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**How c-stores can
capitalize on the
mainstreaming of
electric vehicles**

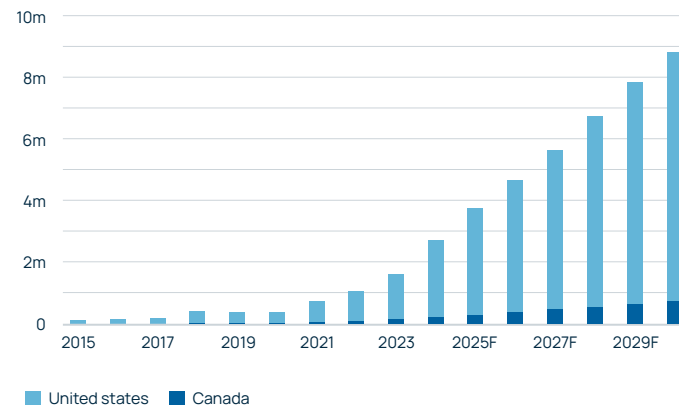
2023 was a record year for electric vehicle (EV) sales in North America. For the first time ever EV sales surpassed one million in the U.S., reaching 1.4 million and raising the total number of EVs on the nation's roads to more than 4 million. In California, the percentage of EV purchases is skyrocketing, with electric cars and trucks accounting for over 20% of all new vehicle sales in the state in the first nine months of 2023.

2024 looks to be another record year. According to a forecast by Cox Automotive, all-electric cars will constitute about 10% of total vehicle sales in 2024. By including hybrids in its forecast, Cox expects EVs to account for nearly a quarter of all vehicle sales.

The growing popularity of EVs is an opportunity for convenience store owners to expand their customer base, cement loyalty, differentiate themselves and drive revenue growth through the addition of reliable fast chargers. For c-store owners who already sell gas, the near and long-term value of adding fast direct current (DC) chargers is significant. In part, the opportunity is an outgrowth of the attributes that have made fuel retailers a success in the first place.



North America electric vehicles sales, 2015-2030



Source: Statistics Canada, EV Hub, and BloombergNEF (2023)



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“If you think about the real estate they have, it was purposely chosen to be convenient and high traffic,” said Kevin Wikholm, senior product manager for FLO, which owns and operates an extensive network of DC fast chargers across North America. “That’s a great place to start.”

But the addition of EV charging also positions fuel retailers to be the destination of choice for the increasing number of drivers transitioning from a gas-powered vehicle to an EV. “Drivers are super habitual. People like getting coffee from the same place. They drive the same routes. And they remember when they’ve had a good experience,” said Marie-Hélène Bellemare, in-transit strategy manager for FLO. “When they do have a good experience, they keep coming back. Adding EV chargers is about retention and future-proofing, so as your gas volume goes down over the next decades you can replace it with more charging.”



Average food spend can be around 25 percent higher for EV drivers.

Forging long-term relationships with EV owners can be profitable for c-store owners, particularly because drivers charging an EV spend more time at stores and charging stations than the typical gas customer. For example, according to the [Transportation Energy Institute's 2021 EV Consumer Behavior Report](#), a pilot program at Kohl's saw EV-driving customers spend 20 minutes more in-store than non-EV drivers. The [McKinsey Center for Future Mobility](#) also found that average food spend can be around 25 percent higher for EV drivers.

The combination of growing and retaining their customer base, brand differentiation, increased in-store sales and access to generous government incentives supporting the installation of EV charging equipment are compelling reasons for c-store owners to consider adding DC fast chargers. But it’s also understandable that fuel retailers have questions they need answered before moving ahead.

The benefits of EV charger implementation for fuel retailers



Increase in-store sales



Put your business on the map



Future-proof your business



Benefit from incentives

Understand the brand impact of EV charging reliability

Recently researchers at the University of California, Berkeley visited public EV chargers around the San Francisco Bay area seeking to answer a simple question: Do they work? All too often (nearly 25% of the time, to be exact) the answer was no.

There are multiple negative ripple effects when public EV chargers don't function reliably. The long-term reputation damage to the owner or site host of the malfunctioning EV charger can be substantial.

For example, if a fuel retailer has a DC fast charger that is not working – or only able to provide a slow charge – what are the chances an EV driver will return? “It’s very easy in the EV space to see your reputation go down because your chargers are not reliable, and people just say ‘I’m not going there anymore,’” Bellemare said. “C-stores work hard to maintain their brands and the last thing they want to do is have it harmed by installing EV chargers that aren’t reliable. People tend to remember when they have a bad experience with public charging, and they are not forgiving.”

This is true whether the c-store owns and operates the EV chargers themselves or is a site host for chargers operated by a partner (more about business models later). If a charger isn't working, the c-store where it's located will likely hear the customer complaints and suffer brand damage. Also, EV drivers have been known to leave negative reviews on third-party platforms, further impacting affected site hosts. Which is why reliability should be the top priority when c-stores choose an EV charging vendor or partner. The National Electric Vehicle Infrastructure (NEVI) program in the U.S., which provides incentives for charger installations, requires 97% uptime. FLO has 15 years of experience in the EV industry and currently operates at over 98% network uptime, demonstrating FLO's commitment to providing a seamless and reliable charging experience.

Lastly, maintaining high uptime can become challenging when charger reliability depends on multiple parts vendors. When a problem arises, service can be delayed because identifying who is responsible for fixing it takes time. This isn't a concern with a vertically integrated partner like FLO.



Do you have enough space?

As a rule, c-stores are in areas that attract significant vehicle traffic — a big advantage as more and more of that traffic is made of electric vehicles. But the individual sites that fuel retailers operate often vary. In his work collaborating with c-stores and other potential hosts for FLO's DC fast chargers, Wikholm has encountered a common barrier. "The number one disqualifier is space," Wikholm said. In some instances, the space is limited because the c-store owner doesn't want to risk the high turnover their business needs by sacrificing a parking spot or two.

Other times, however, fuel retailers can't sacrifice the space needed for trucks carrying gasoline for their pumps to safely maneuver. Having tanks that hold fuel for gas cars located underneath a concrete parking lot can also limit where EV chargers can be placed. "You may need to design the site and install the chargers to allow for sufficient clearance away from the oil and gas tanks," said Yomna Santos, an application engineer at FLO. "Some fueling sites might be considered hazardous locations under the area's electrical code, because of the fuel tanks and their proximity to electrical equipment."





The selection of charging hardware influences how much space chargers will take up. For example, some chargers have a distributed design in which power modules and charging connectors are separate, but this requires additional space for the power cabinets, and can lead to higher installation costs.

That is not the case with the [FLO Ultra™ DC fast chargers](#), which utilizes an all-in-one design that has the benefit of both taking up less space and lowering installation costs. “With the all-in-one unit, you just need to trench once to energize your final EV charger,” Santos said. “But with a more distributed configuration where the power modules are in the main cabinet and the charging connector is somewhere else, you usually need to trench multiple times. That is expensive and it can become an issue if you’re dealing with hazardous locations.”

Having a flexible, modular charger provides design options that overcome space challenges while meeting the needs of customers. For example, it can be difficult or impossible for EV drivers that have a camper hitched to the back of their vehicle to charge if the only option is to back into a charger, and they will block other stalls if they park parallel to the charger. The FLO Ultra™ charger allows for flexible parking configuration options with independent user interfaces and connectors that can be installed on the front or on the back of the unit. A pull-through parking configuration is ideal as it allows larger vehicles and vehicles towing trailers to charge but requires a fair amount of space. If space is limited, a pull-in parking configuration will work best, but it may limit charging to light-duty passenger vehicles.





The turn-in rate can be nearly 45% higher than for drivers of gas vehicles, while average food spend can be around 25% higher.

On-site amenities and services



Food and beverages



Publicly accessible restrooms



Public Wi-Fi



Air pumps



Vacuum cleaners



Car washes



Entertainment (playground, park, etc.)



Give drivers a reason to stay and shop

Because c-store customers don't stay very long, owners thinking about adding EV charging should focus on fast chargers; only DC fast chargers can provide a meaningful charge in a short time. In fact, most EV drivers can get an 80% charge in about 15 minutes. Even with fast chargers, though, EV drivers will stay longer at a fuel retailer than the typical gas customer. According to [McKinsey and Company](#), the turn-in rate can be nearly 45% higher than for drivers of gas vehicles, while average food spend can be around 25% higher. This provides a tremendous opportunity for c-store owners to drive sales. To be clear, a successful EV charging station deployment requires offering some basic amenities.

“Customers will look for things like a restroom, a well-lit and safe charging area, and for other attractive services such as food and drinks, public Wi-Fi, air pumps, or vacuum cleaners, that can deliver real added value to EV drivers while their vehicle charges” Bellemare said. “C-store owners can also encourage EV drivers to visit the c-store while charging their vehicle with well-placed bollard covers to display special deals and products.”

Verify that you have sufficient grid capacity

The electric grid is not the same everywhere. Some locations have lots of available electric capacity while others have very little.

“A DC fast charging site requires a lot of extra electrical capacity at your site. You need to know if you have the available capacity remaining at your site with your existing service. If not, what is the utility’s appetite to bring you new service?”

QIYUAN ZHOU, Application Engineer with FLO

Any initial site assessment should also determine whether there is access to 480-volt three-phase power, which is best suited to efficiently provide electricity to large equipment, including fast chargers.

These are questions that can typically be answered by contacting your local utility. But they’re also just a starting point. Zhou emphasizes the importance of also investigating utility demand charges. “With some commercial electric service plans, you’re often not only paying for the energy you’re consuming. You’re also paying for the utility’s ability to bring it to you at a certain rate or speed, which are demand charges,” Zhou said. “Depending on your utility provider, those demand charges can be an unwelcome surprise if you have not planned for them.” But they also can be offset or eliminated with innovative design. For instance, Zhou works with customers to incorporate batteries that can help mitigate the financial cost of demand charges.

Approach load management technologies thoughtfully

Having battery storage on-site to mitigate demand charges should not be confused with EV chargers that directly integrate batteries. While DC fast chargers with integrated energy storage don't require 480-volt three-phase power and can be installed quickly, they also have risks. For instance, when batteries are depleted – which can happen in locations where chargers are used a lot – the charger is no longer able to charge an EV quickly. This can be a real customer experience problem for fuel retailers advertising that they offer fast charging.

To save on installation costs and offer the best EV charging experience to their customers, fuel retailers should consider charging stations with power sharing capabilities. The FLO Ultra™ DC fast charger makes it easy to expand as needs grow, as you can connect multiple chargers together and, with dynamic PowerSharing™, deliver up to 500 kW for one car in a modular configuration.

Results may vary. Dependant on car make and model and number of cars charging simultaneously.





Own and operate or be a site host?

Clearly, c-store owners must answer a lot of technical and regulatory questions as they consider adding DC fast chargers. An initial question is whether they want to invest the capital and spearhead hardware selection and installation themselves. Some may decide that the potential revenue increase is worth the investment of time and money. Others, however, may prefer to simplify the process by being a site host and having someone else own and operate the equipment and thus cover the capital costs of charger installation and handle all the technical and regulatory issues. "It's a whole new industry and there's a lot to learn. It can be intimidating," Wikholm said. "We are there to help and guide you towards whether this is a good project, whether there's government incentive programs available and to simplify the whole thing."

As helpful as it is to have a partner like FLO during the development and installation phase, it's equally vital to have a partner responsible for the monitoring and maintenance of the chargers once they are operational. FLO not only provides 24/7 monitoring and service of its chargers, but it also provides hardware, software, and network connectivity services that it has designed for compatibility. Put simply, FLO uses a vertically integrated business model to deliver more reliable charging solutions for its customers.



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Think long-term

C-store owners who decide they want to offer EV charging to their customers should begin with at least two charging ports. That way, if there is a problem with one, EV drivers will still be able to charge. To tackle this in the most cost-efficient manner, the FLO Ultra™ DC fast charger has two independent charging ports for redundancy and increased uptime.

But it's also cost-effective to plan for expansion at the start of any project. "It's generally good to know where you want to end up eventually. If you don't plan for expansion in the future, you might incur unnecessary costs when you eventually do expand," Zhou said.

For example, sizing a transformer to handle the number of fast chargers you envision in the future will save time and money when it's time to install new chargers.

"You could source your transformer from day one to be able to support all of the chargers you eventually plan to install. That way you're not having to wait for additional transformers and then having to redo a bunch of groundwork and utility coordination each time you want to install a new charger."

QIYUAN ZHOU, Application Engineer with FLO

When you're ready to begin deploying EV charging, [connect with a trusted partner](#) like FLO to help you through the process.





**EV Charging
Done Right™**

FLO is a leading North American electric vehicle (EV) charging network operator and a smart charging solutions provider. We fight climate change by accelerating EV adoption through a vertically integrated business model and by delivering EV drivers the most dependable charging experience from curbside to countryside. Every month, we enable more than 1.5 million charging events thanks to over 100,000 fast and level 2 EV charging stations deployed at public, private and residential locations. FLO operates its network across North America and our high-quality charging stations are assembled with care in Michigan and Quebec. Click below to learn more about what “EV charging done right™” means to us.

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