"Excellent fun that made some daunting hills into an easy ride"

Talybont Energy – Electric Bike Trial Report

Alison Kidd[1] & Peter Williams

www.talybontenergy.co.uk

October 2009

1 Introduction

From April to October 2009, Talybont-on-Usk Energy (ToUE)[2] ran a trial of two electric bikes in the Brecon Beacons. The trial was run in partnership with the Brecon Beacons National Park Sustainable Development Fund[i].

Audit data for the Brecon Beacons region shows that car transport accounts for around 40% of domestic energy consumption[3]. In a rural, hilly area with sparse public transport provision, most households are heavily reliant on the car. In Wales, short journeys (less than 5 miles) account for 64% of all journeys[ii] and they unfortunately have the highest fuel consumption and are often the primary reason for owning a 2nd car. For those who commute less than 1 mile to work in Wales, 44% use the car and this rises to 77% for those who commute between 1 and 3 miles to work[4]. Very few people cycle.

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[1] For further details, contact alison@prospectory.co.uk Tel. 01874 665401

[2] Talybont-on-Usk Energy (ToUE) is a community group dedicated to promoting the generation and use of sustainable energy and energy efficiency in the Brecon Beacons National Park.

[3] Historical data for 2008 taken from the Big Green Challenge audit for our area.

[4] Unfortunately, we don't know what proportion of our local population commute less than 5 miles to work. A survey of 65 staff of a major employer in Brecon showed that 38% commuted 5 or less miles

Electric bikes provide some power assistance when you are pedalling which substantially reduces the human effort on hills and extends where and how far people are willing to travel by bike. A survey conducted by Leeds University found that the average user of an electric bike covered 1,200 miles per annum compared to only 120 miles for a traditional non-electric bike. The bikes replaced 3 car journeys a week on average – mostly commuting to work and shopping.[iii]

The aim of the Talybont trial was to introduce as many people as possible to the concept of electric bikes and give local people a chance to try electric bikes for themselves for an every day journey in their own environment. Most people have never encountered such bikes and buying one is an expensive and risky decision. We hoped that the trial would make people aware of the benefits of e-biking and reduce the risks of acquiring one for themselves. We also hoped to learn whether this emergent form of eco-transport makes sense in our rural, hilly environment.

The market for electric bikes in the UK is growing fast. 15,000 were sold in 2008 and sales are forecasted to rise by 50% in 2009 to 23,000 bikes.[iv] So far, the penetration in Wales has been low but the first dedicated electric bike shop, OnBike[v], opened in Presteigne in March.

2 The trial

With the help of the Sustainable Development Fund, Talybont Energy purchased two electric bikes from OnBike of Presteigne. We deliberately chose two bikes which had very different modes of operation.

The first was a Monark Eco bike.

The Monark Eco is a 'Pedelec'. A sensor monitors the pressure on the pedals and engages the motor to drive the chain at varying levels depending on the current rider effort. The Monark Eco uses a Lithium Ion Manganese battery with 500-1000 charge cycles. It has a range of 20 - 30 miles depending on terrain and speed.

The second bike was an eZee Sprint.

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to work and 71% of these used a car for that journey. In all but a couple of cases, there was only one person in the car.

The eZee Sprint is driven by a motor in the hub of the front wheel. The power is controlled by a twist throttle on the left handlebar, and is normally only delivered if you are pedalling. This 'pedelec', or power-assisted pedalling mode is the only one legal in many European countries[vi]. The law in the UK is currently different and slightly ambiguous so the trial eZee Sprint could also be set to power the front wheel whether or not the cyclist is pedalling. We tried to discourage triallists from employing this mode as it drains the battery faster. The eZee has a range of 15 - 30 miles depending on the amount of throttle deployed by the rider.

Early trials suggested that both bikes had a range of around 25 miles if the power was on at all times (but used conservatively) and the ride involved some reasonably hilly terrain.

The two bikes cost in the order of £1250 each.

To promote the trial and encourage triallists to use the bikes for shopping and commuting, we purchased some bright yellow plastic panniers[vii]. These were spacious, waterproof and lockable.

We began the trial on April 5th with an open event in Talybont-on-Usk village so people could come and try the bikes and see if they would like to sign up for the trial.

Over 50 people turned up for this event and 20 signed up to take part in the trial.


Anyone who signed up for the trial was invited to borrow the bike for a day and try it, if possible, for a journey they would normally do by car. We charged triallists a nominal £5 to cover insurance costs and required them to complete a loan agreement form. Triallists were also asked to complete 2 online or paper surveys, one before trying the bike (which explored their 'normal' cycling interest and behaviour) and one after trying the bike to learn about their thoughts and experiences.

When we ran out of interested Talybont residents, we invited other Green Valleys'[viii] communities to host the bikes for their own residents to try. For National Bike Week in July, the bikes were hosted by the Sustainable Development Fund in Brecon and the staff arranged demonstrations for local businesses.

3 Who took part in the trial

Over the 6 month trial period, the bikes were hosted by 8 different communities across the Brecon Beacons: Talybont-on-Usk, Llangynidr, Cwmdu, Llanfihangel Crucorney, Abergavenny, Llangattock, Hay-on-Wye and Monmouth. 75 individuals from these communities trialled the bikes for a day or more whilst over 300 people had a quick turn on the bikes at events and shows throughout the region. The trial was featured by local newspapers and on BBC Radio Wales.

We had hoped to sign up some local businesses to host the bikes for a week for their employees to try. Initially, we found it difficult to generate interest amongst businesses and did not commit further effort once the bikes were fully booked by communities and individuals for the entire trial period.

Of the 75 triallists, 58 completed pre-trial surveys and 61 completed post-trial surveys[5]. The results reported here are based on their data.

4 Profile of trial participants

Figure 1 shows the gender and age of the triallists. More men (59%) took part than women (41%) although there were proportionately more women in the younger (18-45) age range.

[5] Unfortunately not necessarily the same individuals!

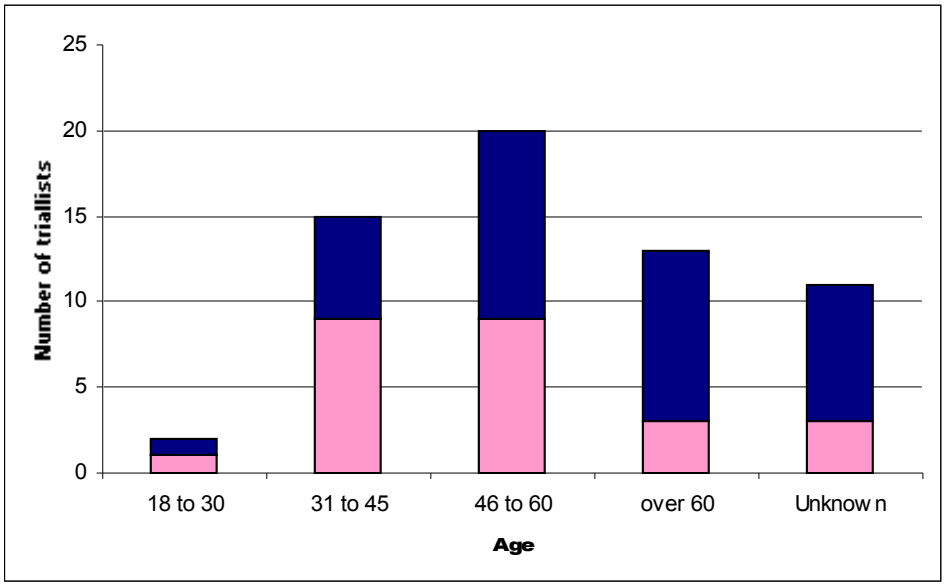

Figure 1 : Gender and age of trial participants

All but 8 triallists owned an ordinary bike. Their average annual bike mileage was 320 miles but the median[6] was only 100 miles. This reflects a wide variation as shown by Figure 2.

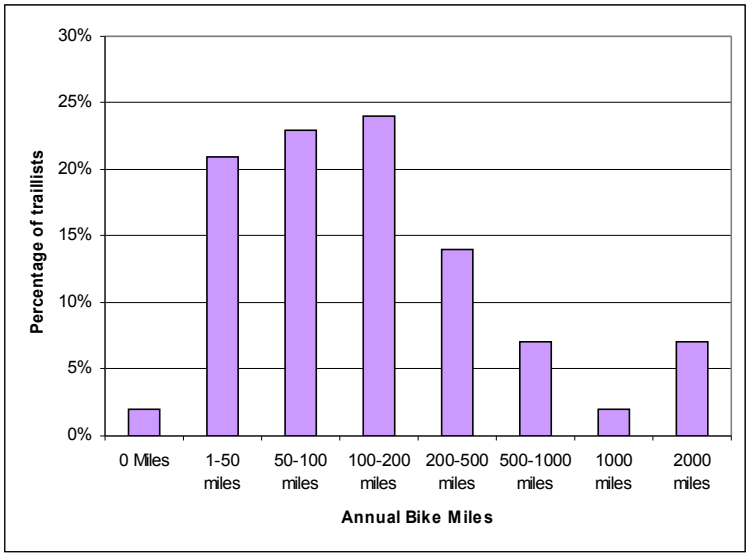

Figure 2 : Annual bike mileage by triallists

Half the triallists did less than 100 bike miles a year. But the trial also included a small proportion (9%) of keen cyclists who cover 1000-2000 miles a year. Women were much more likely than men to do low mileage.

We asked triallists to estimate the number of miles they did each year which replaced miles *they would have otherwise travelled by car*. On average, this was 106 miles but the median was only 30 miles, i.e. about 1/3 of the bike miles travelled. 36% of triallists did not use their

[6] Half the triallists cycled more than 100 miles a year and half less than 100.

bikes to replace car journeys *at all* (see Figure 3) and that included some of the 1000 miles/yr cyclists.

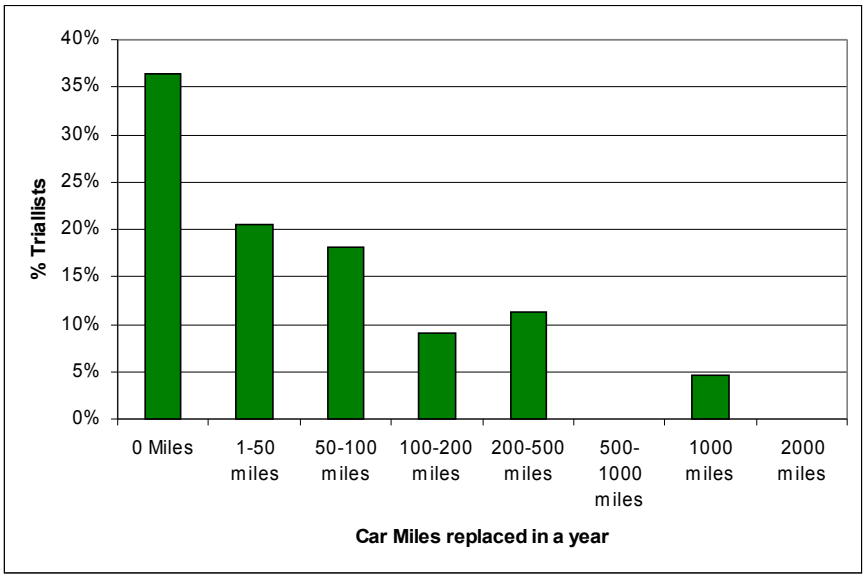

Figure 3 : Annual bike mileage replacing car miles

There was no significant correlation between people's use of a bike and the car miles they replaced. This suggests that keen cyclists view cycling as a leisure pursuit rather than a functional means of travel, e.g. to work or the shops. The two mindsets (cycling and replacing car journeys to cut carbon) do not apparently overlap.

We asked the triallists how much they enjoy cycling. 46% said they 'loved it' and 54% said they 'quite liked it'. Those who loved it, did 7 times more miles a year but less than 1/3 of these were replacement miles for the car. Those who 'quite liked it' cycled less miles but were more likely to be replacing car journeys (1/2 the miles).

We asked the triallists about the distances they travelled to work and/or to the shops and their 'normal' means of travel. Figure 4 shows the results for commuting to work.

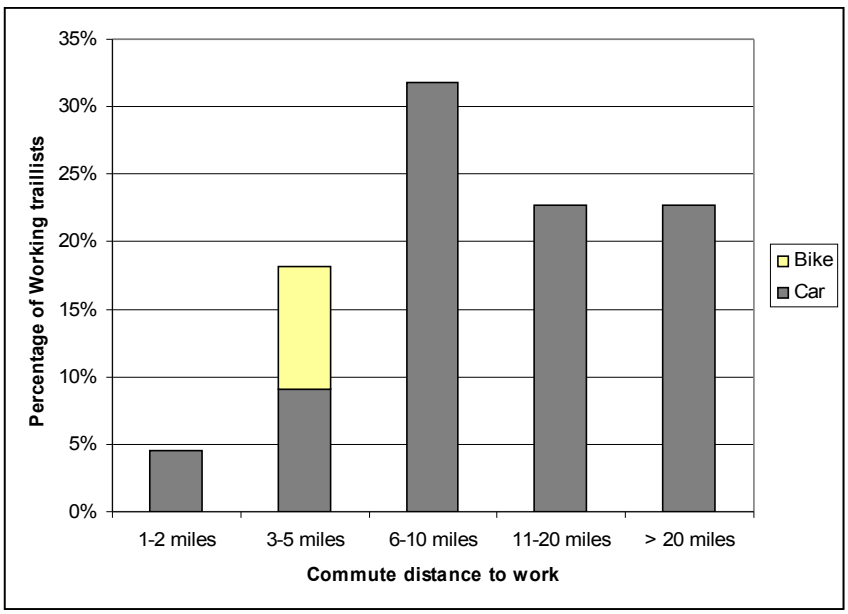

Figure 4 : Commute distance (to work) and means of travel

The average commute to work was 14 miles but the median was 9 miles. Only 9% of triallists regularly commuted to work by bike and only when the distance was 3-5 miles.

Figure 5 shows the same figures for commuting to the 'regular' shops.

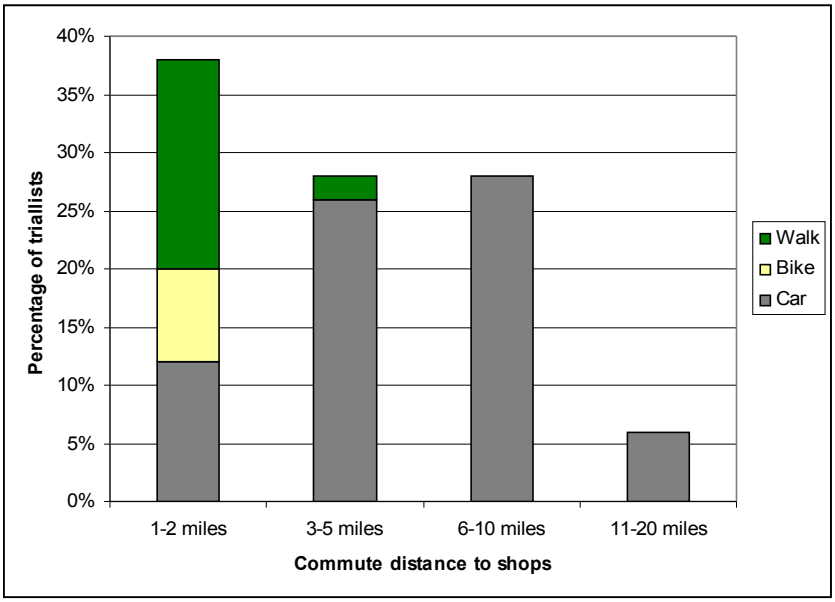

Figure 5 : Commute distance to shops and means of travel

The average distance to the shops was 5 miles but the median was only 3 miles. Again, the car was the dominant means of transport and bikes were only used in 8% of all cases and only when the distance was less than 3 miles. This was true even for the keenest (1000-2000 miles/year) cyclists.

None of the triallists regularly used Public transport to travel to work or to the shops[7].

We asked the triallists what puts them off cycling to work or to the shops. Figure 6 categorises the responses they gave.

[7] Public transport is not an option for many living in the Beacons.

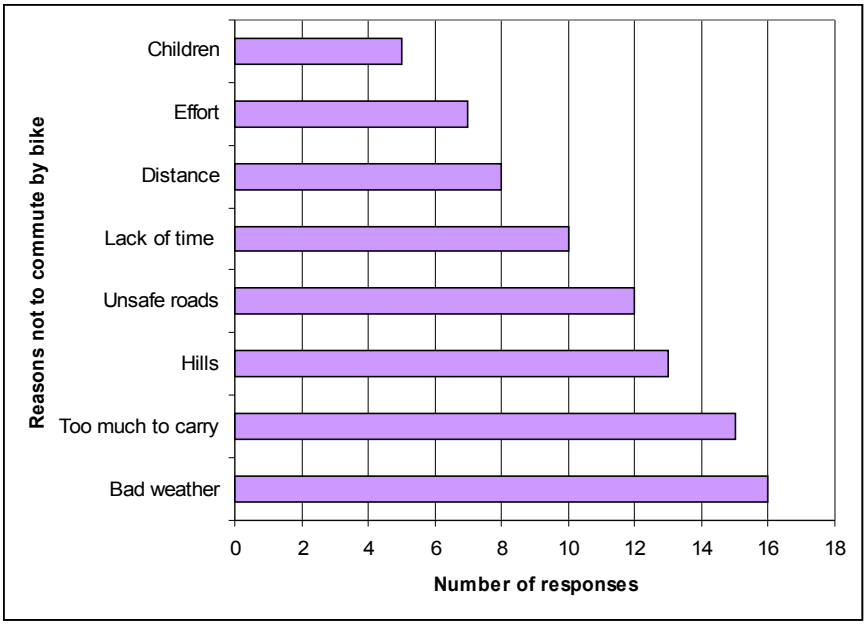

Figure 6 : Reasons not to commute to work or shops by bike

The main two reasons given are not ones which electric bikes directly address although the power assist will help with a heavy load if you can find the space to carry it. Electric bikes should reduce the problem of hills and might also reduce the time to cycle places and possibly expand the distance, given a reduction in effort.

Finally we asked people why they were interested in trying an electric bike. Figure 7 sets out the responses they gave.

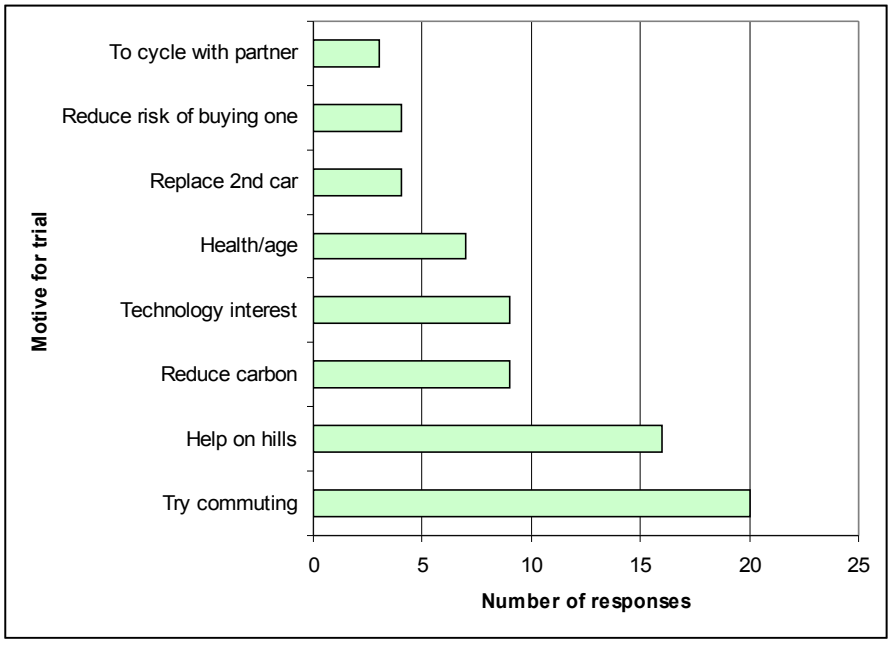

Figure 7 : Motive for taking part in trial

5 Trial behaviour and feedback

38% of triallists rode the eZee Sprint, 33% rode the Monark Eco and the remaining 29% tried both bikes.

The 2 electric bikes travelled a total of 2,714 miles between them during the trial period. The Monark Eco did 1234 miles and the eZee Sprint did 1480 miles.

The average distance travelled by triallists (usually in a single trip) was 18 miles and the median was 17 miles. A few did higher mileages (up to 65 miles) but this tended to be people commuting to work on several successive days. Only 3 triallists reported running out of battery.

Of the total miles the bikes travelled, 67% of these were reported to be replacing car miles[8]. This suggests that, in addition to its primary aims, the trial incidentally replaced 1818 car miles which equates to nearly ½ tonne of carbon.

Most triallists reported that they used the bikes on 'half power' the majority of the time, only using full power occasionally (e.g. tackling a hill).

The response of the triallists to the electric bikes was overwhelmingly positive. 73% said they 'loved it' and 25% said they 'quite liked it'. Only 2% did not like the experience.

The following are typical of the comments made:-

- *"I thought they were a fab bike to use considering the hills in Wales. It felt like you could ride the bike for hours and not feel completely knackered."*
- *"thoroughly enjoyed the experience and wished we could have cycled for longer but had other commitments that day. The 8 miles seemed like 4!"*
- *"Incredible boon. I'm surprised there are not more about."*

The keen cyclists seemed just as likely to be enthusiastic as the occasional cyclists. In some cases, that is because the bike allowed them to do different things.

- *"Brilliant for the countryside round here where there are occasional steep hills. These put you off when you've got shopping to haul back ."*
- *"to cycle from Abergavenny to Blaenavon for work up a very significant hill"*
- *"Could be the compromise answer between being green and being convenient - it's speedier than a normal bike"*

Figure 8 shows the triallists' reaction to the two different electric bikes.

[8] We were not surprised that this proportion was higher than normal biking as this was a trial and participants were encouraged to try the bikes for a replacement car journey.

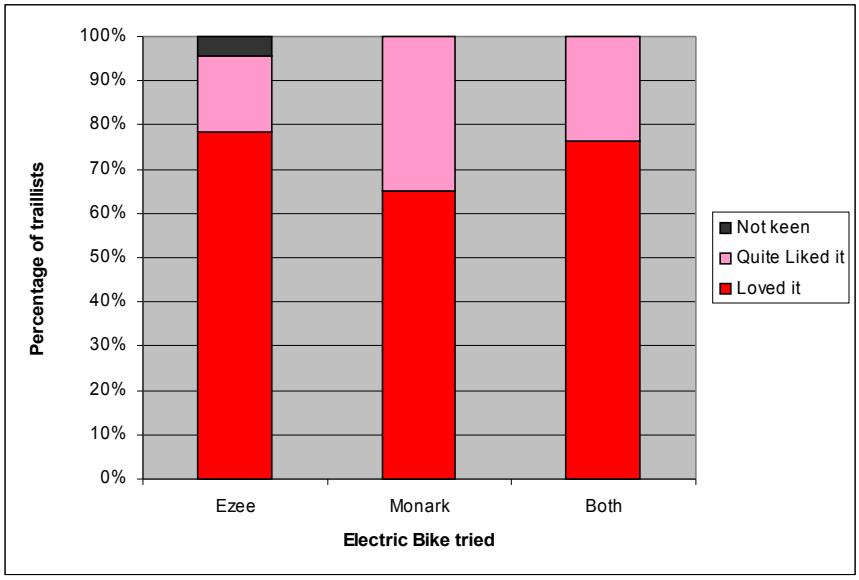

Figure 8 : Triallists' reactions to electric bikes

The eZee Sprint was slightly more popular than the Monark and a number of people who tried both commented to us that they preferred the eZee.

- *"I really enjoyed using the bikes and found the eZee best but quite hard to keep the throttle held all the time. The Monark didn't seem to have quite as much kick as the other one but the controls were easier. I would love to try again and take it on some longer journeys."*

- *"Loved the Ezee but not very keen on the Monark. Ezee great for hills and for when you are running out of steam!"*

- *"It is fun to have the 'helping hand' of the motor. However with the pedal-assist mode (Monark), I think it would almost be possible to forget that you're riding an electric bike after a while, I'm not sure if that's a good thing or a bad thing. The one I tried before had a throttle so you definitely knew you were riding something different/special."*

The slight preference for the eZee might be because it fits people's naïve expectation of an 'electric bike' as the user model is similar to a motor scooter. The rider can directly control how fast they want to go by simply twisting the throttle (at least until they hit a steep hill). The Ezee thus enables people to travel faster (than the Monark) at lower effort. The aid provided by the Monark is more subtle and requires a novice rider to develop a fairly sophisticated model of how it works in order to get the best effect. For example, slowing down or changing *up* a gear on hills means that the motor provides more help. This can be counter intuitive. A technical essay on this topic is available[ix].

Only two of the triallists said they did not like the experience. In one case, this seemed to be because the person liked cycling because of the exercise it provides. In the other case, it seemed to because the person was disappointed that they had to pedal the electric bike at all!

- *"I use bikes for exercise, fitness and pleasure, not e bike territory."*

- *"Husband surprised by amount of torque when engaging throttle.... Had to pedal as well coming up our drive He feels he's too old for an e bike! I'm disappointed that I*

didn't take to it but thank you for the trial. It's a good idea for younger people with more time & energy than us."

Figure 9 shows the primary purpose of the journeys made on the trial bikes.

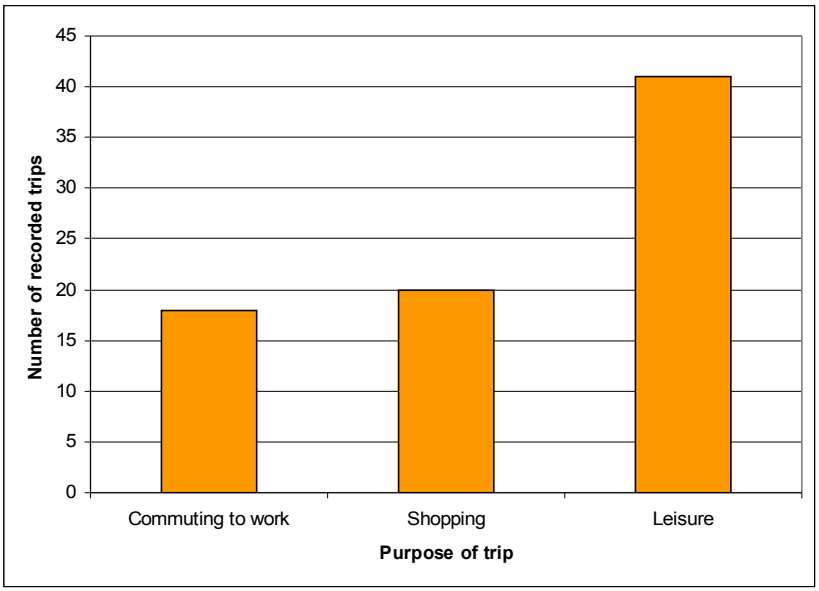

Figure 9 : Purpose of trips made by electric bike

Given the publicised aims of the trial and the stated motivations of the triallists, we were a little disappointed that there were as many leisure trips as 'functional' trips for shopping or travelling to work. However, informal conversations with triallists suggested that many people chose to take the bikes for a leisure run to see if they performed well enough to use for more functional purposes. It does, however, suggest that shifting people to use transport other than their car for functional work and shopping trips is a major challenge and not a natural part of people's mindset.

The triallists who did try commuting to work were mostly impressed, especially when the commute involved a steep hill. The advantages included arriving at work without sweating and in less time than on an ordinary bike.

- *"Very positive - a 12-mile bike ride without breaking into a sweat is ideal for commuting purposes"*
- *"Good for commuting. Overall journey time is reduced as I don't slow down nearly as much on the hills. No sweat! I don't need to spend the first 15 minutes mopping my brow and wishing we had a shower in work."*
- *"brilliant for my short but hilly commute into Monmouth".*
- *"It takes the rough edge off cycling. You don't groan at hills on the way home from work. For someone who has done a day's work and is cycling home, hills are a pain."*

The people who tried commuting talked about an acceptable e-biking distance of around 10 miles.

Those who tried shopping by bike were also impressed.

- *"I came back from the Co-op with 15 kg shopping in the paniers, cycled with power assist 2 km and ascended 45 m. I didn't even break a sweat on a warm autumn day."*

- *"It was a bit of a revelation for two old ladies who found they could get to the shops in the village and back, up a steep hill, on the bike."*

- *"Fantastic for short journeys to work and shopping for groceries."*

For those triallists who were interested in the electric bikes for leisure uses, one of the main attractions seemed to be the ability to enjoy rides with a partner who was less keen on cycling.

- *"I had a fabulous day! The only time I have been able to overtake my partner going up hill!! It was helped by glorious sunny spring weather."*

- *"Encouraging, especially for my wife to accompany me (on my lightweight pedal cycle) on leisure rides."*

- *"for leisure use for those less keen or able to tackle the hills in this area - my wife says she might be able to keep up with me on bike rides if she had an e-bike!"*

Having experienced the electric bikes, we asked the triallists what *they* now thought electric bikes were good for. Figure 10 shows a categorisation of the most common responses.

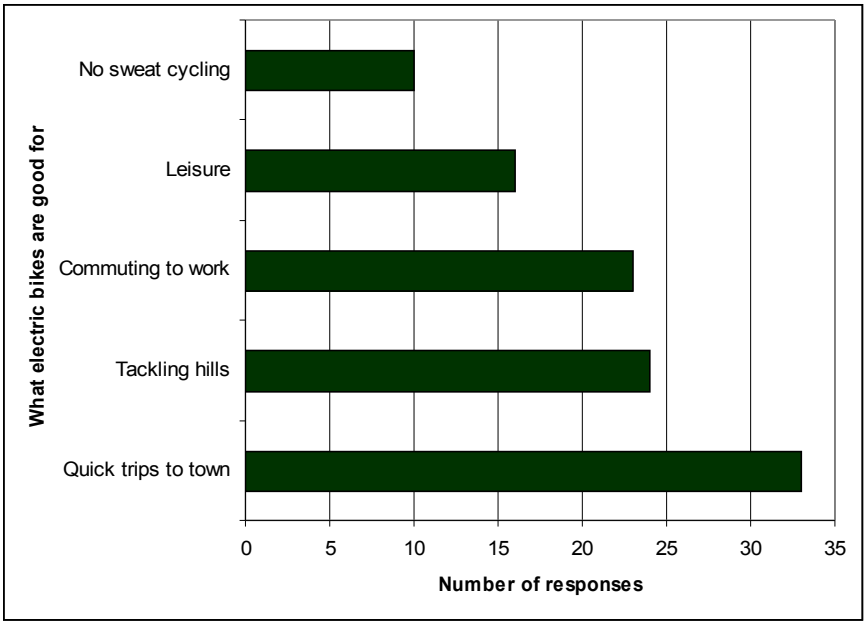

Figure 10 : Views on what electric bikes are good for

The most common response was quick or short trips into town usually for shopping.

- *"I think it would be good for short journeys which I currently use a car for eg. going into town which because of the hills is a bit daunting for an ordinary bike. I was impressed that it only took me 20 mins, to get into Hay"*

- *"Frequent short weekday journeys that would otherwise be taken by car"*

- *"Local travel otherwise undertaken by car. The additional speed when compared to walking makes use of the bike viable when time is limited".*

Quite a number of triallists lived only a couple of miles from their nearest shops or town but up a substantial hill. They didn't like the fact that they always used the car for such a short and frequent journey but found riding a normal bike (or indeed walking) up the intervening hill took far too much effort and time.

Most triallists commented how well the electric bikes worked on hills. 70% reported going up a hill on the electric bikes which "they would not have been able to tackle on their normal bike".

- *"Very good for local trips where we'd be put off an unpowered bike by the hills. Would thus definitely substitute for car trips on many occasions."*

- *"getting to places you wouldn't normally think of going i.e. back lanes with steep hills"*

- *"There are two hills between here and Talybont where I'm normally panting but with the electric bike, I didn't pant at all."*

Some triallists felt that an electric bike would mean that they would commute by bike to work rather than by car.

- *"I would happily commute from Brecon to home with an e-bike. Also I would be able to do shopping with one quite easily.."*

- *"Definitely a worthwhile experience and I was very impressed with the hill-climbing capability. I would consider using one for commuting."*

- *"Interesting - made me consider using one for daily use in place of my car."*

4 of the triallists said the trial had made them think about getting an electric bike as an actual replacement for their 2nd car.

- *"in our moderately hilly area, making return trips up to 10-15 miles very much more acceptable, to the point of dispensing with a 2nd car."*

- *"I like to exercise but I don't want to find exercise difficult. This is easy exercise to do. I can do far more inclines without getting fed up. I would get on a bike more. We hope to get rid of our 2nd car."*

- *"Fantastic fun. Very enjoyable and a real possibility to replace second car with an electric bike. ".*

We also invited the triallists' opinions on what they felt electric bikes were bad for. Figure 11 shows a categorisation of the most common responses.

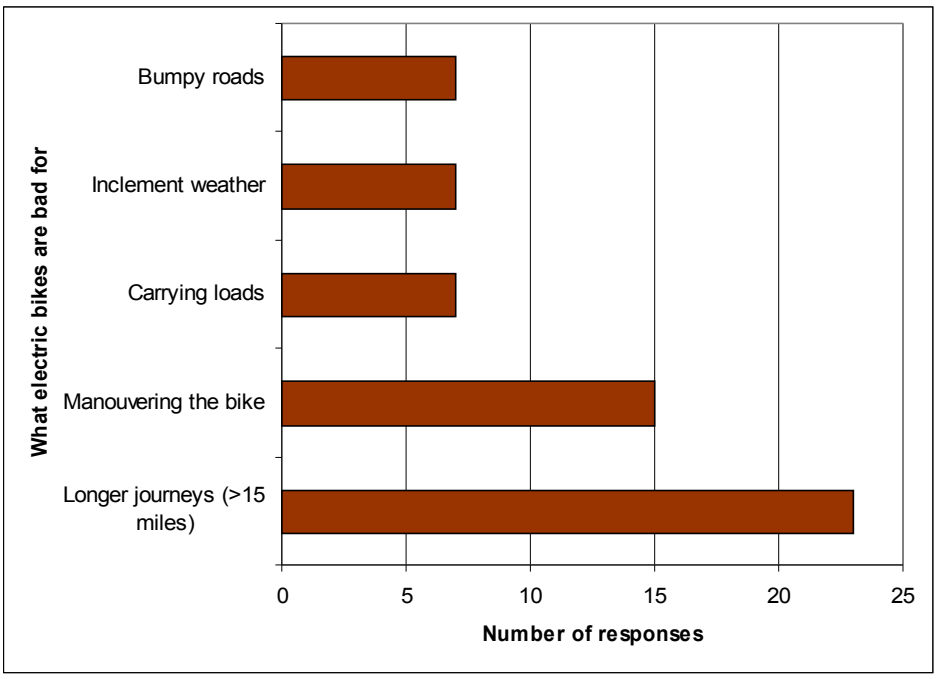

Figure 11 : Views on what electric bikes are bad for

Triallists were well aware of the range of the batteries and felt they would be uncomfortable tackling commutes longer than 10-15 miles.

- *"Very long journeys -the hassle of not being able to re-charge along the way could be a problem as they're very heavy to cycle without the assistance."*

- *"Long distance riding due to battery. The bikes are relatively heavy to cycle with no assisted power".*

- *"I was definitely aware of loss of power near end of 16 mile trip home from picking up bike and had to recharge before undertaking the journey back to return it. It was, however, a hilly route. Would no doubt be better on flatter terrain. However I would have had difficulty undertaking the route at all on a normal push bike."*

Many triallists commented on how heavy the bikes were and difficulties they had wheeling them round town or lifting them over obstacles. This problem was made worse by the bulky bike bins we had attached to the bikes.

- *"Not good for places where you need to lift the bike on and off things as it is very much heavier than a 'normal' bike."*

- *"It was a bit big and heavy to get in and out of the office at work."*

And, not surprisingly, the triallists could see that the electric assist didn't change one's exposure to the elements.

- *"Can't think of any real drawbacks - no bike is particularly pleasant in the rain."*

- *"If it's horrendous weather it could be a problem if you had to be smart for work."*

Nor one's ability to carry a lot of shopping.

- *"journeys which require a lot of carrying items (eg:large shopping trips)".*

A few people commented that the bikes were uncomfortable on bumpy roads.

- *"rough surfaces are rather uncomfortable due to lack of suspension (e.g. potholed and worn roads)"*

We asked triallists whether they experienced any problems with the bikes. Only 20% said they did so. Figure 12 shows the problems they listed and which bike they referred to.

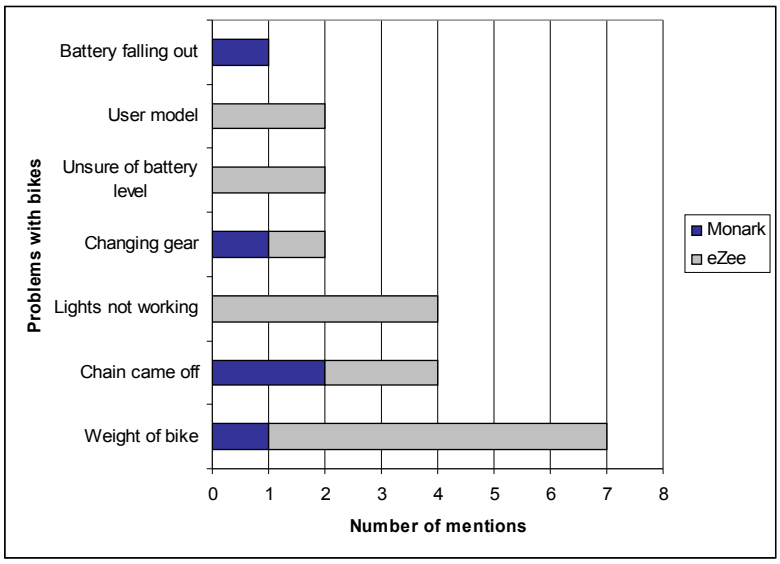

Figure 12 : Problems experienced with bikes

Although the eZee was the more popular bike, people experienced more problems with it. This was also true for the research team. For example, the eZee lights never recovered from a a rainstorm early in the trial, the power monitor fell off the handlebars at an early stage and the front brake needed fixing regularly. The triallists also seemed more conscious of the weight of the eZee which is, in fact, 2kg heavier than the Monark.

6 Will they buy?

We asked triallists whether, having tried one, they would now consider buying an electric bike. We were staggered by the fact that, in the immediate post-trial euphoria, 41% of triallists said 'yes' they would. Figure 12 shows their actual responses depending on which bike they tried[9].

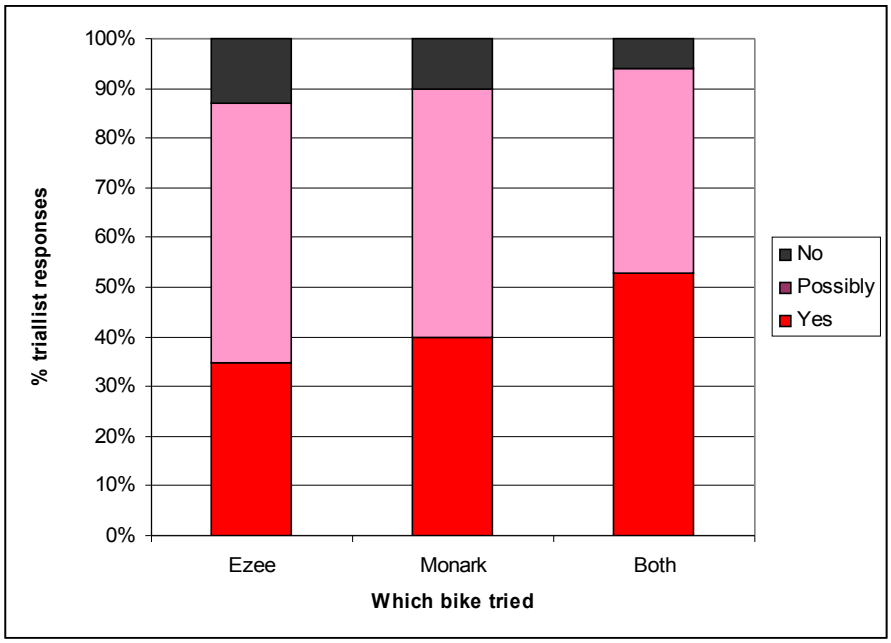

Figure 12 : Whether triallists would consider buying an electric bike

People's comments certainly were consistent with this response. The trial had whetted their appetites and opened their minds to the possibilities.

- *"Fantastic fun. Very enjoyable and a real possibility to replace second car with an electric bike. I am totally sold on the idea and want one of my own."*
- *"a very enjoyable experience. We will definitely be buying a couple in the near future"*
- *"fantastic completely different to my thought prior to this bike trial would consider using again even purchasing."*
- *"I am totally sold on the idea and want one of my own."*

Obviously, there is a difference between people's enthusiasm straight after a trial and whether they will *actually* buy. The only definite information we have is that 3 people have bought

[9] Unfortunately, we didn't ask which type of electric bike they would consider buying.

bikes as a direct result of the trial. We don't know about the rest. In all 3 cases, the bikes purchased were different models to those used in the trial.

- *"Since the trial I have bought an electric bike (a Wisper 905eco) from OnBike, and despite a few teething troubles with the bike I've been successfully substituting car journeys to Hay and back. I had been considering the purchase for a while and the trial helped me make up my mind (because I knew that I could realistically use it for regular short journeys via some very hilly roads)."*

In other cases, where we have managed to contact triallists, some say they are still planning to buy.

- *"Still considering an electric bike purchase but not taken the plunge yet".*

- *"I would consider buying a bike, and was pleasantly surprised at how well the motor performed and, as advertised, smoothed out the hills. But I would not want one of the types available during the trial. As I mentioned in the feedback form they seemed to be very overweight."*

For some, expense is the barrier:-

- *"For a coward like me on a bicycle I thought it was amazing and would seriously consider having one when funds become available.."*

- *"Fantastic, would love one, bit expensive at the moment!"*

- *"We gave the thought of Electric Bikes some thought & on balance the price range is out of our range at the moment."*

Because of the cost, at least 3 or 4 different groups are considering purchasing shared community electric bikes:-

- *"…as part of our development in our Churches' Tourist Trail [where several churches are combining to produce a range of places to visit] we plan to buy 2-4 in the future [hopefully next year]"*

- *"Crucorney Energy Group have no immediate plans to buy an electric bike, but further down the road, hopefully when we're generating some income, we will consider the idea of purchasing one for community use."*

- *"I'd be interested in forming an e-bike club for sharing them with a few neighbours as a way to reduce capital cost."*

Some people we contacted after the trial finished had decided not to buy but talked about the lasting impact which the trial had had on their transport thinking and behaviour. For some, this meant using their normal bikes more.

- *"I have not bought myself an electric bike, but have started riding my normal bike a lot more and have become a lot fitter as a result. I find that I can get to work almost as quickly as when I come in the car. It's just going home that's slightly slower, due to the hill!"*

- *"I probably won't be buying an electric bike, because it just wouldn't be sufficiently practicable at the moment. But it has made me think very hard about how I get*

around, and the other possibilities than doing most journeys in a car, which has far more capacity than I need most of the time."

- *"(The trial) proved fascinating and gave me a conundrum, buy electric or repair/use my old bike more. Well after thinking for a while I've chosen to repair my bike, use it around town and get the exercise."*

7 Conclusions

The trial was highly effective in giving a large number of people, throughout the Brecon Beacons, a chance to experience riding an electric bike in their own everyday environment. For most, this was their first experience of this mode of transport.

The 2 bikes were heavily used totalling 2,714 miles between them. The average trial ride was 18 miles – further than most would be willing to cycle on an ordinary bike.

Unlike many environmental initiatives, the bikes were seen as great fun. Keen cyclists and occasional cyclists all enjoyed riding them and a surprising proportion said they were seriously considering buying one, in some cases to replace a 2nd car. We know that 3 people have purchased electric bikes as a direct result of the trial; there may be more. The expense is, however, a significant barrier so some communities are considering buying electric bikes to share with a larger group. It would be interesting to monitor how well such schemes work.

In the Brecon Beacons, it appeared that the most popular use for electric bikes was for people who live a couple of miles outside their nearest village or town and reluctantly use the car for their frequent journeys in and out because of an intervening hill. This is a relatively common scenario across our region of Wales.

Electric bikes are clearly not a replacement for the car but they (along with regular bikes) offer one alternative for some short journeys. The fact that they minimise the impact of hills removes a major barrier to cycling in our hilly terrain.

However, the trial results were disappointing in one important regard. The normal bicycle use and rider outlook showed that even keen cyclists do not naturally think of the bike as a functional method of transport, i.e. a way to replace their every day car journeys to work or the shops. It seems that in the UK (unlike Holland or Denmark), cycling is perceived as predominantly a leisure pursuit. We were struck by the fact some of the keenest and highest mileage cyclists in the trial did not use their normal bikes *at all* to replace car journeys and even many triallists chose to use the trial bikes as an opportunity for a day's leisure ride. Certainly weekends throughout the year see the village street in Talybont jammed with visiting cars carrying bikes and offloading keen cyclists eager to ride the Taff trail. If anything, such activities might result in a net carbon gain! It is likely that few of these car-transported bikes get used for the daily commute to work.

Can we change this way of thinking?

Maybe. The novelty of the electric bikes certainly had a significant effect on getting people thinking and talking about interesting alternatives to using their cars – at least on local short journeys. Environmentalists tend to think that you need to change people's attitudes first (in this case to car use) in order to change their behaviour. But increasingly psychologists[10] argue that it works the other way around. Research shows that when people engage in a new or

[10] Including this one!

different behaviour, which disrupts their unconscious habits, then this can trigger a change in their outlook and attitude.

Ideally, this would be the lasting value of the Talybont trial. The trial offered people a novel opportunity to alter their engrained transport habits (driving everyday into town or to work) for 1 day only and enjoy it. In some cases, even that one (pleasurable) disruption of habit could have triggered new thinking about how they get around and the environmental costs of always using the car. It would be interesting to poll the 75 triallists in a year's time to see if the trial has had such a lasting impact. We certainly hope so.

"The trial really opened my eyes ....thanks for taking us where we would not normally think of going."

[i] http://www.breconbeacons.org/communities/sustainability/substainable-development-fund

[ii] http://new.wales.gov.uk/statsdocs/transport/wts07/wts07ch6.pdf

[iii] http://wwwnotes2.leeds.ac.uk/cuttings.nsf/37f0d53aa09a6963802565d000562ea0/bd84daac5a3f99e880256f800035d2b7?OpenDocument

[iv] http://www.bikebiz.com/news/29910/Electric-bike-sales-are-surging

[v] www.onbike.co.uk

[vi] http://www.ctc.org.uk/DesktopDefault.aspx?TabID=4512

[vii] www.bikebins.co.uk

[viii] www.greenvalleys.org

[ix] http://www.prospectory.co.uk/id5.htm