



2026 Utility Predictions: The Race to Rule the Energy Future



[Carol Johnston](#), Vice President - Energy, Utilities & Resources

Read time: 12 mins

[Energy, Utilities & Resources Industry Predictions](#)

A new kind of global race is underway, one that's not about military might or space exploration, but about energy. From Washington to Beijing, London to Ottawa, countries are competing to become the world's next energy superpowers. This race is about more than just keeping the lights on; it's about shaping the future of economies, climate policy, and geopolitical influence.

Global Ambitions and High Stakes

The United States is rapidly scaling up its clean energy infrastructure, driven by landmark legislation like the Inflation Reduction Act, which includes massive incentives for renewable energy, electric vehicles, and domestic manufacturing of green technologies. While facing pressure under the current administration, a full repeal of IRA is considered unlikely due to bipartisan support for certain provisions and the economic benefits they bring to many districts.

China, meanwhile, dominates the global supply chain for solar panels, batteries, and critical minerals, while also expanding its nuclear and hydroelectric capacity. The United Kingdom is betting big on offshore wind and small modular reactors, aiming to decarbonize its grid and reduce reliance on imported fuels.

Canada has made its ambitions clear. Prime Minister Mark Carney envisions the country as a leader in both clean and conventional energy, investing in critical minerals, nuclear power, and liquefied natural gas (LNG) exports.

Navigating Challenges

Each country is navigating its own set of challenges. Canada faces scrutiny over Indigenous rights and environmental protections. The U.S. must overcome political gridlock and aging infrastructure. China's dominance in critical minerals raises

concerns about supply chain security, while the UK grapples with energy affordability and grid modernization.

What's clear is that the energy transition is no longer a niche policy issue, it's a defining global competition. As nations race to lead the energy future, the stakes are high, timelines are tight, and the outcomes will shape the world for generations to come.

Power Plays: The Geopolitical Stakes of the Energy Race

As countries pour billions into energy infrastructure and innovation, the race to become an energy superpower is reshaping global geopolitics. Energy has always been a lever of influence, controlling supply chains, setting prices, and forging strategic alliances. But in today's landscape, the stakes are higher and the dynamics more complex.

Control Over Critical Minerals

China's dominance in the mining and processing of critical minerals like lithium, cobalt, and rare earth elements gives it outsized influence over the clean energy supply chain. This has prompted the US, EU, and Canada to accelerate domestic mining and forge new trade partnerships to reduce dependency. The result is a scramble for resource security that mirrors past oil geopolitics, but with a green twist.

Energy Diplomacy and Alliances

Energy investments are increasingly tied to foreign policy. The US is using clean energy cooperation to strengthen ties with allies, while China's Belt and Road Initiative includes energy infrastructure projects that extend its reach across continents. Canada and the UK are also leveraging energy exports and technology partnerships to deepen international relationships and attract investment.

National Security and Resilience

Energy independence is now a national security priority. The war in Ukraine exposed Europe's vulnerability to Russian gas, prompting a rapid shift toward renewables and LNG imports from friendlier nations. Countries are rethinking their energy strategies not just for climate goals, but to ensure resilience against geopolitical shocks.

Prediction #1 – The Future of IoT Led Utility Grids



As we move further into the 21st century, the integration of IoT (Internet of Things) into utility grids is set to revolutionize the energy sector. This transformation is not just a technological upgrade, but a strategic shift that will redefine how we generate, distribute, and consume energy.

Market Growth & Adoption Trends

The smart grid market is poised for significant growth with the global smart grid market expected to grow from \$73.3 billion in 2024 to \$269.5 billion by 2033, at a CAGR of 15.6%. IoT in utilities is projected to reach \$40.87 billion by the end of 2025, growing at a CAGR of 11.3% through 2033.

This accelerated growth is primarily being driven by:

- Rising energy demand and electrification
- Government initiatives for grid modernization
- Integration of EVs and renewable energy
- Need for grid resilience and reduced transmission losses
- Demand for real-time monitoring and predictive maintenance

- Smart city and home automation initiatives
- Regulatory pressure for sustainability and efficiency
- Expansion of 5G and cloud computing

Investment Milestones & Global Leadership

Investment in smart grid technology is accelerating globally with Europe leading in offshore wind and digital grid integration, supported by robust public funding and cross-border projects. India is driving a \$38 billion grid enhancement program, targeting 500GW clean capacity by 2030.

China invested over \$625 billion in clean energy in 2024, with \$88 billion earmarked for grid and storage in 2025. However, to meet net-zero goals, global grid investment needs to average \$600 billion annually through 2030.

Strategic Implications for Utility Leaders

Utility leaders must navigate a complex landscape where microgrids and decentralization are becoming the norm. Localized energy systems are enhancing resilience and enabling peer-to-peer energy trading, which is a significant departure from traditional centralized grids. This shift requires a holistic approach to end-to-end asset lifecycle management that spans traditional generation, transmission, distribution and decentralized energy resources (DER).

Challenges & Opportunities

The road to IoT led utility grids is fraught with challenges. Policy fragmentation and regulatory uncertainty remain significant barriers in some regions. Workforce shortages in technical and data science roles may also slow implementation. Additionally, cybersecurity is a growing concern as grid operations become increasingly digital.

However, these challenges also present opportunities. For instance, consumer engagement is on the rise, with integrated billing and real-time usage data empowering customers to manage energy more efficiently. AI and IoT are enabling real-time load forecasting, predictive outage prevention, and automated diagnostics, making grid operations more efficient and reliable.

AI, IoT & Automation: The Backbone of Smart Grids

AI-native operations are expected to be core to daily utility functions by 2030, with up to 70% adoption in developed markets. Utilities are shifting from reactive to proactive operations using edge devices, smart sensors, and machine learning algorithms. These

technologies enable real-time load forecasting, predictive outage prevention, and automated diagnostics.

Key Technologies Driving Transformation

Several key technologies are driving the transformation of utility grids. Grid-edge software and DER integration facilitate decentralized control, predictive maintenance, and consumer participation in energy markets. Vehicle-to-Grid (V2G) technology is expected to see exponential growth post 2028, allowing electric vehicles to supply energy back to the grid during peak demand. While distribution automation is enabling real-time fault isolation and load balancing, critical for grid reliability and DER integration.

IFS solutions are playing a crucial role in this transformation, providing comprehensive full asset lifecycle management capabilities, predictive maintenance, and real-time data analytics, which are essential for optimizing grid operations and ensuring reliability.

Conclusion

The future of IoT led utility grids is clear, but it requires strategic foresight and robust investment. Utility leaders must navigate regulatory uncertainties, workforce shortages, and cybersecurity risks while leveraging the opportunities presented by AI, IoT, and consumer engagement.

With the right strategies in place, the energy sector can achieve a sustainable, efficient, and resilient future.

Prediction #2 – Small Modular Reactors: The Next Frontier in Clean Energy

As the world races toward net-zero emissions, the energy sector faces a daunting challenge. How to replace fossil fuels with scalable, reliable, and clean alternatives? Enter Small Modular Reactors (SMRs), compact nuclear power plants designed to deliver firm, carbon-free energy with unprecedented flexibility and safety.

A New Dawn for Nuclear?

SMRs aren't just a technological innovation, they're a strategic pivot. They offer a path to cost-competitive, scalable, and clean baseload power, bridging the gap between intermittent renewables and aging fossil infrastructure. With the right mix of policy support, investment, and public trust, SMRs could become an essential element of a resilient, decarbonized energy future.

Market Momentum & Growth Forecasts

The global SMR market is projected to grow from \$4.1 billion in 2025 to between \$40–50 billion by 2035, depending on regulatory progress. The International Energy Agency (IEA) projects global installed SMR capacity could reach up to 200 GW by 2050 under the Net Zero Emissions (NZE) scenario.

Policy & Investment Catalysts

Governments are stepping up with subsidies, tax incentives, and streamlined licensing to accelerate SMR deployment. Public-private partnerships are emerging to de-risk investment and build supply chain maturity and big tech is also investing with Amazon, Google, and Microsoft exploring SMRs to power their AI data centers with clean, reliable energy.

Challenges to Overcome

Despite their promise, SMRs face significant hurdles. High upfront costs and long ROI timelines require innovative funding models. Public perception remains a barrier, with safety concerns and waste management issues. Along with supply chain immaturity and regulatory complexity posing challenges.

Technology Readiness & Deployment Scenarios

IoT and SCADA integration provides a digital backbone, enabling real-time monitoring of reactor conditions and asset health, while AI-driven insights forecast equipment failures and optimize maintenance schedules. With project lifecycle management providing end-to-end visibility across engineering, procurement, construction, and commissioning phases. Enhancing operational efficiency, safety, and regulatory compliance for SMR deployments.

IFS Cloud is uniquely positioned to support the complex needs of SMR operators, offering a unified platform for asset, project, and compliance management. Our customers have realized:

- 20 – 30% reduction in maintenance costs through predictive analytics
- 20% increase in asset uptime
- Streamlined regulatory compliance with automated workflows and reporting

Conclusion

SMRs represent a transformative opportunity for the energy sector. With strategic action, investment, and technological innovation, they can become a key player in the global energy landscape, driving us toward a sustainable and resilient future.

Prediction #3 – Beneath the Surface: The Future of Geothermal Energy Generation



In the race toward a clean, resilient energy future, geothermal power is emerging from the shadows. Long overshadowed by solar and wind, geothermal energy is now poised to become a cornerstone of global electricity and heating systems, thanks to technological breakthroughs, policy momentum, and a growing appetite for clean, firm power.

The Road Ahead

Geothermal energy is no longer a niche. It's a scalable, clean, and politically viable solution to the world's energy challenges. With the right policies, investment, and public awareness, it is poised to become a key factor in a resilient, low-carbon grid.

Growth Projections & Market Potential

According to the International Energy Agency (IEA), geothermal could technically meet humanity's electricity needs 140 times over.

1. **Global Geothermal Capacity:** The global geothermal capacity reached 15 GW in 2023, with projections to hit 60 GW by 2050 under current policies and 80 GW if pledges are met
2. **U.S. Geothermal Supply:** In the U.S., next-gen geothermal could supply up to 100 GW by 2050, with 40 GW by 2035
3. **Heat Production Growth:** Heat production for buildings and industry is expected to triple by 2050, with China driving nearly 70% of the growth

Investment & Policy Momentum

Over \$900 million in private capital has flowed into next-generation geothermal in the past five years. In a rare bipartisan move, the US preserved geothermal tax credits through the mid-2030s, even as solar and wind incentives were slashed.

Google, Chevron, and other major players are also backing pilot projects, including Fervo Energy's record-setting Nevada test that produced 3.5 MW of continuous power for 30 days.

Challenges Ahead

Despite its promise, geothermal faces hurdles. High upfront costs, long development timelines, and permitting complexity, especially in environmentally sensitive areas, limit investor appetite.

However, costs are falling and McKinsey projects levelized costs could drop to \$45 – \$65/MWh over the next decade, driven by drilling efficiencies, better resource mapping, and scaled equipment supply chains.

Technology Driving the Shift

Next-generation technologies like Enhanced Geothermal Systems (EGS) and Advanced Closed-Loop Systems (ACLs) are unlocking geothermal potential in places previously deemed unsuitable. These innovations allow developers to tap heat from deep, dry rock formations, virtually anywhere on earth. Techniques honed during the shale boom, like horizontal drilling and hydraulic fracturing, are now being repurposed to unlock clean energy from deep rock.

IFS solutions are designed for complex, asset-intensive operations. With world-class Enterprise Asset Management (EAM) for tracking geothermal assets throughout their entire lifecycle from investment planning, through construction, operations, and ultimately decommissioning.

IFS.ai provides predictive analytics and real-time asset performance monitoring, while Field Service Management supports field crews with inspections, maintenance, and outage response. All while tracking emissions and enabling sustainability reporting.

Conclusion

Geothermal energy has always held promise. It's clean, dispatchable, and weather-resilient. But until recently, its use was limited to regions with natural hot springs or volcanic activity. That's changing. Emerging superhot rock EGS systems could deliver exponentially more energy per well, with just 1% of global superhot resources capable of generating 63 terawatts of clean power.

The heat beneath our feet is ready. The question is: Are we?

Carol Johnston

Vice President - Energy, Utilities & Resources, IFS

Carol Johnston has over 20 years of product marketing and product management experience delivering mobile workforce management, outage management and meter reading solutions for utilities. She is a member of the advisory/planning committees for DistribuTECH International and Western Energy Institute and has served as track chair for SAP for Utilities.