

Driving Back to the Future: Understanding the Impact of Transport Programmes over Time

Kate Jenkins, Energy Saving Trust, Cardiff, UK
David Kenington, Databuild Research and Solutions, London, UK

ABSTRACT

This paper is about the challenges of evaluating a programme aimed at improving the fuel consumption of fleet vehicles¹. Fleets are tricky to evaluate for a number of reasons:

- Organisations are complex and manage fleets differently and so the timing of when to evaluate the impact can be difficult to determine as organisations can take different lengths of time to implement changes
- Fleet turnover is slow, so some fuel saving initiatives only bear fruit years after intervention and so often these will not show up in an evaluation if the organisation is spoken to too close to the intervention

Energy Saving Trust (EST) has managed a programme delivering advice to organisations on how to make their fleet more fuel efficient for over 10 years. With recommendations covering a wide variety of measures from policy to technology, the speed with which these recommendations are put in place and the length of time that they may remain can differ from measure to measure, placing difficulties on the evaluation.

The programme has been evaluated for a number of years and as the environment that the programme operates changes so the evaluation has adapted and built on previous evaluations to ensure lessons are learned and the programme can evolve as appropriate. Over the course of the evaluations, customers have re-engaged to track impacts over time. Analysis has shown that the extent to which measures stay in place differs depending on the measure. Using the data collected three main factors have been established that influence the lifetime factor for a measure: 1) continuation rate, 2) roll out rate and 3) endurance factor. Using these rates lifetime factors have been calculated that range from 2.5 for monitoring and targeting of vehicle emissions to 13 for the adoption of low CO₂ vehicles. This paper explains how these rates have been calculated.

Background

Climate Change is considered to be one of the greatest environmental threats facing the World today. CO₂ is the most significant of the greenhouse gases (GHG) contributing to Climate Change. The Climate Change Act (2008) has set a long term legally binding framework for GHG reduction in the UK. The Act requires the Government to reduce GHG emissions by at least 34% by 2020 and 80% by 2050 from 1990 levels in the UK (Department for Transport 2011).

Domestic transport emissions (i.e. excluding emissions from international aviation and shipping) currently account for around 25% of total UK CO₂ emissions and 21% of total GHG emissions. Transport is therefore identified as having a critical role in helping the UK meet its Climate Change Act (2008) obligations.

In 2011, 58% of all new car registrations were for company use (SMMT 2012). In 2010 the average new car CO₂ emissions for company cars was 143.8g/km compared to 151.1 g/km in 2009 and 178.8g/km in 2001 (SMMT 2011). This highlights that manufacturers are doing their part in reducing emissions of new vehicles but there are still things that can be done by companies using vehicles for business to improve the efficiency of their fleet. Van

¹ For the purpose of this paper, “fleet vehicles” refer to cars and vans up to 3.5 tonnes

emissions accounted for around 13% of surface transport CO₂ emissions in 2009. Emissions from vans fell by 3.2% in 2009 compared to 2008 mainly due to a decrease in distance travelled (Committee on Climate Change 2011).

For the purpose of this report, the “fleet sector” refers to all organisations using at least one vehicle for business use.

The Energy Saving Trust (EST) is one of the key delivery agencies for the UK Government’s climate change mitigation objectives. EST programmes and consultancy provide independent and impartial advice towards the goal of energy efficient behaviour change and technology purchasing.

Their key client is government, at national and local levels: the UK Government in Westminster and the devolved Welsh and Scottish Governments.

Funded by the UK Department of Transport and managed by EST, the Fleet Advice programme works to minimise the environmental impact of car and van fleets.

Scope of the fleet advice programme

The Energy Saving Trust has been providing in depth advice and consultancy to the fleet sector for a number of years. In this time, fleet decision makers and car owners have become increasingly aware of both the cost and environmental issues associated with transport. The economic crisis and rising fuel prices have meant that all organisations are looking at trying to manage this cost more effectively and secondly, understanding how the decisions they make contribute to the impact the transport sector has on the environment.

The primary goal of the programme is to advise and enable organisations, both private and public, to implement actions that embed best practice and reduce fleet transport emissions. The audience is organisations using cars or vans for their business including employees using their own vehicles (grey fleet) and organisations providing vehicles to employees as a perk. The guidance is focussed on identifying and maximising CO₂ and cost reductions. Advising on subject areas such as tax changes or management techniques through new energy saving technologies, the programme quantifies savings for individual organisations and demonstrates how they can be achieved within the constraints of day-to-day organisational needs.

The programme is available in England and provides advice through two key service offerings:

- Small fleet services – which include a newsletter, email and telephone advice for organisations with fewer than 50 vehicles
- Green Fleet Reviews (GFR) – tailored consultancy service; this involves three or more days of professional consultancy advice to fleets of over 50 vehicles with the aim of reducing the emissions of the fleet. The GFR is a free service to qualifying organisations in England.

This paper focuses on the Green Fleet Review service. Each organisation that has a review will receive a report that contains data collected by the consultant on the organisation’s current vehicles and their CO₂ emissions along with a series of recommendations on how they could improve the emissions of their fleet and an idea of the financial and CO₂ savings they could benefit from if they were to implement the recommendations. The Green Fleet Review reports usually cover the following measures:

- Company car policy change –improving their company car policy for example putting caps on acceptable vehicle CO₂ emissions, revisions to mileage payments, removal of free fuel.
- Monitoring and targeting – adopting CO₂ targets and improving the way that data is collected for improved fuel management
- Modified technologies – technologies that can be fitted to vehicles that do not come as standard such as the installation of telematics and installation of speed limiters
- Driver training – training drivers on how to drive more efficiently

- Adoption of alternative fuels/low CO₂ vehicles – purchasing more efficient vehicles
- Managing business travel – for example, encouraging staff to reduce the amount of travel through the use of video or phone conferencing to using public transport.

Once organisations have received the report, the consultant will often meet with the organisation to go over the recommendations and discuss how these could be implemented. This may involve discussing the costs of putting the recommendations into practice and how long it may take them to see a return on their investment. The return on investment includes a reduction in the cost of fuel, improving the efficiency of workers (for example less time spent travelling or by using public transport so staff can work rather than drive) or a reduction in the cost of maintaining vehicles. The aim of the programme is to help organisations understand what they can do and how to go about making the changes rather than providing organisations with money for the implementation. There are therefore no specific grants or rebates linked to the Green Fleet Review although the consultant will inform organisations of any particular schemes that could be running at the same time.

Programme Evaluation

The programme has been running for over 10 years and has been evaluated since the start. The purpose of the evaluation is to provide an in-depth understanding of the engagement of organisations with the GFR and to quantify the impact of advice in terms of CO₂ emission reductions and cost savings.

The evaluation is important for two main reasons:

- To provide independently gathered and assessed evidence to funders on the value of the programme and to demonstrate the impact it is having on organisations
- To allow the programme team to collect feedback impartially so that they can use the findings to improve and ensure the programme is delivered in the most effective way.

In order to understand the full extent of the CO₂ and cost savings achieved it is important to understand how long any recommendations implemented stay in place for. Changes to fleet management policies and activities are likely to have significant lifetime impacts, differing between types of action taken. For example, a programme of fuel efficient driver training for staff will have a markedly different persistence than a change to a company car policy. Manufacturers often have data on their own equipment (Harris, 2010) or research on driver training (CIECA 2007) but understanding how organisations work in practice and how long these may stay in place for has not been researched in detail.

A full evaluation looking into this would need to include a study over a number of years with a fairly large research budget. The timings and budget for this evaluation did not allow for a full scale study. The evaluation therefore focused on collecting data to establish three main factors influencing the lifetime savings of the different measures included in the GFR:

- The continuation rate – the proportion of organisations that still have the measures in place one year after they were implemented
- The roll out rate – the extent to which measures that were only partially implemented at the first evaluation stage have been implemented across the whole fleet
- Endurance rate – how long measures may be in place for and how quickly they may stop.

Evaluation methodology

The evaluation was conducted through quantitative and qualitative research. The quantitative work was split into two segments.

- **Quantitative telephone interviews carried out with organisations which received a Green Fleet Review in 2009/10.** These interviews focused on investigating how far the consultant's recommendations had been implemented by the organisation. Where

action had been taken, the benefits and the extent to which they could be attributed to the GFR were explored.

- **Quantitative telephone interviews with organisations which had received a Green Fleet Review in previous financial years and had previously been contacted for evaluation purposes.** A selection of sites were revisited to find out if, with a longer timescale, actions were more likely to have been implemented and how far measures that had previously been implemented had continued to achieve a similar level of savings.
- **Face to face and telephone qualitative interviews** were carried out with organisations with which quantitative interviews had already been conducted to explore action and the influence of the programme in more detail.

The evaluation has covered the following main indicators:

- Satisfaction with the service
- Uptake of the recommendations
- Motivators and barriers to the uptake of recommendations
- The extent to which the GFR helped to influence the uptake of recommendations
- Further support they would benefit from to implement the recommendations

The data from the evaluation on the uptake of the recommendations and the extent to which the GFR influenced these enables an estimation of the reduction in CO₂ emissions and the associated cost savings linked to the reduction in the use of fuel².

Evaluation sample for the lifetime study

Just under 200 organisations received Green Fleet Reviews in 2009/10 and 105 of these were interviewed as part of the evaluation.

In addition a sample of 40 fleets that reported implementing or planning to implement measures in past evaluations were contacted to establish:

1. Whether the measures are still in place
2. Whether planned measures have been implemented
3. Whether measures have been rolled out across their fleet.

25% of the respondents were interviewed face to face; the remainder by telephone.

Challenges of evaluating fleets

Fleets are tricky to influence for a number of reasons:

- Organisations are complex and manage fleets differently so this impacts on the amount of time that it may take for the recommendations to be implemented
- Fleet turnover is slow, so some fuel saving initiatives only bear fruit years after intervention
- Companies often use 'grey fleets', which are more challenging to influence and more difficult to evaluate due to organisations having little data on the vehicles used
- Drivers behave irrationally, particularly when allowed to choose their vehicles and so they do not always take up the most sensible cars (i.e. the most efficient) as often they are seen as status symbols.

The first two challenges mean that it is also difficult to evaluate the impact that the programme has on fleets as it is difficult to decide when the evaluation should take place and how long these actions may be in place for in order to understand the full impact. The third and fourth challenges are primarily a challenge for the delivery of the programme and the

² Cost savings due to reduced costs for vehicle insurance, maintenance of vehicles, an increase in staff efficiency or other cost savings have been looked at on an anecdotal basis as organisations rarely have data to allow this to be calculated and this was not a primary aim of the evaluation.

way in which consultants deliver the recommendations and the way the consultants help organisations to tackle their grey fleet (often the first issue is in helping them to manage the data more effectively).

The methodology manages the main challenge of understanding when organisations implement recommendations in two ways:

- Survey timing
- Estimating the lifetime of actions through longitudinal research

It is these two areas that form the basis of this paper.

Survey timing

The methodology for the main evaluation consisted of a two part basis:

- Firstly, customers are contacted three months following receipt of the report – the aim of this interview is to capture information on satisfaction with the GFR, understanding whether expectations were met, how useful the recommendations were and to what extent, if any, they have implemented any of the recommendations (it is not anticipated that many will have implemented measures at this stage but where they have this is captured)
- Secondly, organisations are contacted again six-nine months later – this is to focus on recommendations implemented, rejected and planned

This allows the programme team to react quickly to issues with the delivery of the programme and to get an early indication of what businesses think about the recommendation but also allows actions to be captured later on in the process thereby not underestimating the impact of the programme.

Understanding lifetime emissions

For a number of years, EST had applied a lifetime factor to annual savings figures to calculate lifetime savings. This factor was based on the best available data at the time but was based on a small sample size and took a simplistic view of the situation. One main problem with the savings factor was that the same factor was used for all measures taken; it therefore did not take into account:

- The amount of time taken to implement the measure
- The likelihood of the measure to be rolled out to cover all the fleet
- The likelihood that some measures would last longer than others especially where there was a policy change.

The evaluation team at EST worked together with Databuild Research and Solutions to identify a new way of calculating the lifetime savings. Further research has been undertaken which involved recontacting GFR respondents from earlier years to find out if recommendations were still in place. As mentioned earlier there was no known work that had looked at this and so this evaluation, with a limited budget, sought to identify some of the key factors in estimating the lifetime of the different measures.

Methodology for lifetime calculations

Using data collected from organisations and data on emissions of vehicles (defra/DECC 2011), annual CO₂ savings achieved by organisations through the recommendations can be estimated. In brief these annual savings are calculated as follows³:

- Data is collected from respondents on the number of vehicles in their fleet, fuel used, annual mileage driven and annual fuel costs

³ As the savings methodology is not the main focus of this paper further information on the calculation of the annual savings can be obtained from Kate Jenkins, Energy Saving Trust

- The annual emissions of the fleet is calculated using the above data and CO₂ emissions data (defra/DECC 2011)
- Each recommendation has a % saving factor that can be applied to the emissions if the recommendation is said to be implemented by the organisation
- Organisations are asked whether the advice from the GFR was crucial, some help or no help for each measure implemented – where organisations claim the advice was crucial or some help the savings are attributed to the programme.

The objective of the evaluation is to understand the extent to which the savings would persist and in some cases whether the savings would increase if the measures were rolled out across a larger proportion of the organisation, it was not to evaluate what the savings would be if they implemented all of the recommendations. To this end, the evaluation attempted to estimate a factor by which the savings initially achieved could be multiplied by to understand the true impact of the savings over time.

The methodology looked at three aspects⁴:

- The **continuation rate** – the proportion of organisations that still have the measures in place one year after they were implemented
- The **roll out rate** – the extent to which measures that were only partially implemented at the first evaluation stage have been implemented across the whole fleet
- **Endurance rate** – this provides more of a qualitative understanding of how long measures may be in place for (where organisations still continued to have a measure in place – stated as the continuation rate – they may have an idea of how long they will carry on with this measure for) and how quickly they may stop.

These are described in more detail in the next section.

Data on the roll out rate was analysed from the 105 quantitative interviews from organisations receiving Green Fleet Reviews in 2009/10. The continuation rate and endurance rate was estimated from the 40 follow up interviews with respondents that had received their Green Fleet Reviews in 2006/7 and 2007/8.

Suggested model

A model has been created for each of the six different measures:

- Company car policy change
- Monitoring and targeting
- Modified technologies
- Driver training
- Adoption of alternative fuels/low CO₂ vehicles
- Managing business travel

For each measure a savings profile model has been created to calculate the lifetime of each measure. This section outlines the methodology for creating these profiles.

When discussing how long the measure will stay in place for, some respondents felt that the measure would be in place indefinitely. Even if organisations feel that the measure will stay in place indefinitely, at some point the measures are likely to be changed as a result of commercial and operational changes. Therefore, in order to calculate the lifetime of a measure it is necessary to assume a period of time after which the measure will stop. In this

⁴ This paper does not consider further multiplier effects such as organisations implementing other measures that may not have been recommended but that the GFR triggered them to think about by thinking about fuel efficiency. Nor does the evaluation look at the multiplier effects linked to organisations hearing about the recommendations from other organisations and implementing measures without having a GFR themselves. Both of these elements will impact on the savings achieved but were outside of the scope of the evaluation.

case 7 years has been used as the maximum length of impact^{5 6}. For some measures the savings will decrease down towards zero and for others the savings have been assumed to just stop, this is described in more detail below.

The following chart shows an example savings profile for illustration, each savings profile will differ depending on the measure and is described in more detail in the results section:

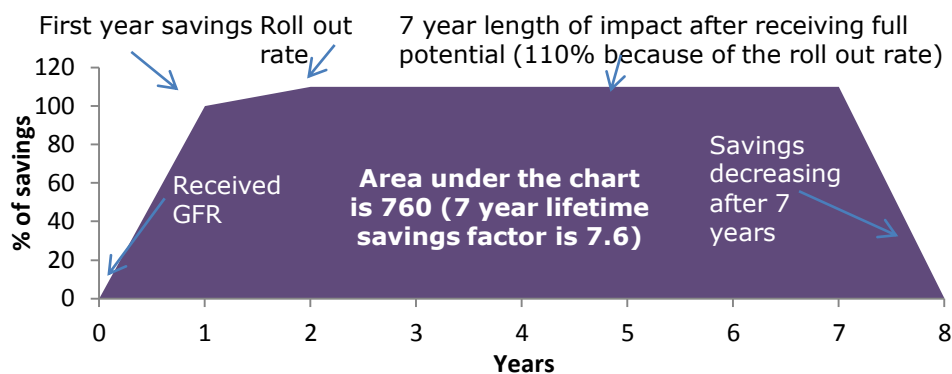


Figure 1: Example Profile of Lifetime Savings

The time at which they receive the review is shown on the chart at 0 years and as 0 savings. At year one on the chart, the savings are those that have been estimated from the evaluation a year after the Review achieved by the measures that the organisation had implemented at that time. In most cases this is shown as 100% but in some cases whilst the measure has been put in place it may take longer for the savings associated with the measure to be realised (e.g. company car policy where the fleet replacement policy may be 4 years – in which case the first year would show 25% saving and it would take 4 years for the savings to reach 100%). The 100% does not relate to the total that could be implemented only to what has been achieved after the first year.

The **roll out rate** shows the extent to which the measure is then rolled out to the rest of the organisation (e.g. if the training to start with just covered the sales team but then it was decided to roll out the training to all drivers). In the example shown here the roll out rate is 110% (i.e. rolling it out to a further 10% of staff on top of the original amount trained).

The **continuation rate** looks at the extent to which the change stays in place, for example if a company car policy changed it is likely to stay in place for a while as it is unlikely to be withdrawn once it is written in to a policy. However, driver training might be less likely to continue. For example in figure 1 the continuation rate would be 100% (indicating that the measure was still in place across all organisations that implemented it) however if the continuation rate was 95% the extent to which the savings would increase would be 105% rather than 110% as in the example in figure 1 (a 5% decrease due to continuation but a 10% increase due to extended roll out).

Unless the analysis has shown otherwise, the lifetime of the measure is said to be seven years from implementation (for example, for monitoring and targeting the data has shown that it is likely that commitment to the measures is likely to decline after two years). After seven years the savings will decrease to zero. The amount of time this takes to decrease is in line with how long it took from the first year to maximum implementation so one year in the example diagram above. Where the analysis has shown that there is not a decrease, the savings have just been cut off at seven years rather than allowing the savings to continue indefinitely.

⁵This is based on the amount of time that it takes for organisations to change a policy once it has been in place, this is suggested as the average length of time a CEO stays in post, whilst there is no definitive agreement on this a number of studies have been done (Canavan, Jones & Potter 2004; FSB 2010; Simms 2010)

⁶ Profiles were also created using 5, 9 and 11 years as the cut off to look at the difference that this makes to the lifetime factor.

Lifetime results for each recommendation

This section highlights the main results of the evaluation with respect to understanding the lifetime of the recommendations implemented. The full results of the evaluation demonstrating the impact of the GFRs are not included here as they do not form the main subject of this paper.

Roll out rate

In the quantitative survey, respondents that have implemented a measure were asked two questions regarding the proportion of the fleet that the implemented action had covered:

- 1) What percentage of their fleet had been covered by the implementation
- 2) Did they plan on rolling out the measure to cover more of their fleet?

Figure 2 shows the percentage of the fleet already covered when spoken to in the evaluation approximately 12 months following the GFR and the additional proportion of the fleet they envisage being covered in the future:

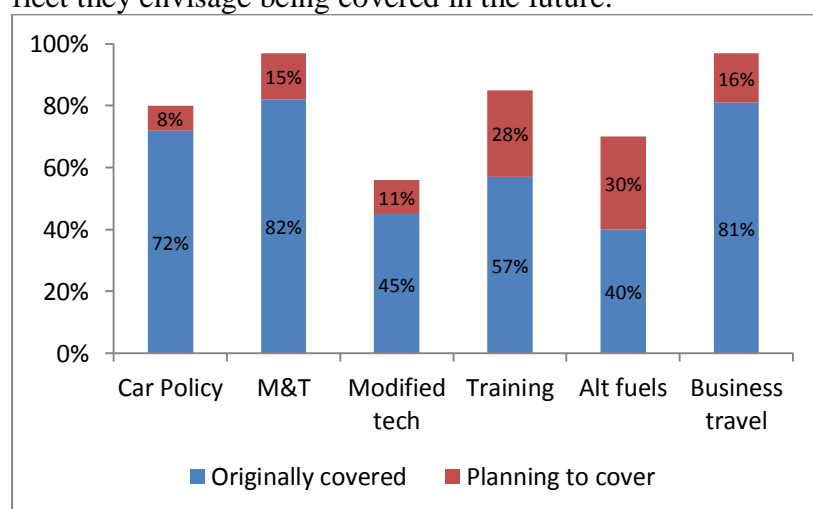


Figure 2: Proportion of fleet covered by the measure one year after receiving a GFR (n=145)

The roll out rate is estimated by calculating the factor by which the original proportion is likely to increase, for example the calculation for driver training would be:

- Originally the training covered, on average, 57% of drivers
- Organisations are planning, on average, to cover a further 28% of drivers
- The roll out factor is therefore 150% (85⁷% divided by 57%)

Based on the figures shown in the chart the roll out rates for the six recommendation type are shown in table 1.

Table 1: Roll out rates

Measure	Roll out rate
Company car policy change	110%
Monitoring and targeting	110%
Modified technologies	125%
Driver training	150%
Adoption of alternative fuels/ low CO ₂ vehicles	175%
Managing business travel	120%

⁷ 57% plus 28%

As shown in table 1 there are differences in the roll out rate between different measures. The lowest roll out rate is for company car policy this is because generally a policy will cover all vehicles and so there is a limit to how much further it can be rolled out. In some cases the initial policy may have only covered company cars and then changed to include cars bought using car allowance and so this would lead to a small increase in roll out rate. This compares to the adoption of low CO₂ vehicles where usually only one or two are trialled first and then once this has proved to be successful the organisations may buy more similar vehicles to add to their fleet.

Continuation rate

In the qualitative research, respondents were asked whether they still had recommendations that they had previously implemented in place. Figure 3 shows the extent to which organisations still had the recommendations in place two to three years following the GFR. For two of the measures – company car policy and alternative fuels – all organisations said these were still in place since receiving their GFR. In the case of the company car policy these will have been written into a policy and therefore to stop the policy would require more intervention than to carry it on and so it is easier for organisations just to carry on with the policy.

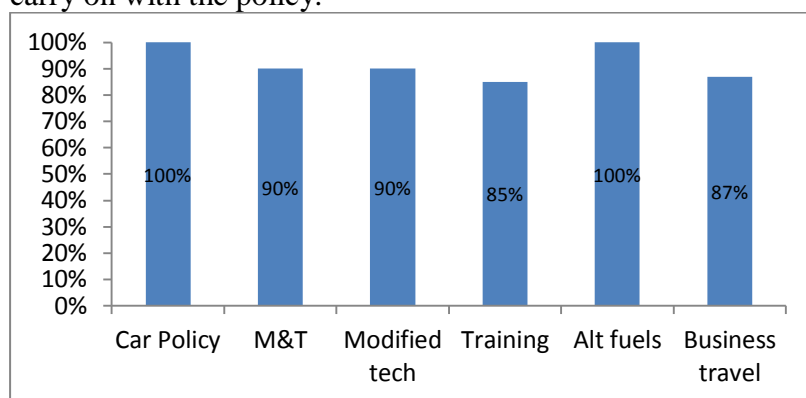


Figure 3: Percent of measures still in place two to three years following the GFR (n=40)

With alternative fuels organisations will have bought one or two vehicles and are still using them, only in circumstances where the organisation did not find the vehicles to work effectively would they get rid of the vehicle.

For monitoring and targeting in a few cases the motivation for this to continue has decreased as day to day issues have taken over.

For modified technologies, in some cases respondents have leased or borrowed them on a trial basis but felt that they had not seen the benefits of the telematics and had decided not to carry these on.

Driver training had continued where organisations decided to offer refresher courses to those trained previously.

In a few cases the changes to business travel have not carried on, again mainly where day to day issues have taken over from the original motivation for the change. However, where the changes were actually written into policy the changes have continued and still remain in place.

Endurance rate

This is based on qualitative data and is therefore an estimation of what happens within organisations based on their responses.

1) Company car policy change

Policy implementation follows a four year cycle until it covers all vehicles and actions due to the fleet replacement cycle (based on the qualitative research). The measure is

unlikely to be discontinued and so can be considered to continue indefinitely, but then start to decrease after seven years due to commercial and operational changes. The savings will then decrease over four years, rather than immediately, due to the fleet replacement cycle.

2) Monitoring and targeting

Monitoring and targeting actions in general are likely to be discontinued during a 4 year period. After the savings realised in the first year the savings will continue for a year but they would gradually decline over a two year period due a decreasing commitment to the monitoring.

3) Modified technologies

Unless the technologies are discontinued fairly early on (see continuation rate) the technologies are then generally in place indefinitely, according to respondents. Therefore after the seven years the savings are likely to decrease over two years in line with the length of time it takes for the savings to increase to their full potential.

4) Driver training

The endurance rate for driver training assumes that in line with the continuation and roll out rate the driver training continues indefinitely for those that do carry on providing refresher courses and so is stopped after seven years in line with operational and management changes.

5) Adoption of alternative fuels or low CO₂ vehicles

As with company car policy, the policy implementation follows a four year cycle. The measure is unlikely to be discontinued and so can be considered to continue indefinitely according to the respondents. However, as discussed due to operational and commercial changes for the purpose of this model the savings will decrease after seven years. The savings will decrease over four years due to the fleet replacement cycle.

6) Managing business travel

As with the other policies, the measure is unlikely to be discontinued and so can be considered to continue indefinitely, but then it will decrease to zero after seven years due to commercial and operational changes.

Lifetime factors

Figure 4 shows the lifetime profile for each measure that have been calculated using the continuation rate, roll out rate and endurance rate.

Using the data from the research the lifetime saving factors based on 7 years (calculated as the area under the chart) are as follows:

Table 2: Lifetime factors

	7 years
Company car policy change	7.65
Monitoring and targeting	2.5
Modified technologies	8.4
Driver training	6.3
Adoption of alternative fuels/ low CO ₂ vehicles	13
Managing business travel	6.9

It can be seen from table 2 that the lifetime factors vary from 2.5 for monitoring and targeting to 13 for the adoption of low CO₂ vehicles. As shown by the charts in figure 4, monitoring and targeting stays in place for a year and the savings plateau but then as motivation decreases so do the savings. In comparison the savings for low CO₂ vehicles increase over a number of years as the vehicles are rolled out to cover more of the fleet. Then

due to the seven year cut off the savings then start to decrease over a four year period in line with the fleet replacement cycle meaning that savings can be achieved to some extent over an 11 year period.

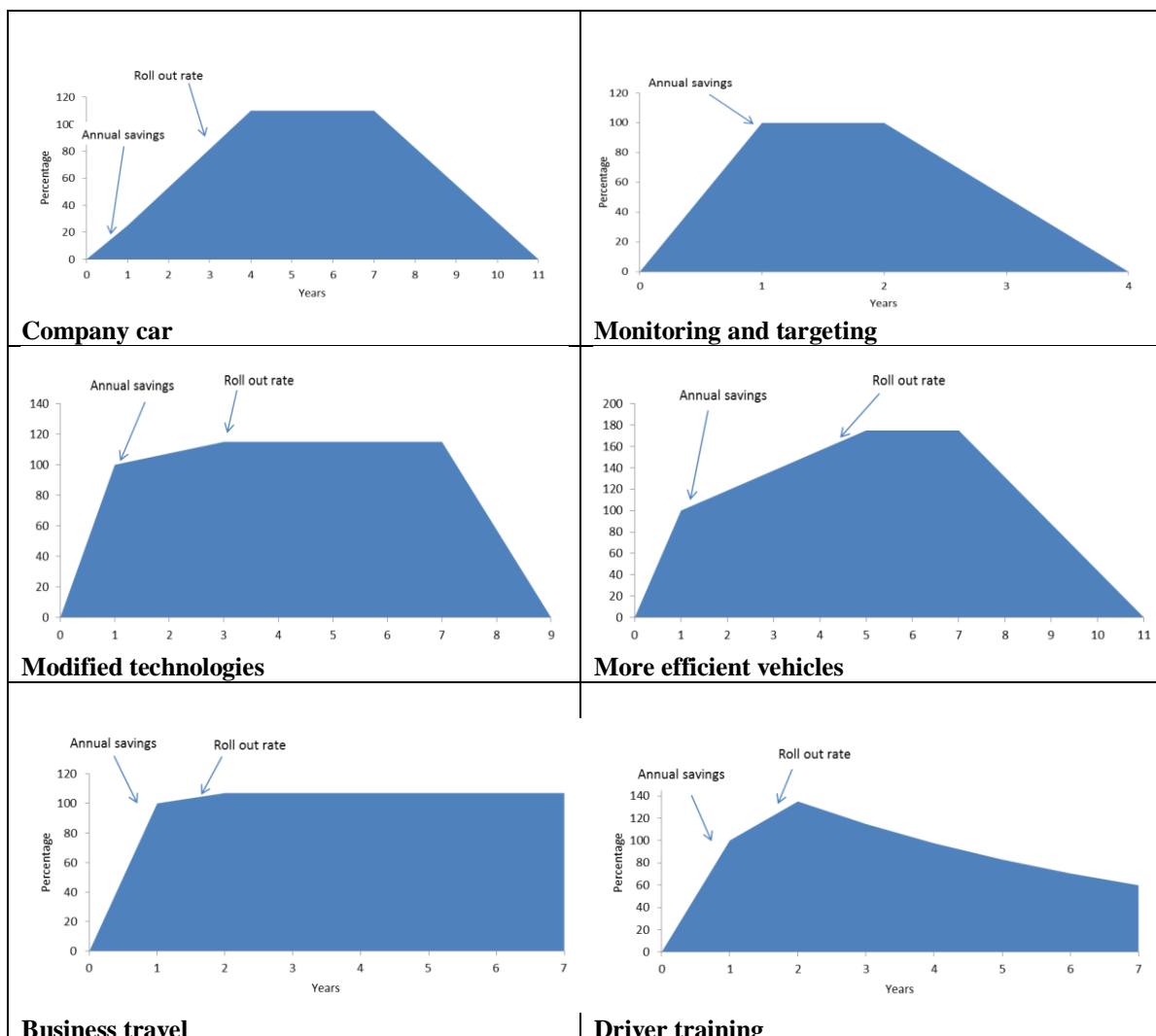


Figure 4: Lifetime profiles

The lifetime CO₂ emission saving figure is then achieved by multiplying the two metrics together for each measure implemented:

$$\text{Annual } tCO_2 \times \text{lifetime factor} = \text{Lifetime } tCO_2$$

Conclusions

There is now evidence going back five years to show that where organisations take action, these measures do stay in place for a number of years and in many cases organisations will trial a measure out with a proportion of the fleet before rolling it out to cover all their fleet.

The evaluation has identified that the extent to which the actions persist can differ by the measure in question. Where the actions are written into policy, this often takes a longer time to implement and needs agreement from the board so once this is put in place it is less likely to be withdrawn.

Other measures such as driver training and monitoring and targeting are often less embedded into company policy and are more likely to see reduced commitment and a

decrease in the extent to which these are followed after an initial period of interest and commitment.

The feedback from this evaluation has allowed the programme team to look at how the advice is delivered and when. For example, the evaluation has highlighted that for the measures that do not persist for as long it would be useful for this message to be reinforced to organisations. These messages can therefore be included in the regular fleet briefing that is emailed to customers to keep such issues at the forefront of their mind. The policy areas also highlight how important it is to actually get measures incorporated into policies as they are then likely to continue for longer. This therefore demonstrates to the consultants that the recommendations should strongly recommend that where possible the changes are included in any policies the organisation has.

This evaluation has highlighted the importance of understanding how customers behave once they have been provided with advice and that it should not be assumed that action they may take then continues indefinitely. Conducting research such as this can help organisations understand how their customers behave and how they may change their behaviour depending on the action in question. As with all research, this evaluation has raised many further questions around the savings achieved by organisations such as the multiple effects the GFR has on organisations, the extent to which the savings persist longer than the seven year cut off as used in this research. There is therefore scope for further evaluations to follow up on the work completed to understand the impact in even more detail.

References

Canavan, J., Jones B, and Potter M. 2004. "Board tenure: how long is too long." *Directors and Boards*

CIECA 2007, CIECA Eco-driving project 2007: Eco-driving in driver training and testing

Committee on Climate Change 2011. Meeting Carbon Budgets – 3rd Progress Report to Parliament

Defra/DECC 2011, *Greenhouse Gas Conversion Factors for Company Reporting*

Department for Transport 2011, VCA Booklet

<http://carfueldata.dft.gov.uk/additional/aug2011/VCA-Booklet-text-Aug-2011.pdf>.

Department for Transport

Harris, S. 2010. "Telematics trial final month: Van tracking pays dividends." *Fleet News*. September 2010

Federation of Small Businesses 2010. The FSB-ICM "Voice of Small Business" Annual Survey.

Simms, J. 2010. "Smooth succession is a CEO's number one priority". *Director Magazine*, January 2010

Society of Motor Manufacturers and Traders (SMMT), 2011. "New Car CO₂ Report 2011: The 10th Report".

Society of Motor Manufacturers and Traders (SMMT), 2012. "Motor Industry Facts 2012."