



# Electric Vehicle Charging Strategy





# Introduction

As part of the UK Government's Decarbonising Transport plan, new petrol and diesel cars and vans will no longer be sold from 2030, and all new cars and vans must be fully zero emission at the tailpipe from 2035.

Bracknell Forest Council supports this shift towards cleaner-emission vehicles as part of the wider aim to tackle the causes of climate change and we want to help make that transition as smooth as possible for our residents and businesses.

The Council has been exploring and investigating EV charging solutions since 2015, when we installed our first public-use charge point in the High Street multi-storey car park (Bracknell).

Since then, EV technology has continued to rapidly evolve and we have purposely taken time to review and consider all relevant emerging and available options, learning from national trials, case studies and our own experiences. More broadly, we have also taken time to reflect on our role in delivering or facilitating chargepoints, alongside our day-to-day duties in providing core Council services.

The rollout of charging infrastructure and the approach taken by Councils varies across the country and we recognise the need to provide clarity. As such, this document aims to provide a detailed overview of Bracknell Forest Council's approach and how we aim to facilitate electric vehicle ownership and use in the Borough.

Technological obsolescence is a big risk and an unconsidered approach could result in our public charging facilities becoming quickly outdated and providing little value or contribution toward the future charging solutions within the Borough.

## Our role

As a Council, we must carefully consider the social, financial and technical practicalities and implications of Electric Vehicle (EV) charging infrastructure. There are many stakeholders that will contribute towards the conversion to EV and we want to ensure that our actions are supportive and co-ordinated wherever possible, to achieve the best solution for the Borough.

Councils are not energy providers and do not have dedicated budgets for EV charging, so our role is to facilitate the delivery of fast, rapid and ultra-rapid chargepoints across the Borough through partnership working with the private sector, and through government-funded initiatives which seek to pump-prime the actions which Councils, businesses and residents can take.

This approach will involve direct engagement with chargepoint operators and other local land owners to investigate and establish sites and solutions that are practical, accessible, and can deliver a high quality, reliable charging solutions fit for the future.



## The future

There is no certainty at present on where future EV owners will predominantly undertake their charging, but we recognise that demand for all charging types will increase rapidly as we head towards the Government's 2030 target. We must also recognise that there is existing property in Bracknell Forest that does not have off-street parking and where parking on street is in short supply. However, changes in the way we work, travel and manage our time are also likely to mean we travel less by car.

Many residents with on-plot parking are likely to establish home chargepoints, whilst new Building Regulations (Part S) will mandate developers to install chargepoints in new developments. Other charging choices will be based on factors such as supply and demand, costs, quality, convenience and personal circumstances.

The pace of change in battery capacity and charging technology are likely to mean that the available range of new cars increases whilst charging times reduce. This means charging a vehicle at a forecourt or rapid charging hub needn't be an inconvenience any more than filling a petrol/diesel-engined car currently.

Both market forces and local demand will increasingly dictate the locations, costs, numbers and standard of chargepoints delivered. Equally, the increasingly competitive EV charging market will continue to drive early investment by key energy providers. This activity will supplement the chargepoints installed by the Council.

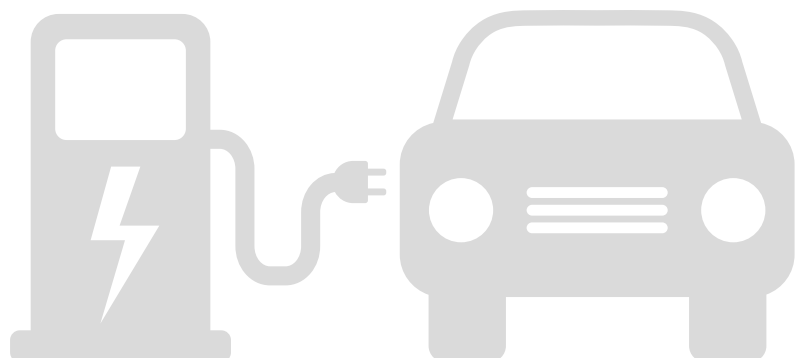
## In summary

We clearly have a role to play in the overall charging solution, but this should be focused towards providing practical, viable and affordable charging infrastructure of public benefit.

Our role is also as a facilitator and influencer in terms of private investment and infrastructure delivery on our transport network, whilst in parallel providing information to our residents, businesses and employers on emerging themes and Government funding opportunities.

As a provider of public facilities and amenities we will identify further opportunities to provide practical charging infrastructure at Council-owned sites where these can deliver value for money and attract funding from Government initiatives, regardless of commercial attractiveness with a view to maximising public benefit and ensuring equality of access to charging.

We will also actively engage with the private sector to establish their appetite to deliver a more comprehensive charging network at no cost to the Council (including rapid/ultra-rapid chargepoints) and work with external stakeholders and land-owners to identify further sites for all chargepoint types.





## Projections

The government-backed National EV Insights and Strategy tool (NEVIS) provides bespoke projections on EV uptake at national and local-authority levels. Various scenarios, based around an assumption of low, medium and high uptake of EVs, provide outputs on the likely number of each different type of vehicle by power source, allowing estimates to be made on the likely number of chargepoints that will be required.

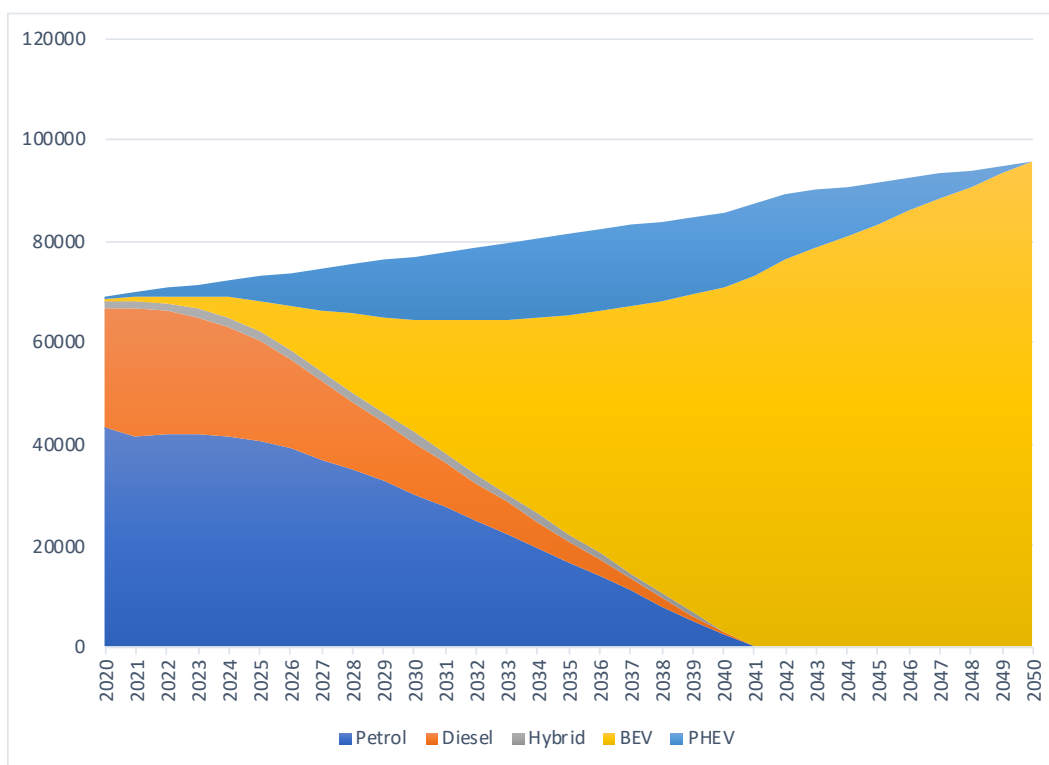
Assuming a ‘high’ level of EV uptake based on the 2030 ban on sales of petrol and diesel vehicles, NEVIS predicts there will be around 22,500 Battery Electric Vehicles (BEV) in Bracknell by 2030, as Table and Graph 1 below show.

Note that the graphs on the following pages show projections on vehicle numbers and potential chargepoint demand in Bracknell Forest to 2050, however, for the purposes of this strategy and informing our decisions, we are considering likely demand and requirements for 2030.

Table 1: Cars in Bracknell Forest – NEVIS projection

	2022	2030	% change
Petrol	41,770	30,169	-28 %
Diesel	24,328	10,174	-58 %
Hybrid	1,635	1,886	+15 %
BEV (Full electric)	1,524	22,437	+1372 %
PHEV (Plug-in Hybrid)	1,492	12,397	+730 %

Graph 1: Projected transition to BEV cars (2020 – 2050)



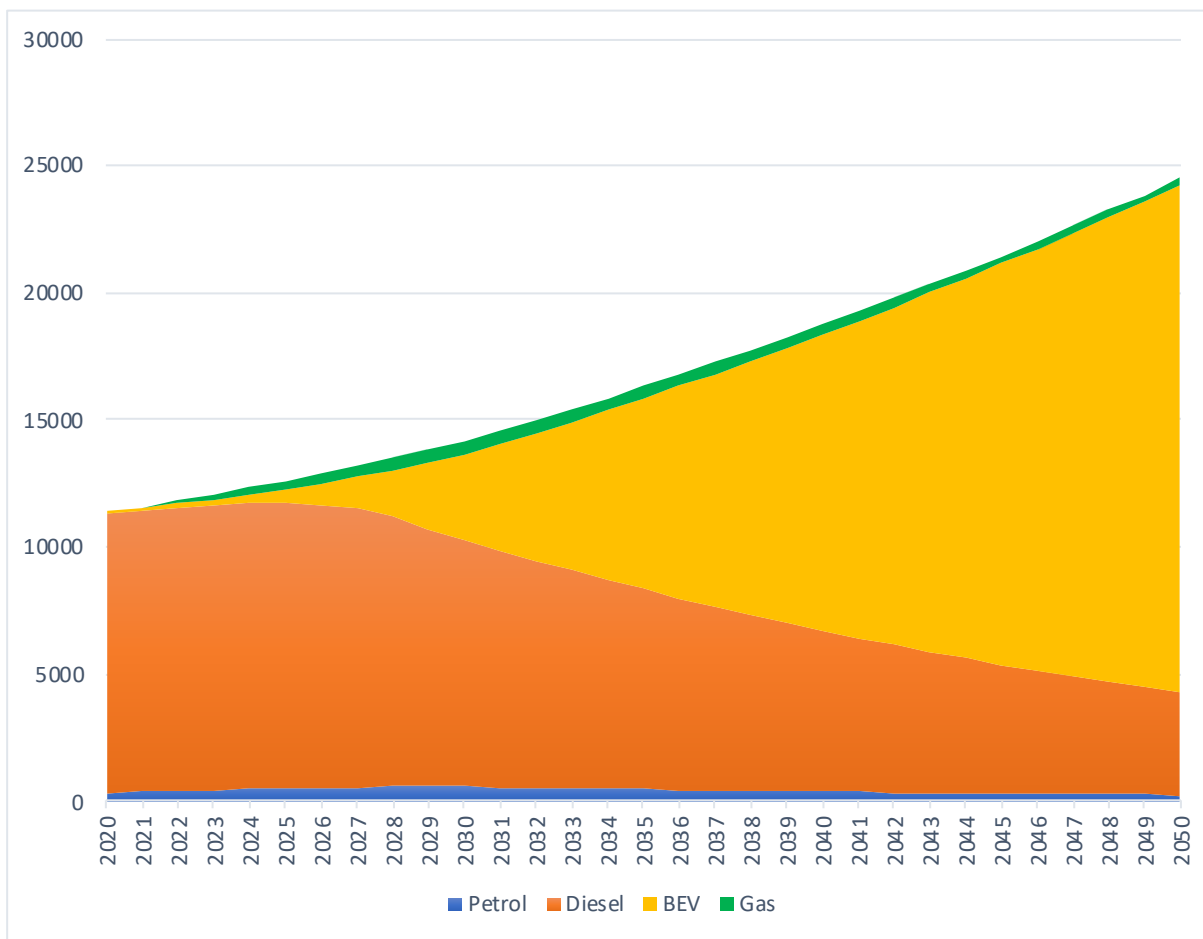


We should also consider Light Goods Vehicles, the number of which are likely to increase significantly due to increased online shopping and associated home deliveries, as Table and Graph 2 show. Whilst it is likely that a much greater proportion of these will remain diesel powered than cars, there is still predicted to be a significant shift to battery powered vehicles.

Table 2: LGVs in Bracknell Forest – NEVIS projection

	2022	2030	% change
Petrol	412	568	+38 %
Diesel	11,153	9,658	-13 %
BEV	129	3,389	+2527 %
Gas	129	568	+ 340 %

Graph 2: Projected transition to BEV LGVs (2020 – 2050)



Based on these figures, NEVIS calculates the likely number of public chargepoints that will be required each year, split by charging speed, as EV uptake and ownership increases. Table and Graph 3 show these predictions.

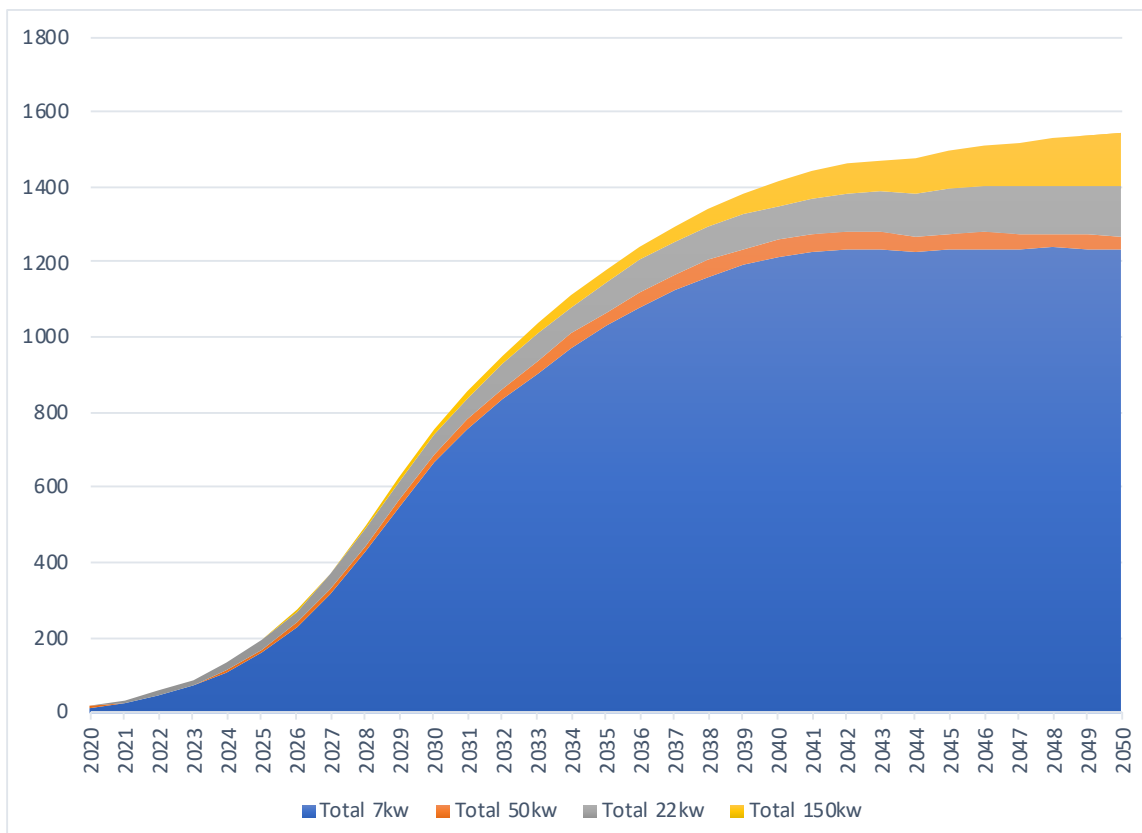


## Chargepoint requirements

Table 3: Projected total number of chargepoint sockets required

Charging speed	Number required in 2030
7kw	664
22kw	51
50kw	25
150kw+	14

Graph 3: Projected total number of chargepoint sockets required (2020 – 2050)



Whilst these figures are large, particularly in terms of 7kw chargers, the projections make some broad assumptions, and do not consider local characteristics. The age and layout of residential streets will be a key factor in determining the suitability and practicality of charging solutions, and as such the roll-out approach of authorities will differ across the country.

It should be noted that the figures also include publicly accessible chargepoints delivered by the private sector, for example at shops, leisure facilities and restaurants. These will naturally increase as the market develops.

Bracknell Forest Council are actively liaising with government departments, the local electrical network operator and chargepoint providers to find a mixed solution which will provide fair, accessible charging options for the Borough's residents over the long term. This will likely be a phased approach, using both government and private sector investment, based on local area characteristics, available land, the local electrical network and associated constraints and opportunities.

Our Action Plan, which can be found on page 17 of this document, goes into more detail on our proposed approach.



# The Overall Charging Solution

There are many stakeholders that will contribute towards the conversion to EV and the pursuance of overall carbon net zero by 2050, as can be seen in the diagram below:





# Electric vehicles and charging: background and basics

Electric vehicles are sometimes known as Battery Electric Vehicles (BEVs), or as ‘pure electric vehicles’ in order to distinguish them from hybrid vehicles.

In 2011, there were only three EVs on the market with 70 to 80 miles range on a single charge. Since then, the number and variety of EVs has increased dramatically with significant improvements in range. Speculation on future technological advances includes the potential for batteries to deliver a 600 mile range which could help simplify future charging needs.

The range of an EV depends on a variety of factors including vehicle configuration, battery age and condition, driving style and environmental and climate conditions affecting its operation.

EVs generally have higher purchase costs than their petrol and diesel competitors due to the manufacturing costs associated with the batteries and electric motor. Although in contrast they are often cheaper to maintain, at least in the short-term, due to their comparative simplicity. As the EV market develops, battery costs and therefore vehicle prices will continue to drop and are expected to reach parity with conventional models in the next few years.

## Chargepoints and costs

There are currently four main types of EV chargepoint – slow, fast, rapid and ultra-rapid, summarised in **Table 1** below. This categorisation reflects the power outputs (with power measured in kiloWatts-kW) and therefore the charging speed available.

Each charger type has an associated set of connectors which are designed for low or high power use, and for either alternating current (AC) or direct current (DC) charging.

Installation costs can vary hugely and depend on the type of unit being used, the ease of grid connection and (for rapid chargepoints) the proximity to high voltage networks and/or necessary transformer upgrades. The costs below are rough estimates provided by the Energy Saving Trust.

**Table 1: EV Chargepoint Types**

	Domestic single-phase / lamp column (3-7kW)	Fast (7-22kW)	Rapid (Up to 50kW)	Ultra-Rapid (100 kW or more)
<b>Typical charge time</b>	6 to 12 hrs	2 to 4 hrs	20 mins to 1 hr	10 to 30 mins
<b>Vehicle range added in 15 mins</b>	3 to 6 miles	6 to 20 miles	35 to 40 miles	100+ miles
<b>Equipment cost per unit</b>	£500 to £1k	£2k to £4k (AC) £20k (DC)	£20k to £50k	£50k+
<b>Installation work and grid connection cost</b>	£250 to £1k	£1k to £25k	£5k to £100k	£20k to £1 million





Typically, slow chargepoints are found in locations where vehicles are left for longer periods. Fast units are found in car parks where dwell time is likely to be a few hours or possibly overnight, whereas rapid units are found more at easily accessible, strategic locations, often as part of dedicated rapid 'hubs' or on existing station forecourts where the user is likely to stay with their vehicle if only charging for a short period, or visit a linked food and drink outlet.

The Council sees rapid and ultra-rapid chargepoints playing a key role in the long-term solution for the majority of our charging needs - especially for those without off-street home charging facilities. These more powerful units will enable EV owners to charge quickly and, as technology improves, would take a similar timeframe to refilling a petrol/diesel vehicle. These will be supplemented by slower units within public and privately owned car parks and workplaces.

Further technical detail on chargepoints, available charging connector types and their main characteristics is provided in **ANNEX B**.

**Below: A 50kW Rapid chargepoint at Shell, Bagshot Road**



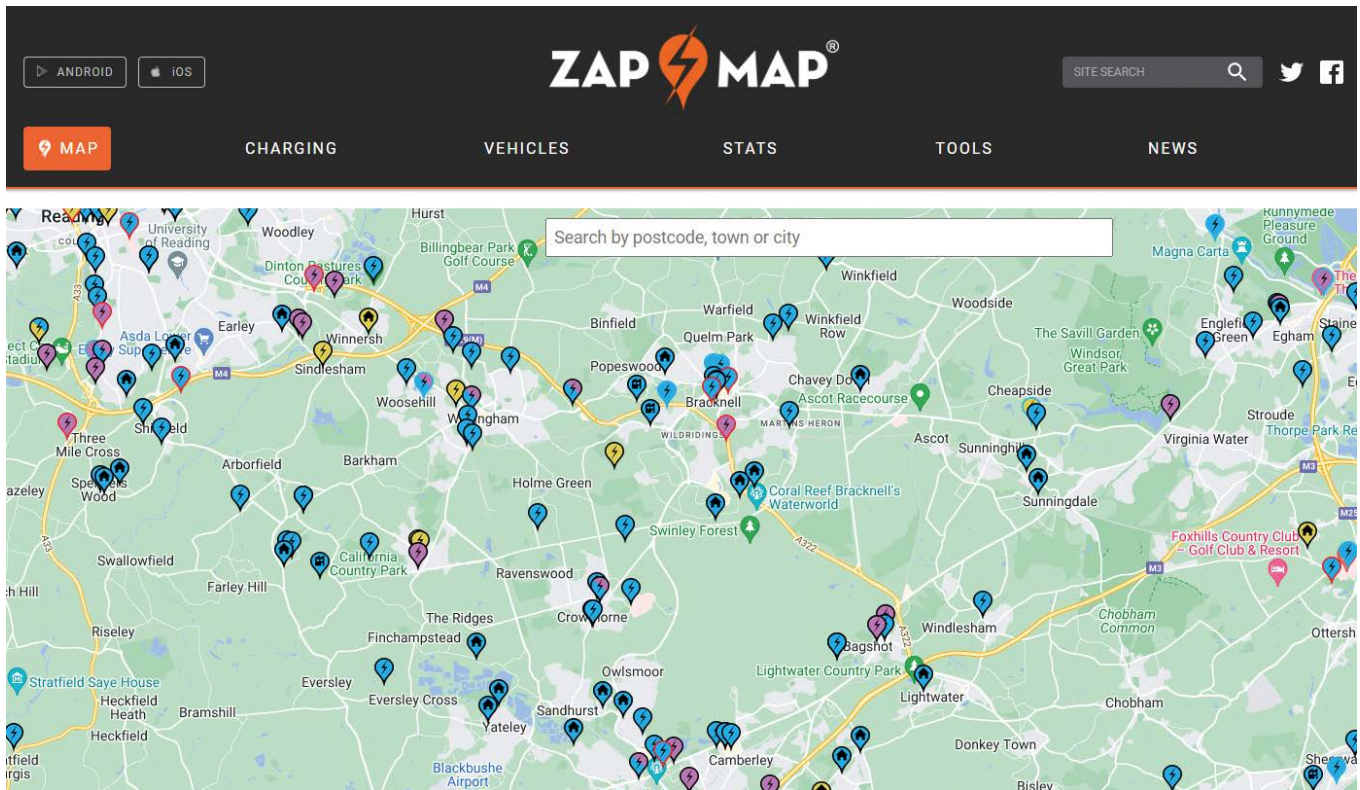
**Below: A 7Kw Fast chargepoint at Tesco, Martins Heron**





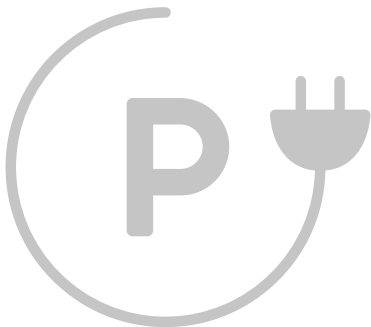
# Car Park chargepoints

The number of chargepoints within publicly accessible car parks is constantly growing and a popular resource to find them is [Zap Map](#).



There are fast chargers in all of the main multi-storey car parks in Bracknell town centre, and most supermarkets are installing units on their premises.

There is ongoing work to increase EV charging bays within Council public car parks, and this may be supplemented by further chargers using parish-owned sites, whilst we will also continue to encourage (and where necessary assist) private car park owners to do the same.





# Charging hubs and station forecourts

We envisage a steady increase in the number of rapid and ultra-rapid chargepoints at existing filling station forecourts. As a greater share of the vehicles on our roads become EVs, this will become a natural business model shift as oil companies diversify into becoming broader energy providers. We are already seeing this in the corporate re-branding of some globally recognised ‘petrol station’ operators and the acquisition of charge point providers by large fossil fuel organisations

Filling stations are ideally placed to facilitate rapid charging, given the similarity of process to filling a traditional combustion engine car, but also due to the facilities they (increasingly) offer or host on the premises for dwell time, such as coffee or sandwich outlets and convenience grocery shopping. Corporate partnerships such as these will help to facilitate the shift in how we will refuel our vehicles, but potentially also in how we use our time. All major forecourt operators have made commitments to significantly increase their charging infrastructure.

Conversely, supermarkets are also increasingly seeing the benefits of providing rapid chargepoints, as the average weekly shop can be achieved in roughly the same amount of time as it takes a rapid charger to completely refuel a car. Coffee companies and fast-food outlets are also investing in roadside sites with rapid chargers to provide a comfortable ‘stop-off’ point for EV users who can fill their cars in the time it takes to order and consume a cup of coffee.

There are also entirely new companies, such as Gridserve, who have opened 100% EV charging stations at sites in Braintree (Essex) and Norwich, and plan to open over 100 more by 2026 across the UK’s strategic road network.



Forecourts will be further complemented by commercial charging ‘hubs’ where clusters of 4 or more rapid chargepoints are located together in car parks, usually on or close to major roads with facilities nearby. Much of Tesla’s Supercharger network uses this model, and we are keen to facilitate further commercial rapid charging hubs on strategic corridors where practical.

On the wider strategic road network, including motorways and trunk roads managed by National Highways, speed and convenience of charging is paramount for those undertaking longer journeys. As such, service stations have been early adopters of rapid chargepoints, and consequently have been some of the first to see 150kw ultra-rapid chargers. It is likely that motorway service stations will continue to see a significant increase in rapid chargepoints in the coming years.

Collectively, these charging opportunities will be complimented by the Council’s local approach to install chargepoints in community and multi-storey car parks where travel patterns suit longer dwell times and where value for money can be achieved with public funds.



# Workplace chargepoints

Workplaces are ideal locations for employee and company owned EVs to be charged, whether during the day or overnight. As the uptake of electric company cars increases due to favourable benefit-in-kind tax relief and increasing EV availability, it will become more important for organisations to introduce chargepoints at workplaces.

In determining how many chargepoints to install, and what specification to use, employers will need to think about the size of their fleet now and in the near future, including private staff vehicles. A detailed analysis of vehicle mileages may also help, for example if an EV with 200 mile range vehicle is used on an average daily route of 40 miles, it will only need charging once per week. Employers should also consider who actually needs to charge as a proportion of their employees are likely to utilise homecharge units instead.

It may be easier and cheaper for employers to install slower chargepoints, i.e. 7kw capable of recharging a car in six to eight hours.

## Workplace Chargepoint Grant

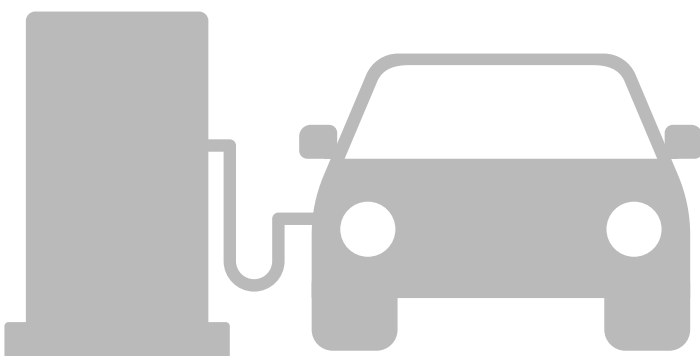
The Department for Transport has funding available for employers to install up to 40 fast (7kw – 22kw) chargepoints, where it will contribute 75% of purchase and installation costs, up to £350 per socket. Find out more [here](#).

# Destination charging

Destination chargers are a useful and convenient option to top up or fill the battery whilst undertaking another activity where the car will be sat idle. Such chargers are becoming more common at shops, supermarkets, restaurants, hotels, leisure facilities and other local attractions.

The likely dwell time is an important factor in deciding the best type of chargepoint to install. At supermarkets and restaurants, a rapid charger would probably be the best solution for those seeking a full charge, whilst at a hotel, fast chargers should be sufficient to charge a battery overnight.

The majority of destination chargepoints will be delivered by the private sector, but the Council will encourage and facilitate their installation by requiring chargepoints to be installed in new commercial builds or major refurbishments where practical, whilst exploring the potential for chargepoints at its own facilities, and those of our constituent partners.





# Residential charging

## Home chargepoints

We recognise that in the short-term one of the most convenient ways to charge an EV will be at home. A chargepoint on a private driveway or within a garage reduces the complications of charging availability. However, many Bracknell Forest residents do not have access to off-street parking, and so will rely on public charging facilities. It is important that these are safe, accessible, cost effective and practical.

## Street chargepoints

A number of housing areas within Bracknell Forest, particularly those built in the 1950s and 60s, do not have on-plot parking. In these locations parking is often provided away from the property in private garage blocks that have become unsuitable for both the size and number of modern-day vehicles. Past surveys undertaken by the Council have found that many of these garages are used for general storage. Some older developments contain communal parking courts which generally provide spaces on a first-come-first-served basis, although some private courts have allocated bays.

Whilst more recent housing developments feature increasing levels of parking provision, with many including private on-plot parking as standard, the increasing levels in car ownership often place parking pressures on surrounding roads.

We continue to invest in the provision of additional parking bays within areas experiencing the greatest parking pressures, but this is limited to land within our control or through our partnership with third parties, e.g. Silva Homes. However, in many residential areas there simply isn't enough space to provide additional parking for all local residents' vehicles.

Adding formal EV chargepoints into residential streets could exacerbate existing parking pressures and potentially create wider divisions within communities. Over time, this could become less of an issue as EV ownership increases, but the prohibitive cost of providing this scale of personalised charging infrastructure would remain.

There are also physical practicalities associated with providing charge points in residential streets. In the majority of cases, limited footway and carriageway widths would make installing chargepoints impossible without significant impacts on the use and layout of the street. In particular, lamp column chargepoints would be impractical as columns are mostly located at the back of the footway within Bracknell Forest.

Furthermore, technical feasibility studies have found that there are electrical capacity issues with local networks, many of which are ageing and unlikely to cope reliably with the extra demand that EV chargers would place on them.

Collectively, these challenges reinforce the need for wider and more varied charging solutions for EV owners which remove the reliance on home charging. New technologies and electrical network improvements may overcome these issues, and we will continue to monitor the market as solutions evolve.



### Domestic on-street charging (cables)

Charging a car from a home supply without off-street parking typically means trailing a cable from the property to the vehicle, which is likely to involve the crossing of a public space or public highway. Footways (or pavements as they are typically known) are part of the public highway, and the Council has a legal responsibility and duty to ensure that these are maintained and kept free from obstruction, including tripping hazards.

Cables across footways are not a new issue to the Council, and licences exist for street traders to run power cables for their business. However, these are issued with conditions that the cable will be suitably protected (i.e. with a quality, high visibility, low-rise rubber cable protector), but more importantly that they are manned while the cable is in place, allowing it to be moved if necessary for any reason. Given that the majority of domestic EV charging will probably take place overnight, cables will effectively be left unattended and out of sight of the vehicle owner, increasing the risk of an incident.

It is also important for residents to be aware that the installation of a charge point which does not serve off-street parking (i.e, you are planning to charge your car on-street via a private charge point) may not be permitted development and a planning application may be needed for the charger.

Nevertheless, we recognise that as EVs become the norm for residents, the need to charge from a property located next to the public highway will only increase, at least until the wider charging solutions become commonplace, e.g. station forecourts, charging hubs, workplace and destination chargepoints. As such, we have produced specific guidance to aid residents on the use of domestic charging cables and this is provided at **ANNEX A**.



# New developments

Overall parking requirements for new development are determined in accordance with the Council's Parking Standards Supplementary Planning Document (SPD) which aims to deliver effective parking solutions while taking account of other planning considerations.

Until June 2022, the Council's Parking Standards Supplementary Planning Document (SPD) was the primary policy setting out the requirements for electric vehicle charging infrastructure associated with new development. This document remains relevant, however a new part of the national Building Regulations (termed 'part S') now requires a greater number of chargepoints than the SPD, which is being updated to reflect that.

Essentially, the requirements are for all new homes and existing homes undergoing large renovations (of 10 or more dwellings) to have facilities for charging electric vehicles in each associated space per home. It applies to:

- New residential and non-residential buildings
- Buildings undergoing a material change of use to dwellings, such as converting a barn into a home
- Residential and non-residential buildings undergoing a major renovation where 10 or more homes are being created
- Mixed-use buildings that are either new or undergoing a major renovation

Technical requirements for electric vehicle charge points are also given in the Building Regulations part S, including requirements to (amongst others):

- Have a minimum nominal rated output of 7kW;
- Be fitted with a universal socket (also known as an untethered electric vehicle charge point).

For new residential buildings there is an electrical connection cost cap applied, which has the effect of requiring fewer electric vehicle chargepoints to be provided if the average connection cost for the electrical connection is greater than £3600. The connection cost is defined as "The cost of upgrades needed to the electricity system in order to accommodate a charge point, excluding the cost of any building work or the cost of the charge point itself".



# Practical considerations for public chargepoints

## Market forces

Given the general capabilities of the local electrical network infrastructure and high cost of purchasing and installing rapid chargepoints, the majority of public chargepoints installed by Councils are likely to be 'fast' 7kw units, meaning a typical electric vehicle would need between 4 and 6 hours to fully charge.

The costs involved in upgrading electricity supplies and installing rapid chargers are less of a barrier for commercial chargepoint providers, but there must be an incentive for their investment. Commercial feasibility is generally determined by the proximity to major roads, populations, businesses, shops and services that can guarantee a level of usage to justify initial cost outlays.

The technology behind EV charging is moving forward very quickly and this presents a number of pitfalls when looking at chargepoint options. This could place Councils at significant risk of investing in technology that could quickly become obsolete, be incapable of fulfilling users' charging expectations and result in some chargepoints becoming unpopular and losing viability. It is important for Councils to secure flexible arrangements with chargepoint providers and operators, with agreements to upgrade chargepoints if necessary or to allow for relocation of under-used sites.

## Payment methods and understanding operator networks

As with any emerging technology, new charging providers enter the market almost every week and it can be difficult to keep up with the number of tariffs, payment methods and apps used. It is crucial that easy payment methods are available to improve EV driver experiences and provide choice.

Some chargepoint operators offer incentives for membership of their payment network, but this could mean an EV owner needing several apps or user cards simply to charge their vehicle. Fortunately, there is recognition from Government of the need for regulation and standardisation amongst providers and it now requires all new chargepoints to be fitted with contactless bank card payment capabilities.

## Bay-marking and enforcement

Experience from trials elsewhere in the country has shown that if an EV chargepoint is installed in an area where parking is already at a premium, it needs to be provided with a marked bay to avoid any vehicle simply parking in front of it and blocking its use by an EV. Conversely, marked bays also remove parking space from the street for non-EV users who may see this as disproportionate in some cases.

A marked bay requires a Traffic Regulation Order, which requires public funds to implement and requires subsequent enforcement, for example through the issuing of fines if used by a non-EV, or against an EV which isn't charging. These cases may be difficult to prove or determine, whilst Council enforcement teams already face competing priorities.







### Maintenance, public safety and vandalism

Whilst appropriate site surveys and risk assessments will be carried out prior to any chargepoint installation, ongoing maintenance and assurance of public safety of chargepoints is better suited to service industries than Councils. Vandalism is also a risk that we have learned from first-hand, when a chargepoint was severely damaged within the Braccan Walk car park within 48 hours of installation.

### Public funds

In order not to risk public funds and maintain value for money in our EV investment the Council must not place itself in competition with chargepoint providers. It is our opinion that the private sector should be leading the way in delivering charging infrastructure and the investment of public funds should focus on providing the authority's contribution to the overall charging network.

Government grant funding, such as the ORCS and LEVI schemes will be used as appropriate to subsidise less commercially attractive sites, whilst complementing and unlocking larger-scale private sector funding as public charging infrastructure is expanded. The Council's role is to coordinate and facilitate this investment by working with partners and stakeholders.

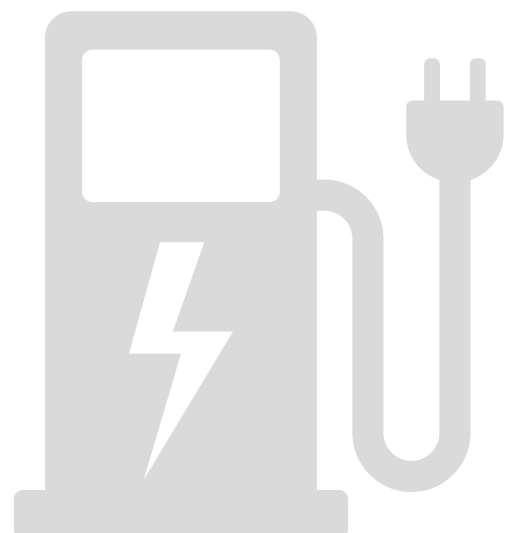
### Accessible Electric Charging (PAS 1899)

The Charity Motability estimates there will be 1.35 million disabled EV drivers by 2035, many of whom may find accessing and using EV chargepoints difficult. As such, the British Standards Institute (BSI) has published PAS 1899<sup>1</sup>.

The new standard will help procurers of public charging points ensure that charging an EV – the physical infrastructure and experience of accessing and using a charge point to charge a vehicle – is accessible for all users, including disabled people. Disabled and older people can face a range of difficulties when attempting to use public EV charging points, which include charging units being of a height unsuitable for wheelchair users, charging cables which are too heavy to lift, connectors that require a high level of force to use, as well as features of the streetscape such as the size of the parking bay or the height of the kerb.

The standard was formally launched in October 2022, and we will ensure that PAS 1899 is considered in all future charging solutions delivered in the Borough.

<sup>1</sup><https://www.bsigroup.com/en-GB/standards/pas-1899/>





# Action Plan

### Actions to date

All of Bracknell's town centre multi-storey car parks have 7kw chargepoints installed for public use. These supplement an increasing number of chargers at shops, supermarkets and workplaces across the Borough.

In a bid to provide more accessible chargepoints for residents, the Council secured funding through the Government's On Street Residential Chargepoint Scheme (ORCS) for 34 chargepoints which were installed in 2022 across 12 Community car park sites in Bracknell. These are all 22kw fast chargers, and are located at:

- Bay Road – 2 chargepoints
- Birch Hill (Leppington car park) – 6 chargepoints
- Crown Wood – 4 chargepoints
- Forest Park – 2 chargepoints
- Great Hollands (Wordsworth car park) – 6 chargepoints
- Hanworth (Bywood car park) – 2 chargepoints
- Harmans Water – 2 chargepoints
- Lily Hill Park – 2 chargepoints
- Priestwood (Community Centre) – 2 chargepoints
- The Broadway – 2 chargepoints
- Wildridings (Crossfell) – 2 chargepoints
- Yeovil Road – 2 chargepoints

**Below: A Government funded chargepoint at Hanworth (Bywood) car park**





### Chargepoint expansion

Initially, over the next 2 – 3 years we are looking to expand on the chargers installed so far using a mix of government funding and direct private sector investment at appropriate sites, and are actively working with residential land owners such as Silva Homes and other local partners to explore options.

As this rapidly evolving Strategy has considered, much of Bracknell Forest's built layout and characteristics pose unique challenges in finding a solution that will be practical, socially equitable, and technically feasible, whilst not exasperating existing problems.

A blanket policy of converting every lamp column in residential areas will not work in Bracknell, as the majority of streets where a lack of off-street parking is an issue are not typical straight terraced rows, and much of the associated electrical network is ageing and does not have the capacity to deliver a reliable, significant quantity of charge.

Nevertheless, there are also opportunities, if carefully planned and considered, for a mix of solutions within existing car parks and petrol stations, complemented by new local charging hubs and rapid hubs within residential areas and at shops and leisure facilities.

### LEVI fund

The Council has been provisionally awarded funding through the Government's Local Electric Vehicle Infrastructure Scheme to deliver more charging infrastructure for local residents.

Our approach will focus on charging hubs, using areas of unused land in residential areas, and adding more charging points within Council and partner owned car parks.

### Local hubs

We see purpose-built mini-hubs of 4 to 8 charging points as being a major part of the charging solution for residents. These will be based in existing car parks or, where feasible, by creating additional parking in neutral areas within estates. The Council would seek funding for necessary groundworks, surfacing and planning applications through LEVI or private sector investment schemes.

The Council will provide a comprehensive list of car park sites and land owned by the Council and its partners, where we are keen to explore these solutions. A mix of fast (minimum 7kw) and rapid chargepoints is desirable, providing residents with options, although we will work with a chargepoint provider to identify where rapids are necessary and feasible, based on network connections, proximity to residents and other rapid chargepoints.

### Rapid hubs

We envisage two types of rapid hub, the smaller scale version (linked to the above) would be located more towards residential areas or within existing car parks with 2 to 8 sockets; while larger scale versions would be located within existing central car parks, with scope for 8 to 20 sockets, potentially alongside slower units. Potential hub locations will be shared within the list referenced above.



### Car parks

We will install more fast and rapid chargepoints in Council owned car parks, and those owned or managed by partners. The size and location of these car parks will determine the scale of chargepoint provision, but we aim to be ambitious in town centre locations where residents are more likely to combine a visit to the shops and facilities, whilst smaller community car parks remain ideal sites for either overnight or rapid charging.

### Timeline for chargepoint expansion 2023 – 2025

- Establish Internal EVCI Group (complete)
- Issue Request For Information (RFI) to chargepoint suppliers (complete)
- Scope sites for residential chargepoints (underway, will be further informed by RFI responses)
- Scope sites for destination charging (complete)
- Prepare procurement documentation (Summer 2023 – Autumn 2024)
- Procure suppliers to deliver EVCI (Winter 2024)
- Roll-out of EVCI (2025 onwards)

Beyond this phase, we anticipate the charging network will continue to naturally grow and evolve as the market and technology develops further, and we will regularly review the EV Strategy and our approach on that basis.

Roll-out will be influenced by levels of available funding, both through government schemes should they be available, and from the private sector. The Council's role will remain as a proactive facilitator, identifying opportunities and working with partners to provide a comprehensive and effective solution.



# ANNEX A

## On-street domestic charging (cables): Guidance for residents

It should be stressed from the outset that much of this guidance relies on common sense and an awareness of personal and public safety, along with an acceptance that liability for the cable lies with the cable owner. **We would strongly advise Electric Vehicle (EV) owners to ensure that they have car or home insurance that provides public liability cover for the cable.**

It should also be noted that domestic cable street charging generally lends itself far better to traditional terraced streets - a housing style which is less common in Bracknell Forest. Given the design and layout of many of Bracknell Forest's residential areas which do not have off-street parking, running a cable from a property is simply not a practical, sensible or realistic solution from the outset.

For these residents, we re-affirm our suggestion and commitment to using chargers in public car parks, rapid units at existing forecourts and other destination charging opportunities.

The Council will not provide personal allocated bays for EV users in residential streets and so the space on the highway outside the property is not for the exclusive use of the EV owner. Therefore, any other residents or visitors could park outside the property meaning charging is not guaranteed and depends largely on the goodwill and understanding of neighbours.

**Refer to your vehicle's handbook and any instructions for the use of cables, including extension cables, and seek advice from a qualified electrician before charging an EV.**

## Parking your vehicle for charging

It is important for residents to be aware that the installation of a charge point which does not serve off-street parking (i.e, you are planning to charge your car on-street via a private charge point) may not be permitted development and a planning application may be needed for the charger.

It is the responsibility of the person charging the vehicle to adhere to any parking restrictions that may be in place and to not obstruct the footway or any accesses. The guidance is intended to help residents make informed decisions about how they can charge a vehicle in these locations. It is the responsibility of the person charging the vehicle to avoid putting themselves and others at risk when trailing a cable across a footway or an area people may cross.

Vehicles should be parked as close to the property as possible. Where a vehicle cannot be parked immediately outside the property, the cable should be run along the carriageway channel against the kerb. The recommended maximum distance from a point outside the property is 10 metres (approximately 2 car lengths).

The cable should not cross the carriageway therefore your vehicle should always be parked on the same side of the road as your property.

## Charging your vehicle

Whenever you are charging your vehicle, you should always follow the guidance and recommendations in your manufacturer's handbook (this may differ depending on the vehicle).

Any extension lead that is required should be suitable for external use. You should read any instructions on the correct use provided with your extension lead.



## Electric Vehicle Charging Facilities

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Cables should be laid flat and never be extended from an upper storey to a vehicle, nor should they be hung from any street furniture including lamp columns or trees.

A cable should only be placed over the footway when the vehicle is charging and should always be removed when not in use.

**It is the resident's responsibility to ensure that the cable does not cause a danger or a nuisance to the public.**



Cable protectors should extend the full width of any footway and verge between the property and vehicle



Always use a cable protector if laying your charging cable across a footway or path.

### Cable licensing

Currently an EV charging cable does not require a licence. However, as policies are reviewed and updated this may change in the future.

**Where a location is not suitable the Council has existing powers under Section 162 of the Highways Act to seek to have the cable removed.**

A license is required for all other temporary placement of cabling on or over the Highway.



# ANNEX B

## Chargepoints and connectors: Technical information

The table below provides a summary of all available charging connector types and their main characteristics:

Connector type	Power Ratings	Features
Type 1	3-7kW AC	<ul style="list-style-type: none"> <li>• 5-pins</li> <li>• Standard US connector</li> <li>• No locking mechanism</li> <li>• Single phase only</li> </ul>
Type 2	3-43kW AC	<ul style="list-style-type: none"> <li>• 7-pins</li> <li>• Is becoming the standard European electric car charging cable connector type</li> <li>• Inbuilt locking mechanism</li> <li>• Compatible with both single and three phase electricity supply</li> <li>• Tesla has a 150kW DC and 250kW DC (Tesla Superchargers) version of type 2</li> </ul>
CHAdEMO	50kW DC	<ul style="list-style-type: none"> <li>• Is compatible with Japanese vehicle manufacturers</li> <li>• Common now in 89 countries in total including Australia, New Zealand, Japan, China, Singapore etc.</li> <li>• Is the most common rapid connector type due to the popularity of the Nissan Leaf</li> <li>• Bi-directional charger allowing Vehicle to Grid (V2G) energy flows</li> </ul>
CCS	50kW - 350kW DC	<ul style="list-style-type: none"> <li>• CCS socket is always combined with either a Type 2 or a Type 1 socket</li> <li>• Common in Europe, SA, USA</li> <li>• Likely to become the most popular DC standard</li> <li>• Enables a higher power rating to support larger ultra-rapid chargers</li> </ul>

### Ultra-rapid chargers

Ultra-Rapid DC chargers provide power at 100kW or more. These are typically either 100kW, 150kW, or 350kW – though other maximum power ratings between these figures are possible. These are the next-generation of rapid chargepoint, able to keep recharging times down despite battery capacities increasing in newer EVs.

For those EVs capable of accepting 100kW or more charging times are kept down to 20-40 minutes for a typical charge, even for models with a large battery capacity. If an EV is only able to accept a maximum of 50kW DC, they can still use ultra-rapid chargepoints, as the power will be restricted to whatever the vehicle can deal with. As with 50kW rapid devices, cables are tethered to the unit, and provide charging via either CCS or CHAdEMO connectors.



### Rapid chargers

Rapid chargers are a fast way to charge an EV, often found at motorway services or locations close to main routes. Rapid devices supply high power DC or AC to recharge a car quickly.

All rapid devices have charging cables tethered to the unit, and rapid charging can only be used on vehicles with rapid-charging capability. These are the most common type of rapid EV chargers currently, having been the standard for the best part of a decade.

Rapid DC chargers provide power at 50kW – 75kW (125A) and use either the CHAdeMO or CCS charging standards. Both connectors typically charge an EV to 80% in 20 minutes to an hour depending on battery capacity and starting state of charge.

Rapid AC chargers provide power at 43kW (three-phase, 63A) and use the Type 2 charging standard. Rapid AC units are typically able to charge an EV to 80% in 20-40 minutes depending on the model's battery capacity and starting state of charge.

### Fast chargers

Fast chargers are typically rated at either 7kW, 11kW or 22kW (single-phase 32A, three-phase 16A and three-phase 32A 22kW). The vast majority of fast chargers provide AC charging.

Charging times vary on unit speed and the vehicle, but a 7kW charger will recharge a compatible EV with a 40kW battery in 4-6 hours, and a 22kW charger in 1-2 hours. Fast chargers tend to be found at destinations such as car parks, supermarkets, or leisure centres, where you are likely to be parked for an hour or more. They are much less costly to install than rapid chargers, and because they work on regular alternating current, they can be installed in most locations with a standard electricity supply.

Most fast chargers are 7kW and untethered, though some home and workplace-based units have cables attached. Charging rates when using a fast charger will depend on the car's on-board charger, with not all models able to accept 7kW or more. These models can still be plugged in to the charger but will only draw the maximum power accepted by the on-board charger. For example, a Nissan Leaf with a 3.3kW on-board charger will only draw a maximum of 3.3kW, even if the fast chargepoint is 7kW or 22kW. Internal AC chargers can be single-phase or three-phase (Zoe Chameleon). The three-phase option provides higher capacity and quicker charge times (close to rapid) when compared to single-phase.





### Slow chargers

Slow charging is carried out between 2.3kW and 6kW, though the most common slow chargers are rated at 3.6kW (16A). Charging on a three-pin plug will typically see the car draw 2.3kW (10A), while the majority of lamp-post chargers are rated at 5.5kW because of existing infrastructure but some can be 3kW.

Charging times vary depending on the charging unit and EV being charged, but a full charge on a 3kW unit will typically take 6-12 hours. Most slow charging units are untethered, meaning that a cable is required to connect the EV with the charger.

Slow charging is a very common method of charging electric vehicles, used by many owners to charge at home overnight. However, slow units are not necessarily restricted to home use, with workplace and public points also able to be found. Because of the longer charging times over fast units, slow public chargers are less common and tend to be older devices.

While slow charging can be carried out via a three-pin socket, because of the higher current demands of EVs and the longer amount of time spent charging, it is strongly recommended that those who need to charge regularly at home, or the workplace get a dedicated EV charging unit installed by an accredited installer.

The most common connector types are Type 1, Type 2, CHAdeMO and Combined Charging System (CCS).





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