



# PR18: Infrastructure cost charges – final impact assessment on the design of franchised passenger operators’ infrastructure cost charges

October 2018

This impact assessment supports our conclusions following our June 2018 consultation [‘infrastructure cost charges consultation’](#). The assessment of the options contained within this document have been updated to reflect points raised in response to the consultation. This impact assessment has been published alongside the [‘Supplementary document – Charges and incentives: Infrastructure cost charges conclusions’](#).

Policy	Charges – infrastructure cost charges
Policy area	Infrastructure cost charges for franchised passenger operators
Background	<p>In September 2017 we <a href="#">consulted</a> on the approach to levying charges that recover Network Rail’s fixed costs (i.e. those costs that do not vary with use in the short-term) from franchised passenger operators. For control period 6 (CP6)<sup>1</sup>, we have called charges that recover these types of costs ‘infrastructure cost charges’ (ICCs). The ICC for franchised passenger operators will continue to be called fixed track access charge (FTAC) for billing purposes. In the remainder of this impact assessment, we will be referring to these charges as ICCs.</p> <p>Currently, the FTAC is levied on franchised passenger operators as a fixed lump-sum based on forecasts of their traffic. Each operator’s FTAC does not vary in response to changes in the level of its services during a control period. In our September 2017 consultation, we proposed to retain the CP5 approach of levying a lump-sum amount on franchised passenger operators based on traffic forecasts but proposed to allow their ICCs to adjust annually</p>

<sup>1</sup> CP6 will run from 1 April 2019 to 31 March 2024.

	<p>to reflect changes in traffic. The responses to our consultation generally indicated support for our proposal.</p> <p>To support our PR18 final determination decision, we have assessed various options for the design of franchised passenger operators' ICCs covering four areas:</p> <p>A) the traffic metric for annually adjusting the infrastructure cost charge;</p> <p>B) the level of disaggregation at which the annual adjustment is applied;</p> <p>C) the basis for the annual adjustment; and</p> <p>D) limiting Network Rail's downside risk.</p> <p>Each of the options under these four areas is outlined in further detail below and is assessed against the relevant PR18 outcomes and objectives (which are detailed in the next section). We set out our final decision at the end of each section based on an assessment of the relative advantages and disadvantages of each option. The option chosen in the preceding section(s) is then assumed as the basis for all subsequent section(s).</p>
<p><b>PR18 outcomes and objectives to assess each option against</b></p>	<p>➤ <b>Outcome:</b> the network is efficient <i>The network is being operated, maintained and renewed at the lowest cost, given the level of use and performance.</i></p> <p><b>Objective:</b></p> <ul style="list-style-type: none"> <li>• Ensure that Network Rail can recover its total costs</li> </ul> <hr/> <p>➤ <b>Outcome:</b> the network is better used <i>Network Rail and operators find ways to improve network use and accommodate new services.</i></p> <p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Provide effective incentives for Network Rail to add traffic to the network</li> <li>• Ensure operators take costs of service into account when using the network</li> <li>• Ensure capacity is allocated on the basis of the cost of provision and value of use</li> <li>• Ensure all parties are incentivised to maximise value of capacity in use</li> </ul>

## **A: The traffic metric for annually adjusting the infrastructure cost charge**

In this section, we assess three units of traffic that could be used to annually adjust franchised passenger operators' ICCs. The metric chosen for the adjustment will affect the decisions made by Network Rail and franchised passenger operators, as each metric responds to different underlying drivers.

- Option 1: actual passenger kilometres

A passenger kilometre is defined as the number of passengers on the train multiplied by the number of kilometres the train travels.

If passenger kilometres are used, the annual adjustment would reflect the difference between forecast and actual passenger kilometres, as opposed to timetabled passenger kilometres. This is because, following previous discussions with Network Rail, it does not appear to be possible to forecast timetabled passenger kilometres.

- Option 2: timetabled vehicle miles

A vehicle mile is the number of carriages on a train multiplied by the number of miles the train travels.

- Option 3: timetabled train miles

A train mile measures the number of miles a train travels, irrespective of any other characteristics of the train (e.g. the number of carriages or passengers, its weight, etc.).

**Outcome:** the network is efficient

**Objective:** ensure that Network Rail can recover its total costs

ICCs are currently levied on franchised operators as a fixed lump-sum amount that does not vary in response to the number of services run within a control period. Adjusting franchised passenger operators' ICCs for changes in timetabled traffic would introduce an element of variability in Network Rail's revenue. The traffic metric used to make the adjustment may affect the degree to which Network Rail's ICC revenue varies.

If the adjustment were based on passenger kilometres, Network Rail's ICC revenue would vary in response to the number of passengers using the franchised operator's services, even though franchised operators are required, through their franchise agreements, to operate a defined timetable as a minimum, regardless of short-term variations in passenger numbers. If passenger numbers were to fall – perhaps due to wider economic factors – Network Rail could face a revenue shortfall while still incurring the fixed costs associated with providing the railway infrastructure necessary to run that minimum timetable.

Calculating the adjustment using (timetabled) vehicle miles would mean that the ICC would depend on the length of the trains run by franchised passenger operators. Although the adjustment would be based on timetabled vehicle miles, operators may choose to vary the length of the trains they run in response to changes in demand

(although franchise agreements do set minimum capacity requirements for peak services in some cases), thus increasing Network Rail's revenue volatility. That is, if train lengths were reduced, it could negatively affect Network Rail's ability to recover its total costs.

If franchised passenger operators' ICCs were adjusted using train miles, the ICC would vary only when the number of timetabled services (or the distance they travel) increases or reduces. Given that franchise agreements set minimum service levels, we would expect this option to result in the lowest volatility in Network Rail's ICC revenue and for this option to minimise the likelihood of Network Rail not being able to recover its fixed costs from franchised operators.

**Outcome:** the network is better used

**Objective:** ensure operators take costs of service into account when using the network

The [analysis](#) as part of Network Rail's new fixed cost allocation methodology shows that one of the main drivers of fixed costs on the railway network is the additional infrastructure required to accommodate a greater number of trains.

With this in mind, using passenger kilometres as the metric for the adjustment could mean franchised passenger operators' ICCs increase for running services at busier times of the day. This would encourage operators to consider the fixed costs associated with the infrastructure in their decision to accommodate a greater number of passengers by running additional services during busier periods. The net effect is, however, ambiguous as any additional service timetabled may simply lower passenger numbers in other services scheduled by the operator.

Network Rail's analysis did not show that the length of trains is a key driver of fixed costs. Calculating the adjustment to the ICC using vehicle miles would therefore not be the most accurate reflection of the evidence on the drivers of the long-run fixed costs of using the network.

By calculating the adjustment using train miles, franchised passenger operators would be charged for each additional train timetabled, more directly reflecting the long-run fixed cost imposed on the infrastructure by running an additional service.

**Outcome:** the network is better used

**Objective:** ensure capacity is allocated on the basis of the cost of provision and value of use

If the ICC adjustment were based on train miles, the bodies responsible for allocating capacity (i.e. Network Rail, funders and ORR) would have information on the fixed costs imposed by the running of additional franchised passenger services. They would be able to take this information into account when making decisions about adding more services.

As mentioned above, based on Network Rail’s new cost allocation methodology, it does not appear that train length is a significant driver of long-run fixed costs. This means an adjustment based on vehicle miles would not provide those bodies with an accurate signal of the long-run costs that operators cause when allocating capacity.

On the other hand, we have shown that calculating the adjustment to the ICC on the basis of passenger kilometres and train miles reflects the main drivers of fixed costs. This means that both these units of traffic would provide those bodies with better information to allocate capacity on the basis of the long-run fixed costs franchised operator services cause on the network.

**Outcome:** the network is better used

**Objective:** ensure all parties are incentivised to maximise value of capacity in use

The metric employed in adjusting franchised passenger operators’ ICCs could affect operators’ decisions about the types of services they run, in turn affecting how they make the best use of network capacity allocated to them.

If the adjustment were calculated using vehicle miles, it could potentially discourage operators from running longer trains, as timetabling trains with more carriages would cost more to run. If the adjustment were calculated based on passenger kilometres, it may discourage operators from changing their prices to fill empty seats as they may expect that the additional fare income would not exceed the additional charges. Both issues could be mitigated through a cap. That is, if calculated using vehicle miles, the number of additional carriages charged for could be capped; similarly, if the adjustment were based on passenger kilometres, a cap could be applied to the charge for the proportion of seats filled on the train. However, we are mindful of the additional complexity that this would introduce and the difficulty of setting any cap at the right level.

Calculating the adjustment to franchised passenger operators’ ICCs using train miles would not directly encourage an operator to amend the type of service it runs to reduce its ICC, as its ICC could only be reduced by removing a service. However, an adjustment based on train miles could encourage operators to lengthen trains to avoid the cost of timetabling more services and/or look for ways to increase the number of passengers on existing services.

### **General objectives**

There may be transitional costs for Network Rail in including a new unit of traffic in its billing system.

Train miles and vehicle miles are already used to bill operators for existing charges meaning that using either of these metrics would require minimal changes to Network Rail’s billing system. On the other hand, passenger kilometres are not currently used to bill operators for any track access charges which would mean that Network Rail would likely face significant transitional costs to obtain the data and update its billing system.

**Decision:** adjust franchised passenger operators' ICCs using timetabled train miles.

This option is the most stable in ensuring that Network Rail can recover its costs and best reflects one of the key drivers of long-run fixed costs on the network.

In its response to our draft determination, Network Rail identified the Schedule 4 Compensation System as the most appropriate system for measuring timetabled train miles in CP6. Network Rail is undertaking further analysis to verify the robustness of this system. We will work with Network Rail as they develop this further and will only approve the implementation of this decision once we are fully assured that the system and resulting data are sufficiently robust.

## **B: the level of disaggregation at which the annual adjustment is applied**

This section considers the level of disaggregation for adjusting franchised passenger operators' ICCs.

- Option 1: operator level

This option would involve annually adjusting each franchised passenger operator's total ICC for the difference between its forecast timetabled train miles and the train miles included in the timetable for that year.

- Option 2: service group level

Under this option, the adjustment would vary across the different service groups (a subset of a franchised operator's overall package of services) a particular franchised operator runs, allowing for a greater level of geographical disaggregation.

We initially considered adjusting franchised passenger operators' ICCs at the service code level but converting timetabled services into train miles at a service code level was deemed infeasible. Thus, we do not assess this option.

**Outcome:** the network is efficient

**Objective:** ensure that Network Rail can recover its total costs

It should be noted that fixed costs can vary significantly across the different parts of the network on which a franchised operator runs its services. For instance, rural areas with difficult terrain are inherently more costly than areas with easier terrain. Franchised operators tend to run a package of different types of services, including intercity, regional and rural services.

Some operators may run services with large variations in the long-run fixed costs they cause. If the adjustment to the ICC were calculated at the operator level, the adjustment may not accurately reflect the fixed costs associated with the services that have contributed to the adjustment (either because they were added or removed). There is a risk that Network Rail could under- or over-recover its fixed costs in these instances. For example, if during a control period a franchised operator only added new services that imposed a high fixed cost relative to its full set of services, the operator's ICC would increase by less than the true fixed cost imposed by those new services. This would result in Network Rail under-recovering its fixed costs.

As services within a service group have similar characteristics, the variation in fixed costs caused by any individual service within a service group will be less than across all a franchised operator's services. With this in mind, adjusting franchised passenger operators' ICCs at the service group level would provide a more accurate reflection of the fixed costs imposed by any service within that group than at the franchised operator level. This would reduce the risk of Network Rail either under- or over-recovering its fixed costs relative to the previous option.

**Outcome:** the network is better used

**Objective:** ensure operators take costs of service into account when using the network

Calculating the adjustment at an operator level would provide less accurate information about the true long-run fixed costs of infrastructure provision borne by Network Rail when the fixed costs attributable to the new services vary significantly from the average adjustment calculated for the operator as a whole. In this case, the ICC adjustment would not necessarily send accurate signals to operators regarding the fixed costs caused by running additional services.

Adjusting the ICC at a service group level would more closely reflect the actual fixed costs of running additional timetabled service borne by Network Rail. As a result, this option provides operators with a better signal of the cost of service than in the aforementioned case.

Nevertheless, we note that franchised operators do not typically take decisions at the service group level. Thus, the incentive to consider the cost of infrastructure provision may, hypothetically, be stronger with a more disaggregated adjustment but, in practice, this may not materially affect franchised operator decision making. Furthermore, Network Rail's response to our June 2018 consultation highlighted that, as franchised passenger operators will not be exposed to ICC changes at any level of disaggregation for CP6 (under their franchise agreements these operators are held neutral by their franchise authority to any changes in track access charges resulting from a periodic review for the duration of the agreement), disaggregating ICCs for franchised passenger operators would be unnecessary.

**Outcome:** the network is better used

**Objective:** ensure capacity is allocated on the basis of the cost of provision and value of use

Similar to the above case, an operator level adjustment could potentially provide less accurate information about variations in fixed costs attributable to additional services timetabled, thereby weakening the signal to Network Rail, funders and ORR on how best to allocate capacity on the basis of the long-run cost of infrastructure provision. Service group level adjustments would better reflect long-run fixed costs but it should be noted that, if information on the long-run cost of providing infrastructure to services is available to Network Rail, funders and ORR separately, we would expect them to use this information to allocate capacity efficiently regardless of the disaggregation of the adjustment element of the ICC.

### **General objectives**

The level of disaggregation for adjusting franchised passenger operators' ICCs will affect the complexity for Network Rail of forecasting the baseline level of traffic. To annually adjust franchised passenger operators' ICCs for changes in timetabled traffic,



Network Rail will have to first forecast baseline traffic levels to compare franchised passenger operators' annual timetabled traffic against. If a service group level adjustment is used, Network Rail would have to forecast the baseline level of traffic for each service group, of which there are more than one hundred. In addition, the lower the level of disaggregation, the harder it is to accurately forecast traffic. It would therefore be less complex and costly for Network Rail to forecast baseline traffic levels at an operator level. Additionally, Network Rail's response to our June 2018 consultation confirmed that billing at an operator-level presents no particular challenge.

There may also be transitional costs to franchise authorities in establishing a process to ensure franchised passenger operators are held neutral to changes in charges. We would expect that calculating the adjustment across a franchise would be less onerous to franchise authorities in terms of the calculation of adjustment payments than if it were set at a service group level as there would be a fewer number of adjustments to hold neutral.

**Decision:** adjust franchised passenger operators' ICCs at an operator level.

Whilst calculating the adjustment for each service group may provide the better outcome in terms of reflecting the fixed costs imposed by the running of any individual service within a service group, we recommend calculating the adjustment at an operator level. We believe that the additional complexity created by calculating adjustment payments outweighs the benefits of employing a more disaggregated adjustment rate.

### C: the basis for the annual adjustment

In this section we assess two options for the basis on which the ICC adjustment element is calculated.

- Option 1: a proportional adjustment of the lump-sum ICC amount

Under this option the adjustment would be calculated as the percentage change in timetabled traffic applied to the lump-sum ICC amount set out in the price list. That is,

$$ICC\ adjustment_{it} = \left( \frac{T_{it} - B_{it}}{B_{it}} \right) \times ICC_{it}$$

Where  $T_{it}$  is train miles included in the timetable by franchised operator  $i$  in year  $t$ ,  $B_{it}$  is baseline timetabled train miles in the ICC forecast for operator  $i$  in year  $t$ , and  $ICC_{it}$  is the lump-sum ICC amount for operator  $i$  in year  $t$  set out in the price list.

- Option 2: base the adjustment on an ICC unit rate for each franchised passenger operator

Under this option, an ICC unit rate would be applied to the annual change in timetabled traffic. That is,

$$ICC\ adjustment_{it} = (T_{it} - B_{it}) \times r_{it}$$

Where  $r_{it}$  is the ICC unit rate calculated as the lump-sum ICC amount for operator  $i$  in year  $t$  set out in the price list, divided by expected train miles for operator  $i$  in year  $t$ .

For clarity, the adjustment to each franchised passenger operator's ICC would be added (subtracted) to (from) the lump-sum element of its ICC.

**Outcome:** the network is efficient

**Objective:** ensure that Network Rail can recover its total costs

A proportional adjustment to the ICC would not precisely reflect the fixed costs borne by Network Rail in relation to additional services run by franchised passenger operators because it would be highly averaged.

By setting the adjustment as a unit rate, the change in timetabled traffic (in train miles) would be adjusted by a proportion of long-run fixed costs to that service. As the rate would be an average across an operator's services, this option would not provide much better information compared with the previous option.

Ultimately, it is not clear as to which of the two options would better allow Network Rail to recover its total costs. This is because both options are highly averaged across a franchised operator's set of services.

**Outcome:** the network is better used

**Objective:** ensure operators take costs of service into account when using the network

Following on from the previous objective, we have established that neither a proportioned nor a unit-rate ICC adjustment directly reflects the underlying cost of infrastructure provision in relation to specific services. This is because neither option is sufficiently disaggregated across a franchised operator's set of services.

Nevertheless, the unit rate adjustment may provide a somewhat clearer signal to all parties as to the cost borne by Network Rail, on average, when accommodating additional services (for a given ICC amount).

**Outcome:** the network is better used

**Objective:** ensure capacity is allocated on the basis of the cost of provision and value of use

As explained above, calculating the ICC adjustment as a unit rate may provide a slightly clearer signal to the bodies responsible for allocating capacity to allocate it on the basis of long-run cost of provision, as the calculation more clearly links the additional ICC amount to a specific service.

### **General objectives**

We do not believe that either of the options outlined above impose any substantial differences in transitional costs for Network Rail or franchise authorities. Both options require similar datasets for the adjustment calculation and franchise authorities would need to hold franchised operators neutral to changes in charges in either cases.

**Decision:** a proportional adjustment of the lump-sum ICC amount.

This option is preferred as neither option is substantially better than the other and the proportional adjustment altogether avoids the complication of apportioning the ICC to the operator's forecast train miles to be run.

## **D: limiting Network Rail's downside risk**

Responses to the September 2017 consultation raised concerns that a decrease in timetabled traffic within the control period could result in a funding shortfall for Network Rail. Whilst we believe that the possibility of a reduction in franchised passenger timetabled traffic is low under the current franchising model, this model could change in the future or a franchise agreement could be renegotiated during the control period. This would increase Network Rail's revenue risk relative to the current situation. We therefore consider two options designed to limit Network Rail's downside risk.

- Option 1: set a floor of 1% per annum on reductions in an individual operator's timetabled traffic

This option limits the percentage reduction to timetabled traffic that will be reflected in a franchised passenger operator's ICC adjustment to 1% in any given year. This implies a maximum cumulative floor of 5% over the control period. For instance, if a franchised passenger operator's timetabled train miles fell by 4% below its baseline timetabled train miles that operator's ICC for that year would decrease by only 1%.

- Option 2: no adjustment for a reduction in an operator's timetabled traffic

This effectively sets the downside adjustment floor at 0% so that no timetable reductions feed into the ICC adjustment. For the avoidance of doubt, franchised passenger operators' ICCs would be adjusted for increases in timetabled traffic.

**Outcome:** the network is efficient

**Objective:** ensure that Network Rail can recover its total costs

Setting a 1% per annum floor on reductions in an operator's scheduled traffic would provide Network Rail with certainty on its minimum ICC revenue in a given year. Nevertheless, Network Rail could still potentially be exposed to changes in its ICC revenue up to the floor. Based on the draft CP6 fixed charges price list available to us at the time of writing, a hypothetical 1% reduction in traffic in every year of the control period would result Network Rail's ICC revenue falling by approximately £50m over the control period.<sup>2</sup> This represents less than 0.2% of Network Rail's forecast expenditure on support, operations, maintenance and renewals in CP6. In addition, this exposure would only be realised if all operators reduced their timetabled train miles.

The option to not adjust for a reduction in timetabled traffic at all provides Network Rail with the most certainty in terms of its ability to cover its long-term fixed costs. This is because this option sets the limit such that any falls in timetabled traffic are effectively ignored, totally eliminating any downside risk from a fall in timetabled traffic only.

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<sup>2</sup> Please note that in our draft impact assessment we erroneously stated that Network Rail's financial exposure would be around £280m over CP6. We correct this in the text above.

**Outcome:** the network is better used

**Objective:** Provide effective incentives for Network Rail to add traffic to the network

Although this section is only concerned with the impact of the adjustment for decreases in timetabled traffic, a number of responses to our June 2018 consultation raised the point that limiting Network Rail's downside risk could dampen the incentive the annual adjustment provides to Network Rail to add traffic to the network.

If franchised passenger traffic decreased on the network and no downward adjustment were applied to franchised passenger operators' ICCs, the annual adjustment would not provide Network Rail with a financial incentive to respond and take action to return traffic to previous levels.

In comparison, if a 1% per annum floor were set on timetable reductions for franchised passenger ICCs and traffic on the network decreased, Network Rail's ICC revenue would also decrease by up to 1%. This would provide Network Rail with a financial incentive to add traffic to the network to recover some, if not all, of its lost revenue.

This demonstrates that limiting Network Rail's downside risk will have an impact on Network Rail's incentives to add traffic to the network when traffic on the network is decreasing. In terms of the two options being assessed, a floor of 1% is better in this scenario as it provides Network Rail with some financial incentive to add traffic to the network.

**Outcome:** the network is better used

**Objective:** ensure all parties are incentivised to maximise value of capacity in use

Under the option where there is no adjustment made for a reduction in timetabled traffic, a franchised passenger operator has no benefit in removing a timetabled service as this would not result in a lower ICC. This could potentially discourage franchised operators from removing services that do not maximise the value of capacity, e.g. trains that run with few passengers.

If a 1% per annum floor were set on an operator's timetable reductions for ICCs, there would be some benefit to franchised operators from the removal of services within the limit set by the floor. Beyond this floor, there would be no further incentive to remove services from the timetable, if indeed there were any efficiencies to be gained from a further timetable reduction. We note that setting any downside adjustment limit means that the charges paid by an operator may not necessarily reflect the fixed costs imposed by the traffic it schedules. However, we expect that scenario to be quite unlikely as it is our understanding from discussions with franchise authorities that it is more common for franchised operators to add services to the timetable as opposed to removing them.

## General objectives

In terms of transitional costs for Network Rail, by setting a floor on reductions in timetabled traffic, there is the possibility that, at the end of each year, Network Rail would need to reimburse franchised passenger operators based on the adjustment made to their ICC. This would require Network Rail to set up a new process to make payments to franchised passenger operators. However a 'wash-up' process for franchised passenger operators' ICCs will be required anyway to adjust their ICCs for changes in timetabled traffic. If there were no adjustment for a reduction in timetabled traffic then this reimbursement mechanism would not need to exist.

**Decision:** setting a floor of 1% per annum on reductions in an individual operator's timetabled traffic.

A floor on reductions in timetabled traffic is the most balanced of the two options presented above as it does not completely negate the benefit to a franchised passenger operator of removing an inefficient service yet provides Network Rail with certainty on its minimum ICC revenue. It also has the advantage of maintaining an incentive on Network Rail to grow traffic on its network.

## Summary

As part of our decision on the design of franchised passenger operator ICCs, we have assessed a number of options under four specific areas: (A) the traffic metric for annually adjusting the infrastructure cost charge; (B) the level of disaggregation at which the annual adjustment is applied; (C) the basis for the adjustment; and (D) limiting Network Rail's downside risk.

Our final decisions are to:

- A) set the adjustment as a rate per train mile to provide Network Rail with the greatest revenue stability;
- B) calculate the adjustment at an operator level given its relative simplicity;
- C) adjust the ICC as a proportion of the lump-sum ICC amount; and
- D) set a 1% per annum floor on reductions in an individual operator's timetabled traffic as it provides Network Rail with certainty on its minimum ICC revenue.



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