PowerSecure

Alabama Power Company
Smart Neighborhood

How APC'S Smart Neighborhood
is Transforming the Future of Energy

About the
Customer

Alabama Power Company (APC), headquartered in Birmingham, AL, provides electricity service to 1.4 million customers in the state of Alabama and is operated by Southern Company. Alabama Power partnered with PowerSecure, Signature Homes, Oak Ridge National Laboratory, the U.S. Department of Energy, and other technology vendors to introduce the Alabama Smart Neighborhood as part of a broader Smart Neighborhood research initiative, championed by Southern Company.
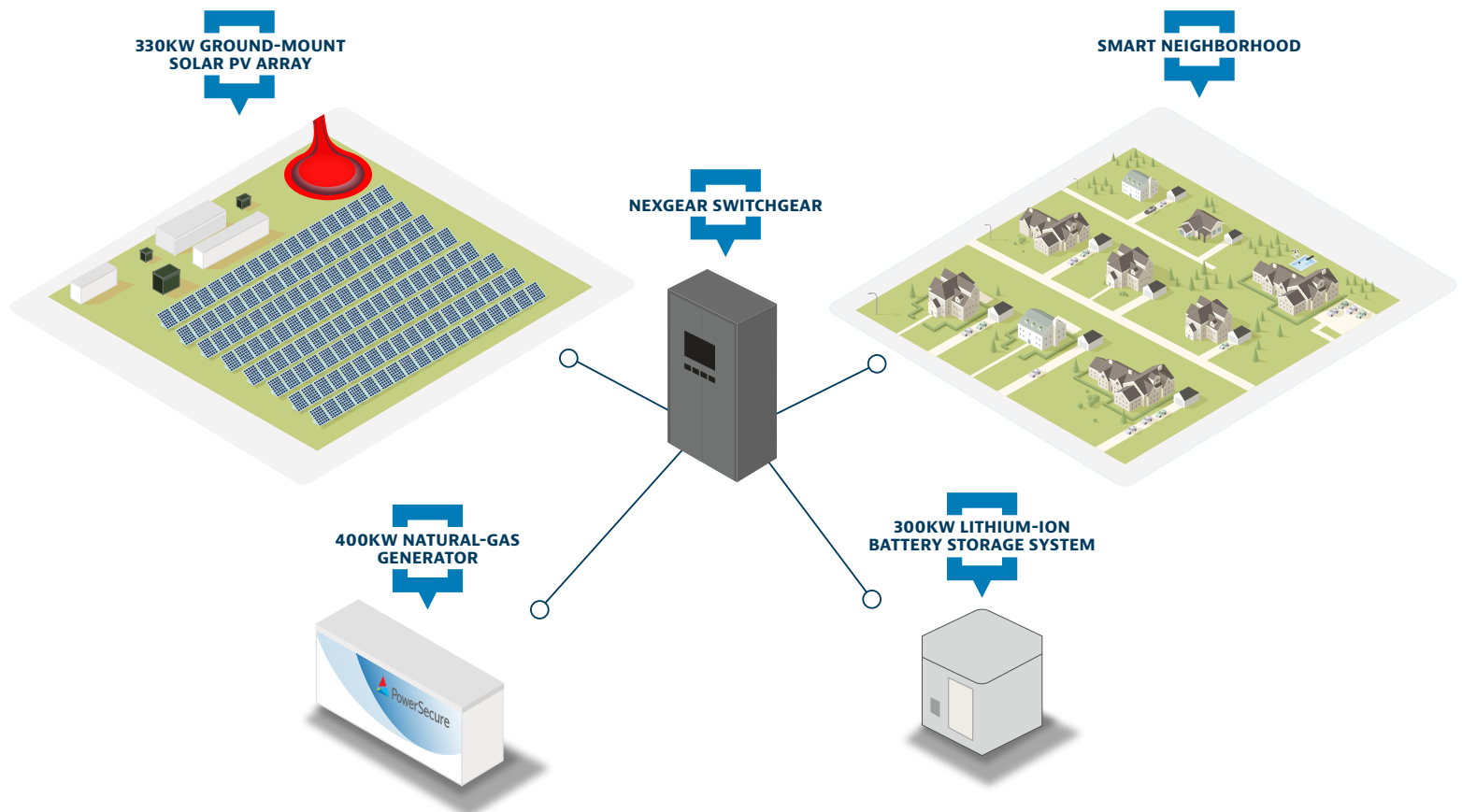

The
Challenge

The Alabama Smart Neighborhood was built as part of Southern Company's research initiative to determine what homes and smart home automation will look like in 2040. The 62-home community is among the most energy-efficient in the country, with improved reliability, increased use of distributed energy resources and decreased operating costs. By integrating advanced home construction methods, smart home automation, and distributed energy resources, Southern Company and its operating companies aimed to optimize its customers' ever-changing energy needs through the development of this Smart Neighborhood research program.

The
Solution

PowerSecure was selected to design, engineer, and deploy Alabama Power's Smart Neighborhood. It was critical for PowerSecure to study distributed energy resources in the residential market and demonstrate how these assets work with the existing electrical grid. The neighborhood is powered by an advanced community-scale microgrid executed by PowerSecure, which integrates a 330kW ground-mount solar PV array, a 400kW natural-gas generator, and a two-plus hour, 300kW lithium-ion battery storage system. The microgrid provides solar energy to the community during normal conditions and seamlessly powers the community during outages. This project is being analyzed by Alabama Power, PowerSecure, Southern Company Research and Development, the U.S. Department of Energy's Oak Ridge National Laboratory, and the Electric Power Research Institute (EPRI). The Smart Neighborhood is the industry standard that can advance residential sustainability in balancing the neighborhood loads for efficiency purposes, provide resiliency during an outage, and support the community with clean renewable energy generation.

330KW GROUND-MOUNT
SOLAR PV ARRAY

SMART NEIGHBORHOOD

NEXGEAR SWITCHGEAR

400KW NATURAL-GAS
GENERATOR

300KW LITHIUM-ION
BATTERY STORAGE SYSTEM

Benefits to
the Customer

With PowerSecure's industry-leading reliability, PowerSecure's distributed generation solution provided:

1 Alabama Power's Smart Neighborhood is the first of its kind in the Southeast, and was designed, engineering, and developed by PowerSecure

2 The data from this project, and coordination between EPRI, PowerSecure, and other leading national suppliers provides insight as to which features to offer potential microgrid communities

3 The microgrid controller's ability to manage the multiple power sources (solar, battery, and natural gas generator) while working with technologies within the homes to shift load to efficiently serve customers is cutting-edge

4 The advanced microgrid seamlessly enhances the homeowner's experience, allowing them to have continuous, clean power and the ability to monitor their energy usage to make a positive impact on their community

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