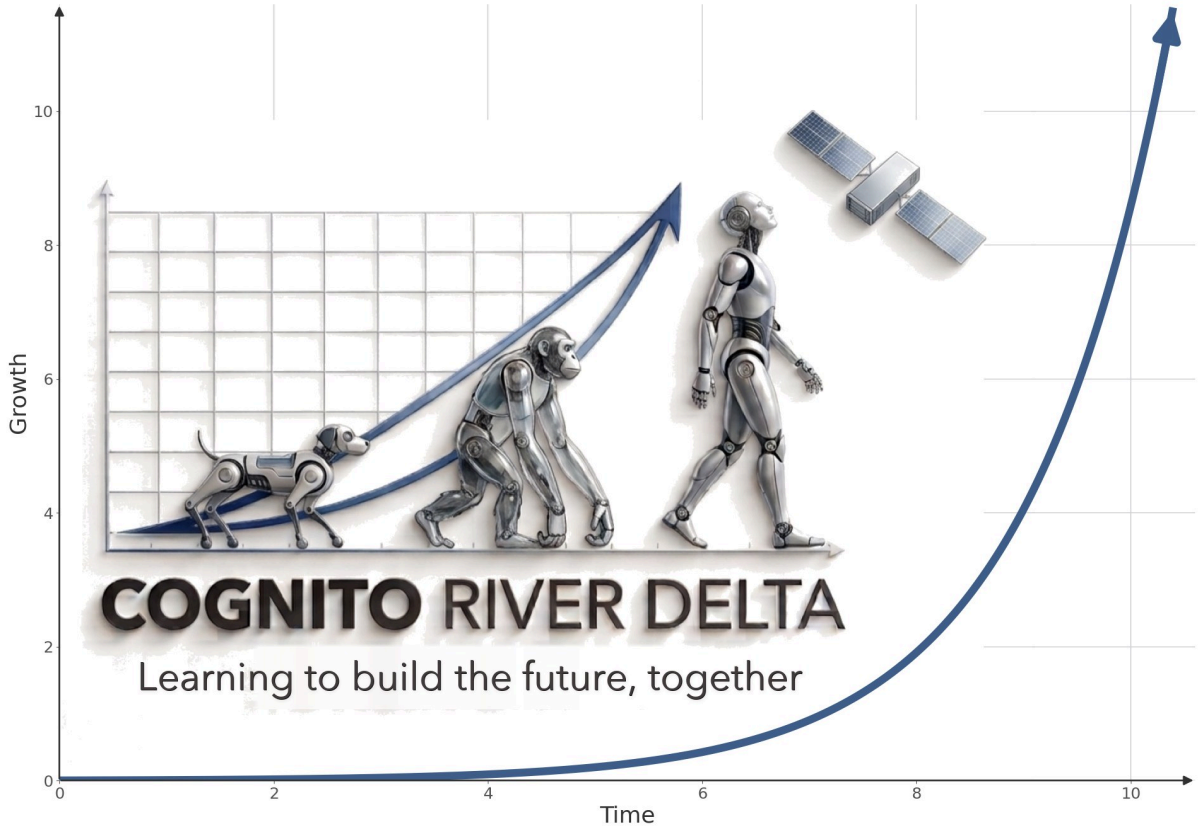


CATEGORY ROLLUP

Grid, gas & utilities - 2026-W46

Week of November 9, 2026

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Week of November 9, 2026 · 15 min read

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Weekly Notebook: The Great Infrastructure Bypass

Overview

The central narrative of the week is the emergence of a "Great Bypass"—a structural decoupling of industrial growth from the traditional electrical grid. For decades, the relationship between expanding industrial capacity and the power grid followed a predictable, if slow, regulatory cycle: utilities expanded capacity in response to forecasted demand, guided by decades-old interconnection processes and state-level regulatory oversight. However, the data gathered this week suggests that the sheer velocity and scale of the AI revolution have fundamentally broken this contract. We are witnessing a massive, multi-pronged movement by private capital to circumvent the terrestrial grid entirely, moving away from a model of "requesting connection" toward one of "manufacturing autonomy."

The week's developments reveal a widening, systemic rift between the "Old Grid"—defined by chronic interconnection backlogs, regulatory bureaucracy, and mounting public hostility—and a burgeoning "New Infrastructure" layer. This new layer is characterized by high-velocity, high-risk deployments designed to achieve energy sovereignty. We see this at every level of the hierarchy: from the macro-scale ambition of SpaceX's "StarMind" orbital computing, to the mid-scale deployment of "grid-skipping" aeroderivative gas turbines by companies like

Crusoe, down to the micro-scale hardware shifts, such as NVIDIA's transition to 800V DC power distribution to manage the extreme physical demands of AI density.

This shift is not merely a technological pivot; it is a profound socio-political realignment. As AI data centers demand unprecedented power, they are colliding with a "Social License to Operate" crisis. The tension between the high-energy requirements of the digital economy and the rising utility costs for residential consumers has moved from a quiet concern to a frontline political battleground. From localized bans in Ohio to nationwide ballot measures, the public is increasingly unwilling to subsidize the energy needs of the AI revolution through their own utility bills. This week's coverage underscores a critical reality: the path to scaling the next era of computing may no longer run through the utility regulator's office, but through the launchpad, the private power plant, and the orbital solar array.

Energy Production and the Grid

The current energy landscape is no longer characterized by gradual growth, but by a violent collision between astronomical demand and structural fragility. The "bottleneck" that once appeared to be a theoretical risk of future scaling has become a physical, immediate reality.

The Crisis of Interconnection and Capacity

The fundamental constraint on the modern economy is the unavailability of power. The US power infrastructure is currently facing a systemic failure to keep pace with demand, a reality reflected in a dismal 13% success rate for US power capacity applications between 2000 and 2020 (Bilyeu). This statistic highlights a massive disconnect between the capital being deployed to build new capacity and the ability of the system to actually integrate it. This failure is not merely a matter of slow growth; it is a matter of systemic friction. Analysts point to a regulatory and bureaucratic environment that is ill-equipped for the rapid-fire deployment required by the current technological era, with US infrastructure receiving a "D plus" rating from the ASCE (Bilyeu).

The urgency of this capacity crisis is underscored by the projected peak demand, which is expected to hit 166GW by November 2025. This massive influx of demand is hitting a wall of interconnection delays that average six years (Wood McKenzie). For a sector like AI, where the window for competitive advantage is measured in months, a six-year wait for grid access is effectively a denial of service. This delay is the primary driver behind the entire "bypass"

movement, forcing developers to treat the traditional grid as an unreliable partner rather than a foundational utility.

The Rise of "Grid-Skipping" and On-Site Power Generation

Because the traditional grid cannot meet the temporal demands of high-growth sectors, a new class of "grid-skipping" infrastructure is emerging. The industry is shifting from a model of "power procurement" (buying from a utility) to "power manufacturing" (building on-site).

A primary example of this tactical shift is the use of aeroderivative turbines. These are essentially repurposed jet engine technologies designed for rapid, flexible power generation. Companies like Crusoe are already bypassing the six-year utility bottleneck by ordering 50MW ProEnergy sets to provide immediate, localized power (Farzad Mesbahi). This approach allows developers to decouple their growth timelines from the sluggishness of state-regulated utilities.

At the extreme end of this spectrum is the SpaceX "StarMind" proposal. This represents the ultimate bypass: moving the problem of energy, power, and cooling entirely off-planet. The vision involves a system of up to one million orbital data center satellites that would utilize continuous solar energy from space to power AI computing (Mesbahi, Ryan Shaw). By utilizing orbital solar, SpaceX aims to decouple the most energy-intensive industry from the limitations of Earth's terrestrial grid and the physical constraints of fiber-optic infrastructure. This isn't just an upgrade; it's a complete re-architecture of the concept of a data center. The scale of this ambition is reflected in Elon Musk’s claims that 100GW of space-based solar could equate to 800GW of power on Earth (Yahoo Finance, TradingView), an order of magnitude that would render terrestrial grid constraints irrelevant.

Hardware Evolution: Solving the Density and Distribution Challenge

As the scale of power requirements moves into the megawatt and gigawatt range, the physical engineering of power distribution must also evolve. The transition is visible in two distinct areas: the internal architecture of the data center and the stabilization of the grid itself.

Within the data center, the move toward extreme power density is forcing a change in how electricity is delivered to the rack. NVIDIA is transitioning to 800V DC power distribution to handle the massive megawatt-scale requirements of next-generation AI hardware (Farzad Mesbahi). This is a response to the physical limitations of traditional AC distribution; as power

density increases, the weight and inefficiency of copper-heavy AC systems become untenable. Moving to 800V DC is expected to reduce copper usage by approximately 45% compared to 415V AC, significantly reducing capital expenditures and improving end-to-end efficiency (Farzad Mesbahi).

On the macro scale, the volatility of the grid is being managed through massive, integrated storage assets. Tesla's completion of the Melbourne Renewable Energy Hub (MRAH) serves as a critical blueprint for this kind of grid-scale stabilization. By deploying 444 "grid-forming" Megapacks, Tesla has provided 600MW and 1.6GWh of storage (Tesla/Megapack video). The use of "CHILL" simulation technology allowed Tesla to automate testing and ensure the project was delivered on time and budget, providing a model for how large-scale battery assets can serve as a buffer for a grid under extreme pressure.

Geopolitical Divergence in Infrastructure Deployment

The ability to deploy "sovereign" or "independent" power is emerging as a key competitive advantage in the global AI race, and a clear divergence is appearing between Western and Eastern infrastructure strategies. While the West struggles with interconnection backlogs and regulatory friction, China has demonstrated a capacity for rapid, large-scale, off-grid deployment, having already constructed an 800-megawatt off-grid data center (Hacker News).

In contrast, other developed economies are struggling to translate high-level ambitions into physical reality. For example, South Korea's gigawatt-scale ambitions are currently stalled at the megawatt scale (THE ELEC). This suggests that the winners of the AI era may not be the nations with the best software, but the nations with the fastest, most independent energy deployment capabilities.

Cross-cutting themes

The Death of the Utility Wait and the Rise of Energy Sovereignty The most dominant theme of the week is the systematic abandonment of the traditional utility model by industrial developers. The industry is moving from a state of "dependency" to a state of "autonomy." This is a shift from asking for power to manufacturing it on-site, in the air, or even in orbit. Whether it is the tactical use of aeroderivative turbines to skip the six-year interconnection queue, or the strategic deployment of massive, independent solar orders, the message is

clear: the grid is no longer viewed as a reliable partner for high-velocity growth. This creates a fundamental tension between the regulated, slow-moving public utility model and a high-risk, high-reward model of private infrastructure developers who view power as a manufactured component rather than a public service.

The Social License to Operate: The New Regulatory Frontier The expansion of the "New Infrastructure" is hitting a significant political wall: the loss of the social license. There is a growing, violent friction between the requirements of the digital economy (AI/Data Centers) and the economic stability of residential consumers. This is manifesting as a "zero-sum" conflict over electricity. As data centers compete for limited capacity, the fear of rising utility costs for residents is driving a wave of legislative and grassroots resistance. This is not just a matter of "not in my backyard" (NIMBY) sentiment; it is a coordinated political effort, evidenced by 33 nationwide ballot measures and specific municipal bans, such as those in 14 Ohio municipalities. The "regulatory hurdle" is shifting from the utility commission to the ballot box.

The Paradox of Scale and Volatility Finally, we are seeing a profound tension between the massive, gigawatt-scale ambitions of the industry and the extreme volatility of the capital being deployed. The era of "incrementalism" is over, replaced by a landscape of hyper-scale orders and massive cancellations. We see evidence of both extreme demand (Elon Musk's potential 100GW solar equipment orders) and massive, sudden volatility (Softbank's $3.7 billion loss following the cancellation of 13GW of gas turbine orders). This suggests that while the *demand* for power is absolute and non-negotiable, the *certainty* of the infrastructure build-out remains highly unstable. Investors and developers are operating in a high-stakes environment where a single pivot can result in multi-billion dollar write-downs.

Where sources agree

- **The Grid as a Systemic Bottleneck:** There is a consensus across all reports that the primary constraint for scaling the modern economy—be it AI data centers, robotaxis, or industrial expansion—is the availability of power and the massive, multi-year delays in grid interconnection (Farzad Mesbahi, Brighter with Herbert).
- **AI's Energy Demand is Disruptive:** All sources acknowledge that AI's energy requirements are approaching "planetary limits" and are driving a radical, fundamental re-evaluation of energy production and distribution models (Wissner-Gross, Bilyeu).

- **Social and Political Backlash is Real:** Analysts agree that the rapid expansion of data centers is creating significant political and social friction, specifically regarding the potential for these facilities to drive up utility costs for local residential populations (Prof G Markets, Randy Kirk, Galloway).

Where sources disagree or differ

- **The Feasibility of Orbital Computing:** A sharp scientific debate is unfolding over the SpaceX "StarMind" concept. Proponents like Jo Bhakdi argue that the plummeting costs of Starship launches will make orbital compute economically superior to Earth-based centers by 2028. Conversely, astrophysicists like Joseph Farah argue the project is fundamentally impractical due to the immutable laws of thermodynamics and the extreme challenges of solar energy collection in orbit.
- **The Root Causes of Infrastructure Failure:** There is a disagreement over why the US energy system is failing to meet demand. Bilyeu attributes the struggle to systemic regulatory bureaucracy and the failure of the existing system. In contrast, BestInTESLA points to a disparity in execution, noting the massive inefficiency of government spending compared to the rapid, effective execution of the private sector (e.g., Tesla's supercharger rollout).
- **The Softbank Turbine Dispute:** There is a direct conflict regarding the cancellation of 13GW in gas turbine orders. While news reports cite a $3.7 billion loss for Softbank due to these cancellations, Softbank itself has actively rejected claims that the company is defaulting on these orders (Google News, The 420.in).
- **The Impact of Data Center Expansion on Residents:** There is a debate over whether the disruption to residential consumers is driven primarily by the data centers themselves or by broader, existing systemic inefficiencies in how utilities manage load and capital.

Numbers and claims to verify

- **SpaceX/StarMind Claims:** Verify the 100GW per year solar equipment order claim (Ryan Shaw/Wissner-Gross) and the 0.75GW power capacity associated with the Texas projects (Randy Kirk).
- **Data Center Restrictions:** Verify the 33 nationwide ballot measures and the 14 Ohio municipalities passing data center bans/restrictions (Prof G Markets).

- **Grid & Infrastructure Metrics:** Verify the 6-year average wait time for gas turbines (Wood McKenzie) and the 13% success rate for US power capacity applications between 2000-2020 (Bilyeu).
- **Financial and Efficiency Claims:** Verify the claim of $7 million profit per megawatt of compute deployed by NVIDIA (Dylan Patel) and the potential 40% reduction in residential power bills offered via SpaceX's campus proposals (Brighter with Herbert, Randy Kirk). Also, verify the 45% reduction in copper usage via 800V DC (Farzad Mesbahi).

Investment and strategic implications

- **Investment in "Grid-Skipping" Technologies:** The value chain is shifting toward companies that provide the tools for autonomy. This includes providers of aeroderivative turbines, large-scale battery storage manufacturers (like Tesla), and specialized hardware that manages density (NVIDIA). If the "StarMind" vision gains any traction, the aerospace sector could become a legitimate component of the energy infrastructure play.
- **Managing the Risk of Scale:** The Softbank incident serves as a warning: in the era of the "Great Bypass," capital deployment happens at the gigawatt scale. This introduces unprecedented financial risk. Investors must account for the fact that the transition from a "planned" build-out to a "canceled" project can happen with catastrophic speed and scale.
- **Efficiency as a Primary Competitive Differentiator:** As the cost of acquiring power rises and the difficulty of distributing it increases, the winners will be those who can squeeze the most work out of every watt. Technologies that improve efficiency—such as NVIDIA's 800V DC architecture or Tesla's "CHILL" simulation technology—are no longer just technical optimizations; they are strategic imperatives for survival in a power-constrained economy.

What to watch next week

- **Legislative and Election Outcomes:** Monitor for any official results or legal updates regarding the data center restriction ballot measures and the Ohio municipal bans.

- **The Status of Major Power Orders:** Watch for any developments regarding the deployment of the 50MW ProEnergy sets or any escalation in the dispute between Softbank and its turbine suppliers.
- **Space-Based Infrastructure Progress:** Look for technical updates or official confirmations regarding SpaceX's solar equipment procurement or any further details on the "StarMind" program.

Appendix: Individual perspectives

We see further because we stand on the shoulders of giants. The people in this appendix are some of those giants: their public work, followed and studied every day and every week, is how CognitoRiverDelta brings the world's AI knowledge and concerns together, so that, in time, our expert panel can help shape real solutions and paths forward for all of us. We learn by observing them, and we think of them as kindred spirits: people helping humanity and AI educate each other and contribute to solutions. Together they form a much larger community of minds, a worldwide panel; ours is a small copy of it. Most people don't want to become expert kayakers, reading rocks and rapids every day; yet that is how this fast-flowing river of change feels to many of us, and the evidence that could ease those fears, the grounded ones and the imagined ones, is still being gathered. That is the work. We credit their ideas here with gratitude; they are not affiliated with us and do not endorse this report.

- **Bilyeu:** Argues that US energy struggles are the result of systemic regulatory bureaucracy and failure, citing the ASCE "D plus" rating for infrastructure.
- **BestInTESLA:** Highlights the disparity between government spending inefficiency and private sector execution (specifically regarding Tesla's supercharger rollout).
- **Bhakdi, Jo:** Contends that the falling costs of Starship launches will make orbital computing more economically viable than Earth-based centers by 2028.
- **Farah, Joseph:** Contends that space-based compute is unfeasible due to the constraints of thermodynamics and solar energy requirements.
- **Farzad Mesbahi:** Observes that AI developers are bypassing grid delays using aeroderivative jet engine technology and highlights the necessity of the 800V DC shift.
- **Galloway, Scott:** Notes that the expansion of AI data centers is a source of social friction that directly impacts local residential utility costs.
- **Prof G Markets:** Tracks the rising political resistance to data centers via ballot measures and legislative actions.

- **Randy Kirk:** Discusses the potential for new campus proposals (such as SpaceX's) to actually reduce residential power costs for local members.

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