



Consumers Energy

Transform Gas and Electric Grid Operations with Digital Grid Management



“AspenTech’s enterprise software approach drives efficiency, supports a consistent user experience and gives us the flexibility to layer on additional functionality when we need it.”

—Alex DeKamp, Operational Technology, Critical Applications Manager, Consumers Energy

CHALLENGE

- Maintain industry-leading reliability even as extreme weather events in Michigan become more frequent and severe
- Ensure that no outage lasts more than 24 hours and no single outage impacts more than 100,000 customers
- End coal use by 2025 and achieve net zero carbon emissions by 2040

SOLUTION

AspenTech Digital Grid Management (DGM) Enterprise System, including monarch OT Platform, SCADA, Generation Management System (GMS), Energy Management System (EMS), Advanced Distribution Management System (ADMS), Outage Management System (OMS) and Gas Pipeline Management System (Continua)

VALUE CREATED

- Integrated OT Platform
- Best-in-class cybersecurity
- Modern and open system
- Widely adopted, proven technology
- Scalable with evergreen updates
- Lower Total Cost of Ownership
- Transparent product roadmap



Navigating the Energy Transition with Electric and Gas

Like many utilities across the US, Michigan-based Consumers Energy is navigating significant change. In 2019, for example, 20% of the company's generation portfolio was coal. By 2025, Consumers Energy will close all its coal plants, 15 years ahead of the utility's original closure schedule.

The aggressive move away from coal is part of Consumers Energy's ambitious Clean Energy Plan. Besides becoming one of the first utilities in the nation to go coal-free, the 20-year blueprint lays out a strategy for the utility to achieve its goal of net zero carbon emissions by 2040. It is also investing heavily in renewable energy and aims to have clean energy make up 90% of its generation portfolio by 2040, including around 8,000 megawatts of solar.

The transformation of Consumers Energy's electricity generation will reduce greenhouse gas emissions and air pollution, conserve water and save utility customers an estimated \$600M USD. Even as the utility adds new solar, energy storage and other clean energy, its 8,000-plus employees are also focused on enhancing the reliable delivery of electricity to almost seven million customers. At the same time, it operates about 28,000 miles of gas distribution pipelines, an essential piece of the utility's strategy to deliver low emissions energy to its customers.

There are unique challenges to ensuring the affordable and reliable delivery of low-emission energy, especially when it comes to the electric grid. Consumers Energy oversees 90,000-plus miles of electric distribution lines, 1,200 substations and nearly 1.5 million poles—and much of the infrastructure is in sparsely populated rural areas. The geographic spread of the company's service territory challenges rapid outage response. Additionally, increasingly extreme and frequent weather events such as ice storms, tornados and high wind speeds threaten grid resilience.

A Big Investment in Grid Resilience

Consumers Energy developed a Reliability Roadmap¹ that seeks to achieve goals as ambitious as those in its Clean Energy Plan. The roadmap has two main objectives: That no customer go without power for more than 24 hours and that no single outage impacts more than 100,000 customers. In 2012, the utility launched a 25-year, \$2B USD project to replace 2,600 miles of pipelines, ensuring the safe and reliable delivery of natural gas to customers.

Additionally, Consumers Energy is investing nearly \$5.5B USD in measures to prevent and limit the negative effects of outages. This includes proactive vegetation management, “undergrounding” power lines and upgrading grid infrastructure to be more resilient to extreme weather. Grid modernization is integral to the company’s efforts to enhance grid resilience and reliability. Smart devices ranging from grid line sensors to smart meters to automatic transfer reclosers provide the data and intelligence necessary to monitor, isolate and respond to grid outages.

Consumers Energy evaluates its efforts to improve grid resilience and reliability by examining metrics like total customer outages and outage minutes, reduced customer costs and avoided outage restoration costs. Increased system automation and visibility via grid modernization is assessed by measuring safety incidents, asset health and reliance on manual processes.

Digital Adoption Essential to Achieving Strategic Objectives

Software is a key tool in the utility’s efforts to improve grid reliability and resilience, deploy clean energy and operate a safe and reliable natural gas network. “Like any utility, a good software vendor is crucial to our ability to achieve our most important strategic objectives and overcome the challenges we face. We ask a lot of our software vendors,” said Alex DeKamp, Operational Technology, Critical Applications Manager for Consumers Energy.



Consumers Energy's Enterprise OT Integrated Approach



monarch™ Core Platform

SCADA, Real-time Field Communications, Alarming, Trending, Visualization, Training Environment, Disaster Recovery, Study Mode, etc.

Consumers Energy first partnered with AspenTech in 2006, when it decided to use the **AspenTech OSI Energy Management System™** and the **AspenTech OSI Generation Management System™** together with **AspenTech OSI monarch SCADA™**. Since then, the partnership has continued to grow and strengthen, as the utility upgraded the original systems and added the **AspenTech OSI Advanced Distribution Management System™** and the **AspenTech OSI Outage Management System™**. Most recently, the utility signed a contract in 2023 to replace its 20-year-old gas SCADA system using **AspenTech OSI Continua Pipeline Management™**.

The long partnership with AspenTech has provided Consumers Energy with an enterprise digital grid management (DGM) solution that encompasses both gas and electric systems and is critically important to achieve its strategic objectives. For example, improving reliability through the deployment of smart sensors and devices doesn't automatically happen by installing the equipment in the field. Effective outage prevention and response is only possible when those devices deliver actionable data to a centralized platform. Integrating DGM capabilities, Consumers Energy is able to leverage its own data to more quickly dispatch crews to power outages, resulting in a reduction in outage restoration time.

DGM also enables Consumers Energy to add line sensor relay fault information and line distance information on the Single-Line Control Diagram (SCD) display for control room operators. Having this information along with customer contact information and outage trending tools enable increased outage prevention and response. At the same time, the utility's gas and electric operators have received an improved user experience by leveraging DGM's common look and feel regardless of which AspenTech product or solution they are utilizing.

Consumers Energy's investment in enterprise operations technology (OT) has allowed them to take advantage of the more efficient system maintenance and patch upgrades available for their DGM enterprise solution, while at the same time provide for an easier training and support on a common OT platform. The investment has lowered Consumers Energy's technical debt, aids in the skilled workforce shortage and in general provides the lowest total cost of ownership long term.

Enterprise Digital Grid Management: Preparing Consumers Energy for the Future

Change is the one constant facing today's utilities—and Consumers Energy is no exception. Meeting evolving customer and regulatory demands, technological advances and operational challenges requires flexibility. The partnership with AspenTech provides that flexibility, by providing modular digital solutions that allow new functionality to be deployed as needed.

An enterprise approach to digital grid management allows Consumers Energy to easily deploy new modules that they might require in the future based around changes in their future energy transition roadmap, while at the same time provide feedback to AspenTech on enhancements that might create an even better operator experience or end-user experience.

Citations

¹Consumers Energy Counters Extreme Weather with Plans for Stronger and Smarter Energy Grid





About Aspen Technology

Aspen Technology, Inc. (NASDAQ: AZPN) is a global software leader helping industries at the forefront of the world's dual challenge meet the increasing demand for resources from a rapidly growing population in a profitable and sustainable manner. AspenTech solutions address complex environments where it is critical to optimize the asset design, operation and maintenance life-cycle. Through our unique combination of deep domain expertise and innovation, customers in asset-intensive industries can run their assets safer, greener, longer and faster to improve their operational excellence.

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