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HOW PG&E USES PREFABRICATED BUILDINGS TO BOLSTER RESILIENCE, RELIABILITY, AND SAFETY

SPEAKERS

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Utilities face an increasingly wide range of challenges and opportunities. Unprecedented load growth driven by electrification and the proliferation of data centers means that electric utilities will play an even more central role in the smooth functioning of modern economies and societies. Extreme weather driven by climate change, however, threatens the consistent and reliable delivery of larger and larger amounts of clean electricity.

Despite the mix of challenge and opportunities utilities must navigate, their core mission to provide safe and affordable electricity to customers remains the same. The set of tools and strategies utilities leverage to reliably and cost-effectively meet the demand for electricity inevitably varies based on their business model, geography, and regulatory environment. One constant in utility efforts to meet their fundamental mission in a rapidly changing landscape is consistent innovation.

For Pacific Gas & Electric (PG&E), the use of prefabricated buildings in the construction and maintenance of substations has become an important tool in improving the safety, reliability, and resilience of electricity it provides customers. For example, as part of PG&E's Modular Protection and Automation Control (MPAC) program, the utility deploys durable prefabricated buildings that house critical substation electrical equipment, control systems, and other infrastructure.

PG&E shared what it has learned using prefabricated buildings for substation projects in the recent webinar, **"How PG&E Uses Prefabricated Buildings to Bolster Resilience, Reliability, and Safety."** The webinar featured the insights and experience of Chad Dupuis, an electrical engineer principal who has worked on over 300 capital projects for PG&E. The webinar also included the insights of Dan Smith, who is a territory growth rep for Trachte, the leading provider of prefabricated buildings to the utility industry.

STRONG DRIVERS BEHIND THE USE OF PREFABRICATED BUILDINGS

Early in the webinar, PG&E's Dupuis made the point that the utility has long used buildings to enclose substation and automation and control systems. That meant sending crews and equipment to often very remote sites to construct the buildings. In the late 1990s, however, PG&E began investigating new approaches to the use of buildings in newly constructed electric substations.

Two big reasons drove PG&E to innovate, Dupuis told the webinar audience. One was the fact that constructing buildings on-site to enclose substation automation and control systems inevitably involved uncertainty around completion schedules – after all, weather conditions, supply chain issues, and other factors introduce risks to any construction project. "PG&E wanted more predictability around our operative date," Dupuis said. "We had lots of projects that were being delayed for various reasons, and often the building controlled the project schedule."

Another reason PG&E began investigating alternatives to on-site construction was because the utility wanted to improve the efficiency of substation projects. "There were lots of inefficiencies with on-site construction," Dupuis said. "We had materials at the end of the job that were waste, we had a lot of construction folks in the fields, we had some quality issues."

Dan Smith of Trachte also noted that safety is a significant driver that leads many of the utilities he works with to consider the use of prefabricated buildings. Prefabricated buildings limit the amount of time construction workers spend on-site, which improves safety. "Anytime you're inside of a substation, there's massive safety implications," Smith said. "By building that building in a quality-controlled factory under our own roof and limiting our time within a customer's site is a huge advantage for our customers because it removes a lot of potential safety issues."

PROVEN BENEFITS FOR CUSTOMERS

PG&E has installed over 130 prefabricated buildings over the past 20 years, two-thirds of which were not part of the MPAC program. Regardless of whether the prefabricated buildings were constructed as part of the MPAC program or not, Dupuis made it clear that their use delivers tangible benefits to PG&E's customers.

"We have demonstrated over the years this is the best way to deliver new buildings for substations that support grid expansion, modernization, and grid enhancing technologies," Dupuis said. "If we are not using prefabricated buildings that deliver efficiencies to how we do our substation projects, customers will likely see a higher cost on their bill. Cost is also connected to quality. If we can't build quality systems, the cost will be higher and we're not delivering projects in a timely way," he said.

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A COMMITMENT TO INNOVATION

The concept of a factory-built prefabricated building shipped to the site of a substation project is straightforward. But innovation and customization to fit the unique needs of individual utilities ensures prefabricated buildings deliver even more value.

Trachte's Smith explained that the company benefits from working with utilities in a wide range of geographies. This allows Trachte to catalogue and share best practices across its customer base. Working closely with utility customers also requires Trachte to innovate to solve very specific challenges.

For example, Trachte worked with customers with projects in areas that receive a lot of snow and experience high winds. In these circumstances, high winds and snow buildup resulted in doors being blown open and remaining open. “We put a vestibule on the building to prevent the snow buildup in front of the door and the door swinging open because of the wind,” Smith said.

PG&E also approaches innovation in prefabricated buildings as a way to solve specific challenges. “One recent example is we noticed an issue with rodents getting into buildings that highlighted the need to develop a cable entrance that prevents rodents and weather, including smoke or dust, from getting into the buildings through cable entrances,” Dupuis said. The utility identified this as a challenge and then piloted solutions to deploy that improved the functioning of its prefabricated buildings.

More generally, though, PG&E has a structured and approach to innovation that has no end point. “We’ve defined the areas where we want to focus on innovation. They include safety, technical, delivery, responsiveness and cost,” Dupuis said. “Innovation doesn’t stop, and we continuously drive toward improvement in each of those areas.”

For more information about the benefits and uses of prefabricated buildings, please visit www.trachteusa.com

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