



Fully Charged

Feedback Results Report

Executive summary

Fully Charged was conceived as a research project to find answers to two main questions.

- 1) Where car chargers could be positioned to encourage more tourists to stay longer
- 2) What size charge points and where they should be positioned to encourage EV (Electric Vehicle) use.

Twenty businesses were asked to host and power the 3kW charger and allow free use to their customers. They could charge non-customers a nominal fee to recover the cost of electricity. They were also asked to mention the charge point on their website and advertising. Upon completion of the project, participating venues filled in a questionnaire providing feedback on the use of the charge points.

Detailed results are mentioned later but three main points were clear:

- 1) Hotels and accommodation venues benefitted from offering the service particularly if they are near to trunk roads or large towns (E.g Newport).
- 2) Venues that advertised the service received more business.
- 3) Location of the EVCP (Electric Vehicle Charge Point) with good access to the charge point and near to main roads were used the most.

Users were more diverse than expected and this meant there were several different markets for car charging.

- a) Rapid charging (50kW and above) for people passing through the area - **We did not cater for this group.**
- b) Fast charging (7kW) for tourists visiting castles and other similar tourist venues - **These sites had access issues e.g sites were locked after certain times.**
- c) Slow charging (3kW) for hotels, bed and breakfasts and holiday homes where overnight charging is standard.
- d) Fast charging (7kW) for town car parks where users “topped up” whilst shopping in town.
- e) Slow (3kW) and Fast charging (7kW) for hybrid vehicle users without charging facilities at home.

- f) Slow charging (3kW) for people without charging facilities at home and need nearby charging overnight.
- g) Slow charging (3kW) for workplaces where people spend most of their day e.g *workplace charging*.

Future EVCP hubs will need to cater for all of these groups.

Achievements of the project outputs

- 1) Raise awareness of electric vehicles and charge points.
- 2) Raise awareness among venues of providing this service to existing customers.
- 3) Raise awareness of the possibility of attracting new customers.
- 4) Demonstrate the costs and benefits from an EVCP to the venues.
- 5) The provision of destination chargers will increase the view that Monmouthshire is a destination - not a pass-through.
- 6) Provide twenty venues and businesses the opportunity to join the EVCP market at low cost with little risk.
- 7) To break the reluctance in EV up-take due to too few charging points.
- 8) To prepare Monmouthshire for the conversion to low-cost, pollution-free transport.
- 9) To encourage more people to use EVs and improve our air quality.

The original belief that only Rapid charging (50kW and above) were enough for all EVs has been disproven by the findings of this project. There is an unmet need for slower charging for a range of other EV users.

In conclusion, the project's aims were achieved and within budget. This project is a useful reference for the Vale of Usk and other Welsh counties to understand the needs of EVs.

Introduction

This report details the results of the feedback received from participants in the Fully Charged Project 2018 (December 2017 - March 2019). This project was created after the Government announcement to ban the sale of all petrol and diesel cars from 2040.

The project had three main benefits to encourage interest in participation;

- 1) The EVCP, installation and maintenance would be free to the participant during the trial
- 2) To offer the EVCP at a large discount for purchase at the end of the trial*
- 3) To offer all businesses the chance to upgrade the EVCP to a higher rated unit or for multiple installations, but as an extra cost minus the original price of the free EVCP unit.

16 Larkfield Park, Chepstow, Gwent, NP16 5QY

t: 01291 629936 e: hello@gwentenergycic.org www.gwentenergycic.org

Company no. 7094143

VAT no. GB 127957674

Registered office: 16 Larkfield Park Chepstow Gwent NP16 5QY

*This was later offered for free to all participants, but it must be noted that all participants entered the research project with the assumption of paying a discounted fee at the end to keep the EVCP or to return it with no added fees.

All participants were offered the same standard 3.6kWh EVCP for their business, and were asked to offer this charging for free to all customers. It was not expected that businesses would run a side venture and make a profit on the EVCP. The installation of an EVCP was intended as an extra service for the business to offer their customers.

However, some businesses felt it appropriate to charge customers in order to cover the costs of electricity and prevent over-staying in car parks (particularly in some tourist destinations that were popular with walkers).

Some businesses already had previous requests from customers to install an EVCP and were confident the standard 3.6kWh would not be sufficient. These participants paid the difference in cost between the units, and some had a 7.2kWh and/or a 22kWh charger.

The standard 3.6kWh charger was offered for three important reasons;

- 1) The slow charging would encourage the EV driver to visit and trade with the business offering the EVCP
- 2) The majority of EVs can use 3.6kWh
Important note: During the early stages of the project, there were a limited number of EVs and EVCPs, and only half of EVs at the time could use an EVCP faster than 7.2kWh
- 3) All buildings with electricity have the capacity to handle a 3.6kWh EVCP

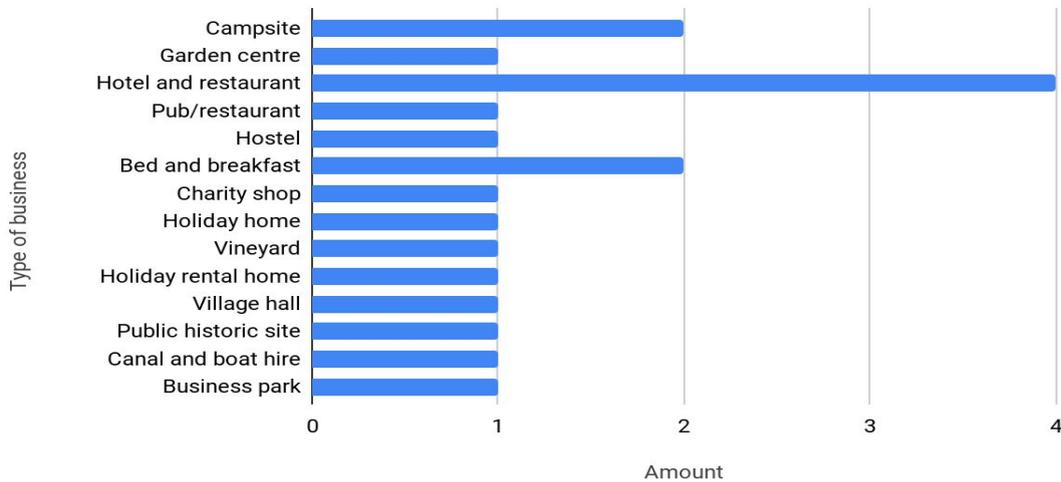
The third point being one of the most important reasons for the offering of a 3.6kWh EVCP, especially in some of the most rural areas of Wales. **Not all buildings can handle an EVCP more than 3.6kWh** and would require extensive costs into upgrading the electricity supply (to a 3 phase system). This balance of cost and usage should be weighed against each other when a business decides to install an EVCP.

Many of the business owners that took part in the project were sympathetic and understanding to the limitations of the current EVCP market and, despite having little to no usage during the trial, remained optimistic of increased usage over the years ahead.

Finally, this project was offered to a wide range of small and medium local businesses within the Vale of Usk, as a way of testing the EVCP market at no extra cost. It is clear that this project benefited some types of businesses more than others, though extra research may be needed to determine why this was. All EVCPs were advertised for free using Zap-Map, a well known and popular app amongst the EV community.

The participants

(Graph 1) Types of business that joined Fully Charged



The table below shows what size EVCP each applicant had and where they were located.

	Type of business	EVCP	Town
1	Campsite	3.6kWh	Caerleon
2	Garden centre	3.6kWh	Goytre
3	Hotel and restaurant	3.6kWh	Caerleon
4	Campsite	3.6kWh	Abergavenny
5	Hotel and restaurant	3.6kWh	Raglan
6	Hotel and restaurant	22kWh	Chepstow
7	Hotel and restaurant	22kWh	Monmouth
8	Pub/restaurant	3.6kWh	Clytha
9	Hostel	3.6kWh	Chepstow
10	Bed and breakfast	3.6kWh	Llandogo
11	Charity shop	3.6kWh	Monmouth
12	Holiday rental home	3.6kWh	Dingestow
13	Vineyard	3.6kWh	Whitecastle
14	Holiday rental home	3.6kWh	Gilwern

16 Larkfield Park, Chepstow, Gwent, NP16 5QY

t: 01291 629936 e: hello@gwentenergycic.org www.gwentenergycic.org

15	Village hall	3.6kWh	Penallt
16	Public historic site	3.6kWh	Caldicot
17	Bed and breakfast	7.2kWh	Caerwent
18	Canal and boat hire	3.6kWh	Mamhilad
19	Business park	3.6kWh	Monmouth

To work out how many hours each EVCP has been used for, divide the usage amount by the EVCP size, e.g

$$\frac{\text{Usage amount: } 287.80}{\text{EVCP size: } 22} = 13.08 \text{ (hours).}$$

The table shows each business's usage from least to most.

	Type of business	EVCP	Location	Usage in units*
10	Bed and breakfast	3.6kWh	Llandogo	4
13	Vineyard	3.6kWh	Whitecastle	7.5
18	Canal and boat hire	3.6kWh	Mamhilad	13.4
11	Charity shop	3.6kWh	Monmouth	14.5
16	Public historic site	3.6kWh	Caldicot	15.5
4	Campsite	3.6kWh	Abergavenny	21.3
9	Hostel	3.6kWh	Chepstow	60.4
15	Village hall	3.6kWh	Penallt	60.5
8	Pub/restaurant	3.6kWh	Clytha	62
14	Holiday rental home	3.6kWh	Gilwern	76.7
12	Holiday rental home	3.6kWh	Dingestow	92.1
2	Garden centre	3.6kWh	Goytre	106.3
7	Hotel and restaurant	22kWh	Monmouth	172
6	Hotel and restaurant	22kWh	Chepstow	287.8
5	Hotel and restaurant	3.6kWh	Raglan	651.1
19	Business park	3.6kWh	Monmouth	693.7

16 Larkfield Park, Chepstow, Gwent, NP16 5QY

t: 01291 629936 e: hello@gwentenergycic.org www.gwentenergycic.org

Company no. 7094143

VAT no. GB 127957674

Registered office: 16 Larkfield Park Chepstow Gwent NP16 5QY

3	Hotel and restaurant	3.6kWh	Caerleon	4560.3
1	Campsite	3.6kWh	Caerleon	-*
17	Bed and breakfast	7.2kWh	Caerwent	-*

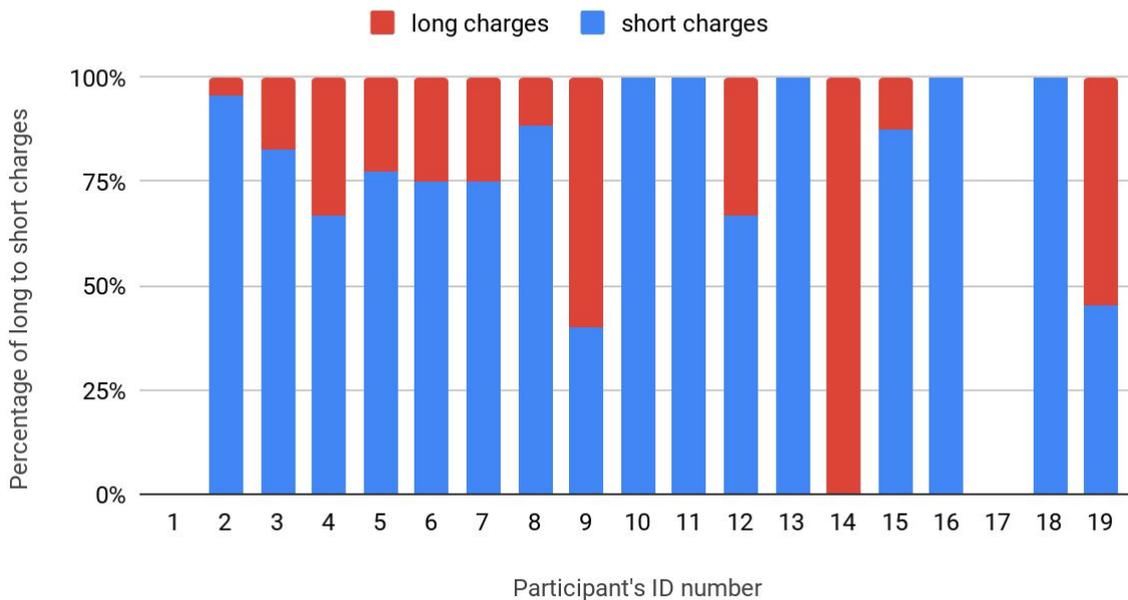
*Lack of meter's signal means we cannot get a remote reading on the total.

Many EV drivers have expressed the urgency for more rapid chargers. However, the most used charger was the standard 3.6kWh and was used more than 5 times as much as the 20kWh EVCPs, despite both businesses being a hotel and restaurant. The Hotel and Restaurant with a 20kWh EVCP was also at Chepstow, conveniently near the M4 - so the question remains: Why wasn't it used more?

Important note: It must be noted that Caerleon's Hotel and Restaurant's owner was an EV driver and used their EVCP to charge their personal and business vehicle, accounting for why the difference in usage is spectacularly high.

The data from remote monitoring

(Graph 2) Percentage of long to short charges



Graph 2's explanation

This graph shows the ratio percentage of long to short charges at each participant, for example:

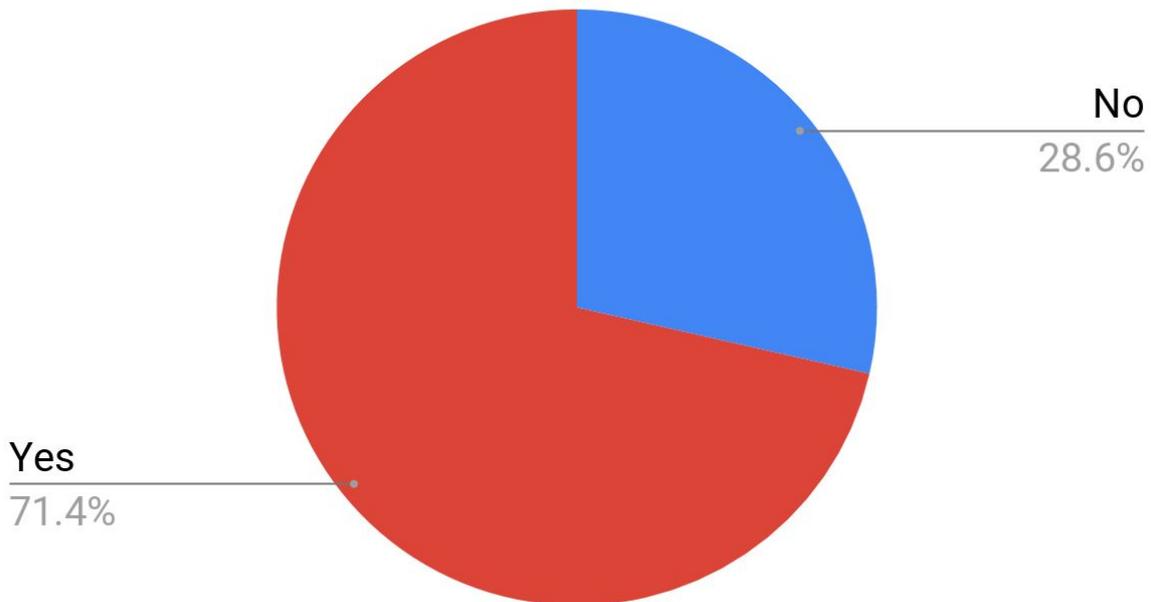
- 1) 100% of charges done at participant #14's site were long charges
- 2) Around 55% of charges done at participant #19's site were long charges.
- 3) Fourteen applicants had mostly short charges, two had mostly long charges, one always had long charges.

The majority of EVCP charges were short charges (Less than thirty minutes). This could have been because the vehicles that used these chargers had a small battery and received the charge they need, or because the owner was only visiting for a short period of time and was just topping up their battery. This graph could indicate that most EV drivers would rather only charge for a short period of time, and as EV battery size increases then businesses will have to accommodate with an appropriately sized EVCP.

Participant #14's charges would have been long charges as it is holiday rental home, and charging would have been used overnight for extended periods of time. It is surprising that #3, #5, #6 and #7 did not have as many long charges, as these were all hotels and restaurants and would have provided convenient overnight charging.

Feedback received from participants

(Graph 3) Did you actively advertise the EVCP?



How did you actively advertise the EVCP?

Responses	Answer
4	N/A (Did not advertise it)
3	On our social media

7	On our website
5	With display signage
1	At local tourist information centres

Four of the participants did not actively advertise the EVCP and were less likely to be used, and those who did advertise were only moderately more likely to receive more use as shown in the table below. This could have been because of the ways in which they advertised, e.g perhaps booking websites that hotels advertised on did not have a specific EVCP entry form, meaning those searching for hotels with EVCPs would not have been able to do so or it could have been because their businesses were well placed. Regardless, appropriate and active advertising is needed and businesses may need help to find the best advertising platform that works for them.

The table below shows the usage each participant's EVCP received, along with whether or not they advertised. It has been sorted from least to most used.

Participant number	Usage in units	Actively advertised?	Was the EVCP free?	Location
10	4	Yes	Yes for customers	Llandogo
13	7.5	Yes	Yes	Whitecastle
18	13.4	No	Yes	Mamhilad
11	14.5	No	No	Monmouth
16	15.5	Yes	Yes	Caldicot
4	21.3	Yes	Yes	Abergavenny
9	60.4	No data received	No data received	Chepstow
15	60.5	Yes	Yes	Penallt
8	62	No	Yes	Clytha
14	76.7	Yes	Yes	Gilwern
12	92.1	Yes	Yes	Dingestow
2	106.3	No data received	No data received	Goytre
7	172	No	No	Monmouth
6	287.8	No data received	No data received	Chepstow
5	651.1	Yes	Yes	Raglan
19	693.7	No data received	No data received	Monmouth
3	4560.3	Yes	Yes	Caerleon
1	-*	Yes	Yes	Caerleon

16 Larkfield Park, Chepstow, Gwent, NP16 5QY

t: 01291 629936 e: hello@gwentenergycic.org www.gwentenergycic.org

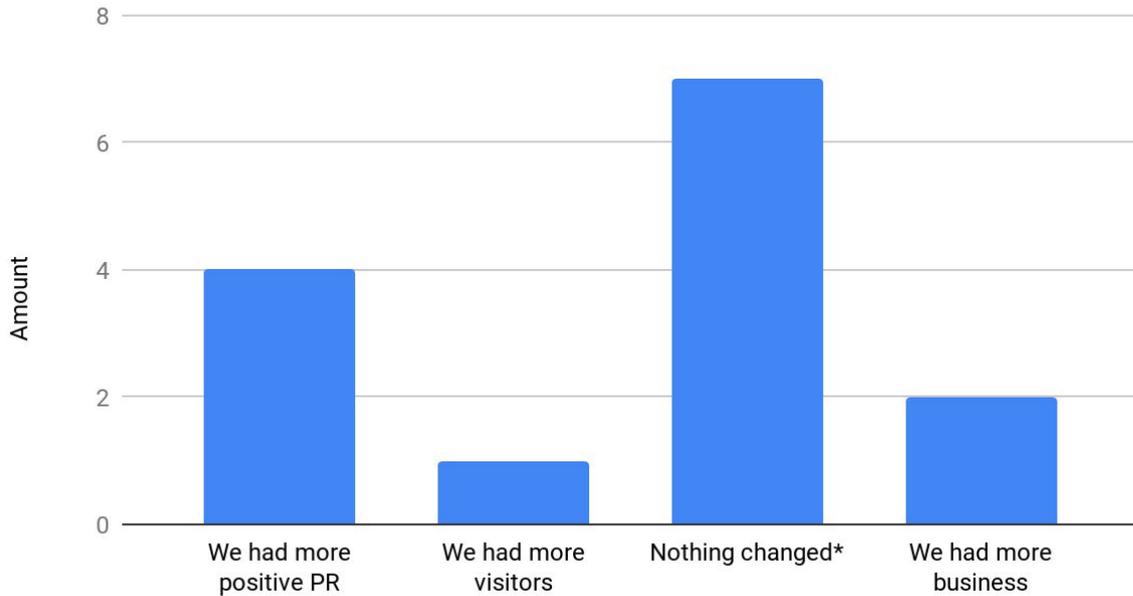
17	-*	No data received	No data received	Caerwent
----	----	------------------	------------------	----------

No data received means no information has been received from this participant.

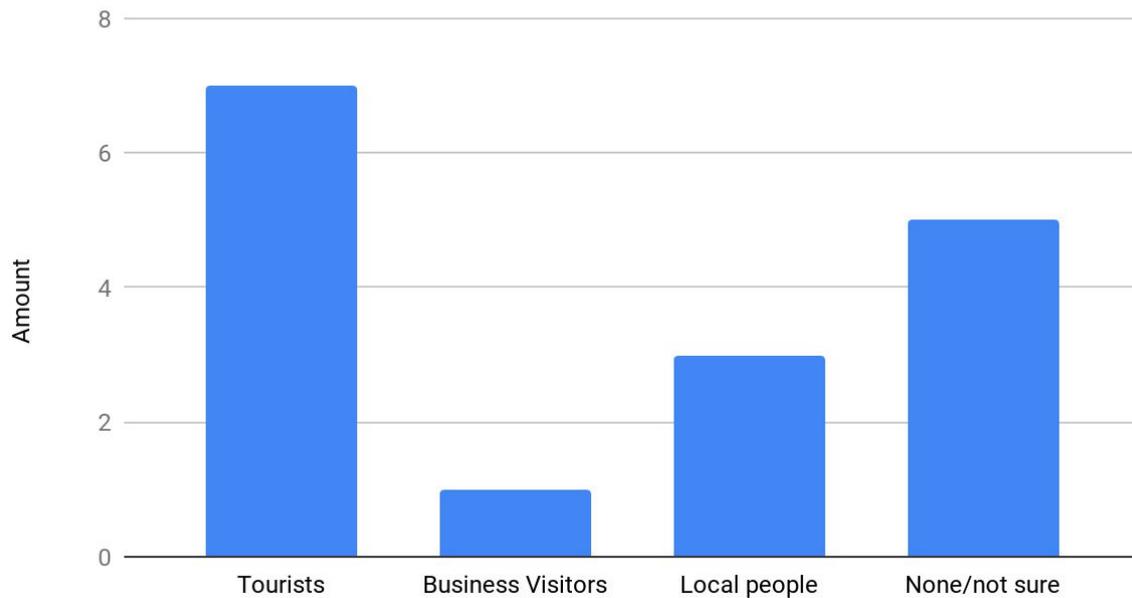
*Lack of meter signal means we cannot get a remote reading on the total.

Important note: One question that should have been asked during the feedback survey was whether they participant had received any previous requests to install an EVCP, as their EVCP could have had repeat usage from loyal customers.

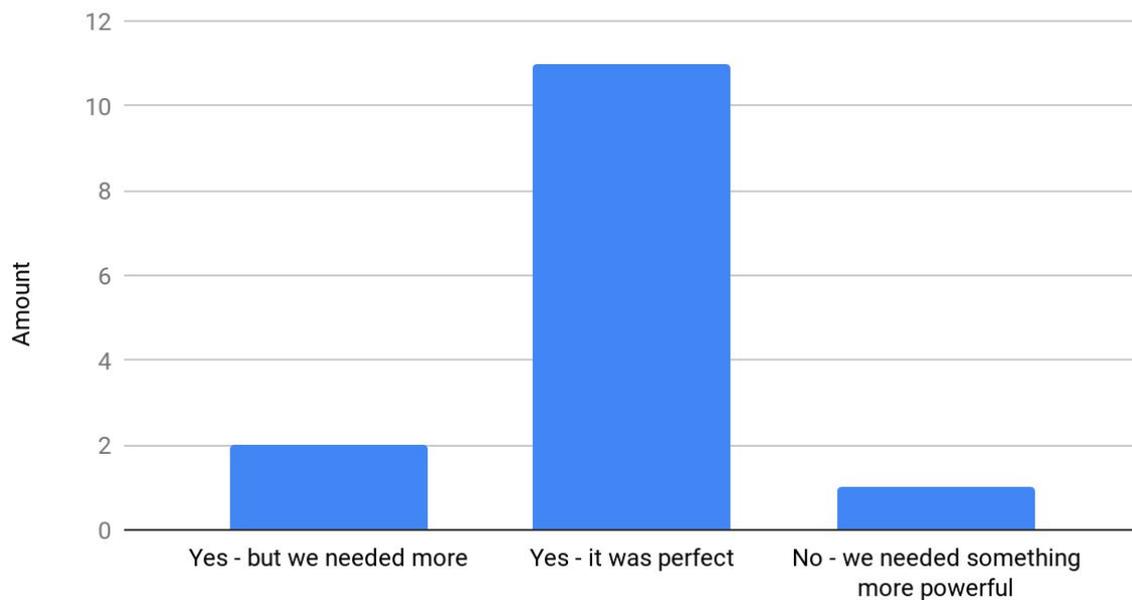
(Graph 4) Did having an EVCP help your business in any way?



(Graph 5) Did your EVCP appeal more to..



(Graph 6) Was a 3.6kW EVCP suitable for your business?

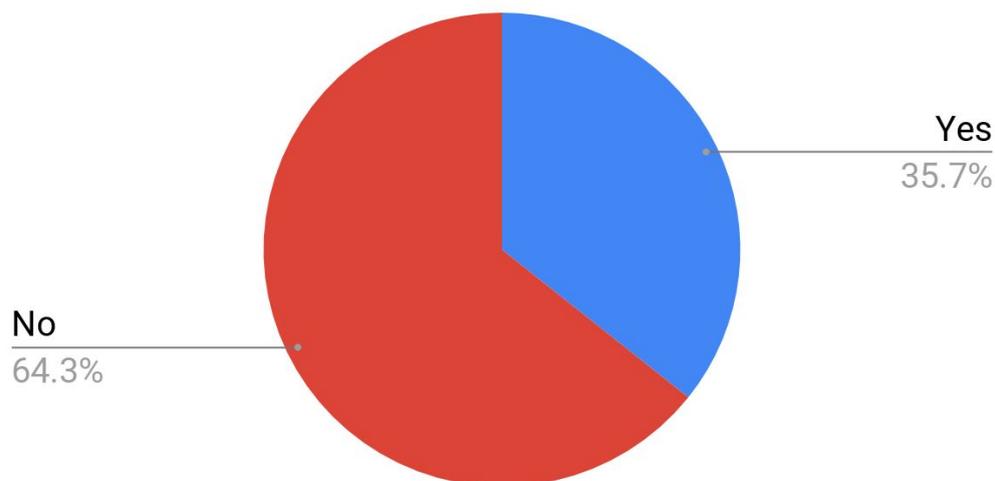


Important note: Perhaps there should have been an answer titled “It was neither suitable or unsuitable”, however due to the fact that every charger received some use it is concluded that the charger was suitable for purpose.

Two participants felt they needed more because they may have received more than one EV needing to charge, and one participant would have liked something more powerful but also responded that nothing changed in terms of receiving more business. This may have been

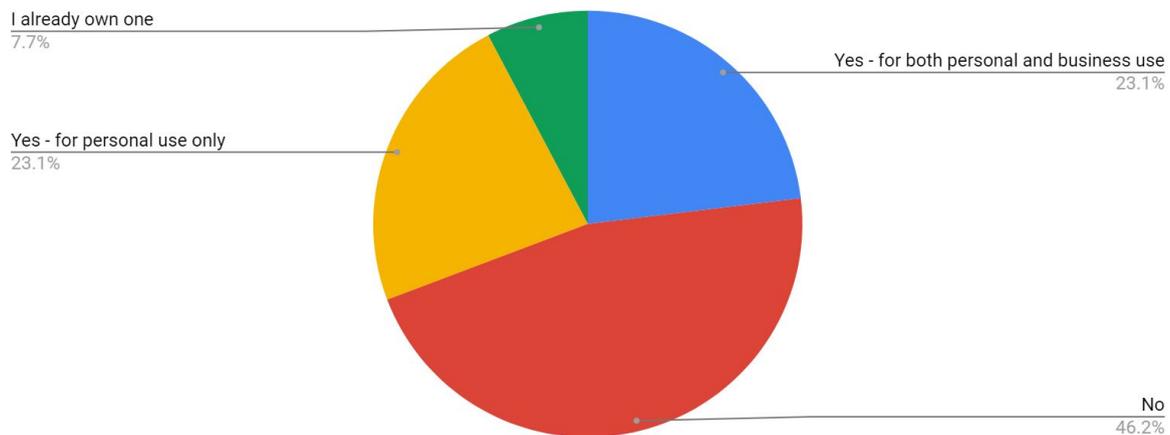
because of the type of business they were, and a rapid charger would have been more suitable at their location. Regardless, this view is an outlier and the rest of the participants did not feel the same way.

(Graph 7) If there was a local EV group, would you consider joining?



Graph 7 shows the interesting responses to the question “If there was a local EV group, would you consider joining?”. Over half of respondents were interested in more active advertisement of their EVCP, but were less likely to join a local EV group - which could have been a good opportunity to advertise their EVCP. This suggests participants were not confident in their knowledge of the EVCP and EV market, and may need further help or training with this. **This lack of confidence could harm the rural EVCP network in Wales, and needs further assistance from the council/government if we would like more SMEs in Monmouthshire to spend their own money in installing an EVCP.** Especially now with the removal of the Severn Bridge toll fees, Monmouthshire is the gateway into Wales from England and could benefit from many EV drivers from England.

(Graph 8) Would you get an EV within the next few years?



Despite now having an EVCP at work and having the ability to charge (for free) while at work, less than half of current respondents were still not interested in an EV and these were from participants in more rural areas of Monmouthshire and the Vale of Usk, which suggests the EV market is still a few years away from being suitable for rural areas. This could be because some of the local terrain is too difficult for most EVs, or because the range of EVs was not sufficient for most local people to make their usual journey through the Vale of Usk. This would need further investigation.

The conclusion

From the above results we now know that a business with an EVCP is **more likely to get use if:**

- 1) The business actively advertises their EVCP

This can be done via social media or on online booking sites

- 2) The business is within 2 miles of a motorway or dual carriageway

E.g Both hotel and restaurants at Caerleon and Raglan were in convenient places for their customers with EVs.

- 3) The business can offer a service to encourage customers to stay longer than two hours and/or overnight stay

This may encourage customers with an EV to travel further and stay for a short weekend break to visit the area.

- 4) The charging service was offered for free

Though more research is needed to determine whether a free charging service encouraged more trade at the business.

- 5) There is good access to the car park and/or parking space

Some SMEs may be difficult to find on the Sat Nav and may have suffered because EV drivers were worried of getting lost and running out of charge.

16 Larkfield Park, Chepstow, Gwent, NP16 5QY

t: 01291 629936 e: hello@gwentenergycic.org www.gwentenergycic.org

Company no. 7094143

VAT no. GB 127957674

Registered office: 16 Larkfield Park Chepstow Gwent NP16 5QY

**Lastly, around 5 miles of range is generated per kWh charged.
For the duration of this trial, around 43,845 miles were driven
around the Vale of Usk with zero carbon emissions.**

Extra comments:

- a) We await the feedback form from the Business Park as they did surprisingly well. It would be interesting to find out if it was mainly staff using the EVCP
- b) The village hall commented that they felt their usage was particularly low, and theorised this could be because their village hall is “off the beaten track”. However, looking at the other participants data, they were actually in the **top ten** most used site and this could have been because their EVCP location was popular with dog walkers or other rambles
- c) Six participants answered the question “Where was the furthest your user visited from?” Their answers were: Germany, France, Bristol, South Wales, Yorkshire and Scotland.
- d) Only one business paid for extra advertising of their EVCP (Participant #5), which resulted in decent usage. However it is unclear if they would have had those users without paid advertisements because there is not enough data.
- e) Two applicants notified us of an issue with the charger - 1) that was that it was not compatible with a visitor’s car 2) that the EVCP was installed in a difficult to reach area of the car park. The second issue is difficult to solve because of a lack of nearby consumer unit for the EVCP to be connected to and would require an additional fee.
- f) One applicant told us that their customer base is of younger people who would not purchase an expensive EV, so questioned if they needed an EVCP.
- g) Every applicant wanted to keep the EVCP upon notification that it would now be free to own. We did not ask whether the applicants would have kept it had the fee still remained, but we know of at least one participant who did originally request for it to be removed before it was decided the EVCPs would all be made free.

*Thank
you* →

Thank you for reading.

For further information, please contact Gwent Energy CIC at hello@gwentenergycic.org.

16 Larkfield Park, Chepstow, Gwent, NP16 5QY

t: 01291 629936 e: hello@gwentenergycic.org www.gwentenergycic.org

Company no. 7094143

VAT no. GB 127957674

Registered office: 16 Larkfield Park Chepstow Gwent NP16 5QY