



Infrastructure: Integrated capital, operational, regulatory and geopolitical risk governance → Resilience

May 2026 reinforced that integrated infrastructure companies are facing a more complex operating environment across five interrelated categories. First, **power demand and grid constraints** intensified as AI/data-center load, electrification, industrial reshoring, and summer reliability risk placed additional pressure on generation adequacy, transmission capacity, and large-load interconnection frameworks. Second, **supply-chain and critical-minerals constraints** moved from procurement inconvenience to strategic risk, with transformer shortages, rare earth dependency, battery supply chains, and grid-equipment bottlenecks threatening the timing and cost of capital deployment. Third, **shifting pricing and supply dynamics** complicated the economics of renewables, storage, gas, LNG, nuclear, and grid investment, as global energy-security concerns increasingly intersected with decarbonization goals. Fourth, **European energy and water stress** highlighted the vulnerability of advanced infrastructure systems to low gas stocks, hydropower shortfalls, price volatility, heat, drought, and aging water networks. Finally, **PFAS and emerging-contaminant regulation** underscored that water utilities face not only compliance and treatment challenges, but also public-trust, funding, residuals-disposal, and long-term liability questions. The 12 news items, below, demonstrate that resilience relies on integrated capital, operational, regulatory, and geopolitical risk governance.

Power Demand and Grid Constraints

1) U.S. power demand projections move higher again as AI/data-center load accelerates

What happened: The EIA expects U.S. power consumption to rise from a record 4,195 billion kWh in 2025 by 1% in 2026 and by 4% in 2027 (4,379 billion kWh), with AI-related demand a major driver.ⁱ This confirms that the U.S. power sector has moved from a long period of flat demand into a structurally higher-growth environment.

For integrated infrastructure companies, this affects generation planning, transmission investment, reserve margins, rate affordability, fuel procurement, and large-load contracting.

Board director response: Require management to present updated load-growth scenarios separating baseline demand, data-center demand, electrification, industrial reshoring, weather sensitivity, and demand-response assumptions. **Monitor:** Large-load interconnection requests, data-center concentration by service territory, reserve margins, peak-load forecasts, rate impacts, and whether new load is backed by firm generation, storage, or interruptible agreements.

2) NERC found U.S. summer grid readiness improves, but reliability risks remain

What happened: On May 19, the North American Electric Reliability Corp. (NERC) reported that record resource additions improved U.S. grid readiness for summer 2026, including solar, battery, and some natural-gas additions. However, NERC warned that increased demand, rapid large-load growth, low-wind periods, early summer heat, drought, and maintenance outages could still challenge reliability.ⁱⁱ The resource-addition story is positive, but the risk profile is shifting from simple capacity adequacy to timing, deliverability, flexibility, fuel availability, transmission constraints, and weather-correlated outages.

Board director response: Ask management to show summer-readiness plans by region and asset class, including forced-outage assumptions, fuel availability, grid-operator emergency protocols, and customer communications.

Monitor: Heat waves, drought conditions, wind-output volatility, forced outages, battery performance during peaks, regional reliability alerts, and emergency load-shed events.

3) DOE clarifies: PJM can curtail data center energy supply during severe emergencies

What happened: The U.S. Department of Energy (DOE) states that the PJM Interconnection LLC - the largest power grid in North America - has the authority to curtail data-center power use during severe power emergencies, requiring them to shift to backup generation as a last resort to avoid rolling blackouts.ⁱⁱⁱ Data centers are no longer just large commercial customers; they are becoming reliability participants whose operations may be subject to emergency curtailment. This has implications for contract design, backup generation, customer economics, emissions, insurance, and public-policy scrutiny.

Board director response: Ensure management has a formal large-load tariff and contract framework covering the permission to interrupt large customers' power, backup-power obligations, cost allocation, credit support, stranded-asset protection, and emergency operating protocols. **Monitor:** PJM and FERC proceedings, state commission reactions, customer pushback, backup-generation emissions rules, and whether other ISOs/RTOs adopt similar curtailment frameworks.

Supply-Chain and critical-minerals constraints

4) Transformer shortages become a binding constraint on grid expansion

What happened: U.S. power developers are scrambling for imported transformers and factory production slots as transformer shortages hold back grid deployment. Demand for generator step-up transformers has increased 274% between 2019 and 2025, substation transformer demand rose 116%, prices rose about 80% over five years,^{iv} Transformer availability can determine whether generation, transmission, substations, renewable projects, and data-center interconnections actually come online. A completed project without transformers can become a stranded or delayed asset.

Board director response: Require a critical-equipment dashboard covering transformer lead times, supplier concentration, production-slot commitments, import exposure, refurbishing options, spare inventory, and project-by-project dependency mapping. **Monitor:** Transformer lead times, grain-oriented electrical steel and copper availability, supplier financial health, domestic capacity additions, import restrictions, and whether procurement commitments are tied to approved capital plans.

5) Critical minerals and rare earths remain a strategic infrastructure vulnerability

What happened: Europe needs its own pricing system for specialty metals and rare earths to reduce reliance on China and unlock mining and processing investment. And, in the U.S., the U.S. DOE announced more than \$45 million to support domestic critical mineral and material supply chains.^v Rare earths and critical minerals are embedded across power electronics, motors, batteries, grid equipment, renewables, advanced manufacturing, and defense-linked infrastructure. Pricing opacity and China-centered supply chains create procurement, cost, and geopolitical risks.

Board director response: Treat critical minerals as an enterprise-risk category. Management should identify which assets, suppliers, and capital projects depend on rare earths, copper, nickel, lithium, graphite, aluminum, and specialty steels. **Monitor:** China export controls, European and U.S. critical-minerals policy, domestic processing capacity, commodity-price volatility, supplier-of-supplier mapping, and potential stockpiling or long-term offtake strategies.

6) Battery storage demand surges, but grid queues and China-linked supply chains limit deployment

What happened: On May 18, Reuters reported that U.S. battery-storage firms are seeing strong demand from AI data centers, but lengthy grid-connection queues and China-dependent supply chains are limiting rapid scale-up.^{vi} Storage is central to serving fast-growing load, integrating renewables, and improving reliability. But storage cannot solve capacity or resilience challenges if interconnection delays, tariff uncertainty, or battery-cell dependence slow deployment.

Board director response: Ask management to distinguish between storage as an economic arbitrage tool, a reliability resource, a data-center support asset, and a regulated rate-base investment. **Monitor:** Storage interconnection queues, tariff and domestic-content rules, battery-cell sourcing, fire-safety requirements, warranty terms, degradation assumptions, and capacity-market treatment.

Shifting Pricing and Supply Dynamics

7) Solar, wind, and battery economics improves, but U.S. policy uncertainty complicates deployment

What happened: The International Renewable Energy Agency (IRENA) has found solar and wind with battery storage are increasingly cost-competitive with coal and gas. Firm solar-plus-storage costs in high-irradiance regions were reported at \$54–\$82/MWh, with further declines expected. U.S. solar installers, banks, and insurers, however, are avoiding some China-linked U.S. solar factories because of uncertainty over subsidy eligibility, threatening domestic manufacturing and power-capacity growth.^{vii} The economics of renewables-plus-storage are improving, but the U.S. deployment path remains exposed to industrial policy, trade rules, tax-credit interpretation, financing friction, and China-linked supply-chain restrictions.

Board director response: Require clean-energy procurement stress tests under multiple scenarios: domestic-content compliance, tariff increases, financing delays, supplier disqualification, interconnection delays, and higher equipment costs. **Monitor:** IRS/Treasury guidance, domestic-content eligibility, solar factory utilization, insurer and lender appetite, PPA repricing, and whether storage economics remain attractive after tariffs and interconnection delays.

8) Aluminum price spikes raise costs for U.S. solar projects

What happened: War-related disruption in Iran and the Strait of Hormuz have pushed aluminum prices higher, increasing racking costs for commercial U.S. solar projects by roughly 20% according to one industry executive. Reuters also noted that EIA expects 43.4 GW of U.S. utility-scale solar additions in 2026, a 60% increase from the prior year.^{viii} Solar project economics depend not only on panels and tax credits, but also on commodity inputs such as aluminum and silver. Cost shocks can turn marginal projects uneconomic and ultimately raise customer costs.

Board director response: Ask management to identify commodity-sensitive components in the capital plan and quantify exposure to aluminum, copper, steel, silver, transformers, batteries, and inverters. **Monitor:** Aluminum and silver prices, supplier force-majeure clauses, project repricing, EPC contract escalation provisions, and whether delayed solar projects affect capacity adequacy.

9) Global energy investment has shifted toward gas, LNG, grids, storage, renewables, coal, and nuclear as energy security concerns intensify

What happened: On May 28, Reuters reported that IEA expects global natural-gas investment to rise more than 10% in 2026 to \$330 billion, the highest level in a decade, while total energy investment rises to \$3.4 trillion. Reuters reported \$2.2 trillion is expected to go to renewables, storage, power grids, and low-emission fuels; coal investment is expected to reach a 14-year high; and nuclear spending is projected at \$80 billion.^{ix} The energy transition is becoming more complex, not linear. Security of supply, LNG, dispatchable generation, coal resilience in Asia, nuclear revival, and grid investment are all advancing alongside renewables and storage.

Board director response: Review whether the company's strategy is resilient across multiple transition pathways: high-renewables, gas-backed reliability, nuclear/advanced nuclear, prolonged commodity volatility,

and energy-security-driven policy shifts. **Monitor:** LNG contracting, gas-turbine availability, nuclear policy, coal generation in Asia, grid-investment incentives, and global capital flows into dispatchable and low-carbon resources.

European energy and water stress

10) European winter power-price risk rises on low gas stocks and weaker hydro reserves

What happened: Reuters reported on May 26 that European winter electricity contracts were trading at more than a 20% premium to the following year's benchmark, the highest since the 2022 energy crisis, as low gas stocks and shrinking hydropower reserves raised cost risks for households and businesses.^x Europe remains vulnerable to correlated energy risks: gas storage, hydrology, power prices, geopolitical shocks, and affordability pressure. For multinational infrastructure companies, this affects procurement, customer affordability, industrial competitiveness, and political intervention risk.

Board director response: Require management to assess winter-readiness, fuel hedging, hydrology exposure, customer affordability, and liquidity requirements under high-price scenarios. **Monitor:** European gas storage levels, hydropower reservoir levels, winter forward curves, LNG cargo availability, government subsidy interventions, and industrial demand destruction.

11) England's heatwave and dry spring exposes aging water-infrastructure vulnerabilities

What happened: Record heat and a dry spring has left thousands of households in southeast England without water or facing low pressure - affecting 20,000+ people at its peak - and South East Water reports low storage and demand roughly 100 million liters above the seasonal average.^{xi} Water reliability is becoming a climate-adaptation, infrastructure-investment, and public-trust issue. Heat, drought, leakage, storage constraints, and underinvestment can converge quickly into service failures.

Board director response: Ask management to present water-supply resilience metrics, including reservoir/storage adequacy, leakage rates, peak-demand response, emergency supply protocols, customer vulnerability, and capex required for climate adaptation. **Monitor:** Drought declarations, reservoir levels, water restrictions, leakage performance, regulator investigations, heatwave frequency, and required investment for supply resilience.

PFAS and Emerging-contaminant Regulation

12) EPA reopened the PFAS regulatory pathway while adding funding for drinking-water systems

What happened: On May 18, EPA announced a PFAS strategy that included nearly \$1 billion in new funding to states for PFAS and other emerging contaminants in drinking water, while issuing two proposed rules for public

comment that would uphold standards for PFOA and PFOS but revise implementation and address legal concerns.^{xii} Water utilities face continued uncertainty over compliance timelines, treatment technologies, capital costs, residuals disposal, and legal liability. Even when compliance timing shifts, PFAS remains a public-trust and capital-planning issue.

Board director response: Require an emerging-contaminants roadmap covering testing, treatment, residuals handling, capex, rate recovery, grant eligibility, litigation exposure, and customer communications. **Monitor:** Final EPA rule language, state-level PFAS standards, grant allocations, technology performance, disposal rules, public-comment themes, and class-action or contamination litigation.

Summary

For board directors, the May 2026 takeaway is that infrastructure resilience must be governed as an integrated capital, operational, regulatory, and geopolitical risk agenda. As it requires a combined view of **load growth, equipment deliverability, critical-minerals exposure, energy security, affordability, and water resilience**, Boards need to discern: 1) whether the company has sufficient capital, and 2) whether capital can be deployed into assets that can actually be permitted, procured, interconnected, financed, operated, and recovered through rates while maintaining public trust. Directors should press for: a large-load and AI-demand strategy; a critical-equipment and transformer dashboard; a critical-minerals risk map; a summer and winter reliability plan; PFAS and emerging-contaminants readiness; and an integrated capital plan that links electricity, energy, water, resilience, affordability, and regulatory recoverability. Boards also should monitor interconnection queues, PJM/FERC/NERC actions, transformer lead times, critical-mineral policy, storage deployment, renewable procurement costs, European winter power pricing, water-supply reliability, and EPA PFAS rulemaking. The governance priority is to ensure that capital plans are not only ambitious, but executable, financeable, recoverable, resilient, and credible with regulators, customers, investors, and communities.

Primary-source support for these trends comes from EIA's May 2026 electricity-demand forecast, NERC's 2026 Summer Reliability Assessment, FERC's summer reliability assessment, DOE's PJM emergency order and critical-minerals funding announcement, IRENA's May 2026 firm renewables-and-storage report, IEA's World Energy Investment 2026, ACER's European gas-market update, and EPA's May 2026 PFAS strategy and drinking-water funding announcement.

ⁱ <https://www.reuters.com/business/energy/us-power-use-beat-record-highs-2026-2027-ai-use-surges-eia-says-2026-05-12/>, <https://www.eia.gov/todayinenergy/detail.php> and https://www.ferc.gov/sites/default/files/2026-05/26_Summer%20Assessment_0521.pdf

ⁱⁱ <https://www.reuters.com/legal/litigation/nerc-says-strong-resource-additions-boost-us-summer-grid-readiness-risks-remain-2026-05-19/> and https://www.nerc.com/globalassets/our-work/assessments/nerc_sra_2026.pdf

ⁱⁱⁱ <https://www.reuters.com/business/energy/us-pjm-grid-can-curb-data-center-power-usage-emergencies-department-energy-says-2026-05-19/>, <https://www.utilitydive.com/news/pjm-doe-emergency-order-curtail-data-centers/820571/> and <https://www.energy.gov/articles/energy-secretary-issues-emergency-order-deploy-backup-generation-mid-atlantic-amid>

^{iv} <https://www.reuters.com/business/energy/us-power-transformer-buyers-scramble-imports-factory-slots-reeii-2026-05-11/> and <https://arxiv.org/abs/2604.18411>

^v <https://www.reuters.com/world/china/europe-must-break-chinas-grip-rare-earths-pricing-spur-investment-sector-body-2026-05-20/> and <https://www.energy.gov/cmei/articles/does-office-critical-minerals-and-energy-innovation-announces-over-45-million-support>

^{vi} <https://www.reuters.com/business/energy/battery-storage-firms-eye-ai-demand-face-grid-supply-hurdles-2026-05-18/>, <https://pv-magazine-usa.com/2026/05/11/u-s-transformer-market-faces-severe-supply-constraints-as-lead-times-extend-to-four-years/> and <https://arxiv.org/abs/2605.29053>

^{vii} <https://www.reuters.com/business/energy/solar-wind-with-battery-storage-become-more-cost-competitive-irena-report-shows-2026-05-06/> and <https://www.reuters.com/legal/litigation/trumps-crackdown-china-linked-solar-firms-stalls-us-factory-boom-2026-05-08/>, https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2026/May/IRENA_TEC_24-7_renewables_2026.pdf and <https://www.renewableenergymagazine.com/panorama/new-irena-report-confirms-costcompetitiveness-of-roundtheclock-20260506>

^{viii} <https://www.reuters.com/business/energy/aluminium-price-spike-mideast-war-fans-costs-us-solar-industry-2026-05-27/> and

^{ix} <https://www.reuters.com/business/energy/natural-gas-spending-hit-10-year-high-2026-oil-investment-falls-iea-says-2026-05-28/>, <https://www.spglobal.com/energy/en/news-research/latest-news/refined-products/052826-energy-investment-to-hit-record-highs-in-2026-despite-war-impact-iea> and https://iea.blob.core.windows.net/assets/de35b632-c4ae-476b-a167-97ef3b40f0fd/WorldEnergyInvestment2026_LaunchPresentation.pdf

^x <https://www.reuters.com/business/energy/european-winter-power-price-premium-hits-highest-since-2022-gas-hydro-shortfalls-2026-05-26/>, <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2026/03/Insight-178-Fossil-fuel-shocks.pdf> and <https://ember-energy.org/app/uploads/2026/01/EMBER-Report-European-Electricity-Review-2026.pdf>

^{xi} <https://www.reuters.com/business/environment/record-breaking-heat-dry-spring-leave-parts-england-without-water-2026-05-29/>, <https://www.theguardian.com/environment/2026/may/21/england-harvest-rainfall-water-usage-shortages-house-of-lords-report> and <https://www.circleofblue.org/newsletter/the-stream-may-26-2026-england-risks-massive-daily-water-deficit-without-urgent-action-parliament-report-says>

^{xii} <https://www.epa.gov/newsreleases/epa-advances-comprehensive-pfas-strategy-legally-defensible-practical-scientificall>, <https://www.epa.gov/newsreleases/things-you-need-know-epa-unveils-comprehensive-pfas-strategy-nearly-1-billion-and> <https://bbklaw.com/resources/la-052626-epa-seeks-public-comment-on-recently-proposed-pfas-drinking-water-rule-revisions>