

## MICROGRIDS SIMPLIFIED

*Real-time grid control for a renewable future*

Microgrids are complex solutions with big benefits. With the ability to localize renewable power sources to decrease reliance on fossil fuels, microgrids can reduce demand charges and keep the lights on even in the event of a main grid outage.

However, the success of the microgrid hinges on the ability to perfectly integrate technology resources in a way that provides ultimate resiliency and efficiency. It all comes down to one thing: control.

The PXiSE Advanced Control Technology (ACT) works with any mix of energy resources and empowers microgrids of all sizes to quickly and easily adapt to changing conditions.

### Benefits of PXiSE

- Reduces demand charges
- Decreases reliance on fossil fuels
- Mitigates any energy fluctuations right from the start
- Interruption free, even in the event of a main grid outage
- Supports frequency and non-frequency-based electric systems, removing the cap on renewables
- Maintains consistent power quality, regardless of energy mix
- No more overbuying assets, like batteries, to hedge against interruptions

### Designed to handle complex microgrid operations

- Operates at 50Hz - 60Hz, depending on grid frequency
- Over 400 protocols, allowing for integration with any mix of technology and infrastructure
- Blinkless disconnect and connect for complete stability, even in the event of an outage (IEEE 2030.7 compliant)
- Deploys in weeks, not months
- Scales to meet the needs of each individual microgrid now and in the future
- Maintains a stable grid using energy storage in coordination with other energy resources

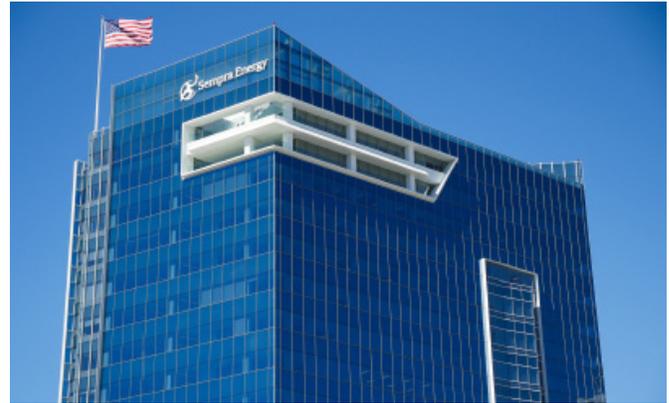
## PXiSE MICROGRID FIELD EXAMPLES

### Commercial High-rise Building Microgrid

Sempra Energy's 16-story, 393,322-square-foot building is home to numerous offices, conference rooms, EV chargers, PV solar, a gym and more. Powering such a large building can be expensive, which is amplified by electric bill demand charges. Building a microgrid would enable Sempra to mitigate these charges and operate areas independently, or island, should there be an upstream interruption.

To net these improvements, the PXiSE Energy Solutions team, a subsidiary of Sempra Energy, began work on a microgrid that would power the third floor. The PXiSE team chose vendors and project managed the construction and deployment of the grid. All of the infrastructure was tied together using the PXiSE ACT, a software-based grid control solution.

Through time of use (TOU) shifting that is built into the optimization algorithm, solar and battery power will



take over during periods of high demand, enabling the third floor to be solely powered by renewables rather than the main electric grid. Not only does this mitigate demand charge pricing, it enables the facilities to remain functional in the event of a main grid outage.

### Commercial Winery Microgrid

Wineries rely on specific temperature conditions to guarantee that wine is of the highest quality, and a power outage can result in spoilage, which can lead to massive losses. But that power comes at a price, and demand charges can take a significant toll on budgets.

This commercial winery uses a microgrid to minimize electricity cost uncertainty and protect against utility system outages and power disturbances. Backed by the PXiSE advanced grid control solution, managers can now continuously forecast an advantageous net usage profile that mitigates both spikes in electric consumption and demand pricing. Equipped with real-time control, operators can easily optimize the energy mix to ensure stability and seamlessly disconnect and reconnect to the grid in the event of an outage.



These microgrid deployments include full records of operational and performance data for advanced analytics and benefit achievements validation. They also demonstrated collaboration with partners and stakeholders to study additional DER integration and customized optimization objectives in C&I buildings.