



Charging for
Investment Ahead of
TEC

nationalgrid

Guidance Document

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1. Purpose of the Document

- 1.1. This guidance document sets out how National Grid will apply charges to parties when they make a request which results in the transmission investments under their connection agreement being made earlier than would otherwise have been the case.

2. Background

- 2.1. Where a customer requests a connection to the transmission system, the transmission owner seeks to plan and carry out all the works necessary for that connection in order to economically and efficiently meet the agreed connection date. The completion date for the transmission works is generally planned to be the date of both connection to, and the exercise of the right to use, the transmission system, at which stage connection charges and Transmission Network Use of System charges (TNUoS) (as appropriate) would be payable. TNUoS is the mechanism by which the costs of investment in transmission (other than those assets classed as connection assets) are recovered.
- 2.2. Where, as a result of a customer request, investment in the transmission system takes place earlier than would otherwise have been the case, it may (as detailed in this guidance document) result in an “other charge” under CUSC Paragraph 14.4, on the basis it is a non-standard incremental cost incurred at the customer’s request. There are two cases where a charge may be applicable:

- **Delay (where a customer seeks to delay the connection date within its connection agreement)**

To delay a connection date a customer is required to submit a modification application. Any charges associated with accommodating the delay will be outlined in the resulting modification offer. Whilst a customer can delay at any point in a programme, it should be recognised that any charges are likely to be lower if we are informed of a delay as soon as possible.

- **Where a Generator Takes Backfeed**

“Backfeed” is a term used by generators where a demand supply is required, commonly to allow for either construction or commissioning of a power station, before the generator wishes to exercise its right to use the transmission system. Whilst, generally, such a backfeed would only be required for a few weeks ahead of generation commencing, some generators have requested backfeed 2-3 years ahead of when the power station intends to begin generating. Charges to provide the transmission assets to enable early connection for the sole purpose of backfeed will be detailed in the offer of connection, which allows the customer to make the economic choice between requesting National Grid for a supply over other options.

3. Charge for Delay

3.1. Charges associated with delay are made up of two elements: a Transmission Charge and a One-off Charge. An example of how they are applied is included in Appendix A.

3.2. Transmission Charge

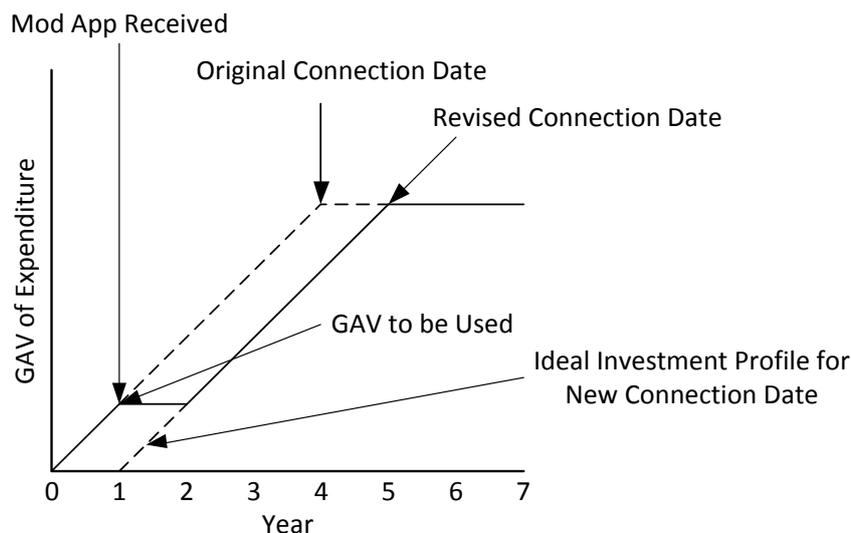
3.2.1. This is a charge related to the transmission investment that is made earlier than would otherwise have been the case.

3.2.2. If the original construction programme would have been the same regardless of the revised connection date, no Transmission Charge will be applied.

3.2.3. The annual Transmission Charge will be based on GAV_d which is the Gross Asset Value of the transmission investments which the transmission owner has made, or is committed to make, at the time the request is made for delay. Transmission investment will include any investment which would form part of the final capital value of the scheme e.g. it will include such items as design, consents, project management, engineering costs etc.

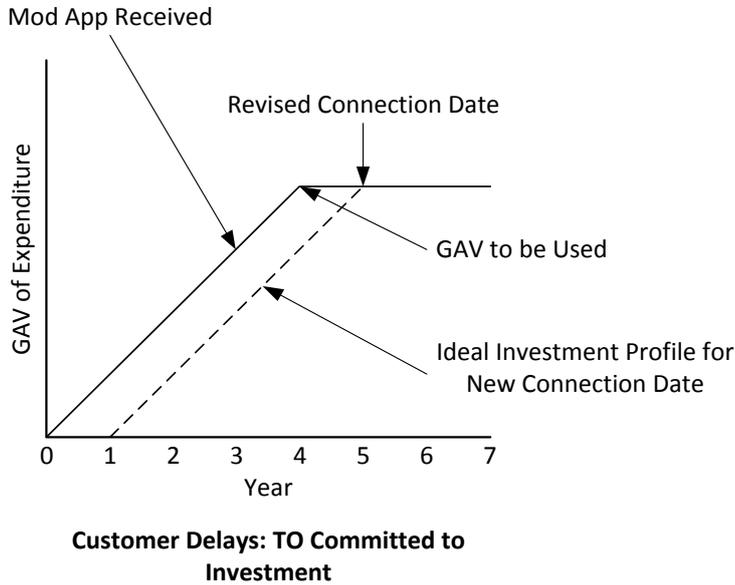
3.2.4. The transmission investment relevant for this charge will be based on Enabling Works. These are defined in CUSC and listed for a specific project in Appendix H of the relevant construction agreement.

3.2.5. When there is a request for delay, and it is practicable, economic and efficient to suspend investment, we will calculate the Transmission Charge using the GAV of the investment in the Enabling Works at the time of suspension. This is illustrated graphically below:



Customer Delays: TO Able to Defer Investment

3.2.6. Where, following a request to delay, it is determined that the most practicable, economic and efficient action is for the transmission owner to continue to the original construction programme, we will calculate the Transmission Charge using the total GAV of the scheme. This is illustrated graphically below.



3.2.7. In determining whether it is practicable, economic and efficient to suspend investment, a number of factors will be taken into account. These will include, but are not limited to:

- Interaction with other schemes.
- The relative costs of de/remobilisation compared to completion.
- The ability of the transmission owner to utilise resource (or not as the case may be) on other projects.
- The availability of transmission outages.
- The completion of a sensible stage in the construction programme to ensure the system is both safe and secure for the duration of the suspension.

3.2.8. Where the transmission owner has committed to expenditure, for example the purchase of a major plant item, then the value of this investment will be included in the determination of GAV_d .

3.2.9. Where a component of the Enabling Works is provided solely for one customer's connection, the total GAV_d value will be used in calculating the charge for delay. However, for components of the Enabling Works which are shared with other parties, the appropriate GAV_d will be apportioned. In apportioning the GAV_d for shared Enabling Works, the following criteria will be applied: -

- If shared Enabling Works would have been built to the original programme irrespective of a customer's request to delay (e.g. due to the

need to meet agreed connection dates for other customers) then no Transmission Charge is due for that element of the works.

- Where shared assets would have been built later if the revised date had been known at the start of the project, then the appropriate GAV_d will be apportioned based on the requested TEC of all concerned projects.

3.2.10. Once the appropriate GAV_d is known, the annual Transmission Charge will be calculated as follows: -

$$\text{Annual Transmission Charge}_n = D (GAV_{dn}) + R (NAV_{dn})$$

Where:

n = the year to which charge relates within the Depreciation Period

$GAV_{dn} = GAV_d$ for year n . (GAV_d is re-valued each year by RPI)

NAV_{dn} = Net Asset Value and is the mid-year value for year n based on re-valued GAV_{dn}

D = Depreciation rate 2.5% (equal to 1/40 of GAV)

R = real rate of return (6%)

3.3. One-off Charge for Incremental Costs

3.3.1. Where as a result of a customer's request to delay the transmission owner incurs one-off incremental costs, these will be treated as one-off works and charged as a One-off Charge. This would be applicable to expenditure related to activities such as de-mobilisation/re-mobilisation, additional consents, re-working engineering etc. This charge would also apply to site specific maintenance costs associated with part built assets. The formula of the charge (in line with the formula in CUSC Paragraph 14.4) is: -

$$\text{One-off Charge} = (\text{Construction Costs} + \text{Engineering Charges}) \times (1 + R\%) + \text{IDC}$$

Where:

Engineering Charges = "Engineering Charge" (as published in The Statement of Use of System Charges) x job hours

$R\% = 6\%$

IDC = Interest During Construction (if applicable)

3.4. Period of Charge

3.4.1. The annual Transmission Charge will be payable in monthly instalments from the original date of connection to 31 March in the financial year prior to that in which TEC is applicable i.e. when the generator starts paying generation TNUoS. The One-off Charge will be a one-off payment payable at the time the costs are incurred. This charge may be deferred by agreement, but will then incur IDC. The specific details of the charge and the payment timings will be set out in the relevant connection agreement when varied.

4. Charge for Provision of Backfeed

4.1. Charges associated with any request for backfeed will be made up of two elements a Transmission Charge and a One-off Charge. An example of how they are applied is included in Appendix B.

4.2. Transmission Charge

4.2.1. This is a charge associated with the value of investments made earlier than they would otherwise have been if no backfeed had been requested.

4.2.2. No Transmission Charge will be applicable if the request for an early availability of the connection does not result in a revised construction programme.

4.2.3. A Transmission Charge will not be applied if the date requested for backfeed is in the same financial year as when the customer exercises its right to use the transmission system and becomes liable to pay generation TNUoS.

4.2.4. The GAV will be based on the minimum assets required to provide the import supply requested for backfeed, unless it is economic and efficient to build other assets at the same time e.g. if a GIS switchboard is required, then it is usually more economic and efficient to build the whole board together. In this case the GAV for all assets provided will be used.

4.2.5. The transmission investment relevant for this charge will be based on Enabling Works. These are defined in CUSC and listed for a specific project in Appendix H of the relevant construction agreement.

4.2.6. Where a component of the Enabling Works is provided solely for one customer's connection, the total GAV_b value will be used in calculating the charge for backfeed. However, for components of the Enabling Works which are shared with other parties, the appropriate GAV_b will be apportioned. In apportioning the GAV_b for shared Enabling Works, the following criteria will be applied:

- If shared Enabling Works would have been built to the proposed programme irrespective of a customer's request for backfeed (e.g. due to the need to meet agreed connection dates for other customers) then no Transmission Charge is due for that element of the works.
- Where shared assets would be built later if the backfeed had not been requested, then the appropriate GAV_b will be apportioned based on the requested TEC of all concerned projects.

4.2.7. Once the appropriate GAV_b is known, the Transmission Charge will be calculated as follows: -

$$\text{Annual Transmission Charge}_n = D (GAV_{bn}) + R (NAV_{bn})$$

Where:

n = the year to which charge relates within the Depreciation Period
 $GAV_{bn} = GAV_b$ for year n. (GAV_b is re-valued each year by RPI)
 NAV_{bn} = Net Asset Value and is the mid-year value for year n based on re-valued GAV_{bn}
D = Depreciation rate 2.5% (equal to 1/40 of GAV)
R = real rate of return (6%)

4.3. One-off Incremental Costs

4.3.1. Where the request for backfeed results in the transmission owner incurring One-off incremental costs, these will be charged in line with CUSC section 14.4. These may include for example temporary works used to provide backfeed which are later removed or replaced by final connection works. The general formula of the charge is: -

One-off Charge = (Construction Costs + Engineering Charges) x (1 + R %) + IDC

Where:

Engineering Charges = "Engineering Charge" (as published in The Statement of Use of System Charges) x job hours

R % = 6%

IDC = Interest During Construction (if applicable)

4.4. Period of Charge

4.4.1. The Transmission Charge will be payable in monthly instalments from the date backfeed is provided to 31 March in the financial year prior to that in which the TEC is applicable i.e. when the generator starts paying generation TNUoS. The One-off charge will be payable at the time it is incurred as a single figure. This charge may be deferred by agreement, but will then incur IDC. The specific details of the charge and the payment timings will be set out in the relevant connection agreement.

5. Predictability of the Charge

5.1. Appendix H of a construction agreement lists the Enabling Works applicable to a particular connection. Cost profile information for these Enabling Works will be issued with the six monthly security updates from January 2016¹. You will be able to use these profiles together with this guidance to help make an estimate of the Transmission Charges which may be levied in relation to a request to delay. We appreciate these will only give you an indication as we will use the actual costs to calculate any charge.

¹ We will not be in a position to provide this information in the security statements to be issued in July 2015. However, if you are considering delaying your project, please speak to your Customer Account Manager for project specific information.

5.2. The size of a One-off Charge is site specific and dependant on the circumstances at the time. These are additional costs above and beyond the scope of works initially planned to meet the original connection date. The full details of these costs will be provided with the offer. For project specific information the appropriate Customer Account Managers can provide assistance.

Appendix A – Example Charge for Delay

Generator A requires a new substation and connection to existing substation C. Generator B is connecting at a location between A and C. As a result substation A and line A-B are solely required for generator A. Works at Substation B and the line from B-C will be shared with Generator B.

Generator A has requested a TEC of 1,000MW for 1/4/2020

Generator B has requested a TEC of 1,000MW for 1/4/2019

Appendix H shows the following Enabling Works associated with Generator A's offer:

1. Construction of New Substation A at point of connection
2. Construction of New Overhead line from Substation A to Substation B
3. Construction of New Substation B and Overhead Line to Substation C

Separately we provide the following information:

Enabling Work 1: GAV = £12m	Construction period 1/4/2017-1/4/2020
Enabling Work 2: GAV = £120m	Construction period 1/4/2017-1/4/2020
Enabling Work 3: GAV = £150m	Construction period 1/4/2016-1/4/2019

For the purposes of this example it is assumed that investment is linear and RPI has been ignored.

Generator A makes an application in Autumn 2017 to delay their connection date to 1/4/2021. In conjunction with the transmission owner an assessment is made which demonstrates we can suspend work on Enabling Works 1 and 2 at the end of 2017/18 for one year and then recommence at the start of 2019/2020. However we will incur additional costs for de-mobilisation and re-mobilisation of £0.5m. We will continue with Enabling Works 3 as it is required for Generator B and would have constructed to the same programme even if we had known of Generator A's new date at the start, therefore, there is no charge associated with these works.

The following calculation will be applicable:

Transmission Charge

As we are able to suspend the work on Enabling Work 1 and 2 at the end of 2018, meaning that these works are 1/3 complete, the following GAV_d are appropriate:

Enabling Work 1:	$GAV_d = £12 \times 1/3 = £4m$
Enabling Work 2:	$GAV_d = £120 \times 1/3 = £40m$
Enabling Work 3:	$GAV_d = £0$

Total $GAV_d = £44m$

The associated mid-year NAV_d for a one year delay is $44(1-(0.025/2)) = £43.45m$

The Annual Transmission Charge is calculated as

$$\begin{aligned}
 &= D(GAV_{d1}) + R(NAV_{d1}) \\
 &= 0.025*44 + 0.06*43.45 \\
 &= £3.707m
 \end{aligned}$$

This will be charged as a monthly charge of £309k from the original connection date of 1/4/2020 to the new connection date of 1/4/2021

One-off Charge

$$\begin{aligned} \text{A One-off charge} &= \text{Costs} \times (1+R) \\ &= 500 \times 1.06 \\ &= \text{£530k} \end{aligned}$$

This will be charged as a single figure on 1/4/2020.

Appendix B – Example Charge for Provision of Backfeed

Generator X requires a new substation and connection to existing substation Y.

Generator X has requested a TEC of 1,000MW for 1/4/2020.

Appendix H shows the following Enabling Works associated with a connection offer

1. Construction of New Substation X at point of connection connected to an existing circuit.

To meet the Generators requirement we would need to make the following investment:

Enabling Work 1: GAV = £12m Construction period 1/4/2017-1/4/2020

For the purposes of this example it is assumed that investment is linear and RPI has been ignored.

Generator X requests that a supply for backfeed is made available on 1/4/2019. In conjunction with the transmission owner an assessment is made which demonstrates the construction of Enabling Work 1 is required in full to allow for backfeed. So to meet the Generators requirement, the programme would now be:

Enabling Work 1: GAV = £12m Construction period 1/4/2016-1/4/2019

This means that GAV_b for Generator X will be £12m

The associated mid-year NAV_b for a one year delay is $12(1-(0.025/2)) = \text{£11.85m}$

$$\begin{aligned} \text{The Annual Transmission Charge is calculated as} &= D(GAV_{b1}) + R(NAV_{b1}) \\ &= 0.025 \times 12 + 0.06 \times 11.85 \\ &= \text{£1.011m} \end{aligned}$$

This will be charged as a monthly charge of £84k from the backfeed date of 1/4/2019 to the connection date of 1/4/2020.

One-off Charge

There is no One-off charge associated with this backfeed.