4 years experience of a rural car club

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4 years ago Talybont-on-Usk Energy[2] proposed and offered to sponsor a small, zero carbon car share scheme in its community. I describe here how the scheme operates, its usage levels, costs and carbon savings and the lessons we have learned in trying to run a viable, small-scale scheme in a rural area.

1 Background

Talybont-on-Usk[3] is a small village of ~300 households situated in the Brecon Beacons National Park. It has a shop, café and 4 pubs and is a popular tourist destination for walkers, cyclists and canoeists visiting the National Park. The village is 7 miles from the nearest town (Brecon). A bus service runs through the village 6 times a day but connections to other bus services are patchy and the nearest railway station (Abergavenny) is 15 miles away. About half the households are located within ½ mile of the village 'centre'. The rest are scattered in the surrounding hilly countryside anything from 1-5 miles out of the village.

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[2] www.talybontenergy.co.uk

[3] www.talybontonusk.com

Talybont-on-Usk Energy is a not-for-profit community company which owns and operates a 36kW hydro electric turbine that has been running since 2006. It sells the electricity to Good Energy and invests the income in energy projects in the Talybont community.

1.1 Setting up the scheme

Discovering that personal transport accounted for 40% of our rural carbon footprint[4], Talybont Energy decided to see if it could set up a zero carbon car share scheme. With help from the Brecon Beacons Sustainable Development Fund, Talybont Energy purchased two cars: a second hand Skoda Octavia which could run on recycled vegetable oil ("Mr Chips") and a Mega City electric car ("Bluebell") with a range of 30 miles. At the same time, it purchased a 500L bunded tank to hold the recycled vegetable oil.

Bluebell – Mega City Electric Car

Mr Chips – Skoda Octavia

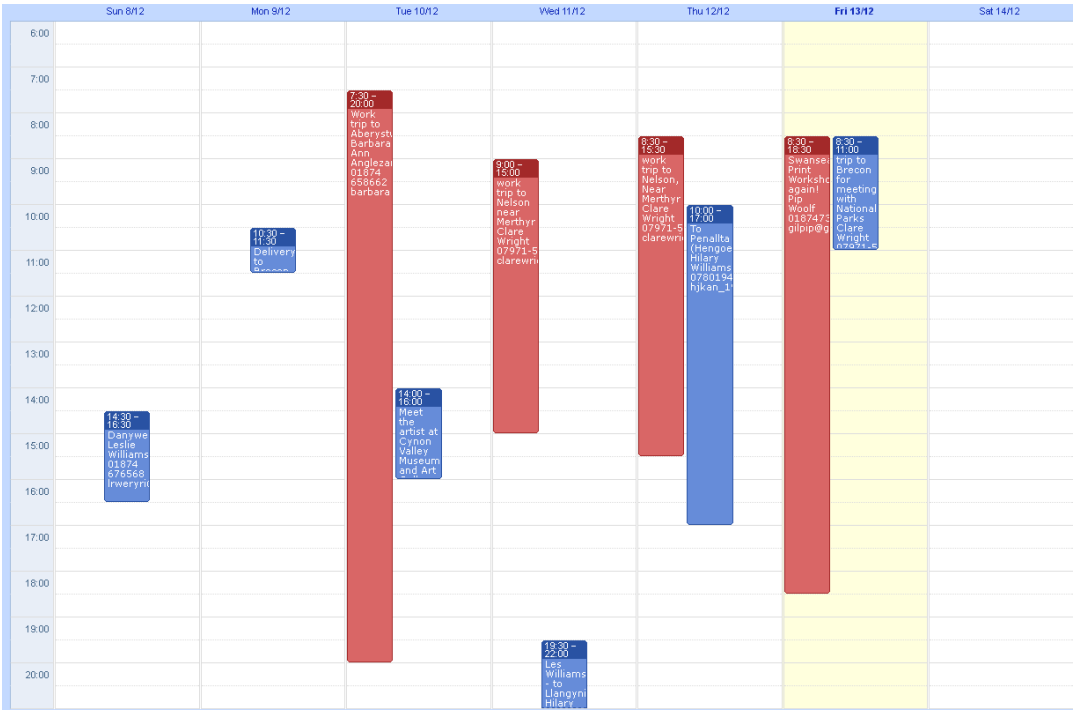
[4] http://theprospectory.files.wordpress.com/2012/02/light-green-strategy.pdf

The scheme was launched in February 2010 with 10 member households and the principal aim of reducing our community's carbon footprint by replacing as many fossil fuel miles as possible with zero carbon miles. We also wanted to explore how a rural car share scheme might work.

Because of the lack of public transport and the distance to shops, work, schools and social events, nearly all Talybont households own a car and many run two or more. In setting up the scheme, we didn't expect that people would or could give up running a car completely but we thought they might be able to give up a 2nd car if they had access to a shared vehicle.

Members pay £25/year to belong to the scheme. They provide copies of their driving licences and sign a standard rental form. They are then instructed in use of the vehicles.

The vehicles are booked online[5]. Here is a snapshot of a recent week of bookings (different colours for different vehicles). We encourage members to say where they are headed in case there is an opportunity for lift sharing.



Both vehicles are parked at the community hall where there is a 4 kW PV panel which powers the electric vehicle. There is a key-coded cabinet at the hall and a log book in each car. Users complete the log book for each trip and, once a month, the entries are copied manually into a spread sheet which calculates the amounts owed from which email invoices are created and sent. Members pay either online or at the village Post office.

One member receives discounted use of the vehicles in return for maintaining them, ordering and organising biodiesel delivery and copying the log books.

[5] http://www.supersaas.co.uk

Each year, we seek to set the vehicle hire rates such that they are roughly comparable with using your own vehicle for the same journey. This is to incentivise their use as a carbon saving alternative. Broadly, this means that the vehicles cover their running costs (insurance, maintenance, fuel and electricity) but not vehicle replacement. That is currently covered by Talybont Energy.

1.2 Current set up (2013)

Electric Bluebell died a death in Autumn 2012 and was replaced in May 2013 by a Kangoo ZE electric van/5 seater ("Heulwen"[6]). This vehicle was also purchased by Talybont-on-Usk Energy. Heulwen has a range of 70-80 miles. The motivation for buying a van was that non-members had commented that they could all think of occasions where a van would be very useful whereas an electric vehicle isn't useful in its own right if you already own a car. We therefore hope it will open out the vehicle's utility to a wider set of the community.

Heulwen – Kangoo ZE Van

The 2013 scheme has 15 member households – only 6 of these are from the original 10.

The 2013 charges for vehicle use are as follows:-

Mr Chips - £18/day and 18p/mile

Heulwen - £2/hour and 5p/mile.

2 Some basic stats

In the 45 months that the scheme has been running, Mr Chips has covered 62,000 miles on biodiesel produced from waste vegetable oil. He is mostly booked by the day and generally does long runs all over the country. His regular round

[6] "Sunshine" (given how she is charged)

trips include: Aberystwyth (150 miles), Bristol (120 miles) and London (350 miles).

In 2013, Mr Chips has been in use 42% of days. 60% of his trips have been 1 day long and 40% 2 days or longer. Over ½ his trips were work related – often paid for by the member's company. The main motivation for using Mr Chips is carbon saving. Figure 1 shows the distribution of his trips in miles. 61% were over 100 miles.

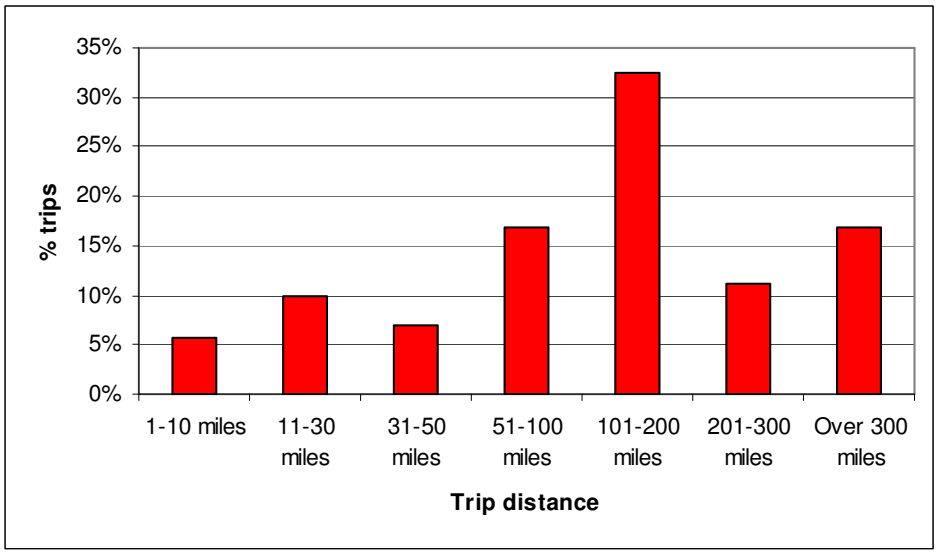


Figure 1 : Mr Chips' trips in miles

Bluebell, the small electric car, did 7500 miles (mostly in and out of Brecon) before expiring from a fried battery in autumn 2012. Her average (and most frequent) trip was 14 miles – in and out of Brecon.

In her first 7 months (May to November 2013), Heulwen has been in use 58% of days and has travelled 3,600 miles. Figure 2 shows the distribution of her trips in terms of miles. 79% are less than 50 miles (round trip) and the average trip is 33 miles in distance and 4 hours in duration. She has only so far made 2 trips which required charging at the destination.

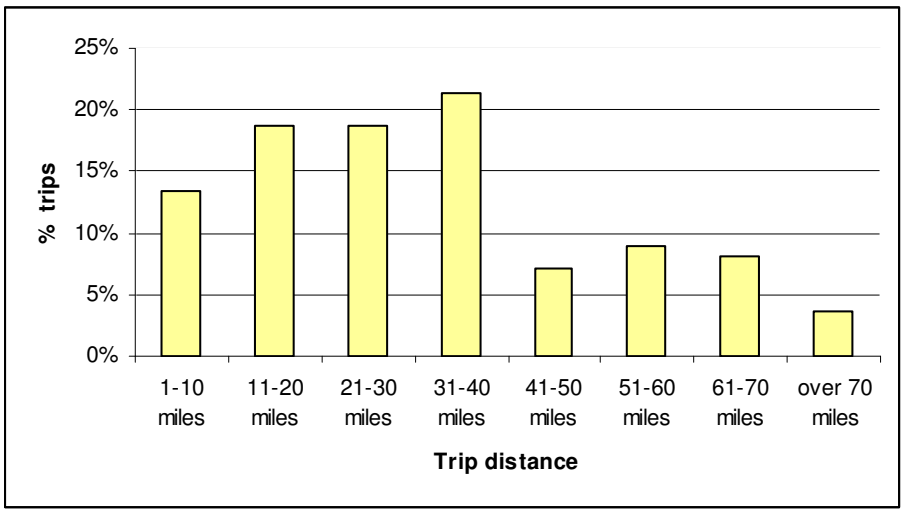


Figure 2 : Heulwen's trips in miles

Members' use of both vehicles is extremely skewed. 5 member households account for 91% of the car trips and 97% of the revenue! 4 households haven't used the cars at all in 2013 and 2 households have only used them once. Despite various changes (and growth) in membership, this skewed pattern of usage has remained much the same across the 4 years.

One 2-person household has given up running a 2nd car as a result of the scheme.

Since the start of the project, the combined cars have saved ~24 tonnes CO2 in replacement car journeys. This includes some shared journeys.

Mr Chips is currently costing around £3,200/per year to run (insurance, tax, biodiesel, MOT and maintenance). So far, his usage revenue has always covered these costs with a small surplus for contingencies (he is now 10 years old).

Heulwen costs around £1500/year to run (insurance, battery rental and electricity). Her current hire revenue is not quite covering this but it looks like it will start doing so shortly. In usage terms, she does almost 3 times as many trips as Mr Chips but these are on average 1/5 of the distance and 1/3 of the duration and hence generate less income.

3 Things we have learned

The economics of running a small rural scheme are very different from a town or city and we have found them very challenging. Without the continued support of Talybont-on-Usk Energy, the scheme would probably have folded by now.

3.1 On the plus side

Setting up the scheme (given the purchase of the cars was funded) was straightforward and it has proved easy to manage and run with relatively little volunteer effort. With the odd exception, members have been co-operative and responsible in their booking and use of the cars. It does help that they mostly know one another.

We have had very few problems with running a Skoda Octavia on biodiesel although accessing biodiesel can be a problem.

As a result of the scheme, we have made significant carbon savings in terms of replacement miles. We have also enabled people to experience what it's like to drive an electric vehicle.

Everyone involved is very keen for the scheme to continue. The vehicles (which are liveried) also generate interest and conversation wherever they go.

Involving local small businesses who occasionally need an extra car or wish to cut their carbon footprint has proved a valuable source of income for our scheme and one we are looking to develop. When a business is paying the rental cost, there is less sensitivity to price. Schemes that combine businesses and local residents in a single scheme would seem a promising way ahead.

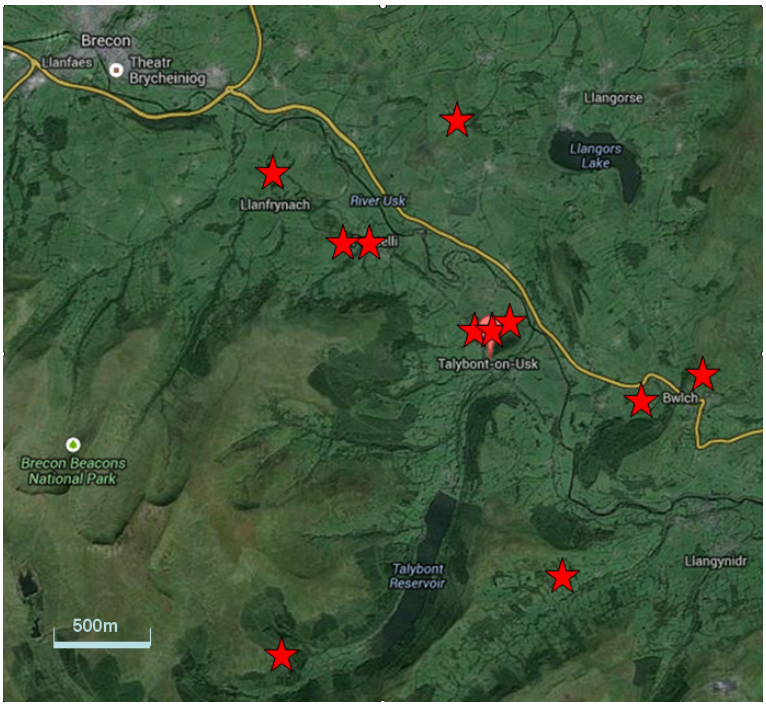
Giving the cars names has given them character and created a sense of shared care and ownership. Members remark how much they enjoy sharing.

The log books in the cars (apart from keeping a legal record of who is driving and the data for invoicing) have proved useful for leaving informal comments and notes pertinent to the cars or other drivers.

3.2 The challenges

3.2.1 Geography & population

The challenges we have encountered are largely to do with a sparse and geographically scattered population. To illustrate this, the red stars below show where current car club members live – only 1/3 live in the village. The rest live 2 to 5 miles away from where the cars are kept.



Scattered location of car club members

It's difficult for anyone living here to cope without a car and, if they own one, then they will generally not be interested in paying to use another.

In our experience, sharing a car in a rural area only works if

a) you don't need a car (or a 2nd car) every day

b) you live within easy walking or cycling distance of where the shared car is kept,

c) there are enough members and cars in the scheme for there to be a high probability one being available when you need it and

d) you have back up transport in case a car is not available.

In this respect we have a basic numbers problem. There aren't enough people who live within easy reach of where the cars live to support the size of fleet which would maximise flexibility and availability and there is no effective public transport back up if a car is not available.

3.2.2 Mixing models of use

We understand that some rural areas operate a different model where 2 or 3 co-located households (who each need a car at different (but relatively consistent) times) can successfully negotiate a shared pattern of use of 1 car. It might be better in rural areas to start with a small social and co-located cluster like this, but we didn't do that.

We have also found it difficult to mix models of use. For a while, we had a member who had given up their 2nd car and was experimenting with using a shared car instead. Not surprisingly, their usage rose rapidly and the car was often absent for a day. Other members found that cars were no longer available when they needed them and started voting with their feet. If a member needs very regular use of a vehicle (especially for longer journeys or time periods), then that has to fit with other members' usage patterns which is difficult to achieve other than in the small social group mentioned.

3.2.3 Insurance

Insurance for self-drive car rental or car clubs is expensive and there are very few providers. The larger the fleet, the better the deal.

3.2.4 Psychology of car economics

People generally have no idea how much it costs them to make a short (or long) trip in their own car. They are not used to thinking about it in trip terms. Hence, they tend to think even our low charges per mile and hour are prohibitively high.

3.2.5 Telematics and umbrella schemes

We explored joining one of the national umbrella schemes like Co-Wheels[7] or Moorcar[8] both of whom were very helpful and informative. We were primarily interested in using their telematics systems which allow easier access to the cars (via swipe card or mobile phone) and automatic trip logging and invoicing. However, at the moment, the hire charges we would need to set to cover the installation and annual service fees for these systems would deter nearly all our current members. Again, the larger fleet the lower these service costs are.

3.2.6 One-off rentals

Belonging to one of these schemes would have enabled one-off rentals to, say, visitors to the area (which would help our income). At the moment, we can't support one-off rental because of the time and logistics involved to our (otherwise occupied) volunteers in checking licences, collecting money and handing over/collecting keys. We are exploring whether such a service could be offered through our village shop.

3.2.7 Electric vehicles

There is a lot of enthusiasm for electric vehicles (EV's) in car club schemes. This may be partly because public grants for low emission vehicles are more readily available.

Whilst we are delighted with our electric van, particularly our ability to charge it via solar PV on the roof of the community hall, we would advise rural groups to think very carefully about acquiring an electric vehicle as part of their fleet. This is particularly true if they have to finance it themselves as EV's are relatively more expensive.

These are the reasons why:-

1. When not in use, an EV has to be kept plugged in at a dedicated charge point to ensure it is ready to go. That can limit car locations.
2. Because of its restricted range (70 miles in our case), an EV can only be used for shorter journeys and therefore for shorter time periods. Although Heulwen (our electric van) does almost 3 times as many trips as Mr Chips, these are on average 1/5 of the distance and 1/3 of the duration and generate less than 1/3 of Mr Chips' rental income.
3. If a shared vehicle can only manage relatively short trips, it makes less sense to travel any distance to pick it up.
4. Electric vehicles are slightly different from conventional cars and drivers it takes time to learn how best to drive them for maximise range taking into account the effect of hills and air temperature. This can be off-putting to new or occasional members.

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[7] http://www.co-wheels.org.uk/

[8] http://www.moorcar.co.uk/

5. EV's have downtime when they are re-charging. If a shared EV has done a trip in the morning, it may or may not be able to manage another trip later that day. Although you can monitor the current charge level of the EV remotely, this doesn't help if you want to make a prior booking and be confident that you will be OK.
6. If the previous trip drained the battery completely, it can require 6 hours to recharge. Should the driver be charged for some of that downtime or not?
7. The public charge point infrastructure is still at an early stage of development. Incompatibilities between EV's and charge points require an array of expensive adaptor cables and some knowledge on the part of EV drivers. To use public charge points, you often have to join different schemes. Heulwen currently belongs to 2 such schemes and carries 2 different cards. In our experience, the charge points aren't always available or functional and that can leave you stranded. Even when available and working you may not be able to leave your EV parked at one for the length of time your visit requires. It is difficult to get accurate information in advance of making the trip. It certainly requires a pioneering spirit at the moment to make such trips!
8. At 500g CO2 per kWh, EV's charged from the grid don't necessarily offer lower emissions than the more efficient modern diesel and petrol cars.

4 The Future

4.1 Community biodiesel?

We are exploring the possibility of manufacturing biodiesel in the village from waste vegetable oil collected from our cafes and pubs. It will be challenging to do this on a small but economically viable scale. There is also a paucity of cars which can run on biodiesel without conversion.

4.2 Larger fleet?

Whilst we cannot envisage Talybont itself being able to support a larger shared fleet, it might be possible to operate a larger shared fleet either in Brecon or distributed across a set of neighbouring villages. These would probably only work for longer journeys (because of how far people are prepared to travel to pick one up) but might enable us to achieve the availability which can only come from a larger user and vehicle population.

If some of the finance for such a fleet could come from local businesses that use the vehicles as well, then that would also help.

4.3 Tie in with related schemes?

A separate scheme, The Eco Travel Network[9] runs a fleet of electric Twizys for rental to visiting tourists. The Twizys are based at accommodation businesses across the National Park and they pay for the vehicles and use them themselves as well as renting them out. A few local residents and businesses are also experimenting with using Twizys for their own local or work transport. Apart from their lack of luggage carrying capacity, the Twizys offer handy and ultra low

[9] www.ecotravelnetwork.co.uk

energy transport for short local journeys[10]. One future model we can foresee is for more local households to own such a low cost, low energy personal EV for local trips and to enable them to reach the base where a larger fleet of shared vehicles is kept which can be booked and used for longer trips. We are already seeing this model in action with 2 members of the car scheme in Talybont owning Twizys. One lives 2 miles from the car base and the other 4 miles.

Personal Twizys being used to reach the shared vehicle base

5 Concluding comment

Running a rural car share scheme has proved logistically straightforward but economically challenging. 4 years on, we continue to experiment and evolve and that keeps us all thinking, talking and learning about ways to cut down our transport carbon footprint *and* share resources. Therein lies most of the value.

10 http://theprospectory.com/2013/08/07/twizyology-4-low-energy-travel-a-different-way-of-thinking/