Department for Transport

Concessionary travel for older and disabled people: user guide for calculating bus operator reimbursement (England)

The Department for Transport has actively considered the needs of blind and partially sighted people in accessing this document. The text will be made available in full on the Department's website in accordance with the W3C's Web Content Accessibility Guidelines. The text may be freely downloaded and translated by individuals or organisations for conversion into other accessible formats. If you have other needs in this regard please contact the Department.

Department for Transport
Great Minster House
33 Horseferry Road
London SW1P 4DR
Telephone 0300 330 3000
Website www.dft.gov.uk

To order further copies contact:
DfT Publications
Tel: 0300 123 1102
www.dft.gov.uk/orderingpublications

Contents

Reimbursement Calculator User Guide

Introduction

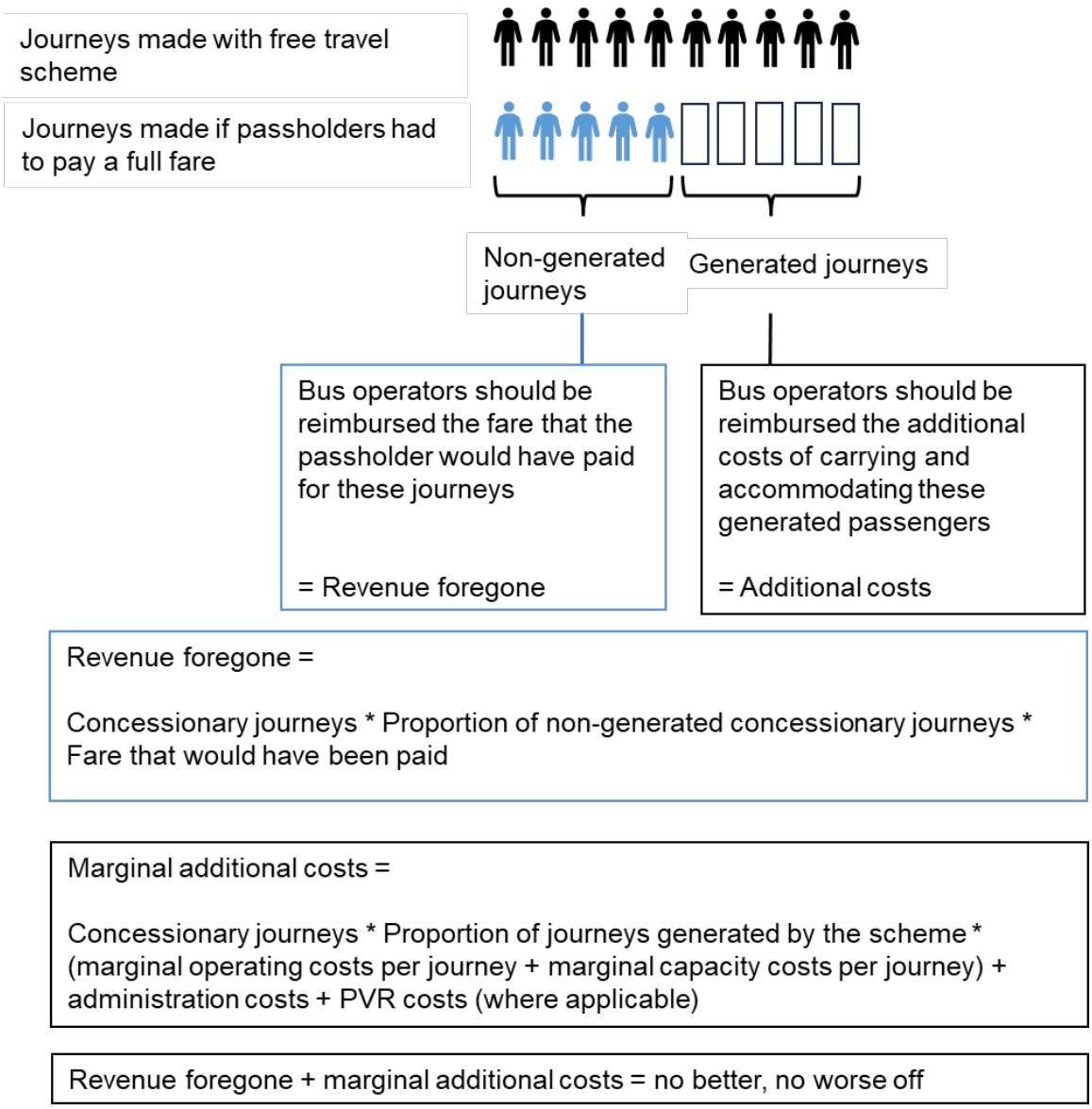
This user guide provides a succinct set of guidance that allows Travel Concession Authorities (TCAs) and operators to estimate reimbursement using the Department for Transport (DfT) reimbursement calculator. The aim is to provide a brief user guide that complements the main guidance document and its Annexes, but enables practitioners to obtain a basic understanding of the key principles of operator reimbursement quickly and effectively. Should anyone using this user guide require additional detail and knowledge of how and why certain functions are set, this can be found in the main guidance document and accompanying methodology report.

Fundamentals of reimbursement

An operator should be 'no better and no worse off' than if there was no scheme. So, for those concessionary journeys that are currently made that would have been made in absence of a free travel scheme, operators should be reimbursed the fare that those passholders would have paid. For anyone else who travels now only because it is free, these journeys are generated, and operators should be reimbursed for the additional cost of carrying these passholders, as well as administering the scheme. This process is illustrated in Figure 1.1 and forms the basis of the entire reimbursement process.

The challenge all practitioners have is that while we know how many concessionary passholder journeys are being made at present, we do not know for certain how many journeys would have been made if there was no concessionary scheme. England has had a statutory free travel scheme in place since April 2006 and some areas offered free travel to their local residents even before this time. Therefore, trying to identify which journeys are generated and which would have been made even without the scheme is complex. This guidance, alongside the calculator, provides the best available evidence to estimate generation and operator reimbursement.

Figure 1.1 Illustration of reimbursement principles



Estimating Revenue Forgone

Estimating revenue forgone requires three main inputs:

- Number of concessionary journeys made in the period.
- The reimbursement factor, i.e. the proportion of concessionary passholders who would have travelled if they had to pay a fare.
- The average fare that the passholder would have paid in absence of a scheme.

The first of these values should be straight-forward to obtain through HOPS[1] data and/or data from operator electronic ticket machine (ETM) back-office systems. For most TCAs, HOPS data should be a reliable dataset with which to derive the number of concessionary journeys made. However, there may be occasions where some smart transactions fail, where ETMs cannot read a smartcard, or where HOPS data transfers fail or are delayed. In such circumstances, it is reasonable for TCAs to accept ETM records as evidence of concessionary journeys. It is, however, expected that only a very small proportion of journeys (typically less than 1%) not be recorded in HOPS.

The number of journeys for a given operator(s) for a given period(s) should be entered in cell [F10] on the General Inputs worksheet of the reimbursement calculator.

The reimbursement factor denotes the proportion of passholder journeys that would have been made in absence of a scheme. The research carried out by SYSTRA and Frontier Economics Ltd in 2023 identified that on a national level, 58% of concessionary journeys made by passholders would have been made in the absence of the scheme.

Since 2019/20, operator pricing will have differed across different operators and in different areas. To derive a reimbursement factor that is relevant to a specific operator in a specific TCA, it is necessary to calculate the proportional change in fare since 2019/20 compared to inflation. If an operator has increased fares by more than inflation, i.e. is more expensive in real terms, then in absence of a scheme a smaller proportion of passholders would have paid a fare, thus the reimbursement factor would be lower. If real terms fares are less expensive, i.e. an operator has increased fares by less than inflation, then the proportion of passholders who would have paid a fare would be higher and the reimbursement factor will be higher.

Calculating the proportional change in fare must be considered carefully. It is not as simple as comparing the change in cash fares or individual product groups. TCAs and operators must ensure that when comparing fares across two different years that the evidence used is comparing 'like with like', taking into account the range of fare products purchased by users, and using data from within the scheme area only.

One option adopted by some TCAs (though this is by no means the only option available to TCAs and operators) is to use the average fare model within the reimbursement calculator. Entering the average cash fare, day ticket price and weekly ticket price for 2019 and the period in question provides two average fares, against which the proportional change can be derived. If following this method, however, it is necessary to ensure that the same look-up table is used.

Once the proportional change in fare has been derived, this should be entered into cell [F22] in the General Inputs worksheet of the reimbursement calculator.

The final stage of estimating revenue forgone is to derive the average fare forgone. There are three methods for estimating the average fare:

[1] Host Operator or Processing System (HOPS) – a central back office which securely processes all smart transactions

Discount fare method

- Basket of fares method
- Local method

The recommended approach for most TCAs and operators is to use the discount fare method, although there will be circumstances where the discount fare method is not appropriate. Table 1.1 presents the recommended method to calculate the average fare forgone.

Table 1.1 Recommended method to calculate the Average Fare Forgone

Circumstances	**Method**
All cases except those below	Discount Fare method
Operators with cash fares only	Average cash fare
Operators with no cash fares	Basket of Fares method
Operators with atypical ticket price combinations The daily ticket to average cash fare price ratio to be greater than 5 (before or after degeneration)	Basket of Fares method
Operators with ticket price ratios that lead to implausible results in the Discount Fare method The proportion of daily or period ticket to cash fare ticket sales is higher for concessionary passengers than current fare paying passengers	Basket of Fares method
Operators with predominantly low frequency services 60%or more of concessionary passenger boardings (on services serving a TCA's area) are carried on buses where the average weekday daytime frequency (09.30 to 18.00) is one bus per hour or less	Basket of Fares method
Former Passenger Transport Executives (PTEs)	Local method
TCAs with appropriate smartcard data	Discount Fare Method with locally derived smartcard lookup table

Discount Fare method

The discount fare method consists of applying a discount factor based on the prevailing ticket price structure for a TCA/operator to the average commercial adult cash fare. The discount factor is derived from a sample of smartcard data on observed concessionary passholders journey frequencies at free fares from four different areas. These are: Large Urban Area, Medium Urban Area, Mixed Urban/Rural and Rural. These four areas have been selected to reflect: urban areas, rural areas and mixed urban and rural areas. The journey data have been used to

model how eligible people would allocate themselves to different ticket types (cash, daily and weekly tickets) depending on the relative price structure. TCAs are able to develop their own look-up table with their own data.

The first step for any TCA is to select the look-up table that most accurately reflects their operating area. This should be through discussion with local operators, and should be consistently applied across all operators within a TCA. Within guidance the number of 'journeys per card day' for each lookup table provides a helpful metric between areas. It also enables TCAs to review their own HOPS data and obtain the number of journeys per card day in their area to provide an informed choice of lookup table to use.

The second step is then to obtain the inputs required within the Average Fare (AF) Model. This requires the:

- average cash fare
- average day ticket price
- average week ticket price

The average cash fare should be derived using sales and revenues of adult tickets and products with a defined number of journeys, such as singles (1 journey), return tickets (2 journeys), carnet style tickets or any other product that is defined by a fixed number of journeys. These sales and revenues should be from all services operating within a TCA. For cross-boundary services, it is unnecessary to disaggregate sales from within the TCA only, thus all sales and revenues of such products should be used within the calculation. The calculation for this is as follows:

To derive the day ticket price, revenues and sales of all adult day products, including day caps (on smartcards and contactless), on and off-bus day tickets/products, and multi operator adult day tickets/products sold on or used on services within the TCA scheme area should be included in the calculation.

To derive the week ticket price, revenues and sales of all adult week products, including week caps (on smartcards and contactless), on and off-bus week tickets/products, and multi operator adult week tickets/products sold on or used on services within the TCA scheme area should be included in the calculation.

Once the three values have been derived, enter them into the relevant cells within the AF Discount Factor Model. The output provides the average fare forgone.

Basket of Fare method

If adopting the Basket of Fares method, first consider all the ticket types that would have been purchased by concessionary passholders in the absence of the scheme and the associated commercial price. In deciding what tickets are in scope, TCAs and operators should come to a shared understanding of the likely ticket mix that concessionary passengers would purchase in the absence of the scheme. As a general principle, weekly tickets should be presumed to be in scope unless there is evidence to indicate that concessionary passengers would not purchase them in the absence of the scheme.

TCAs will have to make explicit assumptions about how many journeys would typically be made by holders of each ticket type. Although it is reasonably obvious for single and return tickets, it requires judgements to be made on the use of multi-journey tickets. Evidence from operators will be helpful in deciding what assumptions to make.

Another assumption required is the proportion of total journeys that would have been made by eligible concessionary passholders in the absence of a scheme using each type of ticket. The percentage split does not correspond to the commercial share of journeys but needs to be weighted in line with the likely purchase of such tickets by concessionary passholders.

From the data inputs above the following information can be derived:

- The implied revenue generated by each journey using a particular ticket type – this is the price per ticket divided by the assumed number of journeys per ticket;

The weighted revenue per ticket – this is the implied revenue per journey multiplied by the percentage share of journeys made with this ticket type.

- The average weighted fare per journey is the sum of the weighted revenues per ticket.

Values for the ticket types included can be input into the AF Basket of Fares model/template. Specifically, the price, assumed journeys per ticket purchased and the estimated percentage of total concessionary journeys that would have been made using each ticket type in the absence of the scheme. The input of these values enables the calculator to compete the calculations for the average fare foregone, and from this the revenue forgone.

Estimating Additional Costs

There are four types of additional costs:

- Marginal operating costs
- Marginal capacity costs
- Administration costs
- Peak vehicle requirement costs

Marginal operating costs (MOC)

Marginal operating costs are the costs to anoperator of carrying an additional passenger assuming a fixed level of service. The components of these costs comprise fuel, tyres and oil, maintenance and cleaning, insurance, information and additional time costs. These costs exclude operators' administration/management time, which are covered by administration costs.

Marginal operating costs are applicable to all eligible services and all eligible operators without the need for further information.

There are two elements to marginal operating costs:

- A fixed element of 5.5p per generated journey (2009/10 prices)

- A variable element that relates to the average concessionary journey length

Within the calculator, the average concessionary journey length is required to accurately derive marginal operating costs for a given operator. This journey length is likely to differ across different services. In the past, the average journey length has been estimated as being 50% of the average route length (weighted by concessionary journeys within the TCA area). This assumption is not unreasonable in absence of any other evidence, although attention should be paid to differing route lengths on different services. For example, some routes have short or longer running services, so some care should be taken if this is the preferred approach.

If a local value has been derived, the local average journey length can be entered into cell [F28] of the General Inputs worksheet of the calculator. The marginal operating cost per generated concessionary passenger will then be calculated.

Marginal capacity costs (MCC)

Marginal capacity costs are the costs to an operator for carrying additional passengers and allowing the capacity of bus services to increase, by using the existing bus fleet more intensively to provide that additional capacity through increased frequency.

Marginal capacity costs should be net of the additional revenue generated from commercial journeys that arise from increased frequency. These costs are additional to the marginal operating costs.

There is a presumption that marginal capacity costs could potentially apply to all routes within a network. Where the service is secured through Minimum Gross Cost tender, the level of service is specified in the contract. Given that the TCA takes on all revenue risk, the need for separate reimbursement for additional costs does not arise. Where the service is secured through Minimum Subsidy or Net Cost tender, the authority is determining the capacity it wishes to see provided so that additional capacity costs are covered through the tender process.

The Marginal Capacity Cost (MCC) model within the calculator provides default values to enable TCAs and operators to derive costs without the need to obtain detailed operational data. However, using local values is recommended where data is available (and for most operators with robust electronic ticket machine data, it invariably is), so this user guide provides a mechanism for deriving those local values. TCAs and operators should not use a mixture of default and local values, instead choosing either using all default values or all local values to derive MCCs.

The primary MCC inputs are:

- Speed
- Mean vehicle occupancy
- Mean journey length
- Mean route length
- Average commercial fare
- Commercial journeys as a percentage of total journeys

These inputs will almost certainly require some additional processing of operator ETM data to derive accurately, and they can be obtained from the following datasets:

English National Concessionary Travel Scheme (ENCTS) passenger journeys by route for an agreed period

- Live hours operated by route for the same period
- Live miles operated by route for the same period
- Total one-way trips (one trip is when a bus operates from one end of the route to the other) for the same period

An estimate of turnaround time for each service

- An estimate of passenger journey length as a proportion of the total route length
- Total commercial passenger journeys by route for the same period
- Total commercial passenger journeys by route at all times within the agreed period
- Total revenue from commercial journeys at all times within the agreed period

Values should be obtained for a representative period of time. Ideally this would be an entire year (either calendar year or a financial / scheme year), but if data is not available or timetables have changed significantly over time, a shorter period would be considered acceptable, provided it is broadly representative of the year.

In addition, most data inputs should be collected for the period of time that the concessionary entitlement is available. For example, if a TCA provides the statutory ENCTS scheme, then data should be collected for the period 0930 - 2300 Monday to Friday, and at all times at weekends and public holidays. However, to derive the commercial average fare, it is necessary to collect trip and fare revenue for the period throughout the day.

A £2 capped single fare scheme was launched in January 2023 and is due to remain in place until 31st December 2024. A £3 capped single fare scheme will then be introduced in January 2025, which is due to remain in place until 31st December 2025. It is necessary to consider this in the calculation of commercial fare revenue as this could understate the real average commercial fare given that local operators are reimbursed for revenue forgone due to the £3 flat fare scheme. It is therefore necessary for TCAs and operators to engage at the earliest opportunity to decide how they intend to adjust fare revenue (but not journeys) to account for the £3 flat fare cap and its impact on the derivation of the commercial average fare. Further detail on the £3 fare methodology is provided in Annex J of the DfT reimbursement guidance.

Once the data is collected from operators, a spreadsheet model could be developed. With the 9 sources of data detailed above, each input for the MCC Inputs worksheet can be derived. When developing a model to derive MCC inputs, it is necessary to input data on a per route basis so that appropriate weightings can be applied. The model should seek to derive MCC model inputs as follows:

Average speed requires a multi-step process to be carried out. Step 1 is to derive the journey time using the following formula:

Journey time = 60 * route length / speed

Step 2 is to derive total time travelled by multiplying journey time by ENCTS trips per service

Total time travelled = journey time * ENCTS trips per service

Step 3 is to derive the weighted journey time by summing total time travelled and then dividing it by total concessionary journeys

Weighted journey time = sum of total travel time / total concessionary journeys

Step 4 is then to calculate the average speed using the following formula:

Average speed = 60 * route length / journey time

This output provides, in miles per hour, the average speed and should be entered directly into the relevant cell within the MCC model.

Mean vehicle occupancy is calculated by dividing passenger miles by total miles on a network. Total miles operated within a period should be an input from data provided by the operator, while passenger miles is derived from total passengers multiplied by the average journey length. A sum of total miles and total passenger miles for each service provide the basis for the calculation to derive the mean vehicle occupancy.

The calculation of mean passenger journey lengths requires an assumption to be made. As concessionary passholder alighting points are not typically recorded (only boarding points are recorded through the electronic record of a passholder boarding a bus) it is necessary to make an assumption around the relationship between the route length and the passenger journey length. If operators can provide evidence or TCAs obtain evidence through surveys or an alternative data source, then this should be used. However, in absence of any data, assuming that the passenger journey length is 50% of the route length for a given service is a reasonable proxy.

The passenger journey length should be multiplied by the number of concessionary journeys for each service, and the sum of passenger miles should be divided by total concessionary journeys to provide an average passenger journey length weighted by concessionary journeys.

The mean route length is calculated by weighting the route lengths (which are inputs that should be provided by the operator) by concessionary passengers. Route length multiplied by concessionary journeys for each service, and then summed and divided by total concessionary journeys provides the weighted calculation.

As stated above, the average commercial fare requires some additional consideration due to the £3 flat fare scheme. The MCC model aims to calculate the theoretical cost of providing additional capacity, then nets off the additional revenue that the additional capacity could typically generate. The average commercial fare needs to include all fare revenue for all passenger types, as additional capacity would not just lead to an increase in adult passengers travelling, but also young people, students and other passenger types who may not pay a full adult fare. The commercial fare should also take into account all ticket and product types, including longer term season products such as annual products.

The commercial fare is derived for each service by dividing revenue by passenger journeys. The sum of all revenue by all passenger journeys provides the weighted commercial fare, which can be entered into the MCC model directly.

Commercial journeys as a proportion of total journeys can be calculated from two inputs directly from the operator: commercial journeys per service and concessionary journeys per service. Summing both columns and dividing commercial journeys by the sum of commercial and concessionary journeys provides a correctly weighted input for the MCC model.

Once all MCC model inputs are derived and entered into the calculator, an output of MCCs per generated passenger is provided, and this shall be used to calculate total additional costs due to an operator.

Administration costs

Costs associated with the production of concessionary passes will be borne by the TCA. There are, however, other administrative costs borne by operators that should be reimbursed for. 'Everyday' operational costs such as publicity, ticketing and software changes are included within marginal operating costs and should not reimbursed through administration costs. However, the collation of data and submission of monthly or periodic claims is considered to be within the scope of administration costs, while management time and costs incurred from requests for information are also within the scope of administration costs.

Administration costs are not intended to be claimed for covering the costs of an operator appeal or challenge.

The relevant amounts are a matter for negotiation between the TCA and the operator as administration costs should be based on the costs incurred and the evidence that sits behind those costs. The reimbursement calculator requires a single value for the period in question to be entered into cell [F36] within the General Inputs worksheet.

Peak Vehicle Requirement (PVR) costs

PVR costs are associated with increasing the number of buses within the fleet or capacity within the fleet in order to meet demand from generated concessionary travel. PVR costs apply where an operator can provide evidence that they have increased the number of and/or capacity of vehicles in order to accommodate generated concessionary passengers. If the operator wishes to claim PVR costs, then the operator must supply data and analysis to support such a claim.

The expectation is that PVR costs will be exceptional, therefore operators will have to demonstrate that exceptional or unusual circumstances have arisen. The evidence provided by an operator to the TCA to support a claim should be:

- Passenger loadings by service for an annual or annually representative period
- Loadings by half hourly periods between 7am and 7pm on weekdays and weekend if peak loadings are during the weekend
- Data should identify all commercial journeys, statutory concessionary journeys, other concessionary journeys, highlighting the non-generated journeys that would have been made in absence of a scheme

The evidence provided by the operator must demonstrate that the peak vehicle requirement is dictated by generated concessionary passholder journeys, and that in absence of the scheme the operator could operate services with fewer vehicles without incurring higher loadings than seen at present.

This methodology does not imply that every peak demand is met in full by putting on extra buses. Operators should demonstrate the criteria they use to decide whether to put on extra services to meet peaks in commercial journeys or allow load factors to be above 100% for short periods.

The formula to use for working out the peak vehicle requirement is derived from the peak vehicle requirement parameter of **£23,908 (2022/23 prices)** – this is the cost per vehicle per annum that has to be added to the fleet to cater for additional concessionary journeys. Annex E in the DfT reimbursement guidance provides further information on how this value was derived.

This is a per year figure so equates to £91.95 per PVR per weekday or £2.30 per PVR seat per weekday assuming 260 weekdays per year and a mean of 40 seats per vehicle.

If the new peak lasts one hour and each additional peak passenger blocks one seat for one route length, the PVR cost per **additional peak period passenger** can be estimated using the overall route time and speed. The calculation would be £2.30 multiplied by one way route time (expressed in hours, and based on local circumstances or defaults) = cost per additional journey in the peak hour (or period).

In cases where the peak period with and without additional concessionary journeys is the same time period, then the calculated unit cost per additional journey can be applied directly to the additional concessionary journeys in that peak period only to calculate a total peak vehicle requirement cost.

In cases where the peak period with generated concessionary journeys is different from the peak period without generated concessionary journeys, for example, where the evening peak is higher than the morning peak, the calculation is slightly different. The unit cost may be different between the two periods if the one way route times are different, but otherwise would be the same. The additional concessionary journeys over which the unit cost is applied are the difference between journeys in the “with generated journeys” peak period minus journeys in the “without generated journeys” peak period.

In these calculations the period referred to may be an hour or half hour, but should be the same length of time, i.e. hour or half hour when comparing journeys in the peak period.

Summary

Operator reimbursement for carrying concessionary passengers is based on ensuring an operator is ‘no better and no worse off’ than if there was no concessionary scheme. This can be estimated by deriving the revenue forgone for concessionary journeys that would have been made in absence of a scheme, and additional costs for all generated concessionary journeys. The key elements of operator reimbursement to derive revenue forgone are:

- Number of ENCTS passenger journeys that would have been made in absence of a scheme
- The average fare forgone that would have been paid in absence of a scheme

The key elements to derive additional costs are:

- Marginal operating costs
- Marginal capacity costs
- Administration costs
- Peak vehicle requirement costs

The DfT reimbursement guidance and calculator provide the best evidence available to enable TCAs and operators to estimate the ‘no better and no worse off’ principle.

However, it is essential that all inputs are robust and accurate and derived in line with the DfT reimbursement guidance. Calculator inputs that are not robust may result in unreliable outputs, which may fail to reach the ‘no better and no worse off’ principle. It is therefore strongly recommended that TCAs and operators engage at the earliest opportunity each year to share evidence and data to derive reimbursement estimates that best meet the ‘no better and no worse off’ principle.