



Accelerating sustainable energy opportunities and outcomes

Proven capabilities for managing renewable energy
and advancing your decarbonization agenda



Demand for sustainable energy continues to rise



The need for climate action and other macro trends continue to generate demand for sustainable energy — from renewables to green hydrogen to demand response and the rise of prosumers. Energy companies and utilities need effective ways to develop and manage these initiatives to help drive the energy transition and decarbonization, and adapt to an evolving ecosystem with new entrants from other industries.

The fight against climate change requires industry innovation and transformation, while driving greater consumer participation in the energy ecosystem.

The electrification of the transport and heating sectors continue to accelerate globally, requiring more sustainable sources.

Greater urgency around energy security prompted governments in many countries to reevaluate over-supply and local production to ensure domestic capacity

Growing regulatory mandates range from green energy incentives to ESG reporting requirements and climate-related financial disclosure

82%

of digital leaders in energy and utilities see climate change, including the energy transition and acceleration toward decarbonization, as core to creating future value for stakeholders

[CGI Voice of Our Clients](#)

460 GW

annual renewable capacity additions forecast in 2027, reaching a record and putting renewables on track to become the largest source of electricity

[IEA](#)

100 million

households worldwide will rely on rooftop solar PV by 2030

[IEA](#)

Key challenges and opportunities

From diversifying the energy mix with cleaner sources, to enabling greater reliability and flexibility for industrial and residential consumers, energy and utilities organizations have a unique role to play in accelerating the decarbonization of our societies. Among their key challenges and opportunities are to:

Large-scale asset management

- Decrease the levelized cost of energy (LCOE) by improving availability, efficiency, asset lifetime and overall production revenue
- Improve availability to minimize downtime
- Increase efficiency by detecting underperformance and its causes, and acting rapidly
- Extend asset life via optimized and predictive maintenance, and considering asset health against other goals
- Maximize ROI of hybrid portfolios by determining the most economical option at any point in time

Green hydrogen

- Support green hydrogen trading targets set by governments
- Identify end-users/buyers early in the project lifecycle, ideally during feasibility
- Consider the production of green hydrogen close to demand sites
- Find ways to combine green hydrogen production and storage with existing wind or solar power plants
- Develop an international hydrogen market to advance supplier diversity and enhance energy security for importing countries
- Consider immediate ways of using green hydrogen such as by mixing a small percentage (<10%) in existing gas pipelines

Smaller-scale asset management

- Put customers (and prosumers) at the center of their focus, and consider what is in it for them
- Collect, integrate and analyze data from grid assets, which are increasingly complex to manage
- Integrate and orchestrate distributed energy resources (DERs) to leverage flexibility while retaining network safety and reliability
- Optimize production forecasts and provide these to market operators as granularly as possible

Energy market facilitation

- Integrate with all market participants and provide consolidated insights across the market
- Securely share data among market parties for metering points, consumer contracts and energy measurements
- Support high-volume metering data, processing in near real-time
- Evolve with changing market developments
- Realize quick time to market
- Reduce implementation costs
- Enable readiness for the establishment of energy communities

Creating a path for future growth and sustainable value

Pursuing this agenda requires specialized expertise and capabilities. Whether optimizing renewable assets, modernizing grids, advancing green hydrogen capabilities, or fulfilling ESG requirements, the following pages demonstrate how we can apply proven frameworks and best-fit technology to help you speed transformation and optimize performance.

In dynamic times, we help our clients boldly set their ambitions and clearly drive their future course with confidence. We bring insights you can act on to create a path for future growth and sustainable value for the energy transition.



CGI is a Sample Vendor in Gartner® Hype Cycle™ for Utility Industry IT, 2022, in the areas of Renewable Energy Management Systems, Mobile Customer Interaction, Channel Asset Investment, and Planning Wholesale Market Operations.¹

Environmental, social and governance (ESG) reporting

Sustainability data is becoming a critical asset in improving performance and creating competitive advantage among increasingly conscientious customers. This data is also critical to fulfilling ESG reporting requirements, specifically around Scope 3 and inbound / outbound supply chains. Meeting these goals requires capturing data from many sources, along with verifying, reporting, analyzing and exchanging that data securely. We offer both advisory services and operational-ready data exchange platforms for effectively managing sustainability data.

Large-scale asset management

Effective management of assets requires actionable insight to improve performance and achieve business goals. We help clients achieve the full potential of their assets through industry-leading services and solutions:

Services

Energy transition strategy and roadmap for continuous improvement, wherever clients are on their energy transition journey

EAM strategy for integrating centralized assets with other enterprise systems (e.g., energy management, mobile, SCADA, ERP, etc.)

Strategy and implementation of intelligent control systems

Strategy and implementation of data and analytics (including IoT and satellite data), AI/ML and cloud technology to better predict asset failures or flaws, minimizing downtime

Automation of business processes, including workforce management, to free up talent for more strategic work

Business solutions

Renewables Management System (RMS)

Enables proactive and efficient management of renewable assets by providing greater insight into operations and analyzing key performance indicators and their evolution. RMS allows organizations to:

- Supervise, control and optimize performance of utility-scale renewable assets
- Maximize flexibility at the grid edge to minimize infrastructure investments and ensure reliability the grid and microgrids
- Manage grid complexity and multiple stakeholders
- Get intuitive performance insights for timely decisions via root cause analysis and key metrics in a single dashboard
- Extend asset lifetime and reduce downtime by anticipating potential faults

RMS enables supervision, control, performance and optimization for:

460

renewable power plants

17.5 GW

installed capacity

8,622

wind, solar and hydro generators

Services

Transition acceleration via bridging the gap between business and IT/OT organizations, including definition of architectural principles, capabilities, processes, data, functional and non-functional requirements

Business solutions

CGI OpenGrid Enterprise Asset Management (EAM)

- Enables new levels of digital optimization for utility transmission and distribution operations, providing full oversight into the end-to-end asset lifecycle.
- Delivers advanced predictive diagnostics to analyze data and detect and address issues before they occur.

IDC MarketScape names CGI a “Leader” in 2022 for Industrial Internet-of-Things Service Providers

Case in point:

Streamlining operations to power growth for a European green energy company

A European energy firm has built and operated renewable power plants for over three decades, with a diverse and growing portfolio. Based on our Renewables Management System (RMS), we helped the company improve operational excellence through: centralized control of energy production; more rapid control and diagnosis of stoppages, reducing downtimes; automation of time-consuming tasks, improving resource optimization; and data-driven, insights-led decision making.

Smaller-scale asset management

Local communities play a vital role in reducing GHG emissions. DERs like solar PV panels, wind generation units, EV charging / battery storage and demand management are empowering consumers to be part of the electrical network. Models like microgrids help communities define a long-term vision for the energy transition. All of this requires a comprehensive approach to managing network infrastructure.

Services

Strategies for managing DERs, microgrids, positive energy districts, etc., driving grid sustainability and resilience

Strategies for transportation electrification for both commercial and residential EVs in support of make-ready, locational and demand intelligence, charge energy optimization, managed / passive charging programs

Vendor-independent readiness and inflight assessment, advisory and implementation of smart grid, meter data management, DERMS, network model and ADMS

Data governance, data management, modern data architecture, and integrated network modeling

Strategy and implementation to enable secure monitoring and control of remote devices at the grid edge, and managing device and market data to support market transactions

Collaboration with client strategy teams to define or enhance their network strategy to continue to deliver resilient, reliable, safe and secure power

Strategy and implementation to bridge the gap between DERMS and other core systems (e.g., ADMS, WFM, billing)

IT/OT security strategy, architecture, design, integration and management; asset discovery; training

Business solutions

[CGI OpenGrid DERMS](#)

Helps utilities connect, monitor, dispatch, schedule and optimize their DERs for enhanced reliability, network efficiency, and grid performance

CGI OpenGrid Foundation

Provides a network model and integration layer to enable a single view of a utility's network across IT and OT systems, a key enabler for delivering data governance strategy

[CGI OpenGrid Work](#)

Helps optimize the process and cost for managing all work, whether simple service work or complex construction needs

[Rooftop Solar Energy Calculator](#)

Combines remote-sensor and Earth observation data with information such as historical weather patterns to determine the best roof area for solar panels and the maximum expected output

Case in point:

Unlocking data insights for a sustainable future grid

In the UK, National Grid ESO, partnered with CGI to build a digital network data model for the future. It puts network data at the heart of the solution by providing a data integration platform that presents a digital reference model of the utility's network at any point in time. 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.

Advancing locally controlled and balanced energy systems

Microgrids are local energy systems designed and controlled for a community or industrial area that seeks to balance energy consumption and production locally. In the Netherlands, "energy islands" are a collection of locations equipped with a smart meter, which ideally interconnect to enable local monitoring and balancing of energy generation. Positive Energy Districts (PED) designate areas that produce more energy than they consume. As a partner of the MAKING-CITY consortium to implement PEDs in Groningen, CGI developed an energy islands platform to provide real-time insight into the local energy balance.



Green hydrogen



Some companies are accelerating the energy transition by pursuing leadership positions in the distribution and use of green hydrogen. Such moves require actionable data insights and smart digital solutions. We offer proven experience in deploying green hydrogen plant control systems and hydrogen data exchange platforms.

Services

- Strategy and implementation of SCADA / production control systems for hybrid plants
- Integration of control systems into central production management systems of industrial plants
- Asset data management strategies
- Standardization and unification of data generated in production plants to facilitate integration and management
- Hydrogen market design
- Strategy and implementation of hydrogen ecosystem data exchange platforms
- Implementation of hydrogen balancing and billing solutions for transmission and distribution operators

Business solutions

Hybrid Plant Operation

- End-to-end solution and framework for supervising the hydrogen production process obtained through a renewable energy source

CGI AgileDX-Hydrogen

Cloud-based data exchange platform supporting hydrogen use cases:

- Replacing legacy IT to address the complexity hydrogen brings into the business. Low-code approach enables transmission and distribution operators to easily integrate hydrogen into their IT landscape, producing customized balancing and billing reports.
- Enabling effective collaboration within hydrogen ecosystems, bringing together stakeholders to monitor, collaborate and communicate. Valuable data insights can support new funding for ongoing projects, launch new initiatives, and help introduce progressive legislation.

Case in point:

Enabling end-to-end control one of Europe's largest green hydrogen plants for industrial use

A leading energy company chose CGI to implement an end-to-end solution that monitors the hydrogen production process of their plant. The solution gives operators the tools, indicators and alarms needed to guarantee the complete manufacturing process. It integrates with systems that control the energy production of the PV plant and the production and supply of hydrogen to the plant.

Piloting a data exchange platform for a European transmission system operator in 5 weeks

A major European gas transmission operator wanted to integrate hydrogen into their current value chain. Establishing a commercial operations data exchange platform was too complex for managing by spreadsheet, and too costly to integrate directly into their legacy IT landscape. With our intelligent data exchange platform, CGI AgileDX-Hydrogen, we jointly developed a proof of concept, with power to scale, in just five weeks.



Energy market facilitation

The energy transition and rapid growth of renewable energy resources create a pressing need for new services, flexibility and real-time information to support efficient energy market operations. For over two decades, we have been at the forefront of building, implementing and operating complex, high-volume central market infrastructures that lower operating costs, improve reliability and resilience, and deliver more flexible and scalable technologies.

Services

Market design

- Proven solution design process generating clear and concise system specifications that completely implement client requirements
- Design methodology bundling best practices of describing and agreeing the specifications with the client
- Requirements traceability process ensuring complete requirements are identified and incorporated

Business solutions

Central Market Solutions (CMS)

Proven platforms for exchanging all types of data to support market facilitation for electricity, natural gas, water and hydrogen:

- Enables data sharing and communication among all market parties
- Stores information related to smart metering points, consumer contracts and energy measurement data
- Offers centralized functionality for grid fee billing and settlement
- Embraces open-standard third-party technologies to allow effective integration

14 energy data platforms

in 10 countries developed and maintained, with never a single message lost

Case in point:

Fingrid Datahub Oy goes live with Datahub

Finland's new centralized information exchange system for the retail electricity market went live on February 21, 2022. It represents a major step in Finland's journey toward a smarter, cleaner and more flexible energy system. Centralizing approximately 3.8 million energy data points on a single platform accelerates the speed of information exchange. Datahub, powered by CGI's Central Market Solutions (CMS), provides a foundation for smart grids and smart meters, as well as new services for energy efficiency monitoring, EV charging, demand-side energy management, and distributed electricity generation.

Benefits of implementing the right processes and technologies



Asset owners and investors

- Improved availability, efficiency and production
- Optimized workforce management for asset maintenance and construction
- Higher customer satisfaction with a more resilient and modernized grid
- Better financial results (higher ROI)
- Increased ability to enter new markets
- Extended asset lifetimes



Grid operators

- More balanced grid, contributing to energy security and safety
- Improved resource management and optimization (e.g., ability to distribute / transmit multiple sources of energy across the grid)
- Complete visibility of the network portfolio and production
- Better ability to forecast and align production
- Accelerated innovation enabled by managing data on a single platform



Customers / consumers / prosumers

- Increased uptime of assets, providing a more stable green energy supply
- Better customer experience with a more resilient and modernized grid
- Greater energy affordability as operators improve operational efficiency
- Easier access for prosumers to participate in the market
- Support for large player and peer-to-peer market facilitation

Why CGI?

Evolving challenges of the energy transition are complex, but solvable. They require a holistic, data-driven approach that encompasses people and culture, business processes and technology. The answers will be unique to your organization, as everyone starts at a different point on the journey, with different variables, and different outcomes in mind.

The right strategic partner can help you navigate changing market dynamics and transform business models, systems and processes to meet current and future requirements. We bring a deep understanding of the energy value chain and proven experience in renewables management, DERs integration, green hydrogen production control, energy market management, and more.



Connect with us for insights you can act on to accelerate sustainable energy outcomes and opportunities.



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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