



Commercial EV Charging Perth

GUIDE 05 · FREE DOWNLOAD

AC vs DC EV Charging for Business Fleets

AC or DC charging for your fleet? It depends on how long the vehicles are parked and how much energy they need. Two fleets of 12 show the difference.



(08) 6275 6587

commercialevchargingperth.com.au

IN SHORT

AC charging is slower and cheaper; DC fast charging is quicker, costs more and needs far more power from the site. For a business fleet, the right choice comes from **how long the vehicles are parked and how much energy they need before they leave again**, not from the charger's top speed. Vans parked overnight usually suit **one AC charger each**. Vehicles that only call in for an hour or two, or pool cars shared between drivers, are where **DC is worth considering**. Some fleets are best served by a mix.

KEY POINTS

- Start with the vehicles, not the charger
- Twelve vans parked overnight and twelve cars that call in for an hour need different chargers
- A van plugged in for 12 hours at 4 kilowatts (kW) takes in 48 kilowatt hours (kWh) of energy
- A fast charger can mean staff moving cars off it all day
- Twelve AC chargers can cost less than two large DC chargers
- Some fleets do best with AC for most vehicles and one DC charger for the exceptions

CONTENTS

01 The Short Answer

02 How Long Are the Vehicles Parked?

03 Same 12 Vehicles, Two Different Answers

04 Why the First Fleet Went DC

05 Why the Second Fleet Suits AC

06 Isn't Faster Charging Always Better?

07 When DC Charging Is Worth Considering

08 Pool Cars Are the Clearest Case

09 When AC Charging Is the Better Fit

10 AC vs DC at a Glance

11 Work Backwards From the Energy

12 Try It on Your Own Fleet

13 Site Power Matters for Both

14 It Doesn't Have to Be AC or DC

15 Seven Steps to the Right Setup

16 Questions to Answer Before You Choose

17 The Bottom Line

The Short Answer

AC charging is the common type you see on a wall or a post. The car's own onboard charger turns the AC power from the grid into DC to fill the battery, so it charges over several hours. A DC fast charger does that conversion inside the charger itself and feeds the battery directly, which is much quicker, but the charger costs a lot more and draws much more power from the site.

When a business moves its fleet to EVs, it is tempting to think faster must be better. In practice the right answer depends far more on how the vehicles are used than on the biggest number printed on the charger.

THE SIMPLE PRINCIPLE

Start with the vehicles, not the charger. Work out when they are on site, how long they stay, how much energy they need before their next trip, how predictable that is, and how much power the site can spare.

How Long Are the Vehicles Parked?

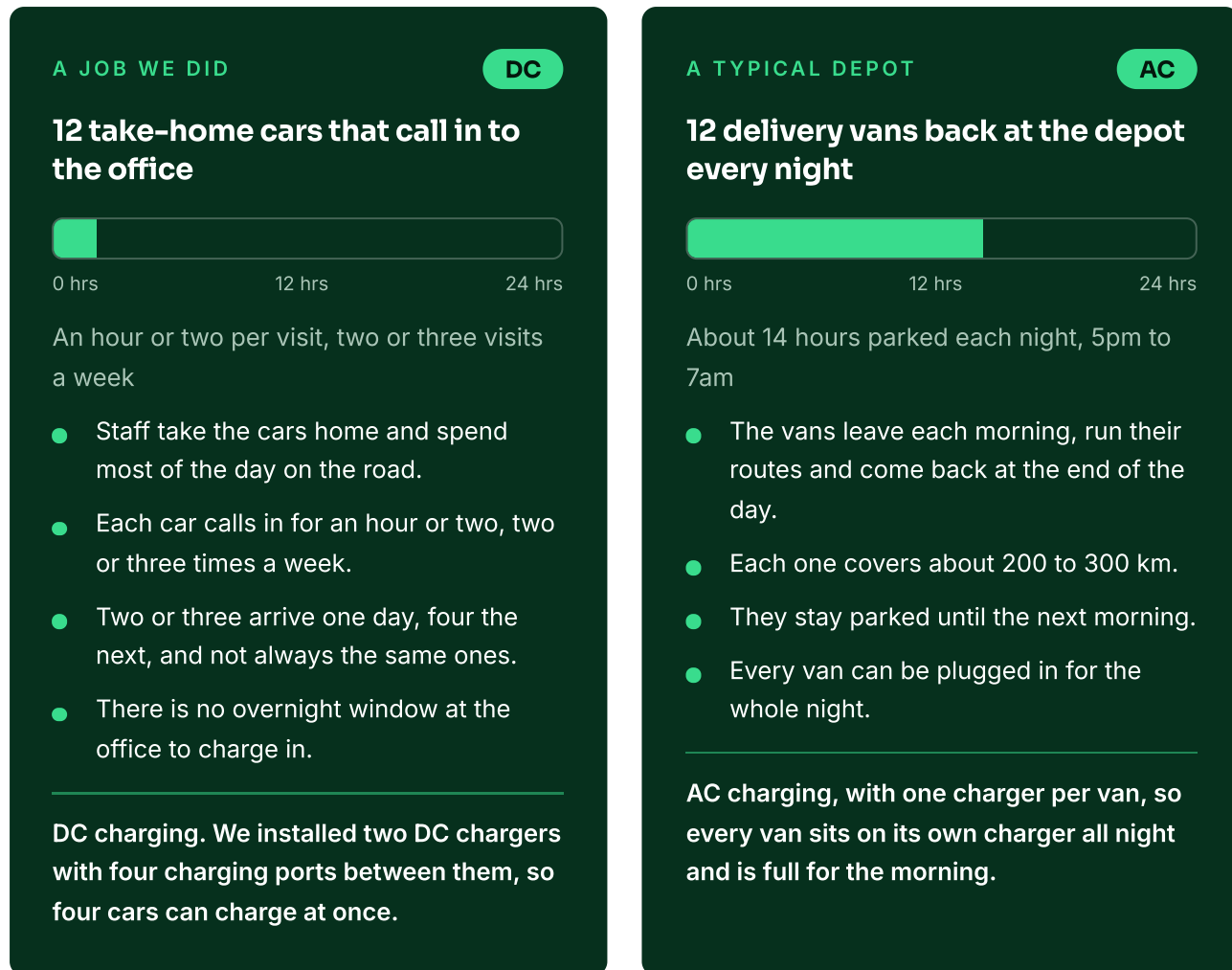
The time a vehicle spends parked on site is called its dwell time, and it is one of the most important numbers in any commercial charging design.

A van that comes back to the depot at 5pm and does not leave until 7am has about 14 hours to charge. A take-home car that calls in to the office for an hour or two has a completely different chance to charge.

A long dwell time lets you put the energy back slowly. A short or unpredictable one can make charging speed the thing that decides whether the vehicle is ready.

Same 12 Vehicles, Two Different Answers

The first fleet below is a job we did. The second is a typical delivery depot with the same number of vehicles, to show how the answer changes.



Why the First Fleet Went DC

The office could not count on long overnight charging, because the cars were at staff homes overnight. It had to put useful energy into whichever cars happened to be in, during a short visit.

Two DC chargers with four ports let up to four cars charge at the same time. How fast each car charged still depended on how the chargers were set up, what each car could accept and how much power the site had, so the design was built around using as much of the site's spare capacity as possible.

Staff could charge in the time they were already at the office, so they relied much less on public fast chargers. Company cars that go home with staff also need a plan for [charging away from the office and reimbursing it](#).

Why the Second Fleet Suits AC

The depot fleet does not need to charge quickly. It needs every van to have enough energy before it leaves in the morning.

If all 12 vans can be plugged in overnight, AC charging does that well. Each van stays in its own charging bay, nobody has to move a van after an hour, and the power the site can spare is shared across the whole fleet through the long charging window. Our [fleet and depot EV charging](#) service is built around exactly this kind of yard.

THE KEY DIFFERENCE

The first fleet has short, irregular chances to charge. The second has long, predictable ones. Both fleets have the same number of EVs and need completely different charging setups.

Isn't Faster Charging Always Better?

Yes and no. Faster charging can be worth having, but speed brings its own costs.

When a car finishes on a DC charger, someone usually has to move it so the next car can use the charger. In a busy workplace that means staff leaving their desks again and again to swap cars between the charging bay and a normal bay.

On AC, a car can stay plugged in for several hours or overnight, which often fits how people actually work far better.

Then there is the cost. Depending on the job, twelve AC chargers can cost less than two large DC chargers, and DC chargers need much more power from the site at any one moment. A fair comparison counts the hardware, the electrical work, the power the site has to spare and how the chargers will be used day to day, not just charging speed. Our guide to [what commercial EV charging costs in Perth](#) covers the price side in detail.

When DC Charging Is Worth Considering

DC becomes a serious option when one or more of these is true:

- Vehicles are only on site for short or irregular periods.
- They need a lot of energy put back during a brief visit.
- They are pool cars, shared by several drivers, and nobody knows how far the next driver needs to go.
- They have to go back into service quickly.

- The fleet cannot rely on a long overnight charging window.
- You want to cut how much staff rely on public fast chargers while they are away from the depot.

Pool Cars Are the Clearest Case

With a pool car, one person brings it back with no idea how far the next person needs to drive. Businesses have complained to us about exactly this. A faster charger gives the car a better chance of having useful range for whoever takes it next, because it does not depend on the car sitting on a charger for hours.

That benefit still has to be weighed against what DC costs to install and whether the site has the power for it. Fleets that have to go straight back out after every job need DC most of all. We fitted the [St John Ambulance depot](#) with DC fast charging for exactly that reason. See our [DC fast charging installation](#) service for what that involves.

When AC Charging Is the Better Fit

AC is usually the better fit when:

THE PLAIN-ENGLISH RULE

If vehicle use is predictable and the charging window is long, the system can usually be designed around slower AC charging. If arrivals, parked times and energy needs vary a lot and vehicles need meaningful energy quickly, DC becomes a much stronger option.

- Vehicles come back to the depot at predictable times.
- They stay parked for long periods or overnight.
- Routes and daily kilometres are fairly consistent.
- You can put in enough charging points for the vehicles that need to be plugged in.
- There is enough time to share the site's power across the fleet.
- You want to keep swapping cars and managing charging bays to a minimum.

AC vs DC at a Glance

If your fleet sits in the AC column on some rows and the DC column on others, a mix of both may suit.

Fleet characteristic	Often points toward AC	Often points toward DC
Dwell time	Long or overnight	Short or irregular
Usage pattern	Predictable	Varies a lot
Who uses the vehicle	One driver per vehicle	Pool or shared vehicles
Turnaround	Hours available	Back into service quickly
Charging bays	Vehicles can stay plugged in	Chargers need to free up for the next vehicle
Power demand	Load can be spread over time	More power may be needed at once
The goal	Hands-off overnight charging	A fast top-up in a short window

Work Backwards From the Energy

Start with how much energy each vehicle needs and how much time there is to put it in. Energy is measured in kilowatt hours (kWh), the same unit as on your power bill. Charging speed is measured in kilowatts (kW), the rate the energy goes in.

For a depot fleet, the design starts by measuring or estimating how much spare power the site has during the charging hours, then sharing it across the vehicles plugged in. Here is a simplified example for one van:

4 kW

Charging rate per van

12 hrs

Hours charging

48 kWh

Energy it can take in

40 kWh

Needed: 50 kWh battery from 20% to full

ON THOSE NUMBERS, AC DOES THE JOB

The van can take in 48 kWh and needs 40 kWh. A real design also allows for energy lost while charging, the vehicle's own AC charging limit, how the chargers are set up and shared, how the chargers are spread across the site's three supply lines, called phases, the site's actual load and a safety margin. The method stays the same: work backwards from the energy needed and the time available.

Try It on Your Own Fleet

Put in your own numbers to see which way your fleet leans. It is a guide to start the conversation, not an engineering design. A real answer needs a look at your switchboard and how much power your site has spare.

ONLINE CALCULATOR

The calculator is on the web version of this guide:

commercialevchargingperth.com.au/blog/ac-vs-dc-ev-charging-for-business-fleets/

Site Power Matters for Both

You cannot pick a charging setup without looking at the electrical side. Before committing to several chargers, and especially to high-powered DC units, you need to know the site's existing supply, what it normally uses and how much power is spare during the hours the vehicles will charge.

Where that is unclear, load monitoring, which means logging what the building actually draws through the day and night, shows the real picture. From there you can choose between [load management](#), which lets the chargers share the power the site already has, charging the vehicles in turns, a supply upgrade or a different mix of chargers. Our guide on [whether your site has enough power for EV chargers](#) goes through it step by step.

It Doesn't Have to Be AC or DC

Some businesses are best served by a mix. The vehicles with predictable days charge on AC through their long parked hours, while one DC charger gives a fast top-up to pool cars, vehicles coming off an unusually long day and vehicles that have to turn around quickly.

The charger mix should follow how the fleet works. Buying the fastest equipment first and then trying to make the fleet's routine fit around it is the wrong way round.

Seven Steps to the Right Setup

Work through these in order before you ask for a quote.

1

Map the fleet

List every vehicle, its daily kilometres, its battery size and energy use, whether it stays at the depot or goes home, and when it normally arrives and leaves.

2

Work out the energy, not just the number of chargers

Estimate the kWh each vehicle has to get back between shifts. The chargers only need to deliver that energy inside the time available, not run flat out all night.

3

Measure the parked window

Long, predictable parked times point strongly to AC. Short, irregular ones make DC worth more.

4

Check the electrical side

Look at the incoming supply, the switchboards, what the site already uses and how much is spare. Where it is unclear, monitor the load before settling the design.

5

Walk through the daily routine

Who plugs the vehicles in, whether they can stay in the charging bays, whether staff have to swap cars, and what happens when a vehicle comes back unexpectedly low.

6

Plan for the hard days

Long days, a missed charge, late returns, extra vehicles and shared pool cars. Work out which of those days a fast top-up would actually fix, and whether that is worth paying for.

7

Consider a mix

AC for the vehicles with long, predictable nights and DC for the smaller group that needs a quick turnaround can give the best balance.

Questions to Answer Before You Choose

You do not need every answer before you call us, but these are the ones that decide the design. If you are still working out [how many charging points your fleet needs](#), start with our complete fleet guide.

QUESTION	YOUR NOTES
How many EVs are in the fleet today, and how many do you expect in the next few years?	
Are the vehicles depot-based, taken home, pool cars, delivery or field vehicles?	
What time do they normally arrive and leave?	

QUESTION	YOUR NOTES
How many hours are they really available to charge?	
How many kilometres does each vehicle usually travel in a day?	
How much energy has to go back in before the next trip?	
Do all the vehicles need to charge every day?	
How predictable is the routine?	
How many vehicles are likely to be on site at the same time?	
Can vehicles stay in the charging bays, or would they need to be moved once charged?	
How much spare power does the site have during the charging hours?	
Would staff otherwise be using public fast chargers?	
What happens on the fleet's hardest realistic day, not just an average one?	
How will the charging grow when more EVs arrive?	

The Bottom Line

For many depot fleets that are parked overnight, AC charging can be the most practical and economical answer. For vehicles with short, irregular or unpredictable chances to charge, DC charging can solve a problem that slower charging cannot.

ASK THIS FIRST

Before choosing chargers, ask how much energy your vehicles need, when they are available to charge and how quickly that energy has to go in. The answers usually point to the right chargers.

Common Questions

What is the difference between AC and DC charging?

With AC charging, the car's own onboard charger converts the power, so it charges over several hours. A DC fast charger converts the power itself and feeds the battery directly, which is much quicker but costs more to install and needs more power from the site.

Is a 7 kW charger AC or DC?

AC. Most wall-mounted and post-mounted business chargers are AC units of 7, 11 or 22 kW. DC fast chargers are usually bigger units that draw far more power from the site.

Does a delivery fleet need DC fast chargers?

Usually not if the vans are parked overnight. A van in the depot for 12 hours at a 4 kW charging rate can take in about 48 kWh, which is enough for many daily routes. We confirm it against your vans' actual daily energy and the site's spare power.

What is the main downside of DC fast charging for a business?

Cost and power. DC chargers cost much more than AC chargers and need far more power from the site at once. A car that finishes quickly also has to be moved so the next one can charge, which takes staff time.

Can we have both AC and DC chargers at one site?

Yes, and for some fleets it is the best setup. AC chargers handle the vehicles parked for long periods, and one DC charger gives pool cars and quick turnarounds a fast top-up.

Not sure what your site can support?

Book a commercial site assessment. We look at the vehicles, the switchboard and the parking before anything is quoted, then give you options with the cost of each.

(08) 6275 6587

Email

info@commercialevchargingperth.com.au

Office

Unit 2/77 Forsyth Street, O'Connor WA 6163

Web

commercialevchargingperth.com.au

Licence

Electrical Contractor EC11686

CHARGING WA PTY LTD · ABN 53 692 564 622

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