Is your data ready for the energy transition?

Strategies to address data
readiness for modern utilities

CGI

The energy transition

The energy industry is experiencing a significant transition, with utilities shifting towards renewable energy sources and adopting new technologies to modernize the grid. Utility leaders recognize the broad scope and urgency of the changes needed to adapt to this rapidly changing landscape, from retiring legacy assets to navigating more robust customer engagement.

But for many, a common stumbling block stands in their way—**data readiness**. Clean, reliable data is key to the integration of renewables, effective energy management, ensuring reliability, and achieving environmental goals.

Simply put, **data** drives the energy transition

Some utilities struggle to understand how to leverage or improve the quality of their data, while others grapple with the volume and complexity of new data sources. Regardless of their data maturity, utility leaders must adopt a strategic, data-driven approach to coordinate and merge data from disparate legacy systems, integrate data from new systems, and address data gaps to develop a complete view of their utility.

Whether the goal is implementing new systems such as Distributed Energy Resource Management Systems (DERMS), leveraging artificial intelligence (AI) and machine learning (ML), improving customer experience, or tracking and managing sustainability targets, utilities require an accurate, integrated, and trusted view of their system data.

A data-driven approach is crucial to overcoming barriers, unlocking insights, and accelerating the transition to a clean energy future. With the proper roadmap and investments in data governance, quality, and modeling, utilities can modernize their grid and operations to thrive during this transformation.

Required investments in data

As part of our annual Voice of Our Clients (VOC) program, CGI conducts one-on-one interviews with executives across industries to gain insights into key trends, priorities, and challenges. Our most recent findings from interviews with utility executives revealed ongoing struggles with data readiness. Many utilities reported challenges with leveraging data analytics, integrating operational technology (OT) and information technology (IT) systems, and implementing an enterprise-wide view of their network data.

Although some leading utilities are progressing on these fronts and experiencing positive impacts from digitalization, overall readiness still needs improvement. Many require more robust and accurate data assets to support new complex systems and distributed technologies, such as Advanced Distribution Management Systems (ADMS) and DERMS, which are essential for the energy transition.

Without addressing fundamental data issues around quality, access, governance, and analytics, utilities risk failing to realize the promised benefits of grid modernization investments. A strategic, data-driven approach is essential to build the proper data foundations.

VOC results underscore the critical need for increased investment in data management, governance, and quality control.

<50%
have alignment between IT and business operations

86%
plan to focus on data management and governance over the next three years

41%
have a holistic data strategy across their organization

84%
intend to prioritize data quality

Barriers to data readiness

As data becomes increasingly valuable, utilities must prepare to leverage data for strategic and operational insights. A lack of data readiness can have significant consequences, such as lost revenue opportunities, negative customer impact, and potential regulatory fines, all of which can be devastating and underscore the need for trusted, reliable, and well-managed data. Understanding the barriers preventing data readiness is the first step toward developing strategies to meet those challenges head-on.

Volume

Legacy data systems and organizational structures are challenged to support the volume and complexity of new data sources. The proliferation of smart meters, microgrids, and other distributed resources has produced exponentially more data. While utilities are becoming increasingly data-hungry, institutional barriers, such as inadequate structuring and storing larger volumes of data, hinder utilities from managing data effectively. Data governance and management practices must keep pace with increasing volumes and sources to maintain quality.

Quality

Data quality varies widely across siloed departments and systems. The consistency and reliability of data have eroded through repeated integrations, migrations, and inadequate processes and systems to capture complete and accurate data. Data-driven insights are only as valuable as the quality of the data that fuels them. New systems like ADMS and DERMS require high-quality and comprehensive data to meet promised business objectives and regulatory approvals.

Alignment

For utilities, long-established planning and forecasting processes now require more granular, high-quality data to account for the proliferation of distributed energy resources (DERs). The growing impact of DERs on the grid forces utilities to integrate DER data into their load forecasts and system plans. However, this data often resides in different lines of business within the utility and is often unavailable or incomplete. Additionally, DERs behind the meter are more aligned with customer operations, but DER operation significantly affects other departments, such as distribution operations. Grid modernization and the energy transition compel different, historically siloed departments within the utility to collaborate more closely.

Change

Many utilities struggle to manage the scope and pace of change grid modernization requires. In some states, rate cases have approved billions of dollars in investments for hardening infrastructure, deploying new systems like DERMS, and installing smart inverters for more efficient transmission and distribution. However, in other states, regulators are cautious not to over-invest, fearing stranded assets for ratepayers to absorb, leading to difficulties in deciding which investments to approve. Utilities face the challenge of aligning the scope and pace of change with their regulators' appetite to support the transformation.

Utilities need bold leadership to drive strategic alignment and implement a data-driven approach across their organization.

While these challenges may seem daunting, there is a path to successful data readiness. Partners with experience driving utility transformation lend much-needed perspective and a path to readiness and innovation.

Taking a data-driven approach

Developing and executing a data-driven approach

Utilities undergoing transformation may experience more than one, if not all, of the challenges outlined above. Yet, they can continue their path to modernization by employing a data-driven approach that includes the following four elements:

① **Implementing a utility data roadmap**

② **Improving business and IT alignment**

③ **Creating a data-driven culture**

④ **Driving enhanced organizational agility**
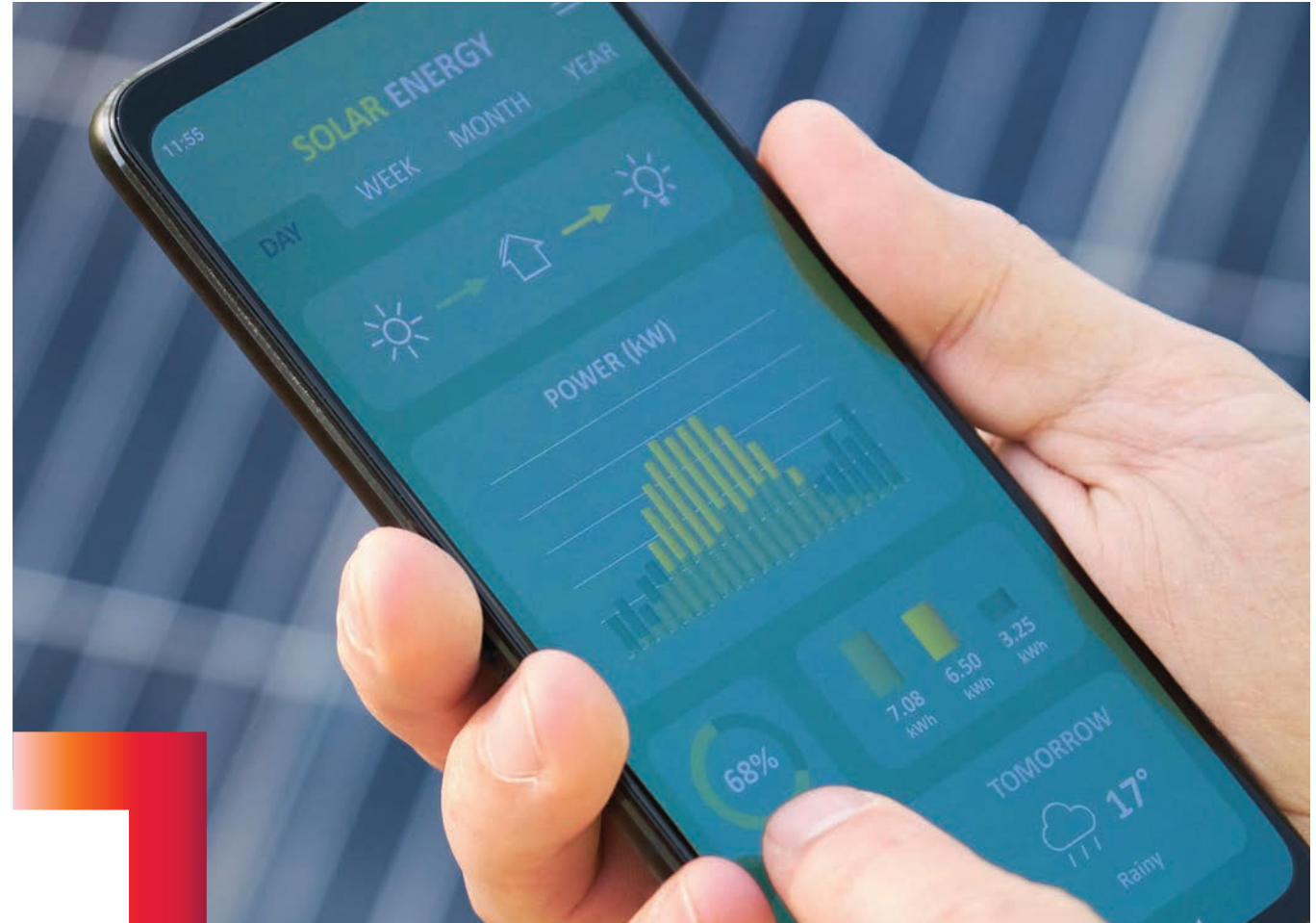
① Implementing a utility data roadmap

Utilities have historically focused on leveraging technology to manage their business. However, given the complexity and current pace of change, a technology-centric approach alone is insufficient. Utilities must bring together data from disparate legacy systems, integrate data from new systems, address data quality, and fill data gaps, ultimately developing a comprehensive view of their data across the organization. Navigating this complexity requires a roadmap to prioritize and implement data-related initiatives and projects.

Establishing a data roadmap will help utilities focus on critical information and data needed to enhance business value. Cataloging existing data, identifying gaps, prioritizing key datasets, and streamlining access are essential steps that empower utilities to make operational and strategic decisions. By concentrating efforts on enhancing asset visibility and optimizing operations, utilities can derive maximum benefits. Mapping data to business value transforms data from a perceived liability into an invaluable asset.

② Improving business and IT alignment

Utilities must improve alignment between operations and IT teams toward a shared goal of data readiness. This requires breaking down cultural barriers between business and IT, as well as system silos between OT and IT. By streamlining IT processes to make quality data available to operations, empowering operations to own their data, and prioritizing data quality initiatives, utilities can realize the full value of their transformation efforts.

A concrete example of this alignment involves leveraging a trusted master data model. Utilities can bring together data from across the enterprise, establishing a single, accurate view of the distribution network. This process starts with assessing the quality and completeness of grid data from across systems. Next, determining appropriate data access, including real-time availability for critical operating needs, becomes crucial. With data governance and quality assured, the network model serves as the hub for driving smart grid initiatives across business and IT operations.

CASE STUDY

Unlocking insights through data alignment

In the UK, Western Power Distribution, now National Grid, partnered with CGI to build a digital network data model for the future. Bringing together data from across the organization puts network data at the heart of the solution by providing CGI's OpenGrid Integrated Network Model that presents a digital reference model of the utility's network at any point in time. As the company transitions from a distribution network operator (DNO) to a distribution system operator (DSO), the data platform helps drive performance and efficiency from the electricity network and meet future energy demands of customers by managing real-time energy flows and leveraging data insights to optimize existing network capacity.

③ **Creating a data-driven culture**

To successfully foster data readiness, utilities must cultivate a culture that actively promotes data-driven decision-making championed by top leadership. This involves educating the entire organization, upskilling and maturing employees into data citizens, leveraging partners for expertise where and when necessary, providing access to quality data for an integrated view of data across the enterprise, and eliminating data blockers that hinder data-driven decisions.

Empowering both the business and IT staff on a shared mission of data readiness lays a strategic foundation for a data-driven culture. For example, improving data quality becomes a collaborative initiative spanning business and IT involving enhancing systems, refining business processes, and providing comprehensive end-user training to ensure quality data capture.

④ **Driving enhanced organizational agility**

Utilities do not have the luxury of relying on a linear approach that requires the entire data structure to be upgraded before implementation. Instead, the key is identifying high-priority use cases and focusing on improvements providing the highest value return in the shortest timeframes. Implementing better data governance in increments will ensure readiness to course correct based on ongoing learning and improved data governance throughout the organization.

Adopting a flexible, incremental approach designed to fit your organization is pivotal for enabling faster deployment of grid modernization use cases, increasing the chances of success, and minimizing the risk of costly program delays. Moreover, this approach provides regulators better access to data and analytics, facilitating more responsive, risk-based oversight. Being adaptable ensures that utilities can respond promptly to evolving requirements and industry dynamics, reinforcing their capacity to navigate the complexities of grid modernization.

CASE STUDY

Becoming a data-driven organization

A large U.S. utility partnered with CGI to build a robust data analytics platform for power distribution, paving the way to transition into a data-driven organization. The utility leveraged several modern data paradigms to implement a robust data analytics platform to support a wide range of use cases encompassing traditional reporting, advanced analytics, and AI. Through strategic investments in data products, dismantling silos, decentralizing responsibility, and fostering a culture of data democratization, the utility was able to build a scalable and reliable data analytics platform, positioning them to unlock the potential of their data assets fully.

Your partner for navigating the energy transition

The energy transition demands that utilities modernize through new technologies and distributed resources. But the foundation for this transition must start with data. CGI is a trusted partner to help build the right strategy, identify investments in data readiness, support the necessary change management and implement best practice processes. We work together to accelerate your technology and data roadmaps, ensuring a successful journey through the complexities of the energy transition.

Discover more about CGI's approach and how we leverage our industry and IT expertise to align with your business and IT strategies, facilitating a seamless integration of innovative technologies and distributed resources to meet the evolving demands of the energy landscape.

About CGI
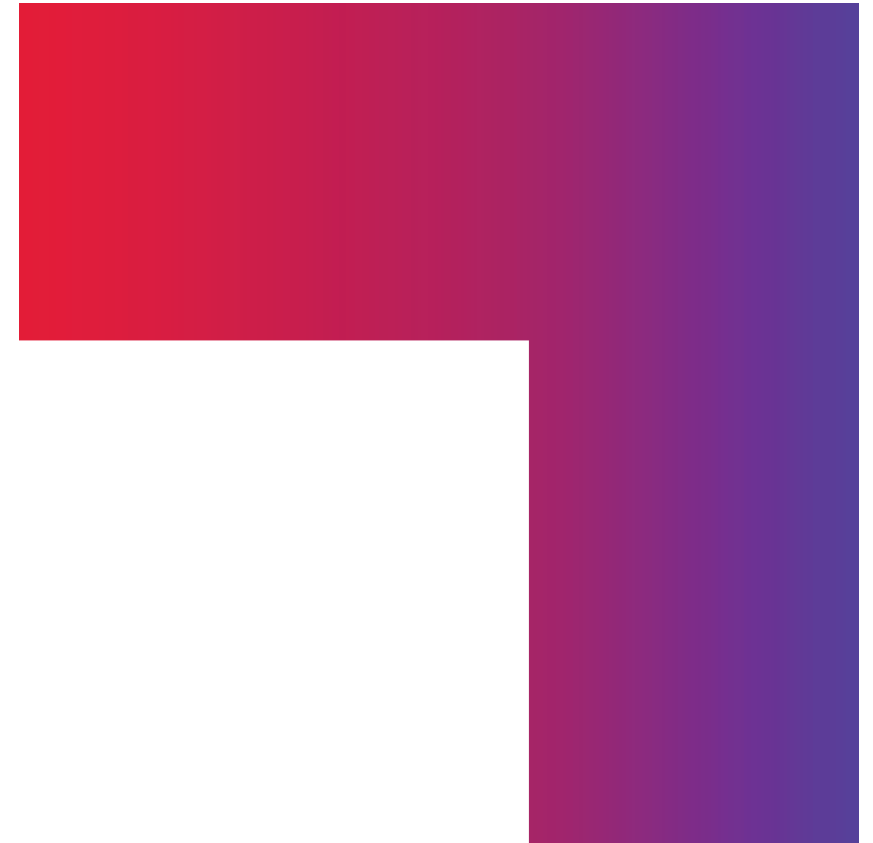
Insights you can act on

Founded in 1976, CGI is among the largest IT and business consulting services firms in the world.

We are insights-driven and outcomes-based to help accelerate returns on your investments. Across hundreds of locations worldwide, we provide comprehensive, scalable and sustainable IT and business consulting services that are informed globally and delivered locally.

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*Source for all statistics: 2023 CGI Voice of Our Clients