11 May 2022, from IEGA – Draft Assumptions Book

Questions (in italics) and responses:

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1. *Is there any part of the analysis where if the estimate of Expected Net Private Benefits is negative, the number set at 0? Is this para 336 and if so, can this be explained in more detail, please?*

Response: Clause 47 of the TPM requires that individual NPB only be calculated for the regional customer groups that have a positive present value of regional NPB. Consequently, the regional customer groups with negative PVRNPB must be excluded from the calculations of individual NPB and starting BBI customer allocations.

To comply with this clause, we

a. quantify the expected regional NPB

b. calculate the present value of regional NPB (PVRNPB)

c. identify the regional customer groups with a negative PVRNPB and set that value to zero

The process is consistent for reliability regional NPB (paragraph 257 of the draft assumptions book) ancillary service regional NPB (paragraph 269) and market regional NPB (paragraph 336).

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2. *Para 61 states the cut-off date for including new generation plant in the modelling for transmission charges from 1 April 2023 is the end of 2021. But it doesn't appear the Turitea North wind farm is included when it started full operation before the end of 2021?*

Response: You are correct that we haven't included Turitea North as an existing generator. However, it will always be difficult to perfectly delineate between existing and new generators given projects are often in construction during the time in which an analysis is being undertaken (or an assumptions book is being produced). We do not consider this to be a material issue – we can treat projects that are in-construction at the time of producing allocations for any given BBI as "committed" (i.e. occurring in all scenarios irrespective of other assumptions) which will be confirmed in the consultation documents relating to that BBI. This has the same effect as a generator being existing in chapter 2 of the draft assumptions book.

Hydro generation

Paragraph 96 and 98 explains the Modulation Factor assumed in the TPM modelling:

"The ability for run-of-river stations and stations downstream of a major reservoir to shift inflows across time is represented by a modulation factor (or regulation factor) – i.e. the ability to use its reservoir storage to transfer power generation across a stage. 1 indicates no storage capacity (flat production), 0 indicates that the plant is capable of full modulation (able to generate more during peak period at each stage)." (para 98)

3. *This description refers to a 'stage' – is this a day or a month or each morning and evening peak period?*

Response: We typically model weekly stages containing 21 load blocks. Load blocks group trading periods with similar load within a week into a “block”. E.g. weekday peak periods, weekend peak periods etc.

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4. *How does the modulation factor affect the results for the EMBD for a generation plant?*

Response: The effect of modulation factors (or any single assumption) on EMBD is likely to change for each BBI (and may also be immaterial for any given BBI).

Section 2.3.4.7 Solar:

5. *Are these 3 solar farms (1.0, 1.6 and 2.1MW) connected to the transmission grid?*

Response: No – they are embedded but modelled as grid-connected. See section 2.3.3.1 of the draft assumptions book.

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6. *If embedded are they modelled for Gross AMP for the EDB Residual using Transpower’s solar assumptions in the Assumptions Book?*

Response: Not explicitly; reconciled meter data from the Reconciliation Manager is used to calculate the EDB’s gross AMD for residual charges. Electricity supplied by an embedded generator (including solar) does not increase an EDB’s gross AMD, as it displaces offtake from the grid. However, the distributor’s gross load or gross AMDR may increase if the embedded generator is consuming electricity, as per clause 4 of the new TPM.

Estimate of EDB gross energy

Note that the Electricity Authority used EDB’s Information disclosure data to work out gross energy for distributors (DG contribution to supplying load). (source: para 2.24 of EA Code amendment consult paper)

7. Is Transpower using the same data source for historic embedded generation output?

Response: The gross energy data sourced from the EDB information disclosure has been used to calculate the notional energy bill for the transitional cap only. We have used embedded generation data from the Reconciliation Manager to calculate gross energy for residual charges.

Section 4.2 SIMPLE METHOD Modelled regions

8. *Are the four regions in the North Island the same as that assumed in the indicative pricing for the Authority’s 2021 proposed TPM consultation?*

Response: Correct, the North Island high voltage connection regions did not change as a result of the updated dataset used to determine the modelled regions for the first simple method period.

Standard method – market NPB

Understand the process to be: Calculate individual customers EMBD over forecast 20 years; PV this number; and use this information to group customers into regional demand or supply groups; allocate BBI to customers in these groups on the basis of 4 years historic (prior to BBI commissioning) offtake or injection volumes respectively.

9. *In all possible scenarios do generators always experience a disbenefit from a BBI (ie a negative PV number) and load a positive benefit from a BBI (ie a positive PV number)?*

Response: It depends on the method used (i.e. price-quantity vs. resiliency) and – if price-quantity – the type of BBI (market, reliability, ancillary, other). Load and generation in different modelled regions will typically both benefit (and therefore both receive an allocation) from what we expect to be the most common BBI (a market BBI using the price-quantity method).

It is clear from paras 329 – 331 that generation and load EMBD are netted off for average generation and average load at the same connection location (ie a distributor's point of connection with embedded generation).

10. *Is the PV of EMBD based on the benefits and disbenefits of the entire output of the embedded generation plant? Then at the next step the allocation of BBI costs to individual customers within a regional demand group is allocated to this group on the basis of the volume of electricity taken from the grid?*

Response: Yes – with respect to market BBIs, we model some embedded generation as if it were grid-connected (clause 49(5) of the TPM), which means the PVEMBD is based on the benefits and disbenefits of the entire output of the embedded generation plant. However, these are added to the benefits and disbenefits (PVEMBD) of the load customer which hosts the embedded generator (which may result in the load customer being deemed to be part of either a regional supply group if it ultimately benefits as if it were a generator, or a regional demand group if it benefits as if it were a load).

Yes – the proportion of PVMRNPB allocated to a member of a regional supply or demand group is based on historical grid injection or offtake

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In a scenario where new generation is forecast to be connected to a load / distributor:

11. *if the average generation exceeds average load does the distributor's point of connection become a (or part of a) regional supply group (a change from being a regional demand group)?*

Response: See answer to 10 – a customer at a connection location can be a member of either a regional supply or demand group (but not both) based on if they benefit more like a generator or load (clauses 51(7) and 52(9) of the TPM). In practice, we expect a modelled region will not benefit both load and generation – it would be more common for a modelled region to benefit load and disbenefit generation, or vice versa. Therefore, yes, it is possible for a customer at a connection location to change from a regional demand group to a regional supply group if embedded generation is commissioned at that location.

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12. *what does this mean for the next step in allocating BBIs to the distributor within a regional group*?

Response: See answers to 10 and 11.