a practical near-term solution when compared with renewable-powered or direct grid-connected models. By offering a bypass around lengthy interconnection queues, it is becoming an increasingly attractive option for developers seeking to bring AI capacity online faster.

REGULATION IS EVOLVING TOO

Policymakers are recognising that the existing regulatory framework was not designed for the scale or speed of today's AI-driven demand.

In June this year, the Federal Energy Regulatory Commission (FERC) ordered six of the country's electric grid operators to justify or revise their processes for powering large energy users, which FERC stated was aimed largely at speeding up the connection of data centres.

The move is intended to make interconnection processes more transparent and efficient, while addressing wider questions around who should pay for new infrastructure and how projects that bring their own generation should interact with the wider grid.

The orders stop short of imposing a single national approach, instead allowing regional grid operators to develop solutions that reflect local market conditions.

As behind-the-meter generation becomes more common, regulatory frameworks are beginning to adapt, giving developers greater clarity around how these projects can be delivered while balancing grid reliability and protecting other consumers from unnecessary costs.

NATURAL GAS AS THE BRIDGE

Island mode and behind-the-meter generation are not without their own unique set of challenges. Developing off-grid data centres requires additional power-engineering expertise and introduces new considerations around fuel supply, equipment procurement, permitting, air quality, local community consultation and long-term operations.

Supply chains are already under pressure, particularly for gas turbines, transformers and other critical equipment while competition for specialist engineering skills continues to grow. Developers therefore need to balance the advantage of bringing power online more quickly with the need to ensure their solutions are robust.

Operators are ultimately looking for a power or fuel source and supporting infrastructure that can deliver the “five nines” standard of 99.999% uptime.

In reality, that level of reliability has traditionally only been provided by the grid, with individual thermal generation assets, typically delivering somewhere in the neighborhood of 90% reliability so redundancy through over building the amount of generation has become a substitute for grid reliability.

For most developers, island mode or behind-the-meter generation is not intended to replace the grid. Instead, it provides a way of bringing projects online sooner while maintaining the flexibility to connect to the wider transmission network as additional capacity becomes available.

In that sense, natural gas is increasingly being viewed as a standalone bridge that allows AI infrastructure to keep moving while the electricity system catches up.

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