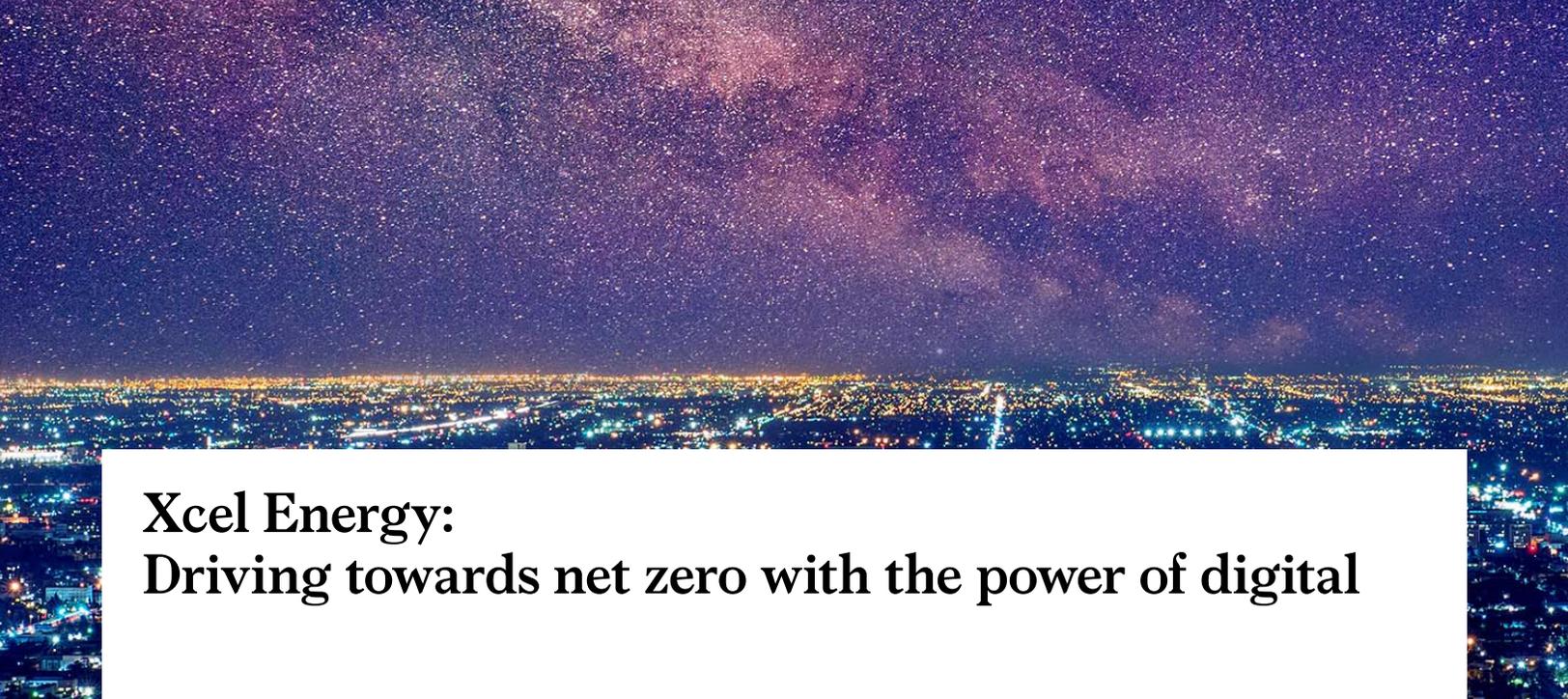


McKinsey
& Company



Rewired in Action

Real-world examples of Digital and AI transformations
and how leading companies succeed



Xcel Energy: Driving towards net zero with the power of digital

The opportunity

Delivering a tech-enabled, sustainable future in a highly regulated environment

Imagine it's your first day on the job as Chief Technology Officer (CTO) for one of the largest electric and natural gas utilities in North America, and suddenly, one of your core systems goes down, leading to a loss of revenue every hour when 5 million customers cannot pay their bills. This is what happened to Tim Peterson when he joined Xcel Energy in late 2019 as CTO. Upgrading the utility's technology offered a clear opportunity for more efficient and resilient operations.

Moreover, Xcel Energy had become the first major utility in the country to announce a goal of reaching net-zero by 2050 and an 80 percent reduction below 2005 levels by 2030. In this ambitious endeavor, technology was considered a key ingredient to enable the energy transition in a highly regulated environment. Tim Peterson and Xcel Energy leaders looked to embrace the organization's purpose: responsibly reducing carbon emissions and producing and delivering clean energy solutions from a variety of renewable sources economically. With its technology-driven clean energy transition, Xcel Energy aimed to be the inspiration not only for utility companies but for heavy assets industries as well.

The solution

Combining technology and innovation to provide safe, clean, and reliable energy at an affordable price

Xcel Energy started by developing a path forward and aspirational vision and, then worked backward to define a set of technology investments. McKinsey brought technical expertise and deep experience with the nuclear power sector to help guide the transformation. The work centered on three clear goals: cost savings through AI and automation; operational excellence and safety; and more efficient regulatory compliance through transparency, accelerating to meet its baseload energy needs with zero carbon electricity.

Instead of starting small, Xcel Energy took a bold approach by beginning with one of its most complex and highly regulated domains, nuclear power. The utility initiated its transformation with a foundational safety process, the Nuclear Corrective Action, and discovered potential run rate improvements amounting to \$15 million, which could be reinvested to accelerate carbon neutrality.

Xcel Energy also undertook a radical shift in its technology architecture by shifting from a system of "black boxes" that were built for specific tasks but hard to navigate and even harder to change, to a platform-centric approach with small, reusable capabilities. During the first year, it successfully established a secure cloud platform on AWS GovCloud with the support of Cloud by McKinsey engineers and architects. This new platform not only integrated pipelines with the existing system but also incorporated a data lake, which would serve as a valuable resource for future digital tools and processes embedded with AI.

To support the user-centric way of doing business, McKinsey helped Xcel Energy set up a Digital Operations Factory to deliver user-empowering tools and analytics quickly, harness cross-functional talent, and work in agile ways to solve the most pressing needs. Notably, multiple workflow automation, custom mobile applications, and advanced analytics solutions were developed to streamline intensive processes. This enabled Xcel Energy to progress on its goals for an advanced grid for clean energy and tools to support smart decisions for the use of renewable energy.

The impact

\$200+ million

Expected impact on customer affordability over 10 years.

70,000

Hours of manual work reinvested in the first year.

45

Increase in end-user usability scores, from 37 (“Awful”) to 82 (“Excellent”) in the first year.



“We transformed data into valuable insights, enabling us to make informed decisions regarding safety. Additionally, we significantly improved efficiency by automating processes that were in place for decades. These breakthroughs set us apart as leaders and exemplify the continuous innovation required for exceptional performance in the utility sector.”

- Tim O'Connor, Chief Operations Officer, Xcel Energy

“What really got us excited were the benefits around operational excellence and safety. Leveraging technology to speed up decision-making for the plants, automate workflows, deploy digital tools at endpoints, and gather the right information really brought us a ton in terms of operational excellence and safety.”

- Tim Peterson, Chief Technology Officer, Xcel Energy

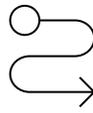
“Our approach is centered around prioritizing the operator as our customer. We aim to develop systems and apply AI logic that aligns with their actual workflows, rather than imposing our assumptions. This effective partnership between business systems and operators is the ultimate goal we strive for. The key is to ensure that the implementation is driven by the end-users themselves, leading to optimal outcomes.”

- Tim O'Connor, Chief Operations Officer, Xcel Energy

The transformation necessitated a combination of reskilling, hiring, and partnering to form a cross-functional team of over 200 people in under two years. To ensure consistent standards and focus on impact, Xcel Energy built a chapter-based model. This model brought together communities of practice centered around product management, experience design, software, and data science.

Xcel Energy's strategic approach of tackling the most challenging problems first and fostering innovation is proving successful. Within 9 months of launching the new cloud platform, the company expanded it to 3 additional business units. Xcel Energy continues to scale the platform to keep their plants cost competitive, advancing towards a zero-carbon baseload. As the years go by, Xcel Energy anticipates gaining widespread recognition as a pioneer in the utility industry, setting an example of how digital is a key ingredient in enabling the Energy Transition.

Lessons learned



Strategic Roadmap

Start with strong BU sponsorship

The success of a digital transformation can hinge on the level of internal support. In the Nuclear unit, where Xcel Energy started its transformation, it was critical to have the full commitment of the leaders at multiple levels toward the goals of the transformation.



Agile Operating Model

Make innovation a core part of the agile process

Xcel Energy created a Digital Operations Factory with cross-functional teams that work with businesses and users as they develop solutions. The teams leveraged Design Thinking to creatively innovate with users in fast iterative cycles.



Technology

Build a tech stack that's easy to use and easy to scale

Xcel Energy's existing tech platform lacked the utility it needed. The team built a new, simplified platform on top that was easy to use and scale to new parts of the organization.

[Aspirations behind the digital transformation](#)

[Biggest reflections from the transformation](#)

[Working with McKinsey](#)