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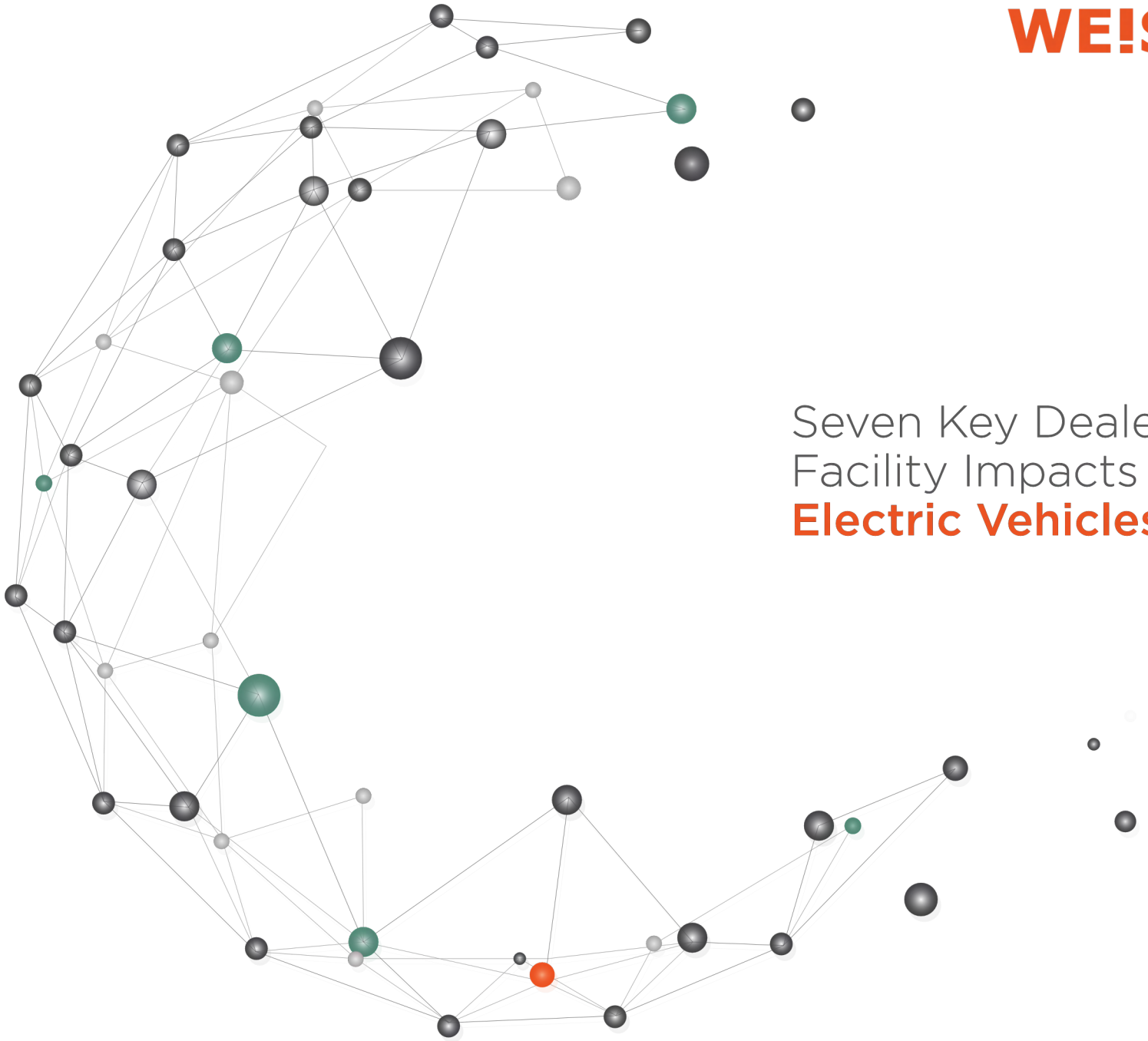

Seven Key Dealership Facility Impacts of **Electric Vehicles.**

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Evolving **Facility Designs.**

The pace with which the industry is shifting to electric vehicles (EV) is staggering. Almost every manufacturer has EV products and plans for either partially or fully transitioning away from internal combustion engine (ICE) products altogether in the near future. And yet, with this monumental transition there is little open discussion around what a transition to EVs actually means for the retailer of today, or more importantly, how existing facilities transition into an EV-ready retail space of tomorrow. Dealership facility designs will need to evolve to accommodate necessary infrastructure, from electric charging stations to EV service bays.

The first aspect an automotive retailer should evaluate is the operation's capacity to obtain sufficient electricity. Will they have enough power with their current building infrastructure to meet future needs? If not (and that is highly likely), they will need to assess how they are going to acquire it and what it is going to cost.

Understanding the future charging capacity and requirements of the facility is essential.

Future automotive retailers will require electricity for more than just charging vehicles.

> The David Suzuki Foundation estimates that by 2035, the market will require 1.6 times the amount of electricity available today, simply to run the equipment of the future, with higher demand on electronics, electric-based heating to reduce fossil fuels, and electric vehicles.

Will retailers have enough power for a full electric fleet? Instead of a 5-minute run to the gas station across the street, it currently takes 45 minutes on a powerful Level 3 charger to fully charge a vehicle. Being able to handle a fully electric product line will require retailers to establish a significantly larger electrical capacity first.

Retailers never needed to be their own gas station, but now they will need to be their own charging hub.

One: Obtaining **Sufficient Power.**

Depending on its location, a retailer's electricity source may vary greatly. From fossil fuels to hydroelectricity, energy source can have significantly different impacts on carbon emissions and costs. And, while retailers were never utility providers, crucial investments may be required for retailers to prepare for future electric operations.

Investing in increasing electric capacity may therefore be prudent and may be achievable via several different options.

Transformer upgrade

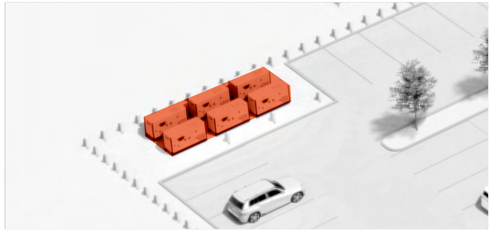
Requesting additional electricity capacity from the local utility company is a viable option; however, they have the authority to accept or reject these requests based on their own local electrical engineering priorities, in spite of what the automotive retailer's needs may be. A large part of the utility provider's decision process will be based on its power planning modeling and will undergo an engineering process to determine required upgrades and associated costs.

Estimating costs requires a thorough analysis of circumstantial factors and may differ greatly from market to market, or site to site.

For example, a large retailer based in central Canada recently decided to pursue a transformer upgrade which came with a hefty price tag of $1.3 Million CAD. Before choosing this option, retailers may want to explore alternatives that could be supplied a fraction of the cost.

Battery storage bank

Technologies are constantly evolving and one option available today is to install a battery storage bank. These come in different kW capacity sizes depending on what the retailer's charging requirements will be. For example, 250kW, 500kW or 1 MW battery sizes are the typical range for automotive retailers.

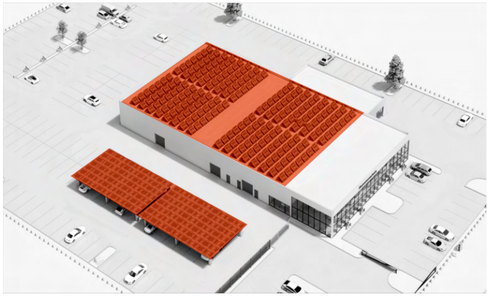


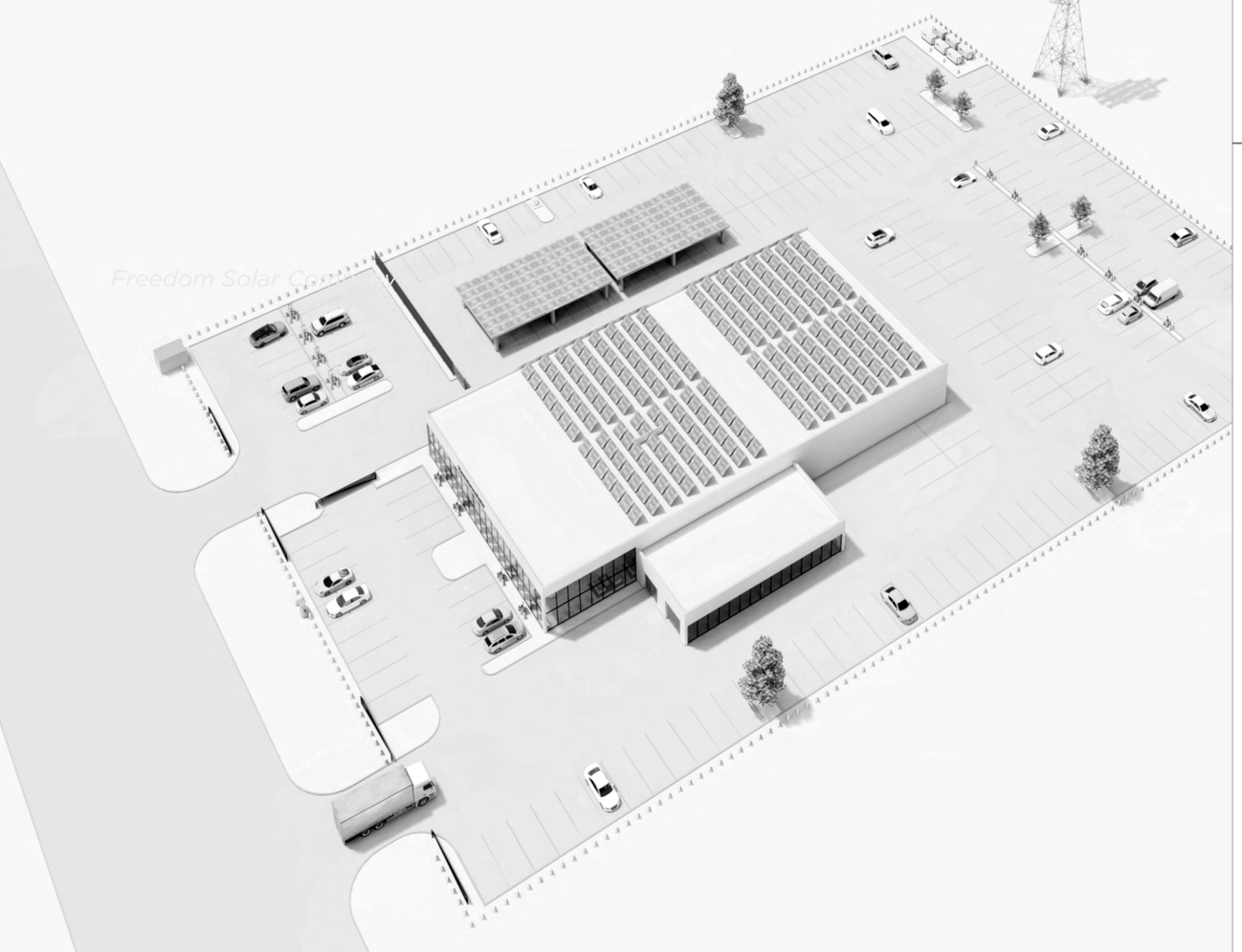
Battery storage banks occupy a relatively large area on a lot however, with each unit being close to the size of a shipping container. Like a transformer upgrade, the local Utility Company will still need to accept the asset as part of the distribution infrastructure needs.

A retailer's main advantage is to maximize power-pulls at night when electricity is charged at off-peak rates and using it during the daytime. Another opportunity is for retailers to enter into a purchasing agreement with a third-party power wholesaler who buys bulk electricity to benefit from locked-in rates. Similar to a fixed rate mortgage, entering in such an agreement can allow retailers the assurance that their power cost will remain stable over a specific amount of time.

Renewables

Renewables can help supplement your electricity needs through on-site power generation. With large surface areas and flat buildings, automotive dealerships are typically well suited for solar PV arrays. Solar canopies are also becoming increasingly popular for protecting products on the lot from weather hazards and providing cover over charging stations, for example.





Two: Managing **Electrical Consumption.**

In order to manage a increasingly electric inventory, careful considerations and planning will be required with regards to the number of charging stations and their location on the property and in the facility.

A medium size retailer may have anywhere from 100 to 150 vehicles on their lot at any given time. Sales inventory, service vehicles and customer loaners will all require to be maintained for charging.

As the industry moves to EVs, retailers should consider how these vehicles will continue running. Going to gas stations to fill-up will become less a part of daily operations, however, it will be the retailer's responsibility to ensure these vehicles are charged for use based on their sales or service need.

One solution to manage charging adequately is a high-density parking cluster. For example, four vehicles may share one charger between them near the back of the facility in the general inventory parking.

Certain considerations should remain top-of-mind however, to ensure smooth operational processes:

- Charging schedule during off-peak hours to save on more costly peak-electricity rates.
- Inventory preparation for test drives, sales or servicing.
- Staff and lot inventory flow management to optimize charging.

While it may not be essential right away, analyzing where on the lot this may be installed in the future or adding additional conduits for future back-of-house use may be an important consideration to save on costly and disruptive nuisances like trenching and repaving later on.

Three: Managing the **Customer Experience.**

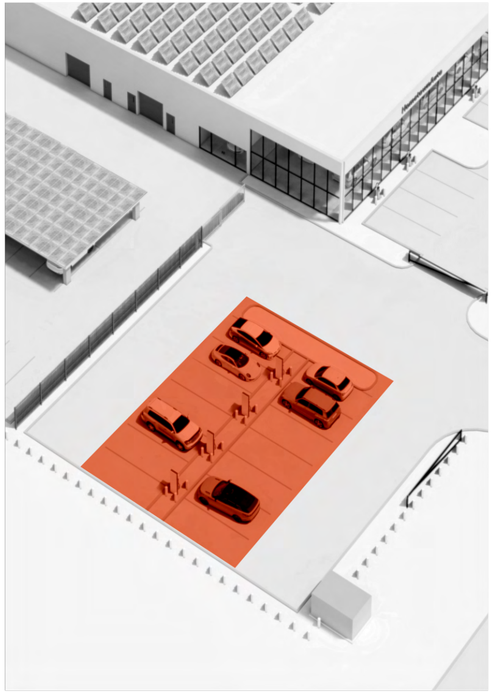
People who are not necessarily customers will still want to charge their vehicle at retail locations. This is already happening at various dealerships, and the experience of these “charger customers”, is very important.

It will be up to these retailers to decide how to leverage this opportunity for their business. Considering how to build this as a revenue-generating opportunity could boost customer and facility experience.

While this may not suit every retail operation, some have leveraged the café hospitality in their facility to offer a “destination” experience.

Considering the location of charging stations should also be a priority to leverage the experience at a facility for guests and customers alike.

Several coffee shop franchise owners have leveraged the charging opportunity as a hospitality destination for people to wait while they top up their battery.



Are chargers strategically placed to be given visible access to new product so individuals in waiting may staring at the newest EV model with higher range?

Utilizing digital tools and signage also represents a new opportunity to engage with guests in new ways.

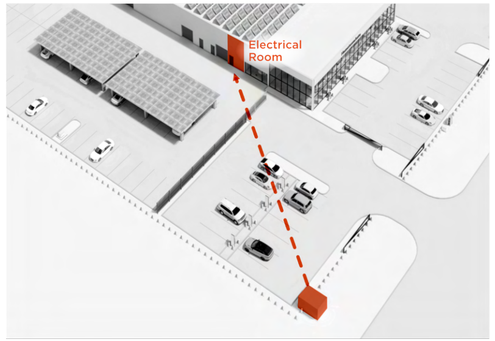
While re-sale of electricity through chargers is currently prohibited in some markets, customers are typically charged for the time to charge or for the real estate the vehicle is occupying instead.

Rules around re-sale of electricity are changing, which will allow for a better revenue and cost capture tool for charging at a dealership in the future. Additionally, if a retailer’s charger is considered public access, there is a higher likelihood they will qualify for government funding, incentives and/or grants.

Four: Managing **Infrastructures for EVs.**

EVs will require changes to the way we manage building functions. Let's start with the electrical room. Twenty-five years ago, our server rooms consisted of a small closet with an internet box. Today they are 10 times bigger, in a prominent location, and house critical business infrastructure. The electrical rooms of our future will also need to be upgraded in both size and equipment to accommodate greater electrical needs.

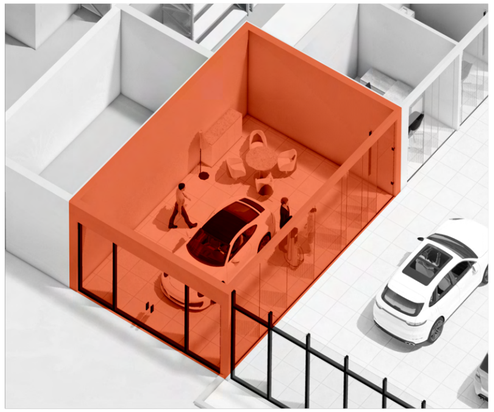
Each site is unique, but the electrical room should be located in a place close to the main transformer for the building, allowing for an efficient connection to the power source.



Additionally, conduits should be prepared across the site to accommodate current and future charging infrastructure, solar PV or other electrical needs in order to future-proof your facility. Laying excess conduit early will make future charger installations more cost effective and less distributive to your operations.

Sales functions

Showrooms should include several demonstration chargers. These should be either mobile or for demonstration purposes only.



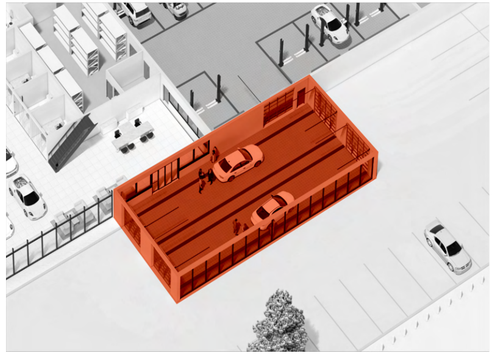
The new vehicle delivery charger enables a smoother handover process at delivery, including customer training regarding their own charging equipment.

Service Drive

In terms of Aftersales, there are several considerations to make with respect to EVs, starting with the Service reception, a high customer interaction point.

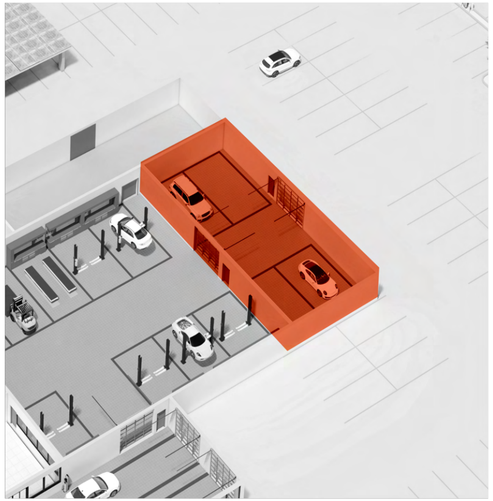
At a minimum, most OEMs presently require one EV charger. Service delivery processes will typically require the EV to be returned to the customer at a certain battery charge level. Having the vehicle plugged in, sitting in the service drive for customer return, will likely become standard process. Retailers should plan for additional charging in the service drive to accommodate for more service deliveries during peak hours.

Moving further into the workshop, we can identify some critical building functions as part of the EV service process.

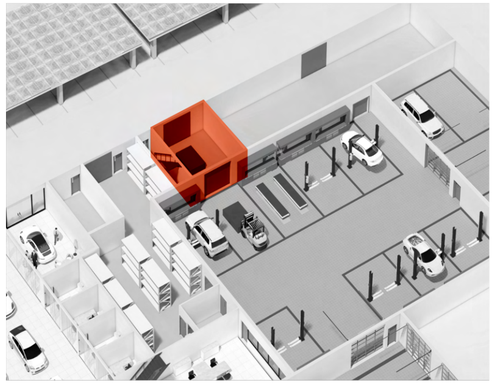


Wash and detail bays

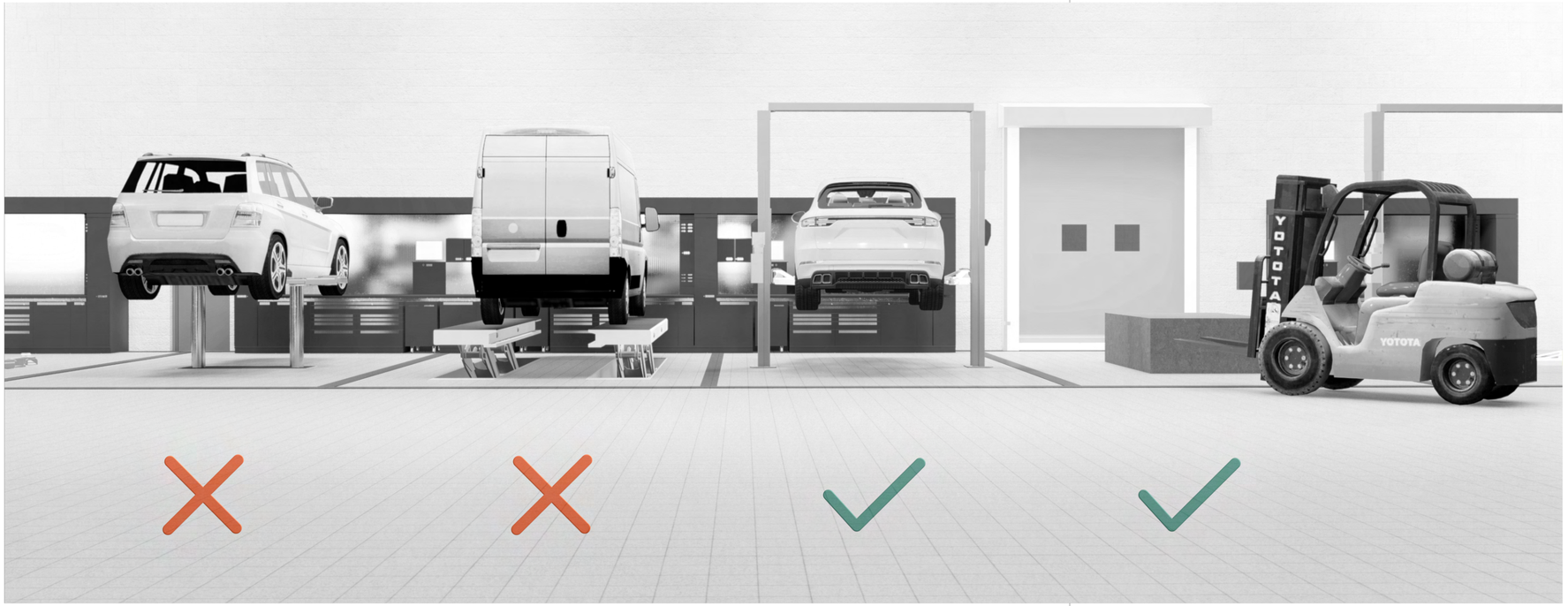
Detailing bays will need to be fully separated, keeping moisture away from the high voltage work areas of the future. Planning how your wash and detail bays will be located in your workshop is an important consideration.



Battery Repair Room



Some OEMs are requiring a Battery Repair Room for major high voltage battery work to take place. This high voltage prepared space is accessible to both the shop and outdoors, with an anti-static floor, safety tools like a fire blanket or rescue equipment, and additional climate and dust controls with positive air pressure.



EV service bays

Looking more specifically at the productive work bay set-up for EVs, the following should be considered for workshop planning.

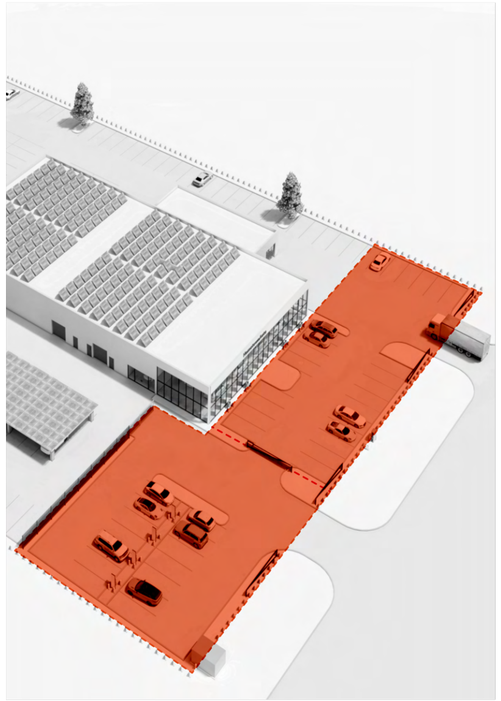
- The type of lift is important. In-ground hoists or scissor lifts do not allow access to the battery under vehicles.
- Two-post lifts are important for EV service. Your OEM should specify a minimum width based on service standards.
- Having a flat bay next to a fully equipped work bay with hoist is important for EV servicing. This provides additional workspace to drop a battery out, prepare the new battery for work or unpack the new battery for installation.
- Depending on brand or local fire code requirements, additional things such as high voltage signage, safety lines or ropes around the bay during EV work may be required.

Five: Managing **Risk.**

Managing risks across a dealership facility is more important than ever before. The use of these sites will evolve towards a more multi-purpose area, way beyond traditional retailer functions.

Security

Public access to a retailer's external charging stations will result in an increase in the number of people navigating through the property, many doing so after hours. This is a new consideration over and above a retailer's normal security parameters. Fencing, gates, and other enclosures should be designed to control the flow of access. Improved illumination / lighting at the front of the facility and potentially different camera angles to manage the charging area, all need to be addressed.

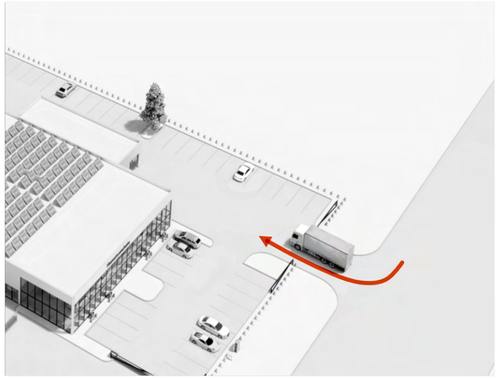


Circulation

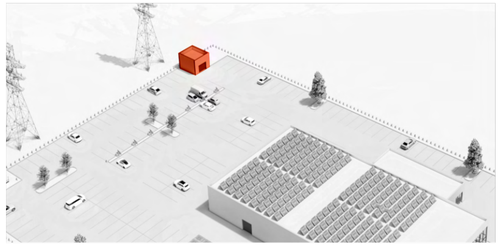
Planning for large delivery trucks and accommodating them for proper circulation away from high voltage chargers should be considered.

We rely on government mandated codes to regulate safety standards. However, these are also evolving around EVs. For example:

- Bollards around high-power chargers
- Fire risks from battery fires – fire suppression systems will evolve.



Quarantine Zones



If a vehicle warning light identifies the battery is at risk of fire or other contamination, the vehicle will need to be placed in a quarantine area. This space, located approximately 5 meters / 25 feet away from the main building, is a designated safe area. It can be a small out-building, shipping container or even an open area depending on the OEM or local safety standards.

Facility design, with regards to EVs, will need to be developed to offer flexibility and easy updates as regulations evolve. Retailers should consider working with subject-specific consultants, electrical engineers or other experts who can advise on site engineering requirements as they evolve in the future.

Six: Adapting to **Business Changes.**

Retailer operations are bound to change with the increase in EV sales, and how businesses plan for this with regards to facilities is vitally important.

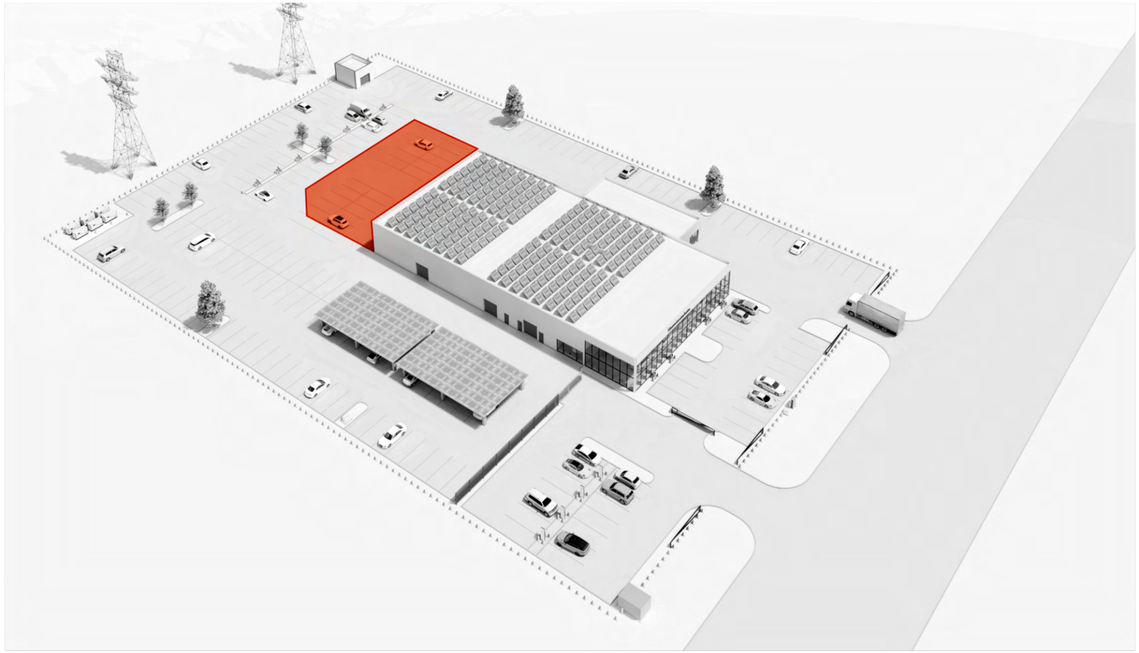
With smart systems, sufficient internet bandwidth to support over-the-air updates and transactions will be essential. Retailers should consider extending a mesh network to the edge of their facility to support:

- Online payment processing - A gateway is a Wi-Fi enabler / enhancer that allows a charger to have bandwidth for internet access, allowing the system to process online payments at the charger itself.
- Updates to vehicle software, anywhere on your site.
- An improved customer experience, especially considering the additional guests who may visit a site to utilize your public chargers.

With service business anticipated to change by some retailers, how can you plan for other growth or building use expansions to attract new business?

- Are there opportunities for the building to increase aftersales revenue to balance out any decline in traditional service business from ICE vehicles?
- Additional tire storage?
- Revival of the in-retailer body shop?

Knowing facilities are future-proofed for EV upgrades can add value to the real estate asset.



Seven: Managing the **Unknown.**

The reality is, we can't plan for absolutely everything. For any business, there remain many unknowns in the market.

For example, how will future CO_2 emissions reporting play a factor?

Future EV growth requires more electricity consumption, driving up operational CO_2 emissions from aging grids. How will reducing CO_2 emissions work against the need for more electricity at a dealership? Will this force you to invest in renewables or battery storage options?

As a result, EV consumption could play a part in:

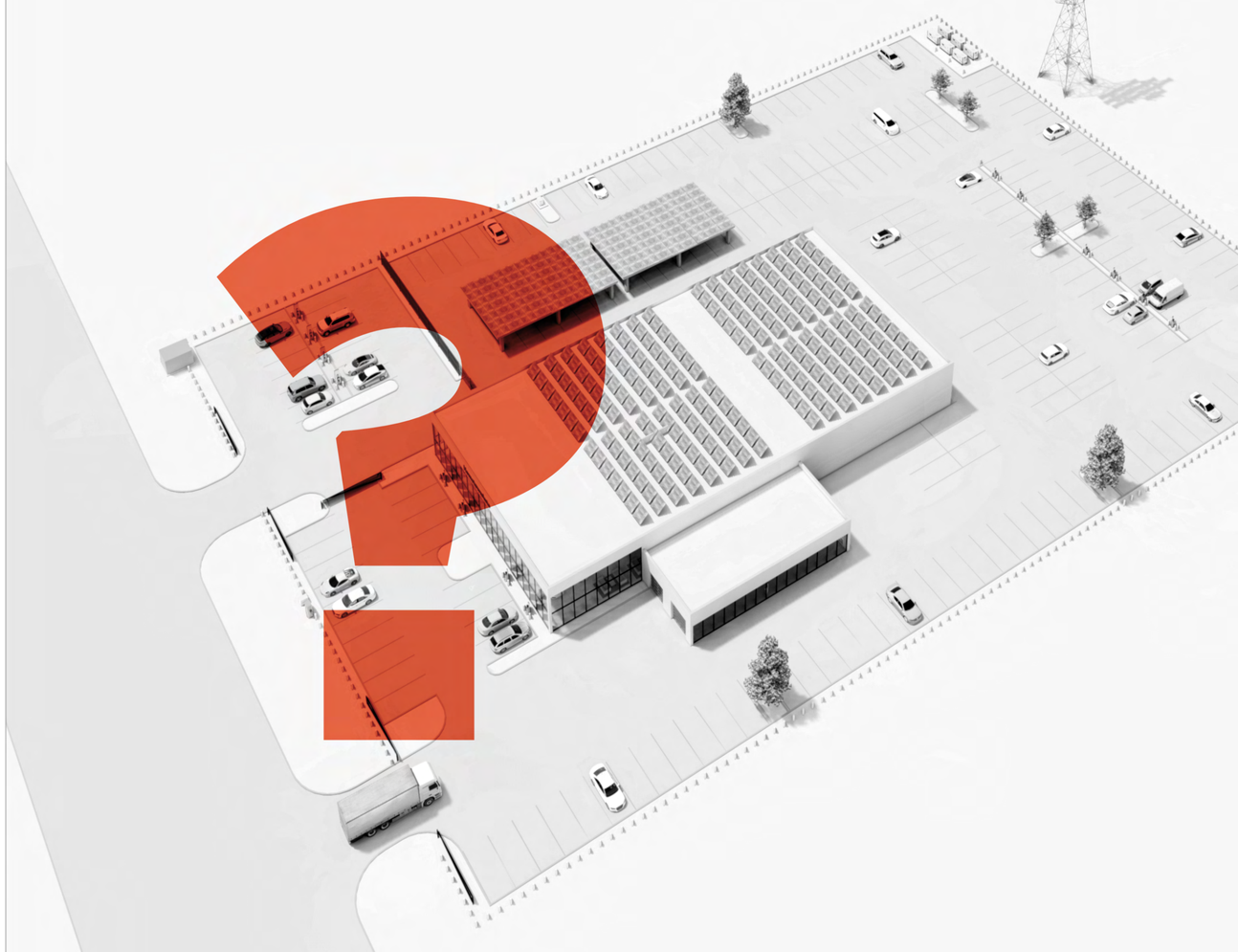
a. Reporting your fleet emissions

b. Reporting your electricity emissions

For the purposes of this report, a traditional automotive retail format has been illustrated. Keeping in mind that automotive retail is evolving at a pace not seen since the launch of the model-T, alternative retail formats should be considered for the future of EV:

- Pop-up locations (airports, shipping containers, city plazas, etc..)
- Off-site service locations
- Facilities with a zero lot line and no exterior parking
- Small showrooms in a ground floor retail or a shopping mall

This evolution, and the unknown and unique site conditions that accompany them, will impact how EVs are managed on a tactical level, site by site.



Conclusion.

While some OEMs are already looking ahead to their new and adapted franchise standards around EV infrastructure at the dealership level, changes will not come all at once.

Many of these changes are incremental, longer-term changes, and retailers can adapt their business as things evolve, new subsidies become available, image programs adapt and change, and government infrastructure laws are amended.

However, those entrepreneurs and courageous business leaders that take the lead in driving change at their business will be in a stronger position to succeed in the future. Timing is key. Being the last company to ask electric companies for more capacity, in a system where there simply isn't enough supply for everyone will pose a great challenge.

There is no one-size-fits-all, and business needs will dictate how retailers adapt – just like they always have.

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