TRANSPOWER

TPM INFORMATION SHEET

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Connection charges: Anticipatory investment and Type 2 FMD mechanism

This Information Sheet describes how the capital costs of anticipatory investments in connection assets are recovered under the transmission pricing methodology (TPM).

Type 2 first mover disadvantage (FMD) arises if early connected or connecting customer(s) (first movers) carry the cost of connection assets in excess of their own requirements until later customers and load arrive.

The TPM addresses Type 2 FMD by spreading the capital cost of an anticipatory investment over a larger set of customers than just the first movers.

This Information Sheet provides an overview of:

- what anticipatory connection assets are
- what Type 2 FMD is
- how the TPM addresses Type 2 FMD.

A separate Information Sheet on connection charges summarises the funded asset component mechanism to address Type 1 FMD.

The provisions relating to the Type 2 FMD mechanism are in Parts C and D of the TPM.

All clause references in this Information Sheet are to clauses of the TPM.

Legal disclaimer

This Information Sheet provides a high-level overview of the relevant subject matter only.

Transpower recommends you review the TPM itself and seek independent expert advice before relying on anything in this Information Sheet.

Transpower cannot, and does not, accept any liability for the accuracy or completeness of this Information Sheet or the consequences of your or others' reliance on it.

If you provide this Information Sheet or an extract from it to any other person you must include this disclaimer.

Version history for this guide

Version	Published	Key amendments compared to previous version
1	23 November 2022	n/a
2	13 March 2023	Minor editorial changes

1 What are anticipatory connection assets?

Transpower may make an anticipatory investment in a connection asset, e.g. additional transformer capacity, where Transpower considers the investment is prudent and efficient to meet both current and anticipated future needs.

Anticipatory investment is sometimes called C+X, where C represents current needs and X anticipated future needs.

Transpower may designate all (or part of)[1] a connection asset commissioned after 1 April 2023 (the start of the first pricing year under the TPM) as anticipatory for a pricing year (clause 26(1)). In exercising this discretion Transpower must have regard to the extent to which first movers have agreed to fund the connection asset under investment agreements, and the extent to which the connection asset may be required during the pricing year to meet the needs of existing customers and cover reasonable grid contingencies (clause 26(3)). A connection asset or part of one so designated is called an "anticipatory connection asset".

The status of an anticipatory connection asset as anticipatory is reassessed for each pricing year. Transpower cannot increase the part of a connection asset designated as anticipatory from one pricing year to the next (clause 26(2)).

2 What is Type 2 FMD?

Type 2 FMD arises if first movers carry the cost, or part of the cost, of anticipatory connection assets (the X in C+X) until later customers and load arrive.

Absent the Type 2 FMD mechanism, the first movers would carry the cost of anticipatory investment because, between them, they will pay the full asset component of the connection charge for the anticipatory connection asset.2 This would result in the first movers being charged for an anticipatory connection asset they do not need or use, and do not necessarily know how long they will continue to be charged for it.

First movers may attempt to avoid these costs by opposing an anticipatory investment even if it is efficient (from a wider regional or NZ perspective), or by delaying their investments in the load or generation the anticipatory investment is intended to facilitate.

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[1] An anticipatory connection asset can be a portion of a physical connection asset. So, for pricing, a single physical connection asset may be treated as two assets: a connection asset and a separate anticipatory connection asset.

[2] Connection charges comprise the asset, funded asset, maintenance and operating components and the funded asset rebate. For more information see the connection charges information sheet.

3 The Type 2 FMD mechanism in the TPM

The TPM contains a mechanism (the Type 2 FMD mechanism) to spread the capital cost of an anticipatory connection asset over a larger set of customers than just the first movers.

The Type 2 FMD mechanism has three components, which we discuss in more detail below:

- Set the replacement cost of the anticipatory connection asset to zero for the purposes of calculating the asset component of its connection charge (clause 26(6)).
- Recover half of the capital cost of the asset by "pooling and sharing" the cost through the asset components of connection charges for other connection assets (clauses 26(6) and 26(8)).
- Recover the other half of the capital cost of the asset through benefit-based charges (BBCs) for a notional benefit-based investment (an anticipatory BBI), the allocations for which are calculated using a modified form of the simple method for calculating BBC allocations under the TPM (clause 27).

3.1 Set replacement cost to zero

The asset component of a connection asset's connection charge is calculated by allocating to the connection asset part of the pooled capital cost of all connection assets, based on the connection asset's replacement cost. This is achieved by calculating an asset return rate (ARR) and multiplying it by the replacement cost of the asset.[3]

Setting an anticipatory connection asset's replacement cost to zero makes the asset component of its connection charge zero as well.[4] Consequently, the customers connected to the asset do not pay an asset component for it.

Instead, the capital cost of the asset (return on and of capital) is recovered 50/50 through connection charges for other connection assets and BBCs for an anticipatory BBI.

3.2 Half recovery through connection charges

Half of the combined capital cost of anticipatory connection assets is allocated to all other connection assets through the asset components of their connection charges, based on their replacement costs. This includes an allocation to connection assets funded under investment agreements, which would otherwise have an asset component of zero.

This is achieved by calculating a discounted asset return rate (DARR) and multiplying it by the replacement cost of each asset.[5] DARR is calculated based on the combined capital cost of anticipatory connection assets only. The combined capital cost of anticipatory connection assets is excluded from the calculation of ARR so that it is not double-recovered.

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[3] Clauses 26(6) (the ARR x RC part of the formula) and 26(7).
[4] The formula for the asset component in clause 26(6) collapses to 0 + 0 = 0.
[5] Clauses 26(6) (the DARR x RC' part of the formula) and 26(8).

3.3 Half recovery through BBCs

Each anticipatory connection asset has a corresponding (notional) anticipatory BBI. The anticipatory BBI is the vehicle for recovering the other half of the asset's capital cost.

The anticipatory BBI is deemed to have a covered cost of half of the asset's capital cost (return of and on capital) and be a BBI to which the simple method applies, with modifications. The modifications are:

- if Transpower determines the anticipatory BBI is primarily to allow for a future increase in grid offtake, the beneficiaries of the anticipatory BBI are deemed to be injection customers only, i.e. only the members of regional supply groups under the simple method receive an allocation of the anticipatory BBI's covered cost; and
- if Transpower determines the anticipatory BBI is primarily to allow for a future increase in grid injection, the beneficiaries of the anticipatory BBI are deemed to be offtake customers only, i.e. only the members of regional demand groups under the simple method receive an allocation of the anticipatory BBI's covered cost.

4 Worked example

The following worked example illustrates the Type 2 FMD mechanism. We assume four connection assets, A to D, where asset A is funded under an investment agreement and asset D is an anticipatory part of asset C, i.e., an anticipatory connection asset. We assume the investment in asset D is primarily to facilitate future grid offtake.

We assume the following capital costs for the assets and pricing year and the following replacement costs:

Connection asset	Capital cost	Replacement cost
A (investment agreement asset)	10	100
B	20	150
C	20 (30 including the anticipatory part)	200
D (anticipatory connection asset from C)	10	100

We assume the following regional customer groups under the simple method with the following regional net private benefits for asset D's investment region:

Regional customer group	Regional net private benefit
NI regional supply group	100
NI demand group	200
SI regional supply group	50
SI regional demand group	100

ARR and DARR for the pricing year are calculated as follows:

$$\text{ARR} = \frac{\textit{capital cost B and C (excluding capital cost D)}}{\textit{replacement cost B and C}} = \frac{20+20}{150+200} = 0.1143$$

$$\text{DARR} = \frac{\textit{capital cost D}}{\textit{replacement cost A and B and C}} \times 0.5 = \frac{10}{100+150+200} \times 0.5 = 0.0111$$

The asset components of the connection charges for the assets and pricing year are as follows:[6]

Connection asset	ARR part	DARR part	Asset component
A	(0.1143 x 0) = 0	(0.011 x 100) = 1.11	1.11
B	(0.1143 x 150) = 17.14	(0.011 x 150) = 1.67	18.81
C	(0.1143 x 200) = 22.86	(0.011 x 200) = 2.22	25.08
D	(0.1143 x 0) = 0	(0.011 x 0) = 0	0
Total	40	5	45

The covered cost of the anticipatory BBI corresponding to asset D for the pricing year is 0.5 x capital cost D = 0.5 x 10 = 5.

[6] To keep this worked example as simple as possible, we have not illustrated how the asset components are allocated to customers through connection charges.

The BBCs for the anticipatory BBI and pricing year (per regional customer group) are as follows:[7]

Regional customer group	Allocation	BBC
NI regional supply group	100/150 = 0.6666	0.6666 x 5 = 3.33
NI regional demand group	0	0
SI regional supply group	50/150 = 0.3333	0.3333 x 5 = 1.67
SI regional demand group	0	0
Total		5

The combined capital cost of assets A to D for the pricing year is recovered as follows:

Recovery method	Amount
Asset components of connection charges for assets A, B and C	45
BBCs for anticipatory BBI corresponding to asset D	5
Investment agreement payments for asset A[8]	10
Total	60

[7] To keep this worked example as simple as possible, we have not illustrated how the regional BBCs are allocated to customers.

[8] The amount recovered through the investment agreement may be different depending on the payment term and other provisions of the agreement.

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