



Gibraltar Net Zero Delivery Body

EV CHARGING INFRASTRUCTURE WORKING GROUP

Final Report and Recommendations

Introduction

Availability of and access to charging infrastructure is recognised as a critical barrier to the adoption of EVs. The availability of charging points has been cited as a key barrier for businesses and individuals in switching to an EV. The requirement for appropriate vehicle charging infrastructure is even more critical now that Government has committed to ending the sale of new petrol and diesel vehicles.

The rapid acceleration of the transition to Electric Vehicles (EVs) required will only be achievable if vehicle owners are confident that they will have access to a convenient network of Electric Vehicle Charging Infrastructure (EVCI).

Recommendations:

1. Issue tender for installation and management of charge points at various key locations around Gibraltar (see Appendix 1)
2. Introduce legislation to regulate the installation, use and management of EV charge points including the requirement for smart capability (to be based on similar legislation in the UK)
3. Publish EV charging strategy (see Appendix 2) which includes home charging policy requiring the use of smart energy management systems to allow the GEA to manage power demand.
4. Update the Town Planning Act to increase the required % of charge points to 50% with immediate effect, rising to 75% and then 100% over the next 7 years.
5. Consider requiring large developments to also install at least one fast or ultra fast charger within their development.
6. GEA to be consulted on all new developments to ensure that developers are adhering to the town planning act requirements for numbers of active and passive EV charging.
7. Government to consider introducing a commuted payment for new developments that do not provide parking spaces. This money could be paid into the Climate Action Fund and be used to provide on-street charging hubs.
8. Introduce two new targets to the Climate Change Strategy : -
2030 – introduce Vehicle to Grid technology
- introduce incentives for the adoption of next generation batteries.
9. Government has also been approached by commercial entities seeking to install ultra-fast chargers at their own cost, but at locations where the electricity supply is currently insufficient. The Group recommends that Government engage with these

entities to discuss potential private/public partnerships that would enable these projects to proceed with the attending benefits to both sides.

10. Charge points must also include full CPO and eMSP provision with flexibility to support a multitude of user groups. Chargers must be compatible with OCPP, OCPI and ISO 15118. Chargers should ideally allow for contactless card payments.

Budget implications

The EV charge points can be obtained under different financial models – direct purchase and installation with revenue generated going directly to Government or a fully funded model in which the relevant company purchases, installs and manages the points with a percentage of any profits returning to Government. A rental model has also been offered in the past. Actual budget implications depend upon the chosen route but for reference an individual rapid charge point could cost in the region of £ 4-5,000 depending on the amount of supporting infrastructure required. The sites in question have been selected by the GEA with a view to keeping these costs as low as possible. The ultrafast chargers can cost from £150,000 upwards.

Appendix 1

List of proposed EV charge point locations to go out to tender (not exclusive)

- Harbour Views Road (x2)
- Westview Park Road.
- Alameda & Red Sands Road (x2)
- Alameda
- North Mole
- Portland House
- Cumberland Road
- Sandpits
- Rosia Battery
- Ragged Staff Car Park
- Landport Tunnel
- Mid-Town
- Europort Road (outside Atlantic Suites)

Appendix 2

EV Charging Infrastructure Strategy



ELECTRIC VEHICLE INFRASTRUCTURE STRATEGY

2024

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Preface

A significant amount of work has been undertaken in recent years to tackle the concurrent climate change and air quality crises, including the declaration of a Climate Emergency in 2019 and the enacting of the Climate Change Act in the same year.

The publication of the Climate Change Strategy in 2021 made clear that the decarbonisation of the vehicle fleet was one of the key elements of the plan to reach net zero and that this, in large part, would need to be delivered via electrification.

Availability of and access to charging infrastructure is recognised as a critical barrier to the adoption of EVs. The availability of charging points has been cited as a key barrier for businesses and individuals in switching to an EV. The requirement for appropriate vehicle charging infrastructure is even more critical now that Government has committed to ending the sale of new petrol and diesel vehicles.

It is recognised that there is a need for an overarching strategy to allow for an accelerated roll out of infrastructure to keep pace with growing demand.

Introduction

The Government's commitment to end the sale of new petrol and diesel cars and vans is one of the key drivers of the decarbonisation of the transport sector. Transport accounts for approximately 30% of our total manageable GHG emissions, with the road transport sector accounting for over half of that.

The rapid acceleration of the transition to Electric Vehicles (EVs) required will only be achievable if vehicle owners are confident that they will have access to a convenient network of Electric Vehicle Charging Infrastructure (EVCI).

The overall transport vision is based on a decarbonisation of transport within a framework of reducing the overall need to travel by private vehicle, shifting journeys to active travel and sustainable modes and then for those necessary journeys that cannot be undertaken differently, to switch to low and ultra-low emission vehicles and cleaner fuels.

This will act as a catalyst for reduced car dependency and will help to create healthier, safer and more equitable communities.

It is acknowledged that EVs will not deliver all the solutions in respect of emissions reductions and that they are not without their own environmental and societal costs, in terms of the embodied carbon and precious metals in the vehicles and batteries themselves as well as in terms of the road congestion that they will continue to contribute to. Moreover, until Gibraltar is powered by 100% renewable energy, the emissions from the tailpipe are simply being displaced. For this reason, this strategy is complemented by other strategies such as the Sustainable Traffic, Transport and Parking Plan and the soon to be published Active Travel Strategy.

However, for certain activities and businesses, cars and vans will remain a necessary mode of transport and transitioning these to EVs is a critical part of the overall climate change strategy. In order to support this transition, we must ensure that people have access to the right type of EVCI in the right locations.

Background

Climate Change & Air Quality

The Gibraltar Climate Change Strategy sets out certain key objectives within the transport sector that are directly relevant to this strategy.

Transport emissions also have an impact on air quality. Although this has been improving over time, Gibraltar still does not comply with the most stringent World Health Organisation standards for certain pollutants like oxides of nitrogen (NOx) and particulate matter (PM).

Long term exposure to these pollutants may contribute to the development of cardiovascular or respiratory disease and may reduce life expectancy. The very young, the elderly and those with existing respiratory or cardiovascular disease are most likely to develop symptoms as a result of exposure.

Fully electric vehicles offer part of the solution to this problem as they operate with no tail pipe emissions (although they do still emit pollutants due to tyre and break wear).

Electric vehicle types

EVs can generally be divided into two types:

- Battery electric vehicles (BEVs) or fully electric EVs (which are always powered by the battery); and
- Plug-in Hybrid Electric Vehicles (PHEVs) which combine a small plug-in battery with an internal combustion engine. This category includes both parallel and series plug-in hybrids (also known as range extenders).

In Gibraltar, most new EV registration are PHEVs, however, this is likely to change in the future as the cost and range difference between hybrid and fully electric vehicles is reducing. The number of EV models available has expanded significantly in recent years. For passenger vehicles, most mainstream car manufacturers now offer an EV model, including small and medium-sized vans, city cars, small and large family cars.

The notable trends among new models coming to market and upcoming launches are the increasing battery capacities and capabilities to provide greater mileage from a single charge and support faster charging rates.

Alongside the carbon and air quality emissions benefits of EVs they also have operational cost advantages over traditional Internal Combustion Engine (ICE) vehicles, due to greater energy

efficiency and lower energy costs and therefore running costs. Upfront costs remain high and this remains a barrier to adoption, however, these are likely to continue to decline.

EV users

In order better understand the EV market and determine where the focus of public and private investment should lie we have identified a number of potential users who would each have their own charging needs.

Vehicle type	User profile
Private cars	Private off-street parking space Shared on-street parking Visitors
Taxis	Private Hire Vehicle Drivers
Light Goods Vehicles (LGVs)	Company fleets SMEs Privately owned/leased LGVs
Public sector fleets	Public sector employees across Government departments, agencies and authorities.
E-scooters, e-bikes, e-bicycles	Privately owned, often cross-frontier workers, likely to be charged within private homes.

Types of EV charging

There are three main types of EV charging – slow, fast and rapid. These represent the power output, and therefore charging speeds, available to charge an EV.

Wall box AC<22kW (likely to be 7kW or less): 8-10 hours – common for charging EV's at home overnight.

Public fast AC/DC < 22-50 kW: 2-3 hours

Public rapid and ultra-rapid 50-350kW: < 1 hour

EV Charging Infrastructure Options

Where users have access to a private off-street parking space it is likely that they will seek to install individual EV chargers for personal use. The section on home charging sets out how this scenario will be managed and what the process for this should be.

Many private cars in Gibraltar, however, rely on shared on-street parking and these users will not have access to home charging options. It is not physically possible nor financially viable to install on-street, publically accessible charge points in every space in residential areas to meet the likely future demand from private car ownership. As such, this strategy will focus on providing alternatives that support residents and small businesses that do not have access to private off-street parking for their charging needs.

Home charging (often overnight)

Available to EV users with access to off-street parking which takes advantage of the long parking times of vehicles and is best suited to slow or fast chargers.

On-street charging

At on-street parking bays which could include a broad range of parking times and could accommodate fast or rapid chargers.

Residential community charging

For car parks in residential areas – also able to take advantage of the long parking times of vehicles and is suited for slow or fast charging.

Destination charging

Defined as locations other than where the EV user resides – workplace charging, multi-storey car parks, shopping centres, park and ride sites. Could accommodate fast, rapid and ultra-rapid chargers.

Electric vehicle charging and the electricity system

How and when people charge is critical to developing an EVCI strategy that works for both users and the management of the wider electricity system. This will become increasingly important as the number of EVs goes up, increasing total charging demand.

The Gibraltar electricity network experiences daily peaks and if a significant proportion of the increased EV charging were to coincide with those peaks this would have knock-on impacts

on the electricity network. The costs of upgrading the system to allow it to cope with these peaks would be considerable.

Smart charging will allow more efficient use of our existing network as well as allowing better use of our increasing amount of flexible, renewable generation. It will allow people to charge their vehicles when it is most efficient for the electricity system. Smart charging will also allow the Government and GEA to consider the introduction of time of use tariffs to encourage EV users to charge at times of low demand.

Allowing demand side response will also mean that the GEA is able to optimise EV car charging across different sites in order to provide greatest stability to the electricity network.

Vehicle to grid (V2G) technology (where electricity is exported from the vehicle battery to the grid) can also help smooth electricity demand and reduce the associated impacts on electricity system costs. These technologies are already in use at many charging locations in other parts of the world. Government will continue to work with the GEA to maximise the opportunity for flexibility from EVs, while protecting the electricity grid and consumers.

Government will therefore shortly introduce legislation requiring all new charge points to have smart capability.

Objectives and Strategic Principles

The Climate Change Committee has recommended that at least 10 publicly available charge points be in place by 2025.

At present there are a number of slow and fast chargers available in various locations around Gibraltar – principally Mid-Town Carpark, the World Trade Centre and Devil's Tower Road Car park.

To date, these have been installed as part of a private-public partnership with Plug-n-Go and the tariffs paid by users are dependent on the location and subject to a management fee. There are a number of other private charge points that have been installed by hotels or other private entities.

There are currently no rapid or ultra-rapid chargers available in Gibraltar.

Increasing numbers of individuals are also seeking to install chargers in their own private parking spaces and this demand needs to be managed by the Gibraltar Electricity Authority (GEA) to ensure security and equitability of supply.

Home charging policy

Gibraltar's electricity network operates in an island mode and therefore balancing the demands on the network is a key requirement for the GEA. The North Mole Power Station has sufficient capacity to be able to ramp up to deliver on anticipated demand, however, certain areas face constraints in terms of grid capacity and this will need to be managed in a way that balances the needs of EV users with those of other critical services and which minimises costly infrastructure investments.

The GEA will therefore assist in the development of charging strategies for different estates/car parks by assessing what the existing capacity is, determining what the maximum demand could be and advising accordingly.

The charging strategy for each estate will likely entail the installation of smart energy management systems that will control how much power a charging vehicle is drawing at any given time, depending on how many users are connected.

Residential estates may then choose to allocate certain days to certain users in order to optimise charging times for residents but in all cases, the demands on the network will not exceed the capacity at the location in question.

Government will be contacting all estate management companies directly to advise them of this policy and to this end, anyone wishing to install a home charging system in their private, off-street parking space should:

1. When the space is located in a garage which forms part of an estate for which there is a management company, channel all requests through the management company to the GEA.
2. When the space is located in a privately owned garage and subject to a rental agreement with Gibraltar CarParks, channel all requests via Gibraltar Car Parks, to the GEA (admin@gibcarparks.com).
3. In any other case, contact the GEA directly on: Customer Services Engineer, Rosia Road Electricity Centre, Rosia Road, Gibraltar / consumer@gibelec.gi

Public chargers

Integration

Interoperability between charge points is an issue that directly impacts the appeal of EV ownership and will be key to ensuring an integrated EVCI network. Given Gibraltar's geographical location, it is imperative that our systems are able to integrate with those in Europe, particularly throughout Spain and Portugal.

Government will encourage providers to ensure that rapid and higher powered charge points offer contactless card payments.

Charge points must also include full CPO and eMSP provision with flexibility to support a multitude of user groups. Chargers must be compatible with OCPP, OCPI and ISO 15118.

Accessible and inclusive

Gibraltar has a wide variety of housing stock and availability of parking is a perennial problem for many who do not have a private garage nor a dedicated parking space. A socially equitable network is needed to provide affordable alternatives to those who do not have access to home charging options.

A number of possibilities will be explored in this respect:

On-street parking

The possibility of installing charge points at key pay and display areas will be explored (for example, Ragged Staff car park, Landport Ditch etc).

The Mid-town multi-storey carpark already has a number of slow chargers available with one fast charger. The expansion of fast charging facilities at this location will be explored further and other multi-storey carparks such as Devil's Tower Road carpark and Eastern Beach carpark will also be explored.

Retail/leisure destination car parks

One of the most convenient options for people who do not have home charging options will be destination charging – for example while doing supermarket shopping or attending sports training and events. Government will engage with private entities to discuss the possibility of providing public access charging at key locations as well as explore the options available at locations such as Europa Point and Lathbury Barracks sports grounds.

Rapid charging hubs

As EV numbers rise and ICE vehicle numbers fall, the need for traditional petrol stations will diminish and be replaced with the need for charging hubs.

A hub site would be based off-street and able to host rapid or ultra-rapid chargers (>60kW, with a preference for high-powered (~350kW) equipment).

The Government will look to partner with a supplier/operator to deliver these rapid charging facilities on public or private land, with several user groups in mind ranging from public authority and services fleets, future e-bus and e-truck operators, taxis, light commercial vehicle fleets and private passenger vehicles.

Specific locations may present an opportunity for different configurations of chargers and facilities; however, the minimum expectation is that charging bays with a capability of up to 350kW speeds will be provided to support the anticipated growth in the numbers of EVs.

It is likely that current petrol filling stations will start to look to offer EV charging as vehicle fleets increasingly transition to electric.

EV Tariff

The GEA will also introduce a specific tariff for EV charging – Tariff 10. To begin with Tariff 10 will align with the current domestic or commercial tariff but it will allow for the potential introduction of time based tariffs in the future as well as allowing the GEA to monitor the demand on the network from EV charging specifically.

EV Charging Requirements for new and refurbished buildings

The Town Planning Act 2018 requires that all new developments provide a minimum of 20% of all parking spaces with active EV charging (i.e. with an actual charge point) and the remaining 80% with passive EV charging (i.e. with the cabling route necessary to allow for future EV charge point introduction). Given the trajectory of EV vehicle growth, this figure needs to increase on a sliding scale to reach 100% active charging points by 2030.

In addition, new developments will be required to provide a minimum of 1 ultra fast charger within the footprint of their development to future proof EV charging needs.

The GEA will work with developers to ensure that new developments account for this future increased power demand.