EVBOX

15 questions to answer before investing in DC charging

Introduction

Over the last decade, electric mobility has grown exponentially. According to IEA's electric outlook report, there were over 10 million electric cars on the world's roads by the end of 2020, and that number is only expected to grow further.

As electric vehicles become more common in both the consumer and business space, the demand for fast and efficient charging solutions has never been higher. Not only to service existing drivers on the road but to address the number one barrier of EV adoption: range anxiety.

According to our data, of those who are reluctant to buy an electric vehicle in Europe, nearly half cite the fear of not being able to charge wherever and whenever it's needed as their greatest barrier to electric mobility.

As a result, more and more forward-thinking businesses are investing in EV charging stations. While there are many different options out there, the interest for high-powered direct current (DC) charging stations—capable of charging up vehicles within minutes—has increased tremendously.

But is DC charging the right investment for your business? What is essential to consider in order to make a well-informed decision? And how can you avoid common pitfalls?

This guide provides the 15 most important questions businesses should ask themselves before investing in DC charging solutions.

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Chapter 01

Use cases

1. Will my business benefit from fast charging?

Generally speaking, there are two main use cases for DC charging: commercial charging and fleet operations. That is, either you want to bring EV charging customers to your business's location or you are a fleet operator and want to make sure that your fleet (i.e. buses, delivery vans, trucks) is charged and ready to go.

Commercial charging

As EV adoption increases, EV drivers are looking for reliable places to charge. For CPO's, (fuel) retailers, hospitality and commercial parking businesses targeting this well-to-do market segment is a powerful way to gain new customers and have them return regularly.

Fleet charging

For businesses that operate or manage a fleet of electric vehicles, DC charging can reduce downtime, deliver a seamless driving experience, and improve the efficiency of your fleet. As a fleet operator, you're likely to have a comprehensive understanding of the types of electric vehicles at your location, the exact length of how long the EVs stay, as well as the length of their routes. Because of this, your charging needs will be more predictable than your commercial charging counterparts.

If your business fits into one of these two categories, then DC charging may be a powerful option to your business

If your business fits into one of these two categories, then DC charging may be a powerful option to your business. Not only will you decrease the charging time of EVs and improve driver experience, but you'll also be driving sustainable change forward.

Chapter 02

Type of drivers and EVs

2. Who will use the charging stations?

Put yourself in the shoes of the driver and ask yourself, “who are my (potential) visitors?”

Are they customers that come to your location with the sole purpose of charging their vehicle? Or do they come to your location for other services, and is charging their electric vehicle an additional option?

If you own a fuel-retail location the needs of your visitors will be different compared to visitors of a hospitality or retail location.

3. How much time do drivers spend at my location?

Or in other words, “how long do I want drivers to stay at my location?” This might be one of the most important questions to ask. It’s crucial to make sure that drivers have enough time to interact with your business as well as be certain that their vehicle will be charged sufficiently.

To illustrate, if you are an owner of a gas station on a highway, your customers most likely come with a low state of charge (SoC). Due to this, they’ll most likely want to recharge as fast as possible, get a small bite, and be on their way. In this scenario, your ideal DC charging station would have a higher charging output and charge as quickly as possible.

In comparison, if you’re the owner of a restaurant or retail store, where people tend to stick around for about an hour or so, it may not be necessary to provide an ultra-fast DC charging station with such great power output (240 kW and above). In this situation, you’d be better off providing a smaller power output, but over a longer period and at less cost to your business.

It’s crucial to make sure that drivers have enough time to interact with your business

Understanding how long an EV is staying (or can stay) at your location will help you to choose the right charging station with the right power output. There is unprecedented value in linking the average amount of time you need to offer your services to the amount of time it takes for your charging station to charge the electric vehicles of your customers.

4. What type of vehicles do they drive?

The kind of EV your customers drive is an important factor when it comes to choosing DC charging stations. Electric vehicles can differ in terms of battery sizes as well as in what type of connector they use (i.e., CCS2 vs CHAdeMO).

The size of a vehicle's battery has an impact on the charging time. For example, if your customers are mostly electric bus drivers with large batteries, you need to consider that even though they stay for a shorter period of time, they still need a larger power output.

However, if your main customer segment drives passenger vehicles—with smaller batteries—then these vehicles may not even benefit from ultra-fast DC charging stations. For instance, while the maximum power output for a fast charger is 350 kW, a 2021 Nissan Leaf's maximum fast-charging capability is 46 kW.

In addition, while most electric vehicles have CCS2 plugs these days, there are still a number of vehicles on the road with the Japanese standard (CHAdeMO). Whilst this is changing after the adoption of CCS2 as the European standard, there are still over half a million vehicles with CHAdeMO plugs in Europe.

Therefore, it's important to keep in mind that to increase accessibility, you may want to offer a variety of charging ports.

TYPE OF EV	CITY EV	LARGE EV	CARGO VAN	TRUCK AND BUSSES	
Average battery size	50 kWh	100 kWh	75 kWh	200 kWh	300 kWh
Power output per charging port	Average time to charge the battery from 20% to 80% SoC*				
50 kW	53 min	1 h 48 min	1 h 20 min	3 h 35 min	5 h 23 min
90 kW	30 min	1 h	45 min	2 h	3 h
120 kW	22 min	44 min	33 min	1 h 30 min	2 h 14 min
150 kW	18 min	36 min	27 min	1 h 12 min	1 h 48 min
180 kW	15 min	30 min	22 min	1 h	1 h 30 min
210 kW	12 min	24 min	19 min	51 min	1 h 16 min
240 kW	11 min	22 min	16 min	44 min	1 h 7 min
270 kW	9 min	19 min	14 min	39 min	59 min
300 kW	8 min	17 min	13 min	35 min	53 min
330 kW	8 min	16 min	12 min	32 min	48 min
350 kW	7 min	15 min	11 min	30 min	46 min

**For illustrative purposes only and does not reflect actual charging times*

Charging time under 1 hour

Charging time under 30 min

Charging time under 15 min

Chapter 03

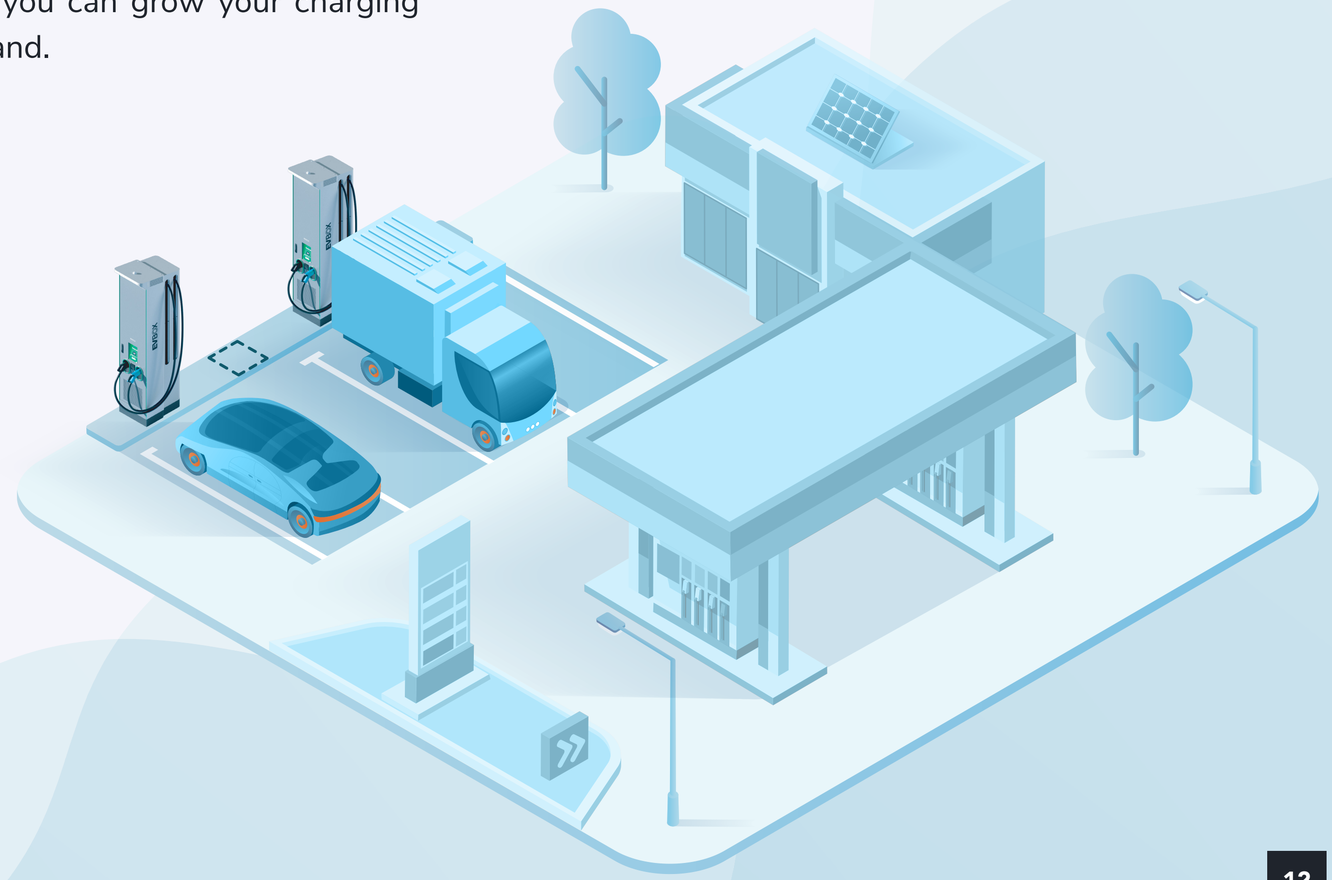
Location(s)

5. What’s the right power output for my location?

Once you have a clear understanding of who your drivers are, how long they’ll stop and the type of vehicles they drive, it’s time to ask yourself, “What’s the right power output for my location?”. With so many different options on the market, the correct answer depends on the unique circumstances of your business.

For instance, in the example from the question earlier: “How much time do drivers spend at my location?”, the gas station will likely want a charging station with 180 kW power output or more. In comparison, if you want your customers to hang around for over an hour, a station between 50 kW or 90 kW would be better suited to your business.

Additionally, you’ll want to ensure your DC charging stations have a scalable setup where you can easily upgrade your power output without heavy adjustments to the original installation. Modularity is key here. Having a DC charging station with upgradable power modules means that you can grow your charging network on demand.



6. What kind of architecture best suits my business?

Because of the complexity and high-power output, it is important to not apply a holistic approach to installing your fast (or ultra-fast) charging stations. If you have more than one location, treat each location as a separate project and map out specific requirements and possibilities per location.

Besides the layout and measurement of your location(s), there are often different parties that need to be involved (such as site owners or local authorities) before a charging station can be installed. So, make sure to involve potential stakeholders early on in the process to avoid delays or additional costs.

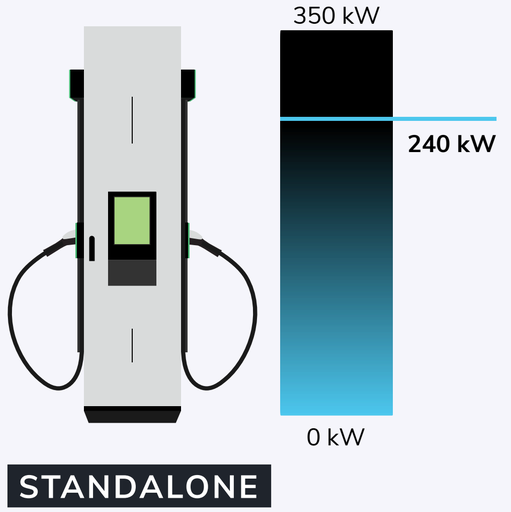
Once you've got a comprehensive view of your location, it's wise to look at the different types of DC charging stations to decide which one will fit your location best.

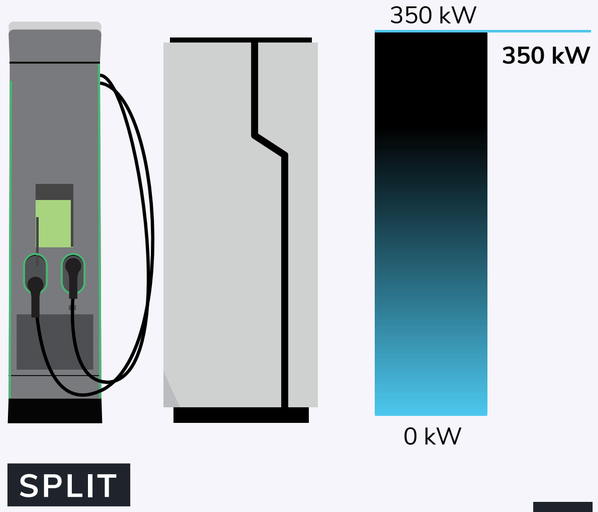
Taking a deeper dive into different DC charging possibilities, there are two main architectures when it comes to fast and ultra-fast charging solutions: Standalone and split.

Standalone solutions are all-in-one DC charging stations that often come in more bulky units, combining both the user interface and the power supply. Standalone charging stations can usually deliver between 50 kW and 250 kW of power.

Split solutions have two separate modules; a user unit that the driver interacts with and a power unit that provides energy to the user unit. Generally, split solutions can deliver more power than a standalone solution, usually between 175 kW and 350 kW.

Based on the layout of your location and your business's needs, either may be a sufficient option. However, keep in mind that the split solution provides a considerably higher power output for faster charging.





7. Do I need smart charging features?

Higher power output is not the only feature of DC charging. In fact, several features make DC charging easier for businesses and customers to utilize. This is where smart charging comes in.

Because most locations have less power than the sum of nominal power from their charging stations (and site owners want to prevent costly grid upgrades), charging outputs can benefit from versitility.

Smart charging enables electric vehicles, the grid, and charging stations to communicate with each other intelligently and, in doing so, optimize the flow of electricity based on specific needs or preferences.

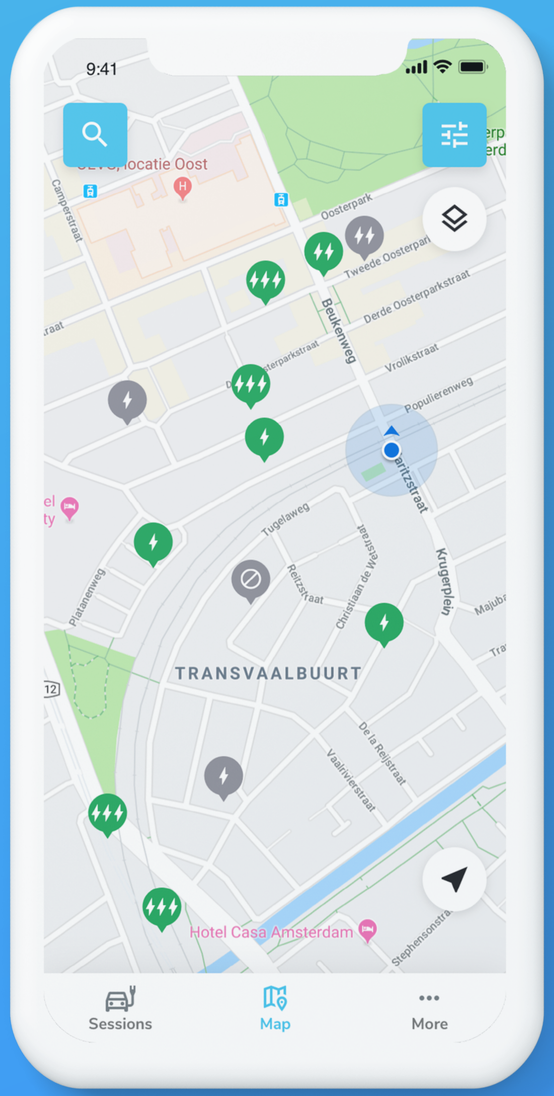
For instance, smart charging features such as load balancing (effectively distributing power

between charging stations) can help you get the most out of your location, avoiding costly grid updates and peak demands. In addition, offering simultaneous charging on a single station helps utilize your existing space.

You should always find out what kind of EV smart charging features your chosen hardware can support.

Chapter 04

Driver experience



8. How do I make sure my stations are visible?

Online.

Before any driver can start charging on your DC charging station, they'll need to be able to find it. So, if you are building a public charging network, your stations should be available on various online platforms such as Google or Apple Maps as well as charging apps like our EVBox Charge app. As a result, drivers will know where all your public charging stations are located and what their status is. This way, they can start charging at the one that is on-route and available.

Offline.

Once your public charging stations are visible online, the next step is to ensure that they stand out offline too. Often, charging stations are installed further away from a gas station or at parking locations without any lights or minimal lightning. At night, this can make it difficult to find and navigate charging, directly affecting the customer's charging experience. Offline visibility comes down to the hardware: your DC charging station can be equipped with LED lighting to help identify stations and LED charging indicators to navigate to available chargers, ensuring visibility and safety at night.

9. How can I offer the best experience to drivers?

In the early days of electric vehicle charging, the interaction between drivers and a charging station wasn't a priority. As early adopters are generally known to be intuitive and quite forgiving when working with any new technology, this was accepted. However, as the adoption of electric vehicles amongst the general public accelerates, driver experience will become more important for businesses offering charging solutions.

Initiation

How a charging session is initiated, or in other words “authorized”, is an important topic if you’re considering EV charging for your business. If you need to charge a fleet of EVs, these options differ from Autostart (i.e., the driver plugs in an EV and the charging session initiates automatically) to using RFID tokens (such as cards and key fobs).

Payment

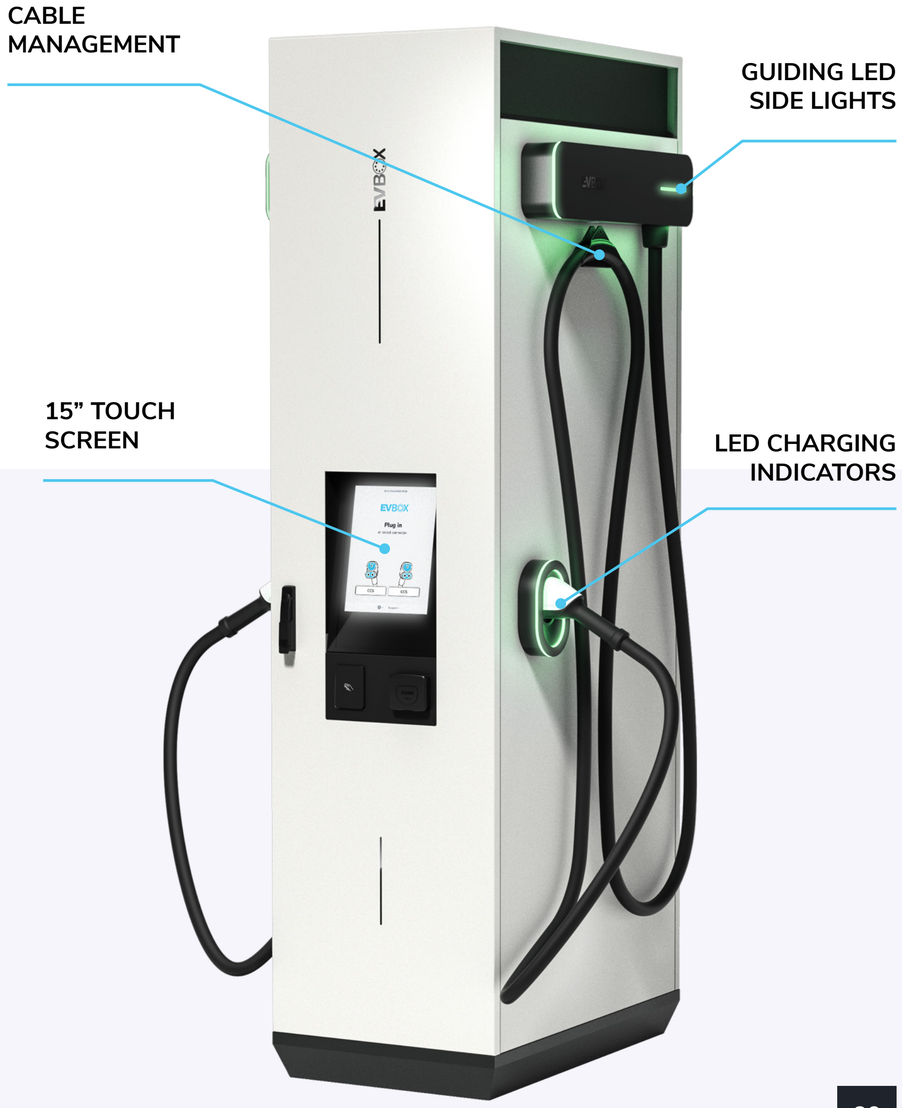
If you want to offer charging to different customers, you can make payment as flexible as possible by offering your customers multiple options. There is a wide range of different payment methods available, such as RFID cards, key fobs, payment terminals, or an app, which you should consider. By making payment as simple and streamlined as possible, you can ensure your customers have a good experience charging at your location and increase the chances that they become repeat customers.

Touchscreen

When a driver arrives at your charging station, the first out-of-the-car interaction a driver will have is with the screen. In the world of touchscreens, it is advised to stay away from buttons and opt for an easy-to-read touchscreen that is roughly 15” or larger. During the charging session, the screen should provide important information about the session, such as power output, time, etc. Furthermore, the driver should be able to choose from multiple languages and multiple authorization options ranging from simple RFID tokens and apps to the classic credit card terminal.

10. How do I make sure my customers feel safe?

The safety element has always had high priority when it comes to the experience of charging an EV. To ensure your customers feel comfortable charging at your stations, safety features like cable management and cable cooling can help increase this feeling of safety.



Cable Management

When it comes to safety, one of the main features of your DC charging station is cable management. Cables from DC charging stations can be heavy. Cable management helps drivers with the weight of the cable, improving driver interaction, and assuring that the cables are off the ground and locked safely. Loose cables create potential tripping hazards that can lead to injuries, but also cars can drive over them, destroying your investment.

Cable Cooling

Because DC charging delivers lots of power, cable cooling can help maximize the output of a station. Depending on your usage and desired power output, there are CCS2 cables available which use liquid cooling technology to deliver high amounts of direct current safely. Keep in mind that cable cooling requires an additional integrated cooling unit.

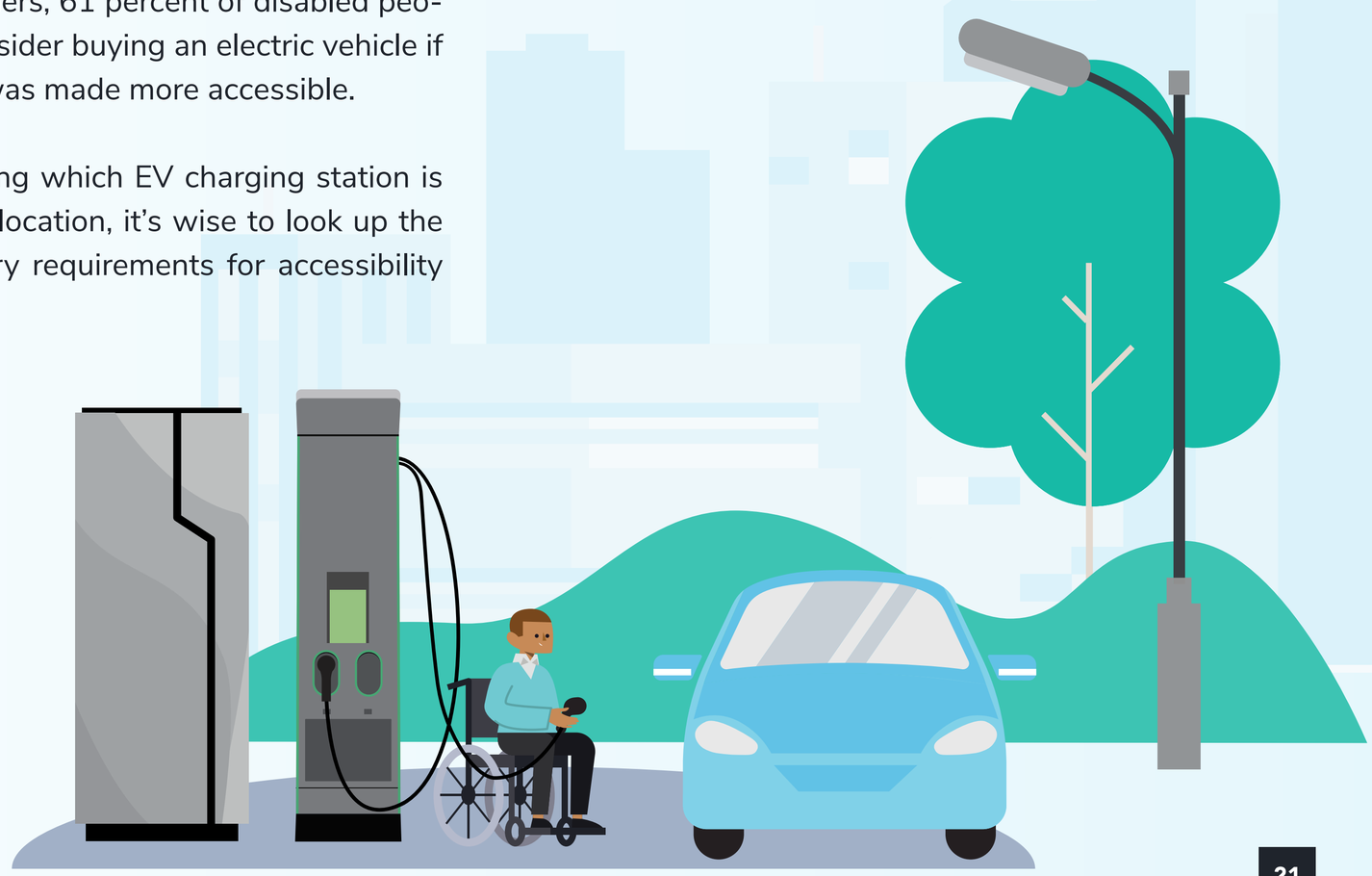
11. How do I make sure my charging station is as accessible as possible?

When investing in a DC charging station, it's crucial to consider how accessible your location is for all EV drivers. For example, it's wise to have a minimum length of 4m cables for fast-charging stations to ensure that all vehicles can access your investment.

Additionally, accessibility features, including wheelchair access, are not only key in advancing the adoption of EVs; they're becoming increasingly necessary to comply with government regulation.

For instance, in the US more and more states are required to comply with ADA-requirements (Americans with Disabilities Act). In the UK, according to the Research Institute for Disabled Consumers, 61 percent of disabled people would consider buying an electric vehicle if EV charging was made more accessible.

Before choosing which EV charging station is right for your location, it's wise to look up the local regulatory requirements for accessibility in your region.



Chapter 05

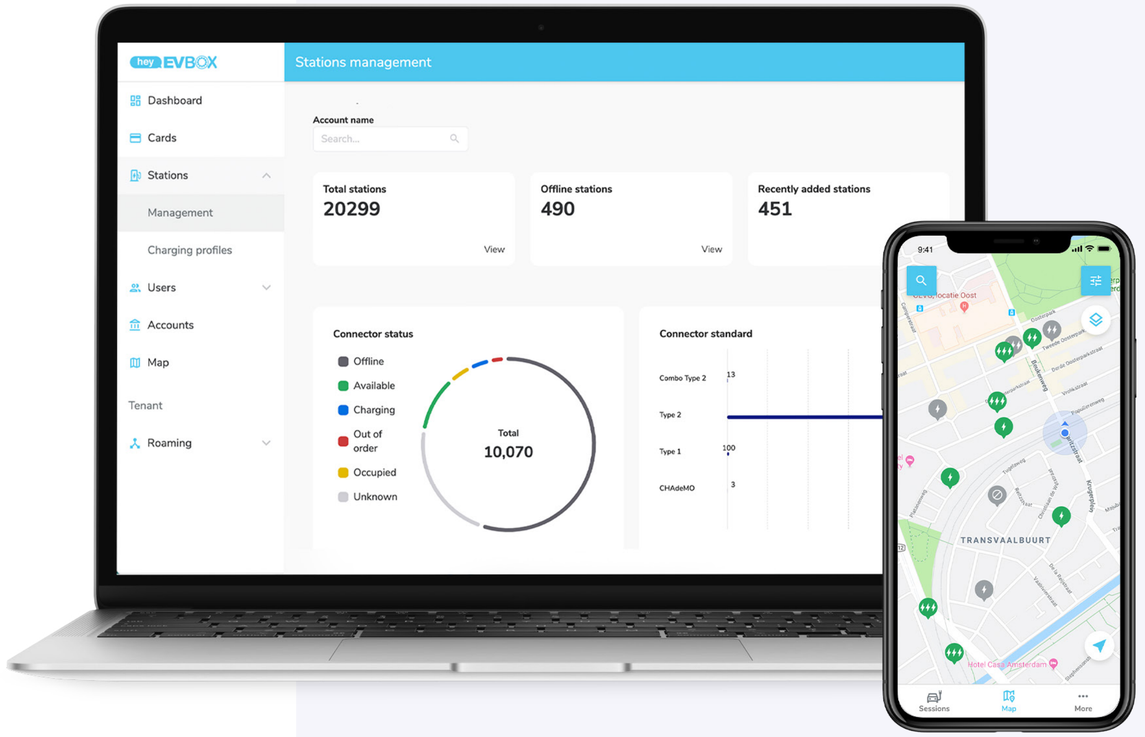
Management and maintenance

12. How will I manage my charging network?

Another topic to consider is charging management software (CMS). CMS helps to keep your network up, running, and accessible to electric vehicle drivers.

The biggest choice to make is whether you want a white-label option that can be tailored to your brand and customers, or CMS with a predefined brand and branch of software. With white-label options, you have more freedom and flexibility as you can define how the platform will look and behave.

Both branded and white-label CMS options will allow you to maximize revenue by setting different charging tariffs. Depending on variables such as the time of day or amounts of power needed, they'll help you save costs by setting limitations on output during peak demand.



13. How will I maintain my charging network?

While DC charging stations are extremely useful for a variety of customers, drivers, and the global electric mobility industry, they are complex and do require maintenance by certified professionals. Therefore, to maximize the uptime of your DC charging stations, you need to think about maintenance and servicing.

It’s essential to understand whether your EV charging partner also provides maintenance services and care packages that tackle issues before they arise.

As you build a fast-charging network, you want to ensure your EV charging stations are low maintenance and ready to go. But if and when unforeseen challenges arise, it’s nice to have a partner that acts fast and is willing to go the extra mile.

Chapter 06

Future-proof your investment

14. How can I make sure my investment is future-fit?

Because of the growing share of EVs on the road today, as well as the different types of EVs and their batteries, the best-suited charging solutions are modular.

Modular units—such as **EVBox Troniq Modular**—offer a variety of power outputs, charging cables, and payment options, can help your business prepare for the future whilst not over-extending yourself today—you can choose a smaller power output and add additional power modules as demand for DC charging grows.

By investing in modular charging stations, you're setting yourself up for long-term success. As you'll have the flexibility to enter the charging industry now and grow your offering as your needs evolve.

15. How can I stay ahead of the curve?

Over the last few years, electric mobility has grown exponentially, and this electrifying surge is not expected to slow down any time soon. According to **IEA's Global EV Outlook 2021** report, electric car registrations increased by 41 percent in 2020 alone, despite the pandemic-related worldwide downturn in car sales. Over the next few years, the uptake of electric vehicles is predicted to grow exponentially.

That means that today, the numbers of EV drivers utilizing the charging infrastructure you provide might be dramatically different from the number searching for charging stations tomorrow. To prepare for this expected fluctuation of EV drivers searching for a place to charge, it is important that your DC charging station can accommodate this future growth.

You'll likely need a partner to give you specific insights on both what charging stations and power output are right for your business's needs today, as well as how to prepare for the growth of tomorrow.

The right partner will understand your current needs, will know where the industry is headed and can help you identify the moment to enter the next phase of your charging strategy. In the electric mobility industry, there is a wide variety of companies specialized in offering charging solutions. These can include charging station management, installation, and maintenance.

EVBox provides a range of DC charging stations as part of our end-to-end electric vehicle charging solutions for businesses around the world. For a complete list of tech specs and use cases, as well as more information, take a look at our portfolio of DC charging stations designed for every business looking to electrify its operation.

Rely on EVBox as your turnkey partner

Looking for an all-in-one charging solution for your business?

EVBox offers the full package of hardware, software, and services so you have everything you need to get started on your EV charging journey.

With over a decade of experience developing charging solutions for businesses like yours, we're here for you every step of your e-mobility journey.

We'll work with you to find the right EV charging solution for your business, and ensure that everything is properly installed and maintained. Speak to our certified experts today to discover the right solution for you.

Request pricing

About EVBox Group

Founded in 2010, EVBox Group empowers forward-thinking businesses to build a sustainable future by providing flexible and scalable electric vehicle charging solutions. With its extensive portfolio of commercial and fast **EVBox** charging stations, as well as scalable charging management software engineered by **Everon**, EVBox Group ensures that electric mobility is accessible to everyone.

EVBOX GROUP AT A GLANCE

250k+
charging ports powering EV drivers

70+
countries powered by EVBox

5k+
fast charging ports installed worldwide

20k+
business customers worldwide