



Power through the energy transition

Insights into the future of
the U.S. electric ecosystem

Introduction

For more than a century, fossil fuels have been the driving force of the U.S. economy. Now, we are trying to reach net zero in just 20 years. This is a massive challenge for power utilities.

The mandate to address climate change by decarbonizing is hitting utilities at the same time that they need to address the nation's aging energy generation, transmission, and distribution infrastructure. Indeed, the transition away from fossil fuels across the economy places unprecedented demands on the power grid—to charge electric vehicles, heat and cool homes, replace electric stoves, etc.

However, utilities simply don't have the resources and budget to achieve net zero on their own, particularly on a short timeline. This is a massive, multi-pronged effort that will require joint government-business collaboration and funding to support development and deployment of new technologies.

The key players—electricity suppliers, network operators, end users, and investors—must consider a wide array of technologies and strategies from the mature to the novel and

unproven. Will their respective decisions preserve their existence, and more, protect their profitability going forward? Or will a wrong move mean “game over?”

There's no single right answer but early movers will have significant market advantage, and active participants in the energy transition can grow their businesses through tremendous change.

Through our extensive work in the power and utilities sector, we have identified several trends that reflect the direction of some of the most successful players in the U.S. energy ecosystem. Here we summarize our view of the state of play today to help participants in the energy transition weigh the best options to meet their unique business and sustainability goals, and ultimately become important contributors to U.S. economic growth and job creation.



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START

The U.S. electric ecosystem and the energy transition

Electricity suppliers, network operators, end users, and investors all fit into a larger ecosystem within the energy transition, and all play significant roles in the process.



Power players

Electric utilities

U.S. power generation owners and operators need to transition to carbon-free, reliable, cost effective generation.

Carbon-free, reliable, cost-effective generation

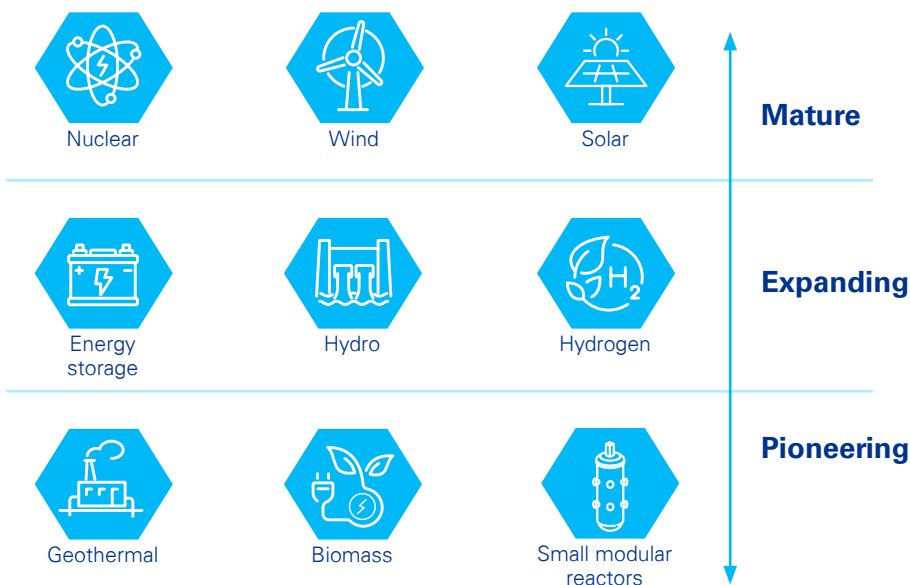
Electricity suppliers that want to meet the energy transition challenge now and plan for the future should evaluate sustainable technologies according to three stages of maturity:

Mature. Renewables such as wind and solar are proven assets with lower risk of becoming unprofitable. However, utilities are struggling to support their integration, and significant infrastructure investment is needed to withstand peak demand.

Expanding. Innovations including batteries for energy storage are proven and in use but immature. Development continues and profitability risk is moderate.

Pioneering. Laboratory-proven technologies need to be tested in large-scale industrial applications. Pilots are underway with significant R&D investment.

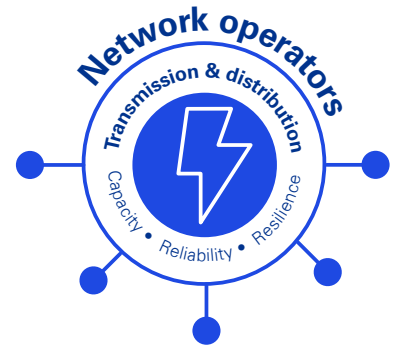
Electricity suppliers



“The clean energy transition is the most exciting development I’ve seen in my 40-plus-year career. The opportunity for innovation, for job growth and for investment is unprecedented. Our government is fully on board, sponsoring investment via the Inflation Reduction Act and the Infrastructure Investment and Jobs Act. And companies are fully committed and prepared to collaborate with each other and the government to accelerate transformation.”

—Jim Ajello, Senior Advisor and former Chief Financial Officer, Portland General Electric Company

Network operators



Grid modernization

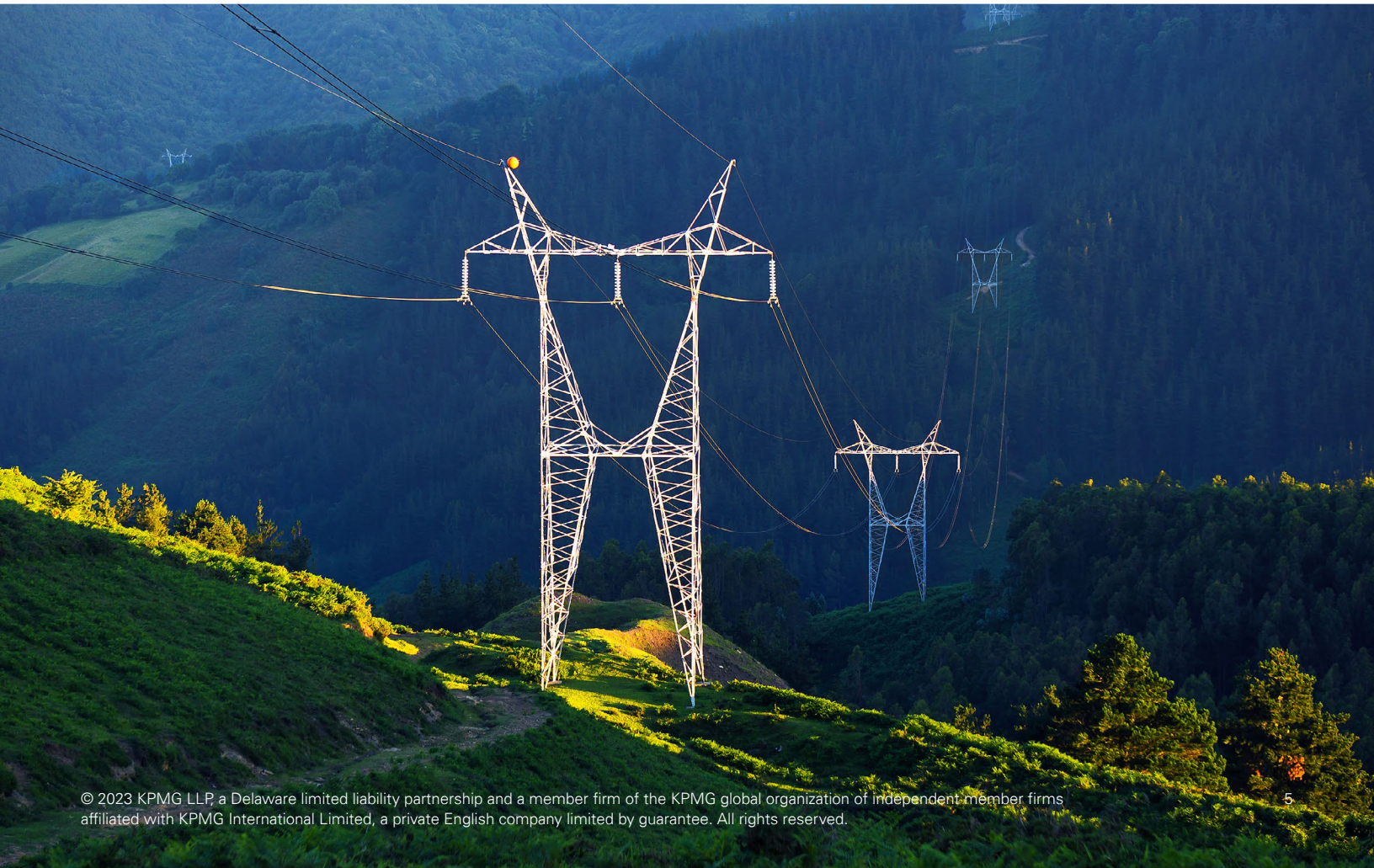
Network operators are organized in a variety of ways and their operating models reflect their unique customer base and geographies. However, the industry is aligned on three themes.

Capacity. Operators need to carefully consider new large commercial and intermittent residential and transportation load coming onto the grid—as well as new sources of power to serve those customers and emerging technologies in load management, e.g., virtual power plants.

Reliability. With more technology in everyone’s lives, now more than ever customers are expecting high-quality, consistent electricity 24/7. Data center proliferation is

already contributing to massive load growth, and given that generative artificial intelligence requires vast, high-speed data and analysis, usage is about to explode again.

Resilience. Operators must harden their most critical assets to not only withstand severe weather, cyberattacks, and other events, but bounce back quickly if safeguards don’t hold.



Power players

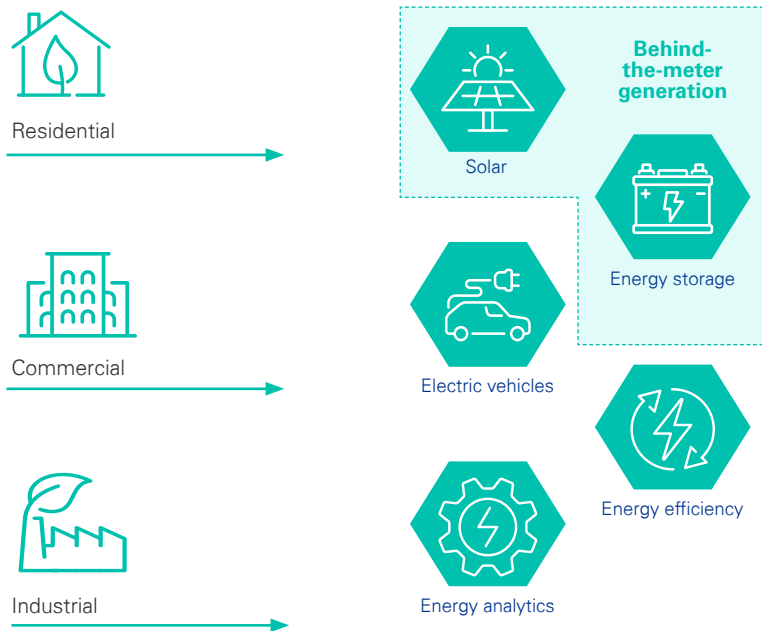
End users

Commercial, industrial, and residential customers want reliable and increasingly carbon-free electricity. Together they exert tremendous influence on renewable energy demand and grid modernization.

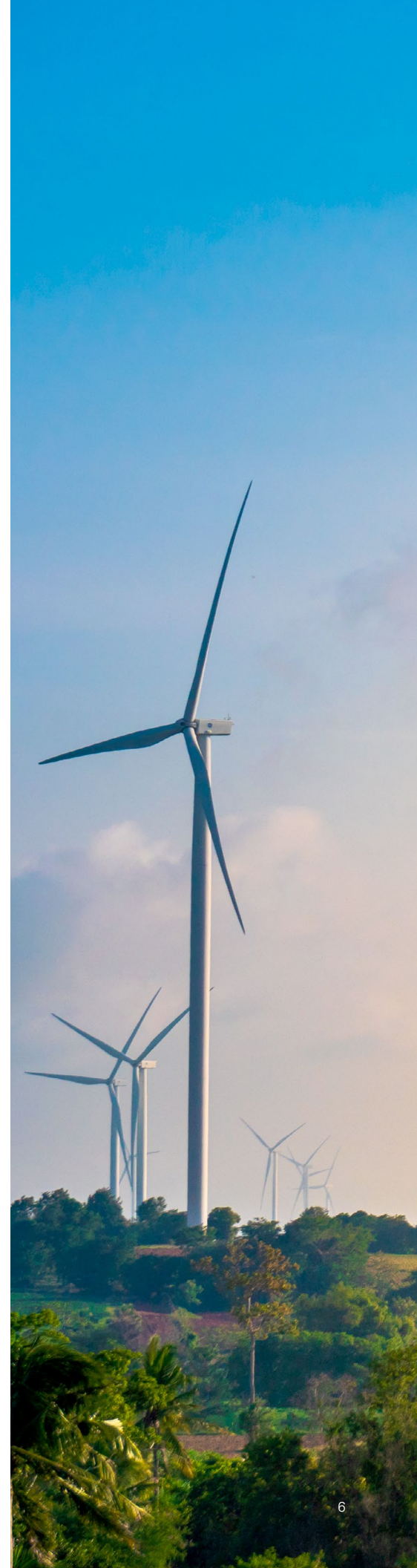
Impact on the electric ecosystem

Commercial and industrial customers, which account for roughly two-thirds of U.S. electricity use:¹

- Contract with utilities for delivery of electricity with stipulations on how the supply is generated
- Impact energy consumption through energy-efficient buildings, processes, and products
- Drive electrification with the adoption of new and emerging technologies (e.g., fleet electrification, gas-to-electric conversion)



¹ United States Environmental Protection Agency



Power players

Investors

Private equity and infrastructure funds help accelerate the energy transition by funding new ideas.

Narrowing the funding gap

U.S. utility investment in their own infrastructure and renewable capabilities remains high at more than \$150 billion annually since 2020.² Private equity, venture capital, and infrastructure funds step in to provide additional, necessary support for clean energy, investing roughly \$6.8 billion into the energy transition in the U.S. and Canada in 2021 alone.³

These institutions:



Finance climate and environmental projects through the green bond market, often benefitting from tax incentives.



Fill the void created by regulatory limitations for funding capital projects.



Evaluate opportunities for investment outside of the regulated arena.



Leverage the Inflation Reduction Act (IRA) and various grants, tax incentives and credits, and low-cost loans to improve return on investment in new and emerging technologies, including hydrogen, carbon capture, energy storage, and renewable natural gas.

² S&P Global, "Rising interest rates do not stop US utility infrastructure, renewables spending," June 12, 2023

³ S&P Global, "Private money flowing freely to energy transition companies, technologies," April 18, 2022





Forces on the ecosystem

Internal and external complexities

Multiple factors can impede the energy transition, create opportunities—or do both at the same time.

Climate change. Unpredictable and/or powerful weather-related events (wildfires, hurricanes, ice storms, etc.) and their impact on life and property heighten the need for resilience.

Customers and community. End users and investors increasingly demand adherence to environmental, social, and governance (ESG) principles, including energy affordability and security.

Technology advancements. The innovation underway to address climate impact is promising but can take time to realize, leaving utilities, corporate customers, and investors to take a chance on unproven technology.

Systemic events. Geopolitical, natural, and other occurrences as well as global trends can disrupt decarbonization efforts—or give them a push.

Resources. Change is occurring so rapidly that organizations need strategies to attract the right talent and acquire the necessary technologies and other materials to keep up.

Regulatory and political change. Government support for climate-related efforts waxes and wanes with changes in administrations and regulatory focus.

Employee and contractor safety. The COVID-19 pandemic's impact on the workforce has increased attention to the health and wellbeing of employees and shifted the balance of power more toward the essential worker.

Balancing stakeholder needs



Five steps to decarbonization

The major players in the U.S. electric ecosystem have myriad strategies from which to choose in order to succeed through the energy transition depending on their roles as suppliers, operators, end users or investors. However, five high-level steps can guide their technology, process, investment, and other key decisions no matter which path they take.

1

Decarbonize with strategic foresight, ensuring the effort aligns with business strategy and corporate goals.

2

Operationalize sustainable behavior with initiatives that incorporate the business case for clean energy and are fully integrated into processes and procedures.

3

Gain regulatory agility by implementing mechanisms for accurate and timely sustainable business reporting.

4

Develop climate-focused partnerships to collaborate on action, spark innovation, and accelerate broader change.

5

Build trust and prove results with insights and by showcasing progress toward sustainable goals.



How KPMG can help

KPMG brings practical guidance and solutions to help you navigate the journey and realize value quickly—whatever the company’s starting point or industry. We work with clients to achieve greater value from business transformation by helping accelerate the process of turning vision into reality, improving performance and profitability, and increasing operational efficiency and resilience. Our people make a difference by becoming deeply ingrained in your business using data-led insights and pioneering technologies to drive change, increase efficiency, and build resilience.

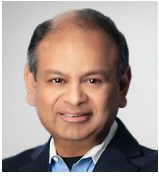
Transformation. KPMG helps clients plan, prioritize, and orchestrate the client’s portfolio of transformation initiatives to deliver the strategic and financial value. We use data to identify, quantify, and implement value creation opportunities and deliver EBITDA improvement.

Connected. Create value by aligning your enterprise for digital transformation to strengthen connections with customers, employees, business partners, and across functions, to drive experiences that build trust and sustain growth—all through an industry lens.

Powered. Transform functions through target operating models designed with the future in mind, using KPMG leading practices and processes and pre-configured software-as-a-service platforms, along with advanced technology enablers, for optimized processes, governance, KPIs, people skills, and data.

Trusted. Build trust and confidence in the business and the digital transformation journey by predictably navigating risk and regulation—and deliver on the promise to keep data trusted, safe, and secure.

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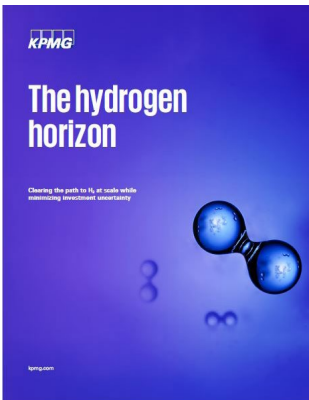
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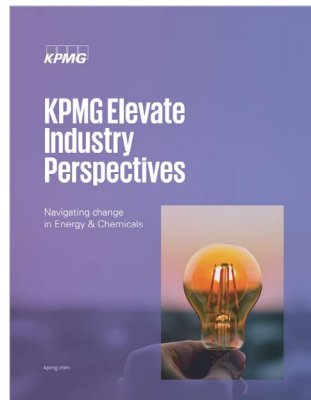
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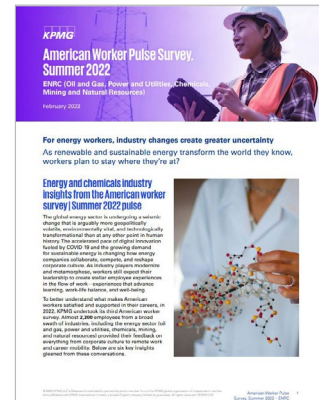
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