TPM INFORMATION SHEET   V2 September 2022

Benefit-based charges: Simple method

Purpose of this Information Sheet

This Information Sheet describes the simple method for calculating starting allocations for benefit-based investments (BBIs) under the new transmission pricing methodology (TPM).

The simple method is used for post-2019 low value BBIs (BBIs valued at $20m or under).

The starting allocations for a BBI are used to calculate each customer's benefit-based charges (BBCs).

This Information Sheet provides an overview of:

- the different types of BBI
- the BBIs the simple method applies to
- how the simple method works.

Separate Information Sheets referring to other aspects of BBCs will be published in parallel, or shortly:

- the BBC standard methods
- the Appendix A BBIs
- BBC adjustment events
- a BBI's covered cost.

The requirements for the simple method, and calculating BBCs generally, are in Part 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 new 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	27 September 2022	n/a
2	29 September 2022	Updated to add correct reference in footnote 2.

1 What are benefit-based investments?

Benefit-based investments (BBIs) are investments in interconnection assets and interconnection transmission alternatives (interconnection investments). They typically include investments in the replacement and refurbishment of existing interconnection assets and transmission alternatives that avoid or defer the need to invest in interconnection assets.

There are two types of BBI:

- Appendix A BBIs (also referred to as 'historic BBIs'). These are seven pre-July 2019 interconnection investments for which the Authority calculated the starting BBI customer allocations and specified these in Appendix A of the TPM.

- Post-2019 BBIs. These are interconnection investments commissioned after 23 July 2019. Starting BBI customer allocations for post-2019 BBIs are calculated by Transpower using a standard method or the simple method in the TPM.

Post-2019 BBIs can be high-value or low-value. The simple method for calculating starting allocations for low-value post-2019 BBIs is the subject of this Information Sheet.

A group of interconnection investments may comprise one or more BBIs.[1] A BBI may include several related projects, or one project may be split across two or more BBIs.

The BBC Assumptions Book (assumptions book) contains more detail about how we define BBIs and about how the simple method works generally.[2]

2 What are benefit-based charges?

Benefit based changes (BBCs) recover the costs of a BBI, from customers identified as expected beneficiaries of the BBI.

A customer is expected to be a beneficiary of a BBI if it has expected positive net private benefit (EPNPB) from the BBI. A customer's starting allocation for the BBI is the customer's share of total EPNPB.

The cost recovered through the BBCs for a BBI is referred to as the BBI's "covered cost". A BBI's covered cost includes capital components (return on and of investment) and an allocation of

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[1]   See section 3.2 of the assumptions book v1.0.
[2]   See sections 3.2 and 3.5 of the assumptions book v1.0.

Transpower's total operating costs (including overheads). The covered cost is calculated annually, for each BBI.

Each customer's starting allocation for a BBI is calculated to be broadly in proportion to the EPNPB the customer is expected to derive from the BBI, as expected at an early point in its lifecycle (in most cases, some point before the investment decision is made). That is, the BBC paid by a customer reflects the positive NPB that customer is expected to receive from the BBI (if any), relative to all other customers.

A customer's BBC for a BBI is the BBI's covered cost multiplied by the customer's allocation for the BBI.

Each customer's allocation for a BBI is fixed over the life of the BBI, unless a change to the allocation is triggered by one of the adjustment events in Part F of the TPM.

3 When does the simple method apply?

The TPM includes three methods for calculating EPNPB, and therefore starting allocations, for post-2019 BBIs. There are two standard methods (the resiliency and price-quantity methods) and one simple method.

The two standard methods are used to calculate EPNPB and starting allocations for post-2019 BBIs that, at the time of the investment decision, are expected to cost over $20m (high-value post-2019 BBIs).

The simple method is used to calculate EPNPB and starting allocations for post-2019 BBIs that, at the time of the investment decision, are expected to cost $20m or under (low-value post-2019 BBIs).

Determine BBC method for Interconnected Grid Investment
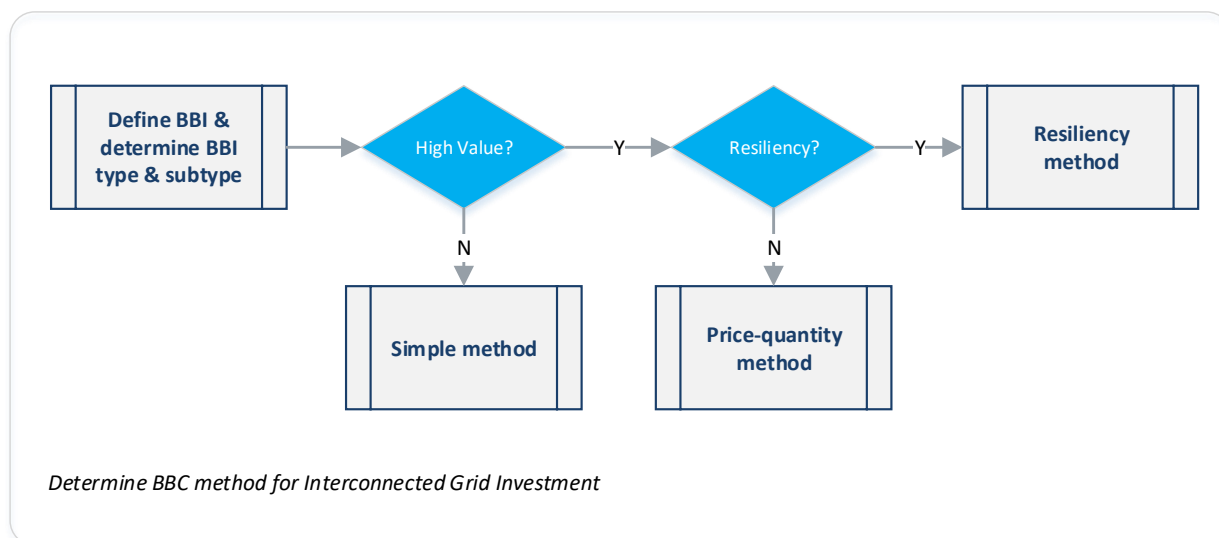
Examples of BBIs to which the simple method applies, for the year to June 2020, are renewal and replacement throughout the country of insulator sets (874 units, total cost of $5.1m), tower

attachment points (631 units, $2.9m), batteries (119 units, $2.1m) and grillage encasement works (174 units, $8.3m).
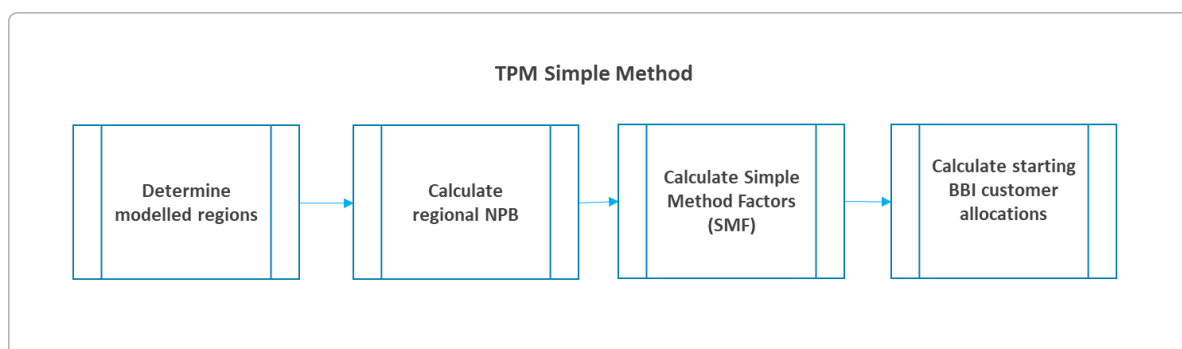
4 What is the simple method and how does it work?

The simple method is designed to be simpler than the standard methods. The simple method provides a way of calculating EPNPB and starting allocations for low-value post-2019 BBIs that does not require an investment-specific individual calculation for each BBI. Rather, it is designed so that the actions that must be undertaken on an annual basis can be fully automated.

Like the standard methods, the simple method uses modelled regions and regional customer groups with regional NPB. A key difference is the regional customer groups and regional NPBs are static - they apply to all low-value BBIs commissioned during a (usually) five-year "simple method period", after which the regions, regional customer groups and regional NPBs are reset. The allocations for previously commissioned low-value BBIs do not change.

The regions and regional NPBs are determined and calculated based on historic power flows before the start of the simple method period. Under the simple method, as under the standard methods, individual NPBs for the customers in a regional customer group are calculated based on the customers' historic grid use (mean historic offtake or mean historic injection), and the individual NPBs with positive values (being EPNPB) are then used to calculate the starting allocations for the relevant BBI.

The simple method has four broad process steps, as illustrated in the diagram below. Clauses 59 to 67 contain the rules for these processes.

TPM Simple Method

Determine modelled regions → Calculate regional NPB → Calculate Simple Method Factors (SMF) → Calculate starting BBI customer allocations

4.1 Determining modelled regions and regional customer groups

Modelled regions under the simple method are determined based on an analysis of historic power flows on the grid (clause 62). Power flows are analysed over a period of five capacity years (1 September to 31 August) starting and ending before the relevant simple method period. This historic period is referred to as capacity measurement period C (CMP C).[3]

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[3] CMP C for the first simple method period ended on 31 August 2021 and started on 1 September 2017. Similarly, CMP C for a subsequent simple method period will end on 31 August of the year two years prior and start on 1 September of the year four years before that (e.g. CMP C for a simple method period starting on 1 April 2023 will be 1 September 2019 to 31 August 2023).

The HVDC link is always a region, and there will always be at least two other high-voltage (≥ 220 kV) regions, one on either side of the HVDC link. From there:

- additional high-voltage regions may be determined if prevailing directional power flows during CMP C are identified on high-voltage AC interconnection branches, with those branches forming the interfaces between the high-voltage regions

- low-voltage (< 220 kV) regions are determined, with each low-voltage region connected to one high-voltage region only. The interface between a high-voltage region and a low-voltage region is the interconnection transformer branch (or branches) connecting the two regions

- Transpower may amalgamate geographically adjacent regions of the same voltage if one region has significantly fewer market nodes than the average region.

Each modelled region other than the HVDC link (referred to as connection regions) has two regional customer groups associated with it – a regional supply group comprising injection customers in the region and a regional demand group comprising offtake customers in the region (clause 63).

Transpower must consult on the proposed modelled regions. The modelled regions are published in the assumptions book.

4.2 Calculating regional NPB

Regional NPB is calculated for each regional customer group in respect of each investment region (the modelled region in which a BBI is located, which may be the regional customer group's region or a different one). This means a regional customer group will have several regional NPB values, one for each investment region.

Regional NPB for a regional customer group in respect of an investment region is calculated based on regional injection, offtake and inter-regional power flows over CMP C (clause 64). The beneficiaries of a low-value BBI located in an investment region are:

- injection and offtake customers located in the investment region, resulting in positive regional NPB for both of the regional customer groups in the investment region

- injection customers in other regions exporting power to the investment region, resulting in positive regional NPB for the regional supply groups in those other regions

- offtake customers in other regions importing power from the investment region, resulting in positive regional NPB for the regional demand groups in those other regions.

The regional NPB values for regional demand groups are scaled up so that 67.5% of total regional NPB accrues to the regional demand groups and 32.5% to the regional supply groups (as required by clause 64(4)). The effect of this is that 67.5% of the covered cost of any low-value post-2019 BBI is allocated to offtake customers and 32.5% to injection customers.

Transpower must consult on its calculation of the regional NPB values. The regional NPB values for a simple method period are published in the assumptions book.

4.3 Calculating simple method factors

A simple method factor is calculated for each member of a regional customer group. A customer's simple method factor is its share of historic injection (for a regional supply group) or offtake (for a regional demand group) in the relevant region over CMP C, calculated based on mean annual injection and offtake (clauses 61(2), 65(10) and 65(11)). The mean annual injection and offtake values are referred to as intra-regional allocators.

Transpower must consult on its calculation of the simple method factors. The simple method factors are published in the assumptions book.

Transpower must recalculate the simple method factors if a BBC adjustment event under Part F of the TPM occurs that affects allocation, e.g. a new customer connects to the grid (clause 61(3)).

4.4 Calculating individual NPB and starting allocations

A customer's individual NPB from a low-value BBI is calculated by summing the product of the regional NPB and the customer's simple method factor for every regional customer group with positive regional NPB (in respect of the relevant investment region) of which the customer is a member (clause 61(1)).

Each customer's starting allocation for the BBI is calculated as the customer's individual NPB divided by the sum of all customers' individual NPBs (clause 43(1)).

5 Worked example

The following worked example illustrates how starting allocations are calculated under the simple method. This example uses a highly simplified situation where there are three modelled regions (A, B and C), three regional customer groups (in fact there would be six) and three customers (1, 2 and 3).

Regional NPB (RNPB) per regional customer group (RCG) and investment region

Investment region	RNPB for RCG A	RNPB for RCG B	RNPB for RCG C
A	100	0	50
B	50	100	0
C	0	50	100

Intra-regional allocator (IRA) and simple method factor (SMF) per customer and regional customer group

Customer	RCG A (IRA, SMF)	RCG B (IRA, SMF)	RCG C (IRA, SMF)
1	0 MWh, 0	5 MWh, 0.33	10 MWh, 0.66
2	5 MWh, 0.33	10 MWh, 0.66	0 MWh, 0
3	10 MWh, 0.66	0 MWh, 0	5 MWh, 0.33

Individual NPB (INPB) and starting allocations for a BBI in investment region A

Customer	INPB for RCG A	INPB for RCG B	INPB for RCG C	Total INPB	Allocation
1	100 x 0 = 0	0 x 0.33 = 0	50 x 0.66 = 33	33	33/148.5 = 22%
2	100 x 0.33 = 33	0 x 0.66 = 0	50 x 0 = 0	33	33/148.5 = 22%
3	100 x 0.66 = 66	0 x 0 = 0	50 x 0.33 = 16.5	82.5	82.5/148.5 = 56%

Individual NPB (INPB) and starting allocations for a BBI in investment region B

Customer	INPB for RCG A	INPB for RCG B	INPB for RCG C	Total INPB	Allocation
1	50 x 0 = 0	100 x 0.33 = 33	0 x 0.66 = 0	33	33/148.5 = 22%
2	50 x 0.33 = 16.5	100 x 0.66 = 66	0 x 0 = 0	82.5	82.5/148.5 = 56%
3	50 x 0.66 = 33	100 x 0 = 0	0 x 0.33 = 0	33	33/148.5 = 22%

Individual NPB (INPB) and starting allocations for a BBI in investment region C

Customer	INPB for RCG A	INPB for RCG B	INPB for RCG C	Total INPB	Allocation
1	0 x 0 = 0	50 x 0.33 = 16.5	100 x 0.66 = 66	82.5	82.5/148.5 = 56%
2	0 x 0.33 = 0	50 x 0.66 = 33	100 x 0 = 0	33	33/148.5 = 22%
3	0 x 0.66 = 0	50 x 0 = 0	100 x 0.33 = 33	33	33/148.5 = 22%

If a BBI in investment region A had a covered cost of $10 million for a pricing year then customer 1's BBC would be $2.2 million, customer 2's BBC would be $2.2 million and customer 3's BBC would be $5.6 million.

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