Austin Energy, the eighth largest communityowned utility in the U.S., serves more than a million residents in and around the capital city of Texas. The utility's mission is to convert "big data" into useful information, provide more reliable customer service, and improve energy efficiency, in part by creating a safer, stronger, more resilient power grid.

The utility needed to better manage the effects of severe weather, which is the number one cause of power outages, costing the U.S. economy billions of dollars a year in lost output and wages, spoiled inventory, delayed production, inconvenience, and damage to grid infrastructure.

In pursuit of its mission, and with the knowledge that an advanced distribution management system (ADMS) enables better operational decisions by integrating millions of data points into a single, simplified user experience, Austin Energy chose Schneider Electric to implement an ADMS.

Defending against weather conditions

Creating a resilient grid is critical to reducing the nation's vulnerability to severe weather. Furthermore, smart grid technology designed to increase resilience can improve the overall effectiveness of grid operations, leading to greater efficiencies in energy use, reduced carbon emissions, and the ability to support the integration of a growing number of distributed energy resources.

Prior to rolling out the ADMS, Austin Energy conducted a pilot to assess technical feasibility as well as the costs and benefits of installing such a system. The pilot comprised monitoring and control of various distribution automation devices over a mesh radio network. Simultaneously, the utility modeled a two-substation area to assess the validity of the geographic information system (GIS) model, as well as the model's ability to communicate the data needed to calculate and solve load flow and fault current. Both models produced positive results.

The ADMS system combined Distribution Management System (DMS), Outage Management System (OMS), and Distribution Supervisory Control and Data Acquisition (DSCADA) System functionality into one system. By fully integrating both demand response and distribution resources into the operations of the

Goal

Reduce power outages due to severe weather and create a safer, stronger and more resilient power grid.

Story

Creating a resilient grid that can withstand the impact of severe weather conditions, Austin Energy was looking for a partner that could help it to implement the latest smart grid technology.

Solution

- EcoStruxure™ ADMS*
- EcoStruxure™ Substation Operation**
- Easergy T200

Results

- Fast, highly reliable system with access to real time information
- Greater visibility into operations from the transmission system to customer meters
- Achieving overall customer satisfaction of 82%
- Leverage information to respond to situations quickly and efficiently

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An ADMS deployment provides operators for Austin Energy with a real-time view of system data, crew locations, and SCADA and OMS information.

distribution system, the utility was able to enhance its communications to customers regarding the status of outages.

The deployment included advanced applications such as Integrated Voltage Var Control (IVVC) to optimize the system, reduce power losses, and apply conservation voltage reduction to reduce demand. It also included Fault Location, Isolation, and Service Restoration (FLISR) to assist in locating faulted equipment, automatically isolating and expediting power restoration by rerouting power, and sending crews directly to areas needing repair.

Additionally, the ADMS offers better tools for responding to system disturbances such as those caused by severe thunderstorms or high winds, thus increasing the dispatch team's situational awareness and improving reliability.

Finally, the ADMS decreased peak demand and lowered system losses through Conservation Voltage Reduction and Volt- VAR Optimization programs.

Improved visibility and control

Less than two years from the start of the project, Austin Energy and Schneider Electric successfully completed the rollout of the comprehensive ADMS platform. The deployment proved effective right away, successfully managing Austin Energy's network through the summer storm season.

For Austin Energy, the most impactful change has been in the control room. Operators now depend on a fast, highly reliable system, with access to more realtime information on the same system, such as load flow information, locations of crew vehicles, and SCADA and OMS information. The system assists the utility in validating any changes made to the topology of its system, and the access to load flow information provides better insight into what load operators are actually managing.

Plus, the utility now has access to a dispatcher training simulator for the ADMS, which provides operator training for critical scenarios.

Benefits that support sustainability goals

By making big data actionable and focusing on a more powerful grid, the utility can enhance customer engagement, improve crew safety, gain new demand response capabilities, and achieve greater visibility into operations from the transmission system to customer meters.

Austin Energy's distribution engineering team, including System Engineering, Distribution Planning, and Control Engineering, can access a single data model, which has increased communication and collaboration amongst the teams and created a new synergy for troubleshooting distribution issues.

82%
Target Customer Satisfaction

55%
Target of renewable energy mix by 2025

950MW
Amount of solar power deployment by 2025

60min
System Average Interruption Duration Index (SAIDI)

0.8
Average Interruption Frequency Index (SAIFI)

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Austin Energy has set a goal of using 55% renewable energy in its energy mix by 2025.

Moreover, awareness has increased across the company. Distribution construction crew leaders, engineers, and SCADA personnel have access to information such as the locations of crews, outages, and real-time load flow information.

Austin Energy's ADMS is the ideal platform to support the integration of control and monitoring of its intelligent electronic distribution devices, as well as the AMI infrastructure. ADMS allows the utility to perform AMI functions such as pinging meters or being notified of last gaps or power restoration messages; this prior notification helps the utility improve its customer service during the time-sensitive process of recovering from an outage and restoring power.

Austin Energy now has the ability to leverage information provided by intelligent electronic distribution devices for applications such as load flow, but more importantly, to use the information and capability to perform advanced applications (such as VVO and FLISR), which gives operators complete control over the distribution system to respond to changes in an intelligent way.

The utility has established additional goals for energy efficiency, profitability, and customer services, including:

- Reaching 55% renewable energy in its energy mix by 2025
- Deploying 950 Megawatts (MW) of solar power, with 200 MW being local solar by 2025
- Adding 100 MW of demand side management for a total of 900 MW by 2025
- Achieving overall customer satisfaction of 82%
- Maintaining reliability goals of System Average Interruption Duration Index (SAIDI) of 60 minutes and of System Average Interruption Frequency Index (SAIFI) of 0.8

All of these goals must be achieved while meeting affordability measures of no more than an average 2% rate increase per year and ensuring that the average residential bill is in the bottom 50% of Texas residential bills.

Austin Energy's ADMS deployment represents a significant step toward the development of a smarter grid and stands as an example for utilities across the country as they work toward creating a more sustainable, resilient, energyefficient country.

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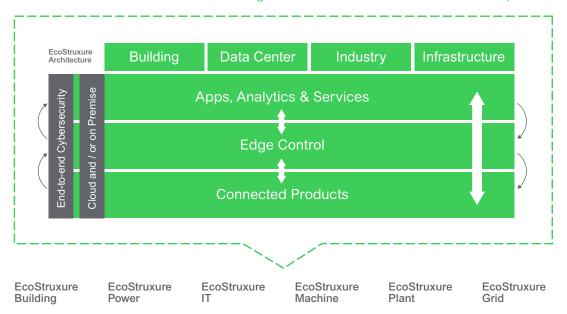
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IoT-enabled solutions that drive operational and energy efficiency

EcoStruxure is Schneider Electric's open, interoperable, IoT-enabled system architecture and platform.

EcoStruxure delivers enhanced value around safety, reliability, efficiency, sustainability, and connectivity for our customers.

EcoStruxure leverages advancements in IoT, mobility, sensing, cloud, analytics, and cybersecurity to deliver Innovation at Every Level including Connected Products, Edge Control, and Apps, Analytics & Services. EcoStruxure has been deployed in 450,000+ installations, with the support of 9,000 system integrators, connecting over 1 billion devices.

One EcoStruxure architecture, serving 4 End Markets with 6 Domains of Expertise

EcoStruxure Architecture	Building	Data Center	Industry	Infrastructure

End-to-end Cybersecurity | Cloud and / or on Premise

Apps, Analytics & Services

Edge Control

Connected Products

EcoStruxure Building	EcoStruxure Power	EcoStruxure IT	EcoStruxure Machine	EcoStruxure Plant	EcoStruxure Grid

Connected Products

The Internet of Things starts with the best things. Our IoT-enabled best-in-class connected products include breakers, drives, UPSs, relays, sensors, and more. Devices with embedded intelligence drive better decision-making throughout operations.

Edge Control

Mission-critical scenarios can be unpredictable, so control of devices at the edge of the IoT network is a must. This essential capability provides real-time solutions that enable local control at the edge, protecting safety and uptime.

Apps, Analytis & Services

Interoperability is imperative to supporting the diverse hardware and systems in building, data center, industry, and grid environments. EcoStruxure enables a breadth of agnostic Applications, Analytics, & Services for seamless enterprise integration.

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Smarter, faster power restoration

Self-Healing Smart Grid Solution Re-energizes Network in Less Than a Minute

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