

Cost allocation GB roll-out

Initial GB results and next steps

Update for colleagues on emerging results from GB roll-out of Brockley Consulting cost allocation work. There is more work to do but we are not expecting major changes to results.

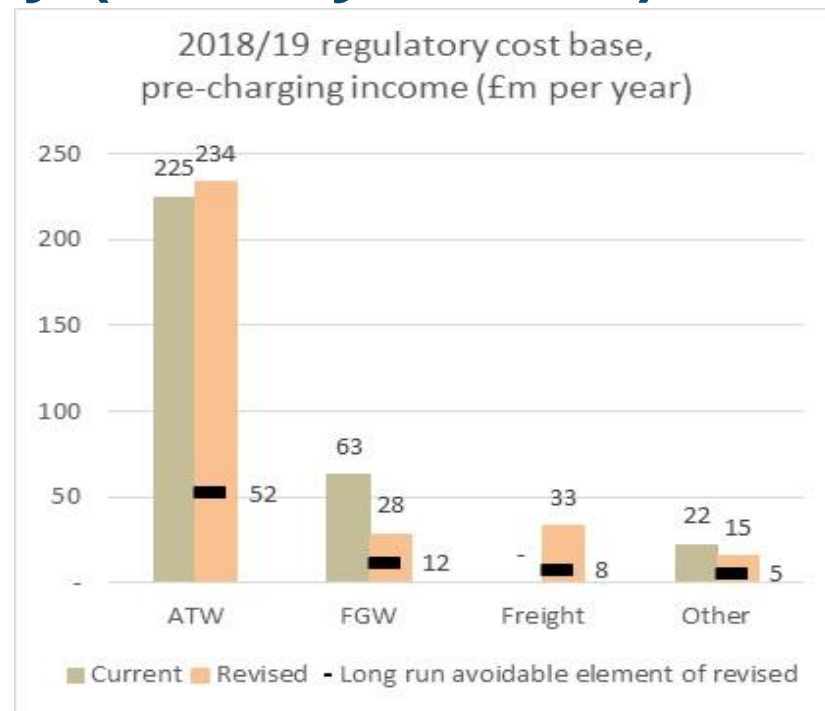
27 March 2017

Agenda

- Re-cap of Wales pilot study
- Initial GB results based on Wales method
- Frequency avoidable costs
 - approach (re-cap)
 - Liverpool Street worked example
 - implementation
 - emerging results
- Further refinements to Wales method
- Outputs and timescales

Re-cap of Wales pilot study (already shared)

- Based on 2013 FD 2018/19 forecast (incl. TOC names etc)
- Existing FTAC method refined to
 - allocate all of NR's costs to all operators
 - disaggregate from Route to track section level
 - reflect long run avoidable costs
 - traffic characteristics (speed, axle load)
 - traffic levels
 - allocate common costs on basis of avoidable costs or traffic
 - allocate RAB return using replacement cost



Key changes – 2018/19 allocations per annum pre-charging income

Operator	Total	Avoidable *	Overall change	Terrain complexity	Traffic	Change from FTAC "all operators"
Arriva T Wales	£234m	£52m	+4%	High (hilly)	Low	+29%
First Grt Western	£28m	£12m	-44%	Low (exc tunnels)	High	-35%
Freight	£33m	£8m		Low (exc tunnels)	High	-52%

Initial GB results based on Wales method of allocating total Network Rail costs

- Trends broadly as expected by Wales pilot
 - reduced allocations to FPOs as a result of extending allocations to all operators
 - remaining changes tend to increase allocations in areas with complex terrain and/or low traffic
- Except that - urban terrain is inherently costly and so tends to increase allocations
 - high density of S&C and bridges
- Changes to cost allocations relative to “all operator” approach
 - modest for a number of large operators with diversified services whose changes largely cancel out (e.g. FGW, Nat Express E. Anglia)
 - some significant reductions for focused Inter City operators (e.g. Virgin Trains, ECML Rail)
 - some significant increases for focused rural/urban operators (e.g. Northern Rail, Arriva Wales)
 - as with Wales pilot, after an initial allocation under all operator approach, Freight allocation falls significantly, due largely to shift in common cost allocation towards traffic
 - OA operators receive allocation under all operator approach

Initial GB results based on Wales method

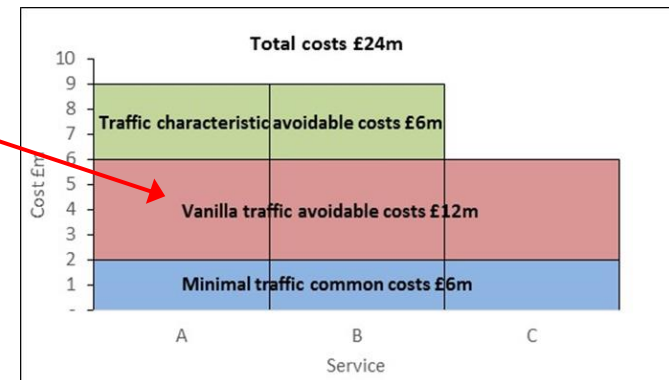
Key changes (full results in Annex) – 2018/19 allocations per annum pre-charging income

NB these are cost allocations not charges

Operator	Total	Avoidable *	Overall change	Terrain complexity	Traffic	Change from FTAC "all operators"
Northern Rail	£566m	£169m	+41%	High (hilly, urban)	Low	+67%
ScotRail	£494m	£134m	+3%	High (hilly)	Low	+18%
Southeastern	£380m	£129m	+7%	High (urban)	Medium	+12%
Virgin Trains	£330m	£120m	-49%	Low	High	-37%
Southern	£316m	£72m	-14%	Medium	High	-11%
ATW	£287m	£67m	+8%	High (hilly)	Low	+32%
E Midlands Trains	£251m	£90m	-13%	High (urban)	Low	+13%
First Capital Conn	£231m	£69m	-32%	Medium	High	-15%
London Mid	£229m	£76m	-5%	High (urban)	High	+10%
TP Express	£215m	£69m	-2%	High (hilly, urban)	Medium	+18%
ECML Rail	£210m	£78m	-49%	Low	High	-29%
Freight	£591m	£167m		Medium	Medium	-27%
Grand Central	£21m	£8m		Medium	Medium	-1%
Hull Trains	£15m	£6m		Medium	Medium	6%

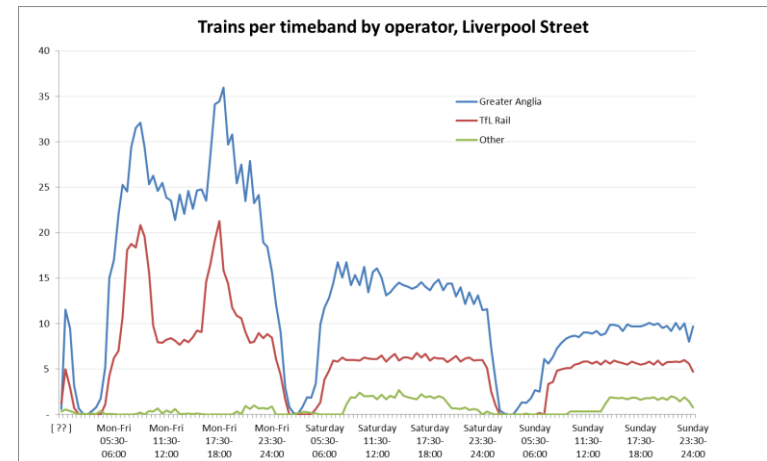
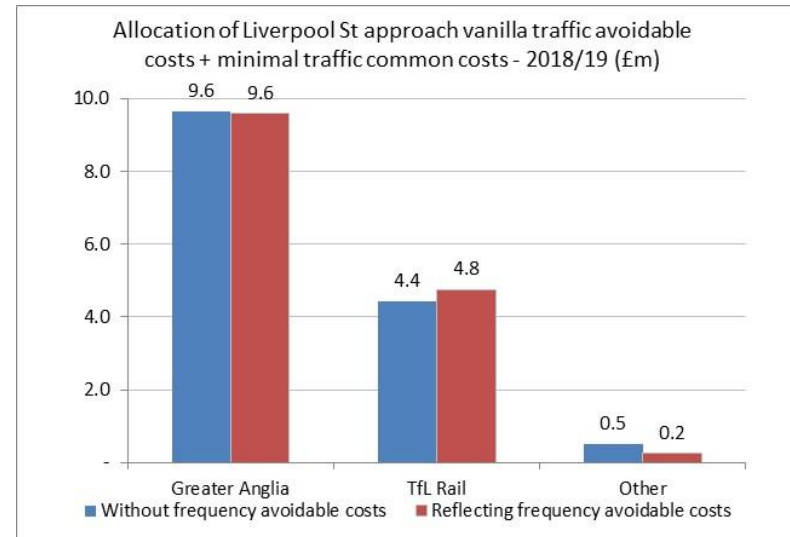
Frequency avoidable costs: approach (re-cap)

- High frequency traffic drives the need for capacity-related costs (e.g. multi-track lines)
 - such costs would be avoidable in the long run at lower frequencies
 - consider allocating frequency-related costs to high frequency traffic
 - not modelled in Wales pilot study as frequency variations quite limited
- Approach
 - assume vanilla traffic avoidable costs are avoided linearly as frequency falls
 - 30 tph to 25 tph = £10m
 - 25 tph to 20 tph = £10m
 - this allocates more costs to services operating in high frequency time bands

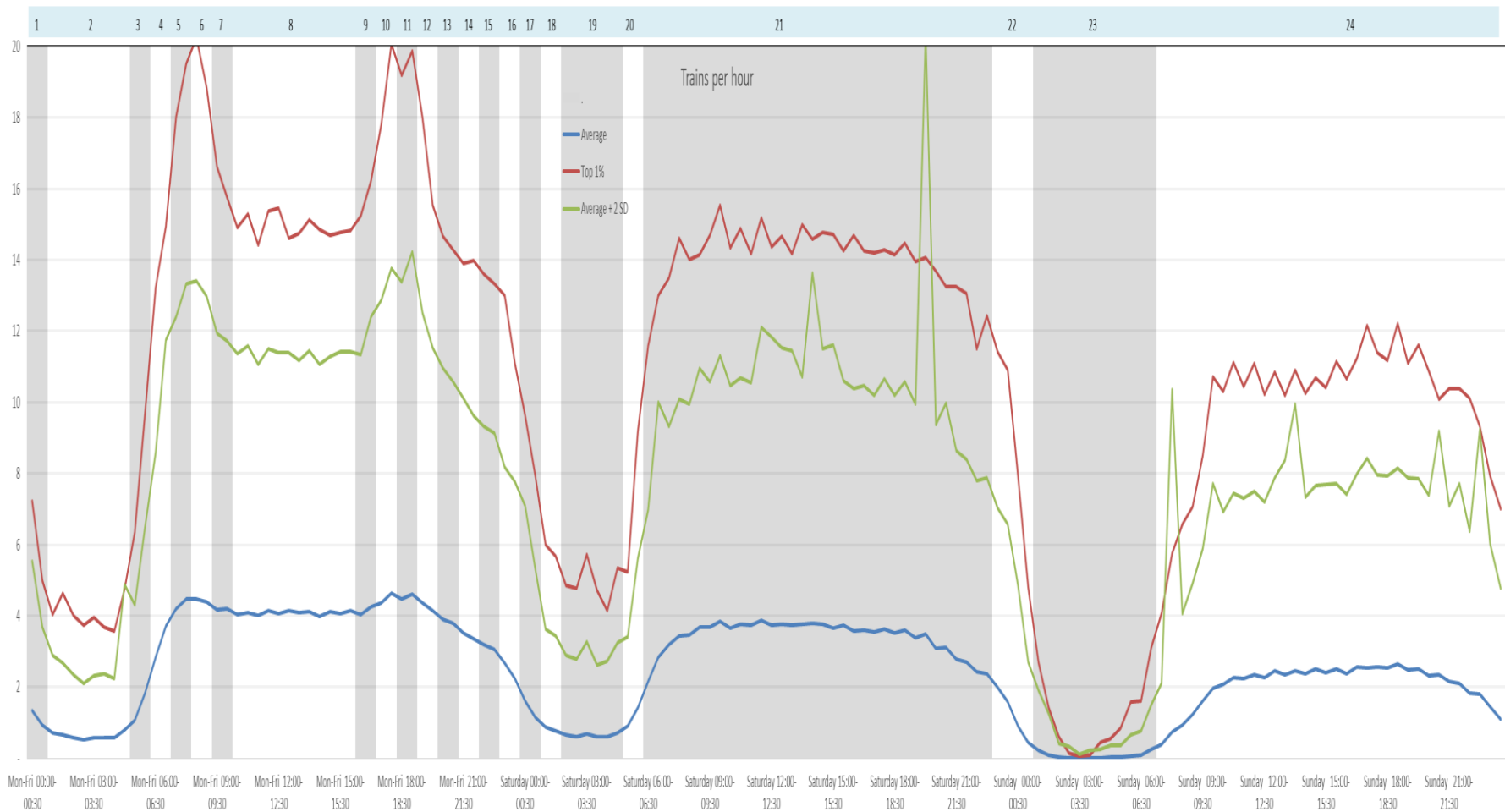


Frequency avoidable costs: worked example

- Based on approach to Liverpool St
 - significant variations in frequency by time of day (106 tph 08:30-09:00; 60 tph 12:30-13:00)
 - but impact on allocations relatively small
 - largely because two main operators show a similar variation in frequency
- For a material impact on one track section, we need the track section to:
 - have material vanilla traffic avoidable costs (GB average is 26% of total costs)
 - be shared by more than one operator
 - show significant variations in frequency by time of day and
 - show significant variations in frequency between operators
- For a material impact across GB, we need many track sections to have these qualities

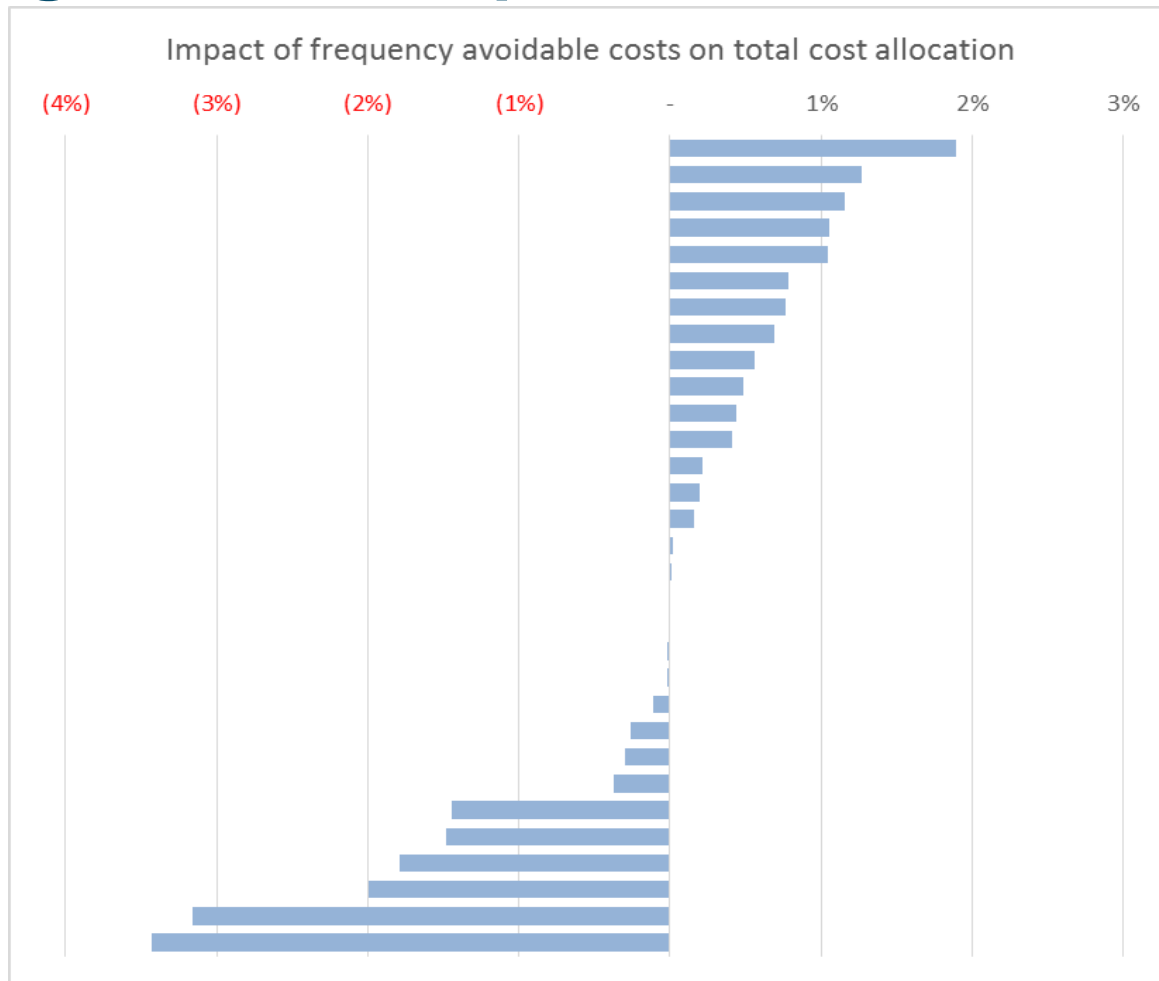


Frequency avoidable costs: implementation



- Frequency data sourced from refined ACTRAFF query using half hourly time bands

Frequency avoidable costs: emerging results at operator level



Frequency avoidable costs: emerging results

- Results still being reviewed for reasonableness
 - so far, appear to make sense



Frequency avoidable costs: initial thoughts

- Implementation is extremely demanding
 - model size, run time and stability issues
- Impact is generally small
- Continuing to review the results
 - e.g. by individual Service Group
- Not yet clear if modelling effort is proportionate

Further refinements to Wales method

- We do not currently expect these to have a major impact on the results
- Updated unit cost estimates for each asset type
- Traffic characteristic avoidable costs (formerly “traffic type avoidable costs”)
 - speed and axle load impact on track costs already modelled in Wales approach
 - refine to reflect non-linearity
 - reflect impact on civils (VUC model)
 - consultation with engineers and industry stakeholders suggested few additional characteristics which could be modelled without disproportionate effort
 - unsprung mass and curving class track costs (VUC model)
- Allocation of RAB returns
 - consider updating 2014 data to reflect 2016 study (impact of MEAV approach)
- Income subtraction
- Expand from single year (final year CP5) to 5 years (all CP6)

Outputs and timescales

March	Industry presentations
April	Final model
May	Final presentations Final report, model documentation, knowledge transfer
June	ORR conclusions on its December charging consultation
July	Network Rail fixed cost charges methodology consultation
...	
December	Network Rail SBP

Annex - Initial GB results based on Wales method

Allocation of 2018/19 total costs (£m)

TOC	FTAC method	All operators	IHC	Disaggregated	Avoidable (FTAC)	Avoidable (traffic)	Change from all operator approach to final approach	Change from FTAC method to final approach	Long run avoidable * costs
Freight	-	809	924	969	771	591	(27%)	-	167
Northern Rail	400	339	304	447	507	566	67%	41%	169
First Great Western	644	533	523	529	544	560	5%	(13%)	161
ScotRail	479	418	397	441	465	494	18%	3%	134
Southeastern	355	341	338	369	376	380	12%	7%	129
South West Trains	393	373	372	365	366	367	(2%)	(7%)	88
Virgin Trains	649	522	559	374	362	330	(37%)	(49%)	120
National Express East Anglia	368	322	318	317	321	326	1%	(11%)	90
CrossCountry	371	305	294	272	299	318	4%	(14%)	101
Southern	369	354	349	316	313	316	(11%)	(14%)	72
Arriva Trains Wales	266	217	198	241	259	287	32%	8%	67
East Midlands Trains	287	223	214	211	234	251	13%	(13%)	90
First Capital Connect	338	273	268	229	226	231	(15%)	(32%)	69
London Midland	241	208	196	199	214	229	10%	(5%)	76
Transpennine Express	219	182	169	190	201	215	18%	(2%)	69
East Coast Main Line Rail	413	298	311	235	225	210	(29%)	(49%)	78
Chiltern Railways	95	84	76	83	84	91	9%	(4%)	23
c2c	69	60	59	67	68	68	13%	(1%)	25
LOROL	62	56	54	56	62	64	13%	4%	22
Merseyrail	51	45	41	55	54	57	25%	12%	16
Miscellaneous Passenger (demin)	-	20	20	31	43	42	108%	-	15
Grand Central	-	21	20	18	20	21	(1%)	-	8
Hull Trains	-	14	14	12	15	15	6%	-	6
Nexus	-	15	13	11	11	13	(15%)	-	2
Heathrow Express	-	15	16	11	11	10	(34%)	-	4
LUL Bakerloo	-	9	8	6	6	6	(29%)	-	1
Heathrow Connect	-	5	5	5	4	5	(15%)	-	2
LUL District (Richmond)	-	3	3	2	2	2	(23%)	-	0
West Coast Railway	-	1	1	3	3	2	19%	-	0
North Yorkshire Moors Railway	-	0	0	4	3	1	-	-	0
Eurostar	-	1	1	0	0	0	(79%)	-	0
	6,069	6,069	6,069	6,069	6,069	6,069	0%	0%	1,806