Concessionary Fares Research and Analysis

ENCTS Principles and Calculator Training Session

Department for Transport

SYSTRA

frontier economics

Agenda

1. Introductions (5 mins)
2. Principles, Updates and Practicalities of ENCTS Reimbursement (45 mins)
3. Practical Demonstration (40 mins)
4. Question and Answer Session (30 mins)

Introductions

Principles, Updates and Practicalities of ENCTS Reimbursement

Principles: no better and no worse off

- The ENCTS guarantees free off-peak local bus travel to eligible older and disabled people anywhere in England (Transport Act 2000, Greater London Authority Act 1999, Concessionary Bus Travel Act 2007)
  - Travel Concession Authorities (TCAs) able to offer discretionary travel schemes using powers in Transport Act 1985
- TCAs must reimburse bus operators for the mandatory concession in a way which leaves operators "no better and no worse off" as a result of the ENCTS
  - Covid-19 era exceptions expire in April 2024
- This requirement for TCAs to reimburse operators to leave them "no better and no worse off" is unchanged by this review
- But the world in which the ENCTS does not exist cannot be observed
  - The way in which this is achieved is open to TCA's discretion
  - The DfT's Guidance and Calculator provide an evidence-based approach to determining appropriate levels of reimbursement

Principles: what would have happened?

Total ENCTS journeys

What would they have done without the ENCTS?

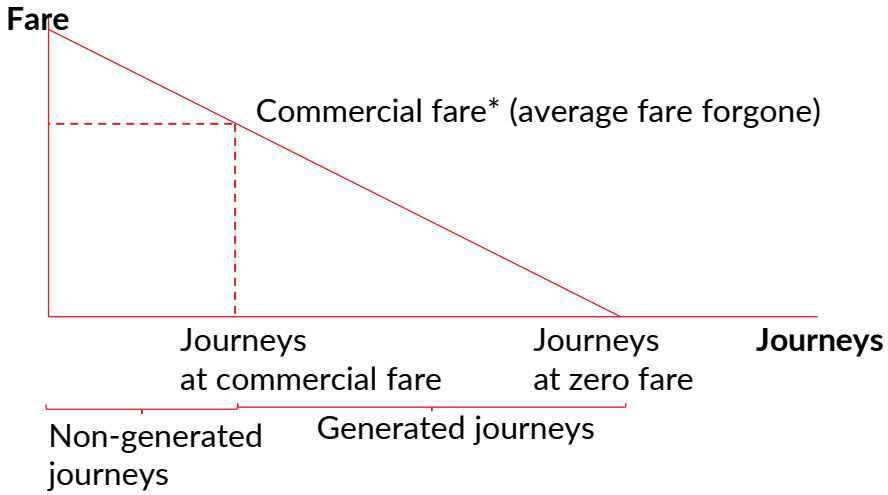
- Not travel anyway? → "Generated"
- Travel anyway? → "Not generated"

How is the operator reimbursed?

Additional costs + Revenue forgone = No better, no worse off

Principles: estimating generation

The role of a demand curve - an example demand curve



The equation behind the demand curve

$$T = ke^{\beta F \wedge \lambda}$$

Where

- T = bus journeys at (real) fare F
- e = mathematical constant
- k = constant
- β = elasticity constant
- λ = damping factor

But **the only things you need to know are T and F**

T (at zero fare) you can observe, and F (for the average fare forgone) can be calculated – more on that later

*this is the average commercial fare that ENCTS passengers would have paid in the absence of the ENCTS, not the average fare paid by commercial passengers

1 ENCTS Principles
2 2023 Updates - Generation Factor
3 2023 Updates - Average Fare Foregone
4 2023 Updates - Costs
5 Practical Demos

Principles: application of generation

- 3 **local inputs** required

- Area type – urban or non-urban
  - This selects the relevant demand curve to estimate generated journeys
- Number of concessionary journeys within the TCA area for the period
- Current average fare foregone and proportional change in average fare between current period and equivalent period in 2019/20
  - This updates the demand curve to reflect real terms changes to fares since 2019/20

- Calculator will produce the proportion of ENCTS journeys to be reimbursed at the average fare (non-generated journeys), and the proportion of journeys to be reimbursed at the marginal additional cost rate (generated journeys)
- The proportion of ENCTS journeys to be reimbursed at the average fare is the 'Reimbursement Factor' i.e. the Reimbursement Factor = non-generated journeys / total journeys

Principles: urban & non-urban demand curves

- There are two demand curves in the calculator: urban and non-urban
  - With different parameter values, reflecting different levels of generated journeys (urban areas have lower generation)
- Different curves because of different trip-making behaviour
  - Based on characteristics of residents in an area
- TCAs can choose which demand curve to use (and may mix and match)
  - Scope for local decision making/discretion
  - But guidance is provided in the ENCTS Reimbursement Guidance document
- Guidance is to base reimbursement on residence of passholder, not on location of trip

Updates: what has changed and why – generation factor

- Three main updates to the generation factor calculation
  - Fares deflated using CPI only, rather than a mix of the CPI and GDP deflator
  - Updating the list of urban/non-urban TCAs based on car ownership in the 2021 census (the list was previously based on the 2011 census)
  - Update to the demand curve parameters
    - Draws on econometric analysis of the National Travel Survey (NTS), based on data from 2010-2021 (2022 data not available when analysis was conducted)
    - This econometrics analysis directly estimates the level of generated journeys, controlling for many other things
    - Shows levels of generation lower than typically seen from previous calculator
    - Further analysis of smartcard (HOPS) data to seek to understand any further post-Covid adjustments was inconclusive
    - Adjusting the fares baseline to 2019/20 from 2005/06
    - Updated demand curve parameters (λ, β) were derived to be consistent with the results of the NTS econometrics for urban and non-urban areas, and cross-checked with the literature on fare elasticities

Estimating the Average Fare

- The average fare is used in the reimbursement calculator to derive the Average Fare Forgone per non-generated passenger journey. Average Fare Forgone refers to the average revenue lost per journey under the ENCTS and is used to calculate lost revenue to the operator
- A representative average fare requires consideration of consumer travel behaviour and ticket type choices in the absence of the ENCTS – meaning that the Average Adult Cash Fare is inappropriate in most instances, as:
  - Discounted products (travel cards, day tickets/caps and weekly tickets) allow unlimited numbers of journeys within a defined time period
  - Discounted products offer a lower average fare per journey. Usage of these products reduces average yield per journey
  - Evidence from smartcard journey data suggests concessionary users travel frequently enough to require ticket type choice to be considered in the derivation of average fare and Average Fare Forgone

1 ENCTS Principles
2 2023 Updates - Generation Factor
3 2023 Updates - Average Fare Foregone
4 2023 Updates - Costs
5 Practical Demos

Core Approaches to Estimating Average Fare Forgone

- The determination of a representative Average Fare Forgone varies with the approach used to estimate it. There are three core approaches included in the reimbursement calculator and any comparisons across different years or fares changes should maintain a consistent method:
  - Discounted Fare Method
  - Basket of Fares Method
  - Average Cash Fare
- It is permitted for local (bespoke) methods to be used to estimate the Average Fare Forgone. However, these are likely to involve the use of bespoke lookup tables within the Discounted Fare Method (see slides which follow on the Discounted Fare Method) rather than contributing an entirely different approach
- In the previous calculator there was one lookup table, there are now four to reflect the range of geographies across England.

Discounted Fare Method

- In this method, the estimation of the Average Fare Forgone reflects the discount (relative to the Average Cash Fare) which concessionary passengers would pay in the absence of the ENCTS
- A discount factor is applied to the Average Cash Fare. The factor is based on the distribution of concessionary journey frequencies and the relative prices of commercial fares
- The distribution is derived from a sample of smartcard data on observed passholder journey frequencies at free fares and included in a set of four lookup tables for:
  - Large Urban Areas
  - Medium Urban Areas
  - Rural Areas
  - Mixed Urban/Rural Areas
- One of the above four lookup tables can be used (referring to Table 3 in the guidance) or a bespoke lookup table for the geography can be built (Annex F in the guidance)
- A degeneration factor is used to adjust the number of concessionary journeys undertaken to reflect that under commercial fares passengers would likely make fewer journeys

Discounted Fare Method: Fare Inputs

- The fare inputs to the Discounted Fare Method are fairly prescriptive in the reimbursement calculator:
  - Average Cash Fare: the average commercial price of single, return, carnet and other fixed journey tickets
  - Average Daily Ticket Price: the average commercial price of tickets which allow unlimited travel within a single day
  - Average Weekly Ticket Price: the average commercial price of tickets which allow unlimited travel within a single week
- The relative prices of the Daily to Cash Fare and Weekly to Cash Fare are calculated from the inputs. These ratios are used to reference against the lookup table selected and determine the discount factor applied to the Average Cash Fare (based on an assumed number of journeys for different combinations of price ratios)

Basket of Fares Method

- In this method, an effective discount rate is calculated through a weighted average fare per journey
- The weighted average fare is calculated from an assumed usage of different commercial ticket types (the lookup tables cannot directly be used in the calculator for this method)
  - The approach requires assumptions on the average number of journeys made per ticket type in the absence of the ENCTS (for revenue per journey)
  - It also requires assumptions on the proportion of total journeys made using each ticket type in the absence of the ENCTS (for weights)
- The above can be informed by operators and/or surveys. For example, electronic recording of sales and use of tickets using QR codes or smart codes should provide good quality data
- In practice, it is likely that a mix of historical data on past purchases/travel decisions by concessionary passengers, surveys of concessionary passengers and operator ETM data will be used to inform this method

Basket of Fares Method: Fare Inputs

- The Basket of Fares Method is less prescriptive than the Discounted Fare Method in terms of fare inputs. It does not use generic ticket groups and instead it is for the operator and TCA to decide which ticket types are in scope
- Consideration will need to be given as to which products would have been used in the absence of the scheme and the average commercial price
- Operator and/or survey evidence would help inform the most relevant 'basket' but will require agreement between the operator and the TCA

Average Cash Fare Method

- The Average Cash Fare Method is the most simplistic of the three approaches
- It is unlikely to be relevant unless the operator serves mostly single, return or carnet journeys.
- This might occur for small operators with infrequent services and/or where they do not offer Daily or Weekly tickets
- Under this method the only fares inputs required would be the average price of single, return and carnet journeys, for example (i.e. tickets with a defined number of trips per ticket)

Preferred Approach

Circumstance (under which approach might be the most appropriate)	Method
All cases except the below	Discounted 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 Discounted 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 Executive areas – should local travel patterns indicate the other methods are unrepresentative, but subject to agreement between operators/TCAs	Local Method
TCAs with appropriate smartcard data	Discounted Fare method with locally derived smartcard lookup table

Application of average fare

- The demand curves and estimate of generation provide the proportion of people who would have travelled in absence of a scheme
  - Reimbursement factor
- Now know the average fare they would have paid in absence of a scheme
  - Average fare foregone
- Concessionary journeys * reimbursement factor * average fare foregone
  - Revenue foregone
  - This mechanism reimburses operators for carrying non-generated concessionary journeys
- Next step is to estimate marginal additional costs of carrying generated concessionary journeys

Marginal Additional Costs

- The costs of carrying generated concessionary journeys
  - Marginal operating costs
  - Marginal capacity costs
  - Administration costs
  - Peak vehicle requirement (PVR) costs

- Changes made to reimbursement calculator & guidance are
  - Updated inflation index within MOC model to reflect changes to bus operating costs
  - Updated cost per mile and cost per vehicle hour to reflect changes to bus operating costs in MCC model
  - Updated service frequency elasticity within MCC model
  - Updated guidance around how to assess PVR claims

Calculating Marginal Operating Costs

- Costs incurred by operators for carrying generated concessionary journeys
- 2 parts
  - Fixed marginal operating costs cover costs such as increased insurance premiums, maintenance, cleaning, fuel, tyres, oil, fuel, information and additional time costs
  - Greater costs for those operating longer services, so variable element covers this
- If do not know the mean journey length, reasonable to use the default value (3.9m)
- If operator has robust evidence for mean journey length, this should be used
- There is an assumption that the journey length is half the route length – not unreasonable
- Mean journey length should reflect the length of concessionary journeys - may differ from commercial journeys
- MOC model produces a value (in pence) per generated journey

Calculating Marginal Capacity Costs

- MCC model calculates how much it would cost to run existing buses more intensively, and nets off any additional revenue generated by doing so – a theoretical model
- MCC Model produces a value (in pence) per generated journey

- MCCs are eligible on all commercial services – though MCCs can be £0.00
- MCCs shouldn't be paid on 'contracted services' as capacity is dictated by contracting Authority

- 2 options for deriving MCCs
  - Use default values plus the commercial average fare
  - Use local data to populate the model
  - Important to use all local inputs or all default inputs (plus average commercial fare)

1 ENCTS Principles
2 2023 Updates - Generation Factor
3 2023 Updates - Average Fare Foregone
4 2023 Updates - Costs
5 Practical Demos

MCCs Using Default Values

- MCC model has a series of default values
- But still requires commercial average fare
- Commercial average fare should be what a commercial fare payer (adults, children, scholars, students etc) pay for average per journey
- Necessary to obtain operator data that sets out total commercial revenue and total commercial journeys made:

$$(\text{Total Revenue})/(\text{Total Journeys})$$

- Important to include all commercial revenue, incl. on-bus and off-bus revenue

- Want to derive average commercial fare using data from scheme operating hours only. However, may need to obtain data outside of scheme times to ensure comparing like with like.

MCCs Using Local Values

- Inputs required are:
  - Speed
  - Mean vehicle occupancy
  - Mean journey length
  - Mean route length
  - Average commercial fare
  - Commercial journeys as a % of total journeys
  - Costs per vehicle hour and per vehicle mile
- Necessary to derive MCCs for the time period in which the concession is available i.e. Monday - Friday 0930-2300 and Saturdays, Sundays & Public Holidays 0000-2359
- Many 'larger' operators and consultants have an Excel template to derive MCC inputs

MCC Local Input Models

Concessions (Within Boundary)	Total Bus Hours	Total Live Miles	Journeys	Route Length	Speed	Weighed Route Length	Weighted Speed	ENCTS Pax	Commercial Pax	Commercial Revenue
				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!			
				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!			
				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!			
				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!			
				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!			
				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!			
				#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!			
-	-	-							-	-

Weighted Speed	MVO	Weighted Route Length	Trip Length	Average Commercial Fare	% Commercial
#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

ENCTS passholder boardings within TCA	ENCTS passholder journeys on entire service	Adult commercial journeys	All other journeys: children, young people etc	Average Journey Duration (Mins) including turn times	Average (One Way) Route Length (km)	Number of service runs (one way) in period

Administration Costs

- Costs incurred by operators for supporting the administration of the scheme
- Admin costs include:
  - Collation of data
  - Submission of monthly claims
  - Management costs for dedicated ENCTS meetings
- Admin costs should not be claimed for covering the costs of challenging the scheme or appealing the scheme

Peak Vehicle Requirement (PVR) Costs

- The cost to operators of acquiring additional buses in order to accommodate generated concessionary pass holders
- PVR costs should be applicable only in exceptional circumstances
- Operator would need to demonstrate that the PVR (the number of buses needed to accommodate demand during the peak period) is dictated by generated concessionary pass holders, and that in absence of a scheme, they would operate with fewer vehicles
- With generation factor typically being lower in the new calculator and guidance, PVR claims are less likely now

Peak Vehicle Requirement (PVR) Costs

- It is incumbent on the operator to evidence any PVR claim
- Operators typically adopt a hypothetical network approach using an Excel based model – as below

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1								Max. load factors		36%							Assumed generation	54%	Headway pattern		A	B
2										36%									Current headway (mins.)		10	
3									All Pax			Conc Pax					Generated Pax		Proposed headway		12	
4	Service	Direction	Journey No	Sched Dep	Dep Place	Arr Place	Arrival Time	Min Count	Max Count	Ave Load		Total Count	Ave Load		Ave Conc /Ave Pax		Ave Load Exc Gen	Ave Gen Pax		Pattern	Rev. load exc Gen	Variance vs. now
5	1	O	1	6:30	Church Street Depot	Town Centre	7:09	12	27	8		0	0		0%		8	0		A	9	1
6	1	O	3	6:40	Church Street Depot	Town Centre	7:20	5	38	7		0	0		0%		7	0		A	7	0
7	1	O	5	6:50	Church Street Depot	Town Centre	7:30	7	41	10		0	0		0%		10	0		A	11	1
8	1	O	7	7:16	Church Street Depot	Town Centre	7:36	2	16	3		0	0		0%		3	0		A	3	0
9	1	O	9	7:22	Church Street Depot	Town Centre	7:42	7	21	5		0	0		0%		5	0		A	5	0
10	1	O	11	7:00	Church Street Depot	Town Centre	7:49	26	62	16	49	0	0		0%		16	0		A	18	1
11	1	O	13	7:10	Church Street Depot	Town Centre	7:59	46	106	26	67	0	0		0%		26	0		A	28	2
12	1	O	15	7:20	Church Street Depot	Town Centre	8:11	17	97	21	81	0	0		0%		21	0		A	23	1
13	1	O	17	7:29	Church Street Depot	Town Centre	8:24	26	122	31	102	0	0		0%		31	0		A	33	2
14	1	O	19	7:37	Church Street Depot	Town Centre	8:32	36	85	22	122	0	0		0%		22	0		A	24	2
15	1	O	21	7:45	Church Street Depot	Town Centre	8:40	34	91	26	143	0	0		0%		26	0		A	28	2
16	1	O	23	7:53	Church Street Depot	Town Centre	8:48	26	130	21	147	0	0		0%		21	0		A	22	1
17	1	O	25	8:01	Church Street Depot	Town Centre	8:56	34	116	21	142	0	0		0%		21	0		A	22	1

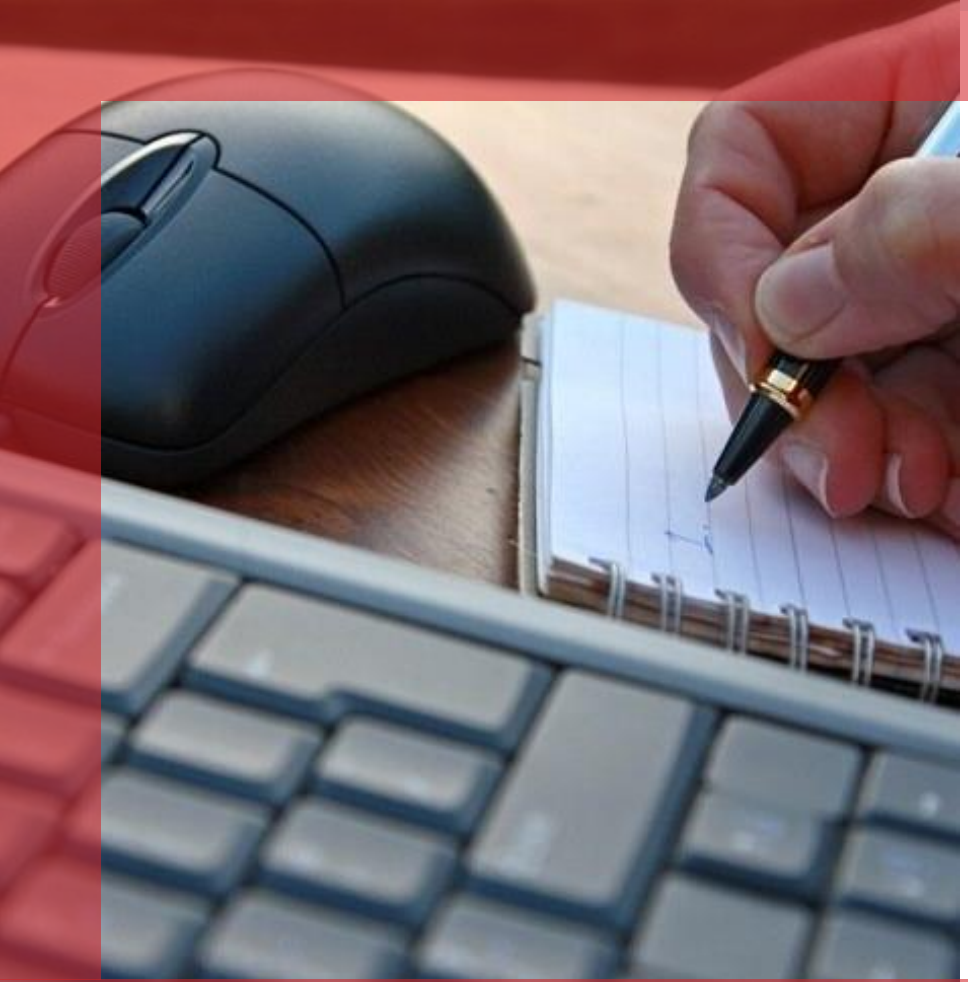
Assessing PVR Claims

- There is no standard approach to assessing PVR claims – each claim should be considered on its own merits
- Based on the detail within guidance, PVR claims can be assessed using following four tests:
  - Has the operator demonstrated that the PVR of a given service is dictated by generated concessionary passengers?
  - Has the operator demonstrated that unusual or exceptional circumstances lead to the PVR of a service being dictated by generated concessionary travel?
  - Has the operator demonstrated that the proposals are commercially plausible?
  - Has the operator demonstrated that the route or service can be operated with the reduced PVR to accommodate the reduced demand in absence of a scheme?

Application of marginal additional costs

- Previous section derived reimbursement for revenue foregone
  - Journeys * reimbursement factor * average fare foregone

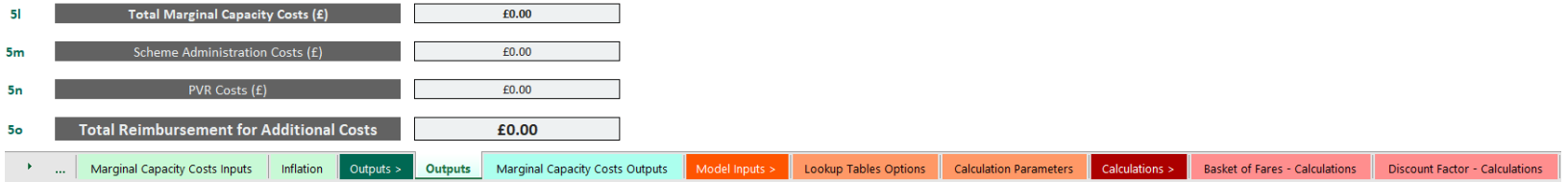
- We can now determine MOCs and MCCs per generated concessionary journey
  - Journeys * (1-reimbursement factor) * marginal operating cost per generated journey, plus
  - Journeys * (1-reimbursement factor) * marginal capacity cost per generated journey, plus
  - Agreed annual admin costs
  - Any annual PVR costs



Practical Demonstration

Overview of the New Calculator – Structural Changes

- The structure of the new calculator was updated, to follow best practice standards:
  - Inputs, Outputs, Model parameters and Calculations are separated
  - The new structure allows the user to go from Inputs to Outputs without going through the calculations
  - This helps reduce modelling and user errors and improves traceability
  - The calculations are accessible, clear and simplified, for interested users
- The worksheets / tabs that do not require user inputs have been protected, without a password
  - This limits involuntary errors while allowing the user to modify the calculator if they wish
  - The worksheets can be unprotected from the excel Review tab



Colours, links and formatting

- The calculator cells are colour-coded by function

Dropdown Inputs
User Inputs
Outputs
Calculations
Calculation Parameters

Area Type	Non-urban
Year	2023-24
Observed Concessionary Journeys	

MCC Active	No
Area Type	Non-urban

- The macros have been removed from the calculator, and are replaced by dynamic links
- Error messages, conditional formatting and data validation have been added to guide the user and help reduce errors

Links to

Instructions
General Inputs
Discount Factor Method (enter average ticket prices directly)
Marginal Capacity Costs Inputs
Outputs
Marginal Capacity Costs Outputs

Selected Lookup Table	Medium-Sized Urban

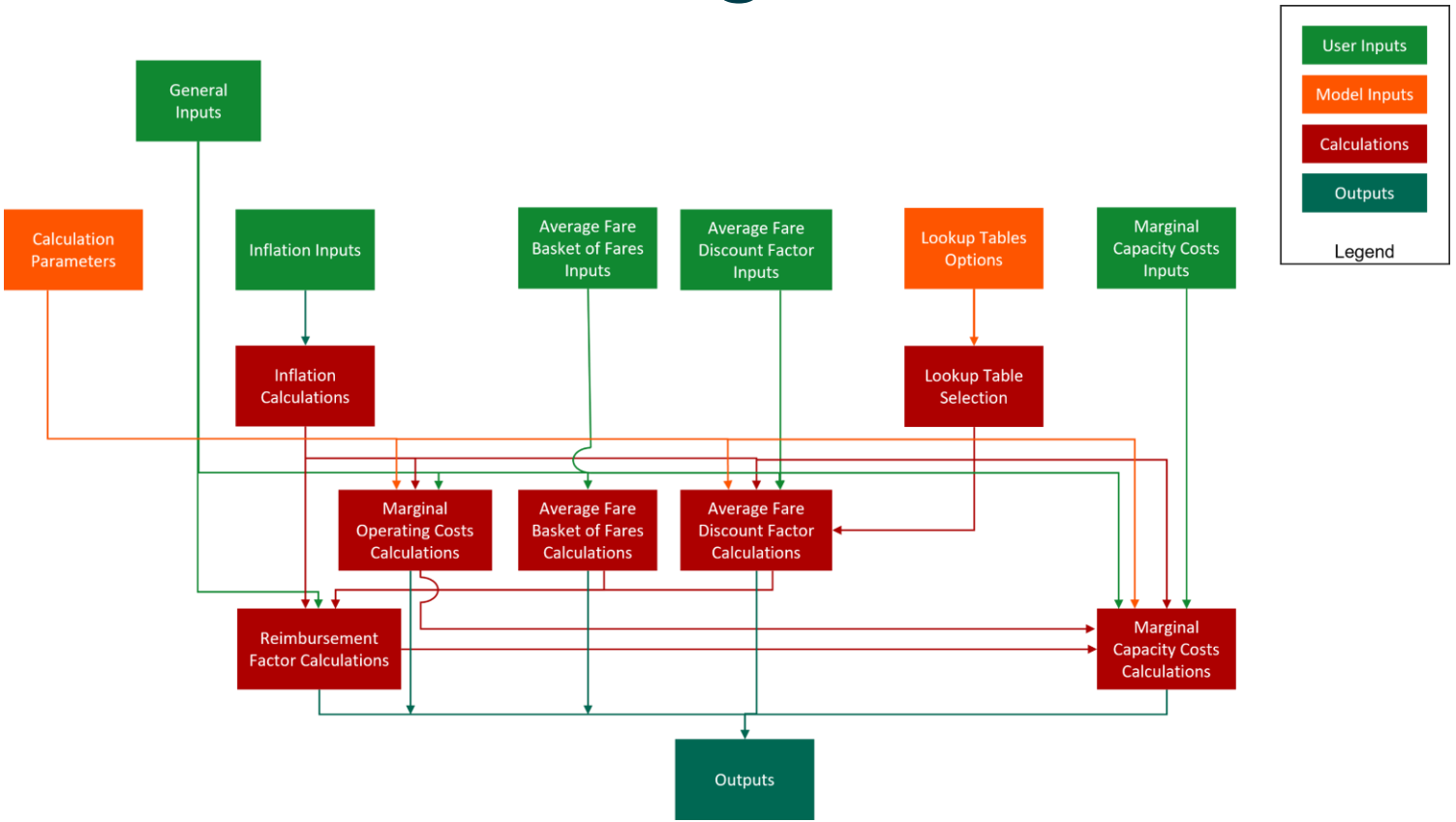
Average Cash Fare	
Average Daily Ticket Price	
Average Weekly Ticket Price	

Average cash fare must be input for this method to be used

Department for Transport

1 ENCTS Principles
2 2023 Updates - Generation Factor
3 2023 Updates - Average Fare Foregone
4 2023 Updates - Costs
5 Practical Demos

Calculator Walk-Through



1 ENCTS Principles

2 2023 Updates - Generation Factor

3 2023 Updates - Average Fare Foregone

4 2023 Updates - Costs

5 Practical Demos

Case study 1: rural TCA with low data availability

This case study is only an example to understand the workings of the calculator, not a series of instructions or a comparison basis.

The example uses mostly Default parameters, and TCA-wide averages. This can be a TCA calculating a standard scheme, and that does not have wide data availability.

General Inputs	Input
Area Type	Non-urban
Year	2024/25
Observed Concessionary Journeys	950 000
AFF method	Basket of Fares
RF: % change in fares	15%
MOC journey length	Default
MCC option	Yes, default
MCC Average commercial fare	£1.40
MCC Total Journeys on network	500 000

Case study 1: rural TCA with low data availability

Average Fare Forgone Inputs: Basket of Fares method

- The Basket of Fares has been selected in this example for demonstration purposes. The reasons for selecting the BoF method over other methods are explained slide 18.

Type of Ticket	Price	Journeys / ticket	% of total journeys
Single	£2.30	1	30%
Return	£4.00	2	50%
Day	£5.00	2.2	20%

Case Study 1: Outputs

General Parameters	
Area Type	Non-urban
Year	2024-25
Observed Concessionary Journeys	950000

Revenue Forgone	
Average Fare Forgone (£)	£2.14
Discount Factor	
Reimbursement Factor (%)	51.41%
Total Reimbursement for Revenue Forgone (£)	**£1,047,308.24**

Additional Costs	
Generation Factor (%)	48.59%
Marginal Operating Costs (£ per trip)	£0.091
Total Marginal Operating Costs (£)	**£42,100.05**
Average additional Capacity Cost per generated passenger journey (£ per trip)	£0.254
Total Marginal Capacity Costs (£)	**£61,595.81**
Scheme Administration Costs (£)	£0.00
PVR Costs (£)	£0.00
Total Reimbursement for Additional Costs	**£103,695.85**

Total Reimbursement	£1,151,004.10

Case study 2: urban TCA with high data availability

The example uses all local parameters, and operator-specific averages. This can be a TCA calculating an operator-specific scheme, and that has high data availability.

General Inputs	Input
Area Type	Urban
Year	2024/25
Observed Concessionary Journeys	1 940 000
AFF method	Discount Factor method
RF: % change in fares	22%
MOC journey length	Local
MOC journey length value	3.4 m
MCC option	Yes
PVR costs	£230 000

Case study 2: urban TCA with high data availability

Average Fare Forgone Inputs: Discount Factor method

- TCA has already calculated the average ticket prices from all available tickets
- If not, use Discount Factor through template method, following same methodology as Basket of Fares, but separating by Cash, Day and Weekly products

Type of Ticket	Price
Selected Lookup Table	Medium-Sized Urban
Average Cash Fare	£1.60
Average Daily Ticket Price	£4.20
Average Weekly Ticket Price	£18

Case study 2: urban TCA with high data availability

Marginal Capacity Costs Inputs

- Operator has 2 different networks in the area
- Local values are available for both networks

Parameter	Network 1	Network 2
Total concessionary journeys on network	450 000	780 000
Speed	9.2	7.3
Mean Vehicle Occupancy	8	12
Mean journey length (miles)	3.2	2.8
Mean route length (miles)	9.2	6.9
Average commercial fare	£1.40	£1.60
Commercial journeys as % of total	67%	60%

Case Study 2: Outputs

General Parameters	
Area Type	Urban
Year	2024-25
Observed Concessionary Journeys	1940000

Revenue Forgone	
Average Fare Forgone (£)	£1.46
Discount Factor	8.44%
Reimbursement Factor (%)	55.83%
Total Reimbursement for Revenue Forgone (£)	**£1,586,670.19**

Additional Costs	
Generation Factor (%)	44.17%
Marginal Operating Costs (£ per trip)	£0.090
Total Marginal Operating Costs (£)	**£77,162.52**
Average additional Capacity Cost per generated passenger journey (£ per trip)	£0.209
Total Marginal Capacity Costs (£)	**£113,361.44**
Scheme Administration Costs (£)	£0.00
PVR Costs (£)	£230,000.00
Total Reimbursement for Additional Costs	**£420,523.96**

Total Reimbursement	£2,007,194.15

Network Number	Active calculation	Network/Subset of networks	Net additional capacity cost per generated passenger journey (Final)	Total net costs for the network/subset of networks (£)
1	Yes	1	0.360	71,464.275
2	Yes	2	0.122	41,897.163

Questions and Answers Session

We will collate a note of all questions and answers discussed in this session, the note will be shared with everyone that joined today's event.

If a question about the contents of this session occurs to you later, you can submit it to us by the end of Monday 4 March and we will add that question, and our response, to the note.

Questions should be submitted to:

concessionaryfares@dft.gov.uk


Department
for Transport


SYSTRA


frontier
economics

Discounted Fares Method - Example

- In the table and text below an illustrative example of estimating the discount factor is shown (prior to degeneration)
- Discount factor: 1 – (B*E + A*D + C) / F
- Discount factor: 1-(9.9*150,667 + 1.8*1,769,176 + 935,069) / 6,661,511 = 15.8%
- AFF: Average Cash Fare * (1=Discount Factor)

Item	User Input Derived Values	Lower Band	Upper Band	Factor	Interpolated Value
Daily Ticket Price/Cash Fare (A)	1.80	1.00	2.00	0.80	
Weekly Ticket Price/Cash Fare (B)	9.90	9.00	10.00	0.90	
Cash Fare Journeys (C)		0	1,168,836	0.80	935,069
Daily Tickets (D)		2,704,246	1,535,409	0.80	1,769,176
Daily Journeys		4,592,329	3,423,492	0.80	3,657,260
Weekly Tickets (E)		182,264	147,156	0.90	150,667
Weekly Journeys		2,353,557	2,037,585	0.90	2,069,182
Check Journey Total (F)		6,945,886	6,629,914		6,661,511
Discount Factor		37.5%	13.9%		15.8%
Average Discount Factor	25.7%				

Basket of Fares Method: Example

- In the table below an illustrative example is shown for the Basket of Fares Method:

Ticket Type (A)	Price £ (B)	Assumed Journeys per Ticket (C)	Implied Revenue per Journey £ (D)	% of Total Journeys (E)	Weighted Revenue per Ticket (F=D*E)
Single (<1 mile)	1.50	1.00	1.50	3%	0.05
Return (<1 mile)	2.80	2.00	1.40	5%	0.07
Single (>1 mile)	2.50	1.00	2.50	22%	0.55
Return (>1 mile)	4.80	2.00	2.40	24%	0.58
Daily pass	5.00	3.00	1.67	33%	0.55
Weekly pass	18.00	16.00	1.13	13%	0.15
Total				100%	
Weighted Average					£1.94

Average Cash Fare Method: Example

- In the table below an illustrative example is shown for the Average Cash Fare Method:

Product	Ticket Price £ (A)	Single Journey Multiplier (B)	Number of Tickets Sold (C)	Total Revenue £ (D)	Equivalent Number of Journeys (E=B*C)
Single Zone 1	£2.50	1.00	50,000	125,000	50,000
Single Zone 1+2	£3.00	1.00	180,000	540,000	180,000
Return Zone 1	£4.80	2.00	15,000	72,000	30,000
Return Zone 1+2	£5.60	2.00	90,000	504,000	180,000
Carnet (10) Zone 1+2	£22.00	10.00	5,000	110,000	50,000
All Cash Fares				1,351,000	490,000
Average					£2.76