The Electric Vehicle Revolution Is Here:

Are You Plugged In?

CBRE

Over the past decade, electric cars have evolved from a niche novelty to a common sight in most major U.S. cities. Although the share of electric vehicles (EV) on the road compared to gas or hybrid models remains relatively small, early adoption and accessibility are on the rise. According to Bloomberg, electric cars accounted for around 2.7 percent of U.S. vehicle sales in 2020. By 2025, this number is expected to reach 10 percent, and by 2040, over half of all vehicles sold will be electric.[1]

As consumer demand for these vehicles grows over the coming decades, commercial real estate has an important role to play in supporting this transformation. A recent collaboration between CBRE and SemaConnect illustrates some of the unique considerations. In 2019, CBRE Project Management worked alongside **SemaConnect**, a North American leader in Class A electric vehicle charging (EVC) solutions, to install 1,100 EVC stations for **Electrify America LLC**. That installation—the largest ever in the United States—required new thinking around program planning, leasing, site preparation and other vital activations.

[1] Source: Bloomberg Electric Vehicle Outlook, 2021.

A Growing Industry

Although the electric vehicle industry is growing at a steady clip, the average person may not understand how charging costs for electric vehicles stack up against fuel prices for internal combustion engine-based vehicles. According to Mark Pastrone, SemaConnect's COO, the cost of charging an electric vehicle will soon compare to paying less than a dollar per gallon of gasoline. He also anticipates a drop in vehicle maintenance costs due to the simplicity of electric vehicle batteries when compared to complex combustion engines.

"Around ten years ago, the cost of an electric vehicle battery was approximately $1,000 per kilowatt hour," Pastrone said. "Now, it's approaching $100 per kilowatt hour. Within the next two or three years, this industry will hit an inflection point, and once an electric car is priced similarly to a vehicle with an internal combustion engine, we'll see major savings in fuel costs."

Automakers are also pursuing bold plans to invigorate EV sales. As of 2019, all new Volvo vehicles are electric or hybrid.[2] General Motors will make their entire fleet of vehicles electric by 2035.[3] Ford is investing $11.4 billion in EV production.[4] Tesla, the leading electric car brand, continues to innovate while raking in record profits.[5] These efforts, part of larger goals to mitigate the impacts of climate change, also give commercial real estate organizations an opportunity to immediately pursue environmentally friendly initiatives—like building reliable EV infrastructure—before they become an expected workplace amenity, much like high-speed internet access, a hospitality-driven employee experience or free-flowing coffee.

With increased investment, reduced fuel costs and the ongoing adoption of EVs, it seems obvious why commercial properties would want to tie themselves to this growing industry. Real estate companies need

[2] Source: **Wall Street Journal, "Volvo to Phase Out Conventional Car Engine," 2021**

[3] Source: **New York Times, "G.M. Will Sell Only Zero-Emission Vehicles by 2035," 2021**

[4] Source: **The Washington Post, "Ford Building Massive Electric Vehicle and Battery Plants with $11.4 Billion Investment," 2021.**

[5] Source: **New York Times, "Tesla Profit Hits a Quarterly Record," 2021**

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new opportunities to deliver heightened services and amenities to building and office tenants, especially as consumers explore their commute options beyond internal combustion engine-based vehicles as they return to offices and retail hubs.

A major aspect of driving culture as we know it, the typical refueling experience on the way to or from a destination, will also look quite different as EVs become more ubiquitous.

"What works really well for electric cars is to fuel the vehicle while it's parked," Pastrone said. "This is a massive paradigm shift, and CBRE is already at the center of this transformation."

Vehicles connect to a building's power grid to charge while people work or shop, creating an opportunity for property owners to provide a new service to EV drivers and create new sources of revenue. Currently, with a small number of people having transitioned to electric cars, there are few battery-charging options when compared to other fuel sources. But by offering increased access to EVC at the workplace and in retail settings, commercial real estate leaders' efforts to promote this fast-growing segment of the automotive industry can further incentivize curious drivers to embrace all-electric cars while providing bottom-line benefits for real estate investors.

The Need for Future-Focused Infrastructure

In recent years, high-end properties in large urban areas have comprised the bulk of these infrastructure projects. But as the industry and base of EV drivers expands, organizations are making EVC a significant part of how they shape their assets to align with the needs of future workers. Although still in the early stages of the process, EVC is growing beyond dense city centers to suburbs and exurbs as the industry finds its footing.

As an amenity for commercial properties, EVC installation cost and expertise remain the biggest hurdles for most owners and investors. To retrofit a building with charging capabilities, the equipment alone accounts for 30 to 40 percent of total costs. To install such expensive technology, property owners need assurance that their investment is in the hands of experts. For new construction, building codes and regulations are increasingly requiring updated wiring and other key infrastructural components to simplify the EVC installation process, paving the way for charging stations to become a standard part of any workplace or retail setting.

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- **Jim Dobleske,** Global President of Project Management, CBRE

Automakers continue to make hardware and software enhancements to address safety concerns and ensure reliability for consumers.[6] With automotive companies committing billions in investments in EV development and battery technology improvements, it is a clear indication that now is the time for property owners and investors to plan for the EV changes to come.[7]

But with electric charging poised to become a global standard, an important question remains: how will power grids handle this uptick in energy usage?

"In some cities, the power grid is already maxed out," said Jim Dobleske, CBRE's Global President of Project Management. "Take the ice storms that hit Texas this year, for example. What if 20 percent of people living in Dallas had an electric vehicle? What about 30 percent? It's not just about putting charging stations in—it's about having the right infrastructure in place to support them."

With no signs of a slowdown in sales, businesses and governments alike must invest in the infrastructure necessary to meet sustainability goals and plan for a future without fossil fuels.

"It's a big investment to make," Dobleske said. "We're talking about companies spending millions of dollars on charging options. Even though they may have only a small percentage of their staff driving electric vehicles currently, they will need to be equipped for 30 to 40 percent within the next 5 or 10 years. I believe that companies on the leading edge of this are doing the right thing."

He continued, "You don't want to have 100 cars that can't be charged because there are only five stations—rather, client or employee-centric firms will focus on leading the curve and providing an adequate number of stations for the long-term demand."

Currently, 290 million EV charging stations would need to be built across the globe by 2040 to keep up with vehicle sales.[8] To support that level of growth, governments will have to invest in substantial efforts to enhance and fortify their grids.

"Governments are committing billions to fund EVC infrastructure, but there will need to be careful consideration to determine the proportion of EVs to EV charging stations needed, and the additional funding from operators to meet the demand and achieve EV targets," said Simon Galway, CBRE's Executive Director of Operational Real Estate, Roadside and Automotive in Europe and the Middle East. "Consider what a grid powers—it's powering electricity lines, train infrastructure, housing—and we're talking about extending that to individual locations where electric vehicles will need to charge. Solar farms and wind farms, although good, won't make the difference. But with the right investments, getting to 100 percent adoption of electric vehicles is not only tenable, it's necessary."

[6] Source: **Chevrolet, "Chevrolet Bolt EV Battery Production Resumes," 2021.**

[7] Source: **Bloomberg, "Automakers Are Investing in EVs Like They Mean It," 2021.**

[8] Source: **Bloomberg, "Electric Vehicles Sales to Fall 18% in 2020 but Long-term Prospects Remain Undimmed," 2020**

While Western governments debate how best to increase and encourage EV usage, China has already invested in a rapid scale-up of the technology as a component of national policy, with the government setting targets, providing funding and mandating specific charging standards. In contrast, the American electric vehicle industry is less centralized and more dynamic. So far, the U.S. government has played a minor role in the development of EV charging infrastructure, with most support coming from the private sector or state and local governments via tax credits, rebates and other incentives.[9]

"China is so far ahead of the U.S.," said Jim Hurless, Managing Director of CBRE's Occupier Advisory and Transaction Services. "They don't have a problem absorbing or growing their power plant capacities. In the last report I saw, they had around three times the number of charging stations over any other country."

Hurless foresees additional challenges for EVC in the United States, particularly with existing energy providers and manufacturers struggling to keep up with demand. He says supplying the power necessary for widespread EVC will likely require extensive negotiations and partnerships with regional electricity providers across the country, in addition to understanding existing grid limitations and investigating how power can be increased. Regardless of the approach to EVC expansion, as drivers abandon gas cars for a cleaner alternative, new data on how and when people charge EVs will inevitably require the revision of any current estimates.[10]

At present, the United States offers nearly 43,000 electric vehicle charging stations across the country.[11] As part of the $1 trillion infrastructure bill passed by the Senate, $7.5 billion will fund EV charging stations across the U.S.[12] While the Biden administration's ambitious goal to install half a million additional stations across the United States by 2030 may require more funding, this bill will provide opportunities for automakers and EV charging companies, provide tax incentives for EV drivers, and facilitate grants and public-private partnerships.[13]

Despite an ongoing debate on how best to encourage the development of EVC, there's no question that the industry's growth will be a vital component of the world's clean-energy future. Given the speed at which EVs are becoming more commonplace, organizations and investors should prepare for these changes as they explore their long-term sustainability options. With governments now signaling an interest in the growth of EV infrastructure, property owners and investors will fall behind unless they also consider how EV charging and other green technologies will impact their assets.

[9] Source: **Columbia | SIPA Center on Global Energy Policy, 2019**

[10] Source: **Columbia | SIPA Center on Global Energy Policy, 2019**

[11] Source: **U.S. Department of Energy, Alternative Fuels Data Center, 2021**

[12] Source: **CNBC, "How the $1 Trillion Infrastructure Bill Will Direct Billions Toward Tech Spending, 2021**

[13] Source: **CNBC, "Biden Wants to Build a National EV Charging System Under $2 Trillion Infrastructure Plan, But It Won't Be Easy," 2021**

Learn More About CBRE's **EV Charging Solutions**.

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