



CABINET – 11TH NOVEMBER 2020

SUBJECT: ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

REPORT BY: CORPORATE DIRECTOR – EDUCATION & CORPORATE SERVICES

1. PURPOSE OF REPORT

- 1.1 To seek Cabinet approval for funding to install electric vehicle charging infrastructure as part of the first phase of actions to introduce electric vehicles into the Authority's fleet.

2. SUMMARY

- 2.1 At its meeting of 19th September 2018, Cabinet approved the Electric Vehicle Strategy and Action Plan. Good progress has been made, and this report sets out the next steps, including requesting capital funding to deliver the proposed actions.

- 2.2 The initial actions identified in the report focus on providing the electric vehicle charging infrastructure at the three main council sites. This will allow the Council to be able to charge in excess of 100 electric vehicles, depending on service area demand. The initial costings based on Western Power Distribution (WPD) quotations and Building Consultancy estimates amount to just under £300,000.

- 2.3 Office for Low Emission Vehicles (OLEV) Workplace Charging Scheme funding is potentially available up to £10,000 which will be applied for. A balance of £49,500 for capital funding is available from previously approved Carbon Reduction Initiatives. A figure of £240,500 is requested from Capital Earmarked Reserves.

3. RECOMMENDATIONS

- 3.1 That Cabinet approve the following financial support to install electric vehicle charge units at the CCBC owned sites listed in this report and as set out in Appendix 1:

- Capital funding allocation of £240,500 from Capital Earmarked Reserves.
- The allocation of the remaining balance £49,500 in the previously approved Carbon Reduction Initiative budget.
- The submission of a grant application to the Office of Low Emissions Vehicles (OLEV) for £10,000

- 3.2 That Cabinet approve the installation of electric vehicle charge units directly from existing buildings where there is sufficient capacity, to minimise grid connection costs.

4. REASONS FOR THE RECOMMENDATIONS

- 4.1 To contribute to the Council's commitment to renewable energy and sustainable transport and to implement the actions set out in the approved Electric Vehicle Strategy and Action Plan.
- 4.2 To contribute to the work being proposed as a result of the council's declaration of a climate change emergency and to support the authority's Decarbonisation Plan.
- 4.3 To ensure we achieve best value when installing the electric vehicle charging infrastructure on council sites.

5. THE REPORT

- 5.1 At its meeting of the 19th September 2018 Cabinet approved the Electric Vehicle Strategy and Action Plan. The strategy recommended switching traditional internal combustion engine diesel fleet vehicles to electric vehicles to support the Council's carbon reduction work. Electric vehicle charging infrastructure is required to support the switch to electric vehicles.
- 5.2 Electric vehicle charging units are mainly defined by the power they can produce and how quickly they can charge an electric vehicle. The following table represents the various charging options available.

Table 1. Charge Point Options

Charge Point Type	Power Transfer kW	Power Transfer phases	Typical Charging time	Recommended locations
Slow	3kW	Single phase	8-12 hours	Public locations, workplace charging, leisure facilities
Fast	7kW	Single phase	3-4 hours	Public locations, workplace charging, leisure facilities
Fast	22kW	Three phase	1-2 hours	Public locations, workplace charging, leisure facilities
Rapid	43kW	Three Phase	80% in 20 to 30 mins	Public parking, taxi ranks, bus depots, motorway service stations
Rapid	50kW	DC	80% in 20 to 30 mins	Public parking, taxi ranks, bus depots, motorway service stations
Super rapid	>43kW	Three phase	<20 to 30 mins	Public parking,

Charge Point Type	Power Transfer kW	Power Transfer phases	Typical Charging time	Recommended locations
				taxi ranks, bus depots, motorway service stations
Super rapid	>50kW	DC	<20 to 30 mins	Public parking, taxi ranks, bus depots, motorway service stations

- 5.3 It is proposed to install fast charge units that can provide from 7kW to up to 22kW at the main council sites initially and in the future, where possible, install rapid charge units as we roll out the switch to electric vehicles for fleet vehicles and to enable employees to switch their own personal vehicles over time.
- 5.4 It should be noted, that at present some electric vehicles, especially older models can only charge at 3kW or 7kW due to the battery size and capacity. The maximum domestic charging rate is 7kW and overnight (10 hours) this allows the equivalent of 240-280 miles range to be transferred to a car or small van if the vehicle's battery is large enough to accept it. Our car and small van fleet average less than 40 miles per day – at most a three hour recharge.
- 5.5 It is also true that the current trend is towards electric vehicles that can be charged more rapidly and this trend is likely to continue; rapid chargers are of value for overnight charging of large commercial vehicles with big batteries like refuse trucks. Rapid chargers also have a role providing top ups during the working day or between shifts.
- 5.6 Seventeen specific vehicles have been identified to be switched to electric as part of the first phase of works. Electric vehicle charging infrastructure will be required at three main council sites (Penallta house, Tredomen House and Tir Y Berth Depot) to accommodate this.
- 5.7 The proposed infrastructure at the 3 sites would involve installing 20 double charge points across the 3 sites. This could provide the capacity to charge up to 100 vehicles, depending on usage patterns. This figure could be increased significantly if smart charging technology is included. This option is currently being investigated and evaluated in partnership with the Welsh Government Energy Service (WGES).
- 5.8 The current budget estimate for this work is £297,371.25, including a contingency figure and Building Consultancy fees. Appendix 1 provides the breakdown of costs for the infrastructure at each site.
- 5.9 There is potential to apply for match funding from the Office for Low Emission Vehicles (OLEV) Workplace Charging Scheme. This is a voucher based scheme to support the installation of electric vehicle charge points for the work place. The contribution is limited to 75% of the purchase and installation costs, up to a maximum of £500 for each socket, up to a maximum of 20 sockets across a variety of sites. As this report recommends the installation of 20 charge points, we will submit an application for funding for £10,000, the maximum amount that can be applied for. The vouchers are valid for four months (120 days) from the date of issue and

applicants must use an OLEV approved installer to redeem the voucher.

- 5.10 A balance of £49,500 for capital funding is available from previously approved Carbon Reduction Initiatives.
- 5.11 One of the main costs when installing the charge points is providing the electrical supply to the area, and the excavation and groundworks to link the area to the internal supply or to the external grid connection.

All the costs provided are for external grid connection. Linking the charge points directly to the buildings could potentially reduce the installation costs at some sites for workplace charging. Current evaluation of existing half hour data suggests that at the Tredomen Campus most of the buildings had significant capacity. Only Tredomen House was exceeding its site capacity, but that exceedance was still very small when compared to the excess capacity at the other buildings on site.

- 5.11 There is significantly less capacity at the Tir y Berth depot, and whilst there is sufficient capacity for the initial phase of work, this will need to be addressed in the medium term, particularly if this is to become a central charging hub or if electric refuse collection vehicle were to be trialled or used.
- 5.12 Property Services will project manage the installation of the charge points at the council sites. Back office support can be provided for the charge points by the charge point provider, and this cost can be factored into the energy price per unit, but there still needs to be overall internal management of the infrastructure. Property Services will manage the charge points, working with the back office support provider.

Service areas using the electric vehicle charge points will pay the cost of the electricity used. App based technology facilitates this.

- 5.13 The charge points will include the functionality to allow staff or residents to use the charge points for their own vehicles, but the details of the implementation of this element will be subject to a further report.
- 5.14 Guidance will be provided to Services outlining the expectation that when procuring a new vehicle, that advice will be sought from Fleet Management, and that low carbon options will be prioritised.

6. ASSUMPTIONS

- 6.1 Although the costs highlighted in Appendix 1 have been provided by WPD, the Distribution Network Operators (DNO) via Building Consultancy, the groundworks costs could vary at each site, depending on the contractor undertaking the work and also due to any contingencies that may arise once the work has commenced
- 6.2 The costings assume that every site will have an external grid connection. Linking directly to the buildings where possible could reduce the installation costs. The cost to install the single charge point at Penallta House, which is linked directly to the building, was £4,470 excluding bay line marking costs. At present the estimated costs to install the charge points at the three main council sites using external WPD connections is £12,150 per double charge point.

7. LINKS TO RELEVANT COUNCIL POLICIES

7.1 The following council's policies are relevant to the Electric Vehicles and Charging Facilities report.

- CCBC Corporate Plan 2018-2023
- CCBC Carbon Reduction Strategy
- CCBC Sustainable Development Strategy
- CCBC Regeneration Strategy
- CCBC Local Development Plan
- CCBC Electric Vehicle Strategy & Action Plan 2019

7.2 Corporate Plan 2018-2023.

Electric vehicles and electric vehicle infrastructure also support the following Corporate Well-being Objectives, identified within the CCBC Corporate Plan 2018-2023:

Objective 4 - Promote a modern, integrated and sustainable transport system that increases opportunity, promotes prosperity and minimises the adverse impacts on the environment

- Improving the energy efficiency of our vehicles to help promote an innovative, low carbon society that uses resources efficiently and proportionately and saves money. Reducing our greenhouse gas emissions locally (associated with transport) will help to mitigate the global impacts of climate change.

Objective 5 - Creating a county borough that supports a healthy lifestyle in accordance with the Sustainable Development Principle within the Wellbeing of Future Generations (Wales) Act 2015

- Electric vehicles produce zero direct emissions, which specifically helps improve air quality in urban areas by reducing and removing air pollution from exhaust emissions from petrol and diesel vehicles.

8. WELL-BEING OF FUTURE GENERATIONS

8.1 Electric vehicles contribute to several of the Well-being goals within the Well-being of Future Generations Act (Wales) 2015, including:

- A prosperous Wales
- A resilient Wales
- A healthier Wales
- A more equal Wales
- A Wales of cohesive communities
- A globally responsible Wales

Electric Vehicles also supports the "Protect and enhance the local natural environment" action area and the "Asset management" enabler identified within the Caerphilly Public Services Board Well-being Plan 2018-2023, supporting the Positive Change, Positive People and Positive Places objectives.

8.2 Electric vehicles produce zero direct emissions, which specifically helps improve air quality in urban areas by reducing and removing air pollution from exhaust emissions of petrol and diesel vehicles.

- 8.3 Electric vehicles and their infrastructure are also consistent with the five ways of working as defined within the sustainable development principle in the Act.

The five ways of working of the sustainable development principle, listed in the Act are:

- Long Term – taking action to improve the energy efficiency of our vehicles to help promote an innovative, low carbon society that uses resources efficiently while delivering our service to the highest standard.
- Prevention – Providing opportunities for the use of ultra low emission vehicles to help mitigate climate change and reduce air pollution and the resulting health issues.
- Integration – Supporting the Corporate Well-being Objectives identified within the CCBC Corporate Plan 2018-2023
 - Promote a modern, integrated and sustainable transport system that increases opportunity, promotes prosperity and minimises the adverse impacts on the environment.
 - Creating a county borough that supports a healthy lifestyle in accordance with the Sustainable Development Principle within the Well-being of Future Generations (Wales) Act 2015.
- Collaboration – The electric vehicle work involves a collaborative project including 5 local authorities and PSB Partners, all working together and sharing expertise to develop effective approaches to improve well-being.
- Involvement – Supporting internal services, staff, local residents and visitors who are keen to invest in electric vehicles and their infrastructure.

9. EQUALITIES IMPLICATIONS

- 9.1 An Equalities Screening has indicated a low potential impact. Creating sustainable communities, employment and transport for example, is of benefit to all the residents of Caerphilly county borough, regardless of their individual circumstances or backgrounds.

10. FINANCIAL IMPLICATIONS

- 10.1 The estimated cost of the works to install charging infrastructure at the 3 main Council sites, as set out in the report amounts to approximately £300,000.
- 10.2 The authority will apply for £10,000 funding from the OLEV Workplace Charging Scheme.
- 10.3 A balance of £49,500 for capital funding is available from previously approved Carbon Reduction Initiatives.
- 10.4 The remaining shortfall of £240,500 is requested from Capital Earmarked Reserves.

11. PERSONNEL IMPLICATIONS

- 11.1 Property Services will manage the installation of the charge points.
- 11.2 Property Services will need to manage the charge points, working with the back office support provider.

12. CONSULTATIONS

- 12.1 This report was originally drafted in February 2020 and has since been significantly amended, however some comments from the initial consultations remain valid and these, along with the author response are included below:
- 12.2 One consultee felt the industry categorisation of charge type (section 5.4.1) is potentially misleading as their perception is that developments in charge speed mean it is now out of date. They felt whilst the 22kW chargers proposed are classed as fast they are actually very slow compared to some chargers. They felt the report should note that fast isn't really fast. They did comment they fear that the 22kW charges will soon be considered outdated.

Response:

We have taken advice from the Energy Saving Trust on the types of charge points suitable for electric fleet vehicles. The majority of the fleet electric vehicles will be charged overnight or during a specific time of day. It is more appropriate and cost effective to install 7kW to 22kW charge points that the vehicles can utilise. The charge points can be upgraded in the future as vehicle technology improves. Fast charge points cost about £3k plus installation costs while rapid charge points cost about £35k plus installation costs.

- 12.3 The Head of Property suggested that it wasn't appropriate for Property Services to manage the charge points once installed. The respondent felt this would be better done by Fleet Management.

Response:

The charge points will be located at the main council sites. Property Services currently manage these sites and liaise with contractors as and when required. It was felt that Property Services would be better suited to manage the charge points based on their current role.

- 12.6 One consultee suggested that we need to make the charge points available to employees and visitors if we are serious about promoting and encouraging electric vehicle uptake and asked why can't they be made available straight away?

Response:

Initially we need to prioritise to ensure we have EV charging in place to support our fleet electric vehicles. Once services are using the electric vehicles and develop a routine for charging, if there is spare capacity, we could allow the charge points to be used by staff and visitors. There is an opportunity to generate a very small income by providing EV charging to staff and visitors.

13. STATUTORY POWER

- 13.1 Electric vehicles contribute to several of the Well-being goals within the Well-being of Future Generations Act (Wales) 2015.

Author: Paul Cooke, Senior Policy Officer, Service Improvement and Partnerships

Consultees:

Cllr P Marsden, Leader of the Council
Cllr N. George, Cabinet Member for Environment and Neighbourhood Services
Cllr S. Morgan, Cabinet Member for Economy, Infrastructure, Sustainability & Wellbeing of Future Generations Champion
Cllr D.T Davies, Chair of Environment & Sustainability Scrutiny Committee
Cllr A. Hussey, Vice Chair of Environment & Sustainability Scrutiny
Richard Edmunds, Corporate Director, Education & Corporate Services
Mark S Williams, Interim Corporate Director Communities
Rob Tranter, Head of Legal Services/ Monitoring Officer
Stephen Harris, Interim Head of Business Improvement Services & S.151 Officer
Sue Richards, Head of Education Planning & Strategy
Lynne Donovan, Head of People Services
Marcus Lloyd, Head of Infrastructure
Rhian Kyte, Head of Regeneration and Planning
Rob Hartshorn, Head of Public Protection, Community and Leisure Services
Mark Williams, Interim Head of Property
Kathryn Peters, Corporate Policy Manager
Paul Rossiter, Energy & Water Officer
Clive Campbell, Transportation Engineering Manager
Mike Headington, Green Spaces and Transport Services Manager
Phill Evans, Fleet Review Officer
Anwen Cullinane, Senior Policy Officer (Equalities and Welsh Language)

Appendices:

Appendix 1 - Electric vehicle charging infrastructure and costs

Appendix 1:

Table 2. Electric vehicle charging infrastructure and costs

Site	Cost	Number of charging units	Comments	Charging Capacity
Tir Y Berth	£51,500.00	7 double		7kW to 22kW
Tredomen	£93,500.00	7 double	Hub at top end of car park	7kW to 22kW
Penallta	£98,000.00	6 double	EV charging could also be installed as part of the Tredomen Campus Energy proposal (PV canopy)	7kW to 22kW
Contingency costs @ 10%	£24,300.00			
Building Consultancy costs @ 11.25%	£30,071.25			
OLEV Workplace scheme Grant application	-£10,000.00		Funding dependent on successful application and work being undertaken by the grant deadline	
Total	£287,371.25	20 double charging units		7 to 22kW per charging unit