

Copper Labs Webinar

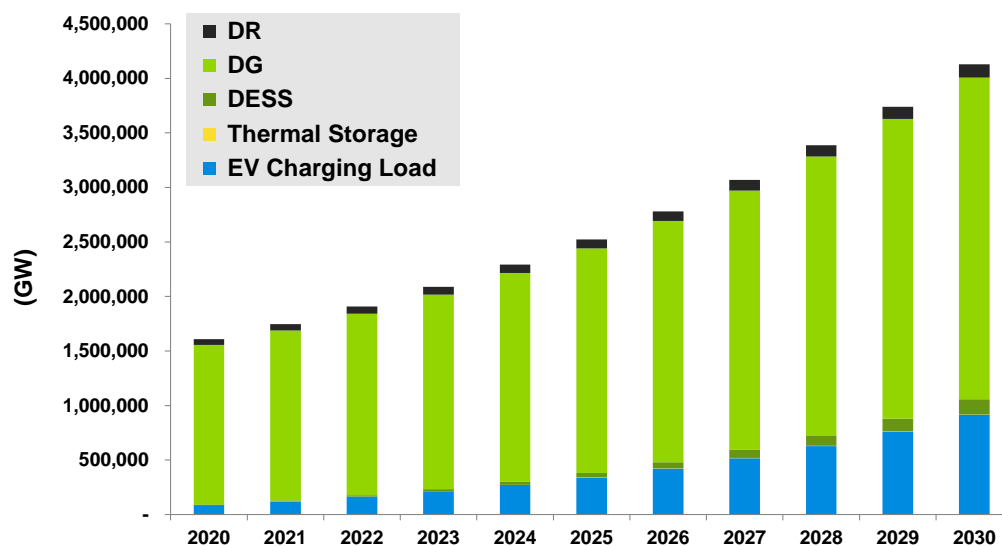
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Wireless Real Time Energy Management: A Powerful Tool for Both Utilities and Consumers

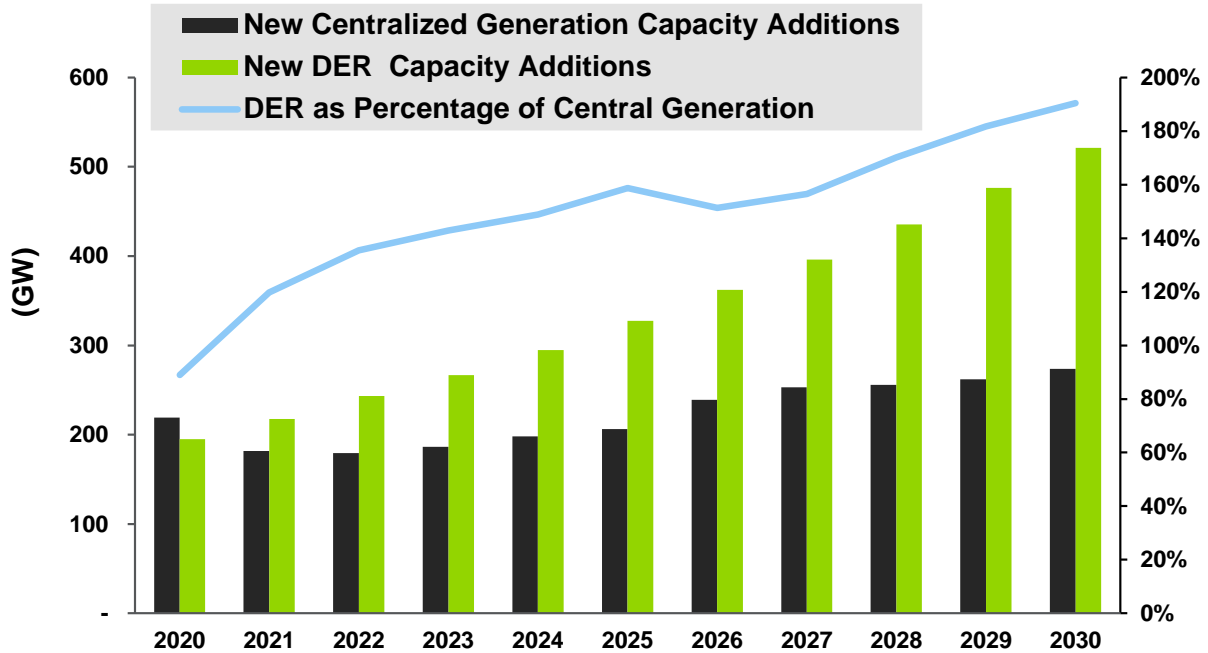
As the energy sector continues to transition into a digitalized and decentralized ecosystem, the emergence of distributed energy resources (DERs) has accelerated worldwide. Linear value chains supporting one-way power flow from centralized generation to end customers have given way to a more sustainable, highly digitized, and dynamic energy system. This system now supports a two-way energy flow in which customer engagement, innovation, and agility have become extremely critical. This shift away from centralized generation requires the use of innovative energy management technologies and solutions. Peak loads from extreme weather events, such as hurricanes and wildfires, have been addressed by traditional demand response (DR) programs for decades, which call on large commercial and industrial customers to reduce energy consumption during periods of high energy demand. However, automated behavioral demand response for residential customers who own distributed energy resources—such as solar panels, batteries, electric vehicles, smart thermostats, or water heaters—has become a highly useful tool for utilities to shift and shave peak loads more effectively.

Chart 1 Cumulative DER Power Capacity by Technology, World Markets: 2020-2030



(Source: Guidehouse Insights)

Chart 2 Annual DER vs. Annual Central Generation Capacity Additions, World Markets: 2020-2030



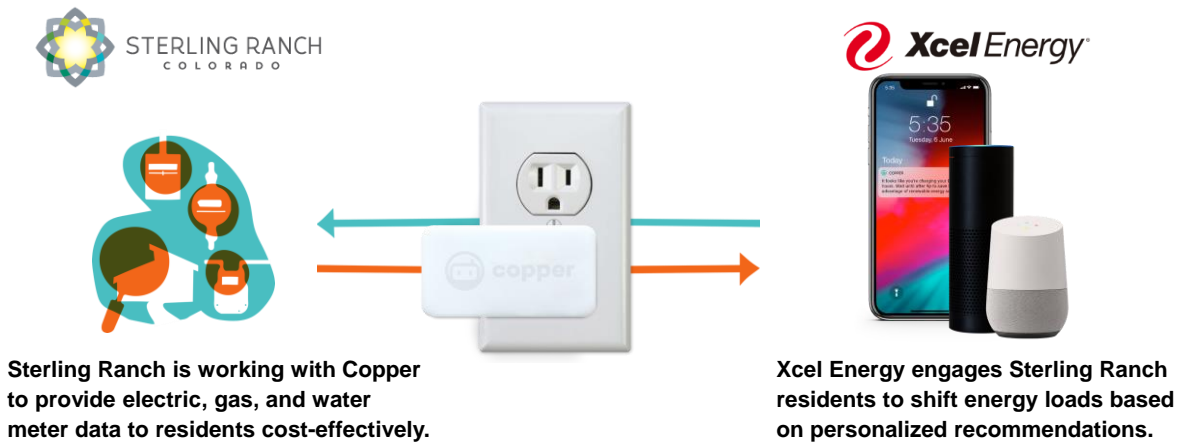
(Source: Guidehouse Insights)

In a customer-centric framework, the power system works as an end-to-end ecosystem. Wireless real-time energy management (WREM) solutions provide utilities with new opportunities to provide meaningful grid services and engage their customers into supporting grid reliability. Scalable, personalized, and real-time insights available through WREM are important tools in enabling both utilities and their customers to harness the clean energy transition with greater personalization, comfort, and control. WREM can help fill the gap between grid need and end customers' growing desire for energy control and home comfort.

Case Study: Copper Labs WREM Solution at Sterling Ranch Community

On August 5th, 2021 Pritil Gunjan, an associate director at Guidehouse Insights, hosted the webinar *Managing Energy and Water Demand with Real-Time Grid Intelligence and Customer Engagement*, with Eric Van Orden, the director of sales and business development at Copper Labs; Ryan Austin, a product developer at Xcel Energy; and Denise Hogenes, the general manager at Sterling Ranch Community Authority Board. The webinar provided an overview of Copper Labs' WREM solution, which is being used by the utility Xcel Energy to monitor and control energy use in the Sterling Ranch smart community in Colorado.

Figure 1 Real-Time Energy and Water Meter Data Drives Targeted Customer Engagement



(Source: Guidehouse Insights)

At Sterling Ranch, every home is solar-ready and wired for EV charging stations, which means there are more renewables and DER on the grid than in an average community. As a result, grid-edge intelligence and the time and location in which residents consume energy are increasingly important to ensure grid resilience. Similarly, water conservation is key at Sterling Ranch's location in drought-prone Colorado. Xcel Energy, as Sterling Ranch's energy provider, utilizes Copper's real-time energy data for targeted behavioral DR to engage Sterling Ranch's residents for load shedding and shifting to drive grid resilience.



“Back in 2018, Xcel Energy set a goal to use entirely carbon free energy by 2050. We are seeing large deployments of rooftop solar, energy storage, and we are closing our last three coal fired power plants. The energy grid in 10 to 20 years will look vastly different than it does today There is a need to meet energy demand in different places This partnership with Copper Labs and Sterling Ranch is a great opportunity to test out behavioral demand response messaging and achieve these goals.”

-Ryan Austin, Product Developer at Xcel Energy



“If energy and water systems were a highway, we can’t keep adding lanes to accommodate rush hour traffic that only happens a couple of hours per day. We need to be smart and optimize our systems... Real-time energy and water usage data is what helps enable cleaner electric supply, the reduction of economic risks put on natural gas utilities, and the conservation of our critical resources.”

-Eric Van Orden, Director of Sales and Business Development at Copper Labs



“The vision of the community is to be a smart community... We aim to enable homeowners to use technology to effectively manage their water and energy consumption. Smart infrastructure and the access of real time data are two priorities to make this vision a reality. Our homeowners will see lower electric and water bills, higher home resale values... and give them control over the resources they have.

-Denise Hogenes, General Manager at Sterling Ranch Community Authority Board

Looking Forward: Harnessing the Power of DER Capabilities in the Future

According to Guidehouse Insights, the US is set to become the largest market for residential DER capacity over the next decade, as North America's DER capacity is estimated to grow at a compound annual growth rate (CAGR) of 9.3% until 2030.

Figure 2 *DER in Numbers*



The North America distributed energy resources (DER) market is increasing at a compound annual growth rate of 9.3% until 2030.



Although supply chain hurdles remain, 10 GW will likely come from distributed solar PV in 2021.



This will likely result in only 38.4 GW of DER capacity additions in 2021.



In 2030, 28% of capacity is expected to be EV charging.



North America cumulative DER capacity is estimated to exceed 720 GW by 2030.



In 2030, 46% of capacity is expected to come from residential DER.



Global cumulative capacity is expected to reach 1.7 TW in 2021.



Aggregation strategies and new business models will likely drive growth.

(Source: Guidehouse Insights)

Likewise, WREM solutions' annual revenue is expected to grow from about \$3.0 billion in 2021 to \$4.6 billion in 2028 at a CAGR of 8.0%. As utility program managers work to develop the next generation of residential demand-side management programming, WREM might prove to be an easily scalable and effective solution.

For more information:

- Please download the white paper: Guidehouse Insights and Copper Labs, [Building Real-Time Grid Intelligence](#), 2021.
- Link to webinar: [Managing Energy and Water Demand with Real-Time Grid Intelligence and Customer Engagement](#), August 5, 2021.
- Further reading: Pritil Gunjan, "[Unlocking Customer Engagement and Grid Resiliency Solutions](#)," Guidehouse Insights Blog, June 9, 2021.