ELECTRICITY AUTHORITY
TE MANA HIKO

Code amendments to support the implementation of the new transmission pricing methodology

Consultation Paper

Executive summary

This consultation paper seeks feedback from interested parties on proposed amendments to the Electricity Industry Participation Code 2010 (Code) that relate primarily to the implementation of the new transmission pricing methodology (TPM). While each proposed amendment is relatively minor, they in aggregate support a more effective implementation of the new TPM, and therefore contribute to the new TPM providing material benefits to consumers.

The Electricity Authority (Authority) signalled its intention to consult on some of these amendments in the *Transmission Pricing Methodology 2022 Decision paper*.[1]

The Authority has identified that obtaining information on the generation activity of a small number of generators' "behind" grid exit points (GXPs) may better enable the effective working of the new TPM (in particular, the allocation of the residual charge). Therefore, subject to considering further voluntary data disclosures, the Authority proposes amending the Code to enable the Authority, where Transpower does not already have access to relevant information, to request that participants provide historical generation quantities for behind-the-GXP generation plant. The proposal is for such requests to focus on generation plant with a capacity of 10 megawatts (MW) or more, and where the Authority considers a point of connection has a material amount of load (with a potential fallback mechanism if the information available is not suitable). Such a request can be only for the purpose of enabling Transpower to calculate its charges.

The immediate inclusion of this information requirement may reduce undesirable incentives for new generation. Without it, co-location of new embedded generation (at or above 10 MW) may be used by transmission customers to influence the amount of residual charges they pay, resulting in a potentially inefficient incentive to site new generation as co-located embedded generation. The Authority recognises incentives to potentially inefficiently site also apply to co-located generation below 10 MW. Regardless of whether the Authority makes the Code change relating to behind-the-GXP generation being proposed in this paper, we intend to consult on future enduring information requirements in a separate consultation.

The Authority also proposes amending the Code to expressly enable Transpower, as the grid owner, to use information held by the system operator for the calculation or adjustment of transmission charges. An example of such information is supervisory control and data acquisition (SCADA) information, the provision of which would improve the accuracy of information used by Transpower to calculate the residual charge.

Minor issues associated with implementing the new TPM may arise that require, for example, drafting corrections to the new TPM. The process requirements in Part 12 of the Code could be interpreted as restricting the Authority's ability to amend the new TPM to address any such issues, despite the power to do so existing under the Electricity Industry Act 2010 (Act). Therefore, the Authority proposes amending the Code to clarify that the process requirements in Part 12 of the Code applicable to a full review of the TPM do not apply to amendments of the TPM made using section 39(3) of the Act or in circumstances that justify urgent amendment of the Code using section 40.

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[1] Available on the Authority's website at https://www.ea.govt.nz/assets/dms-assets/30/2022-TPM-Decision-paper1358263.1.pdf.

The proposed Code amendments promote the Authority's statutory objective by improving the efficient operation of the electricity industry. This is achieved mainly by improving the accuracy of information used in Transpower's charges, and enabling errors and workability problems with the new TPM identified during its implementation to be addressed in a timely manner. Transpower must implement the new TPM by 1 April 2023.

This consultation is proceeding with a three-week period for submissions. The submission period reflects the discreet nature and low complexity of the amendments proposed, noting also that the proposed amendment relating to embedded generation data likely affects only a few participants directly.

The Authority welcomes feedback from interested parties on the enclosed suite of proposed Code amendments.

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1. What you need to know to make a submission

What this consultation paper is about

1.1 This consultation follows on from the Authority's recent decision to incorporate a new TPM into the Code. It proposes a set of amendments focused on a smooth and effective implementation of that new TPM. Specifically, the purpose of this paper is to consult with interested parties on the Authority's proposal to amend the Code:

(a) subject to considering further voluntary data disclosures, to require participants to provide Transpower with the quantities of electricity generated from 1 July 2014 by generation plant with a capacity of 10 MW or more at a point of connection with a material amount of load, if requested to do so by the Authority for the purpose of Transpower calculating gross energy under the new TPM (with a potential fallback if information is not suitable)

(b) to enable Transpower, as the grid owner, to use any information held by the system operator that is needed for Transpower to calculate charges under the new TPM

(c) to clarify that the Authority may amend the TPM in accordance with section 39(3) or section 40 of the Act.

1.2 The proposed amendments are intended to address the following issues and potential issues that have been identified during the development of the new TPM:

(a) Transpower, as the grid owner, does not have available to it for the purpose of calculating charges under the new TPM all quantities of electricity generated at each point of connection with a material amount of load and generation plant with a capacity of 10 MW or more[2].

(b) To ensure that the Code does not prevent the system operator from disclosing to Transpower, as the grid owner, certain information that may be relevant to calculating transmission charges.

(c) The Code as it stands creates some confusion as to whether ordinary processes for urgent or technical/non-controversial Code amendments as provided for in the Act can be applied in respect of the TPM. This may adversely impact the Authority's ability to address, in a timely manner, any minor issues with the new TPM identified during its implementation.

1.3 Section 39(1)(c) of the Act requires the Authority to consult on any proposed amendment to the Code and corresponding regulatory statement. Section 39(2) provides that the regulatory statement must include a statement of the objectives of the proposed amendment, an evaluation of the costs and benefits of the proposed amendment, and an evaluation of alternative means of achieving the objectives of the proposed amendment. The regulatory statement is set out in section 5 of this paper.

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[2] The Authority's intention to consult on the availability of data behind the GXP was signalled at para 15.14(b) in the Authority's consultation on the proposed new TPM www.ea.govt.nz/assets/dms-assets/29/Proposed-Transmission-Pricing-Methodology-Consultation-paper-v2.pdf

How to make a submission

1.4 The Authority's preference is to receive submissions in electronic format (Microsoft Word) in the format shown in Appendix C. Submissions in electronic form should be emailed to TPM@ea.govt.nz with "Consultation Paper – TPM-related Code amendments" in the subject line.

1.5 If you cannot send your submission electronically, please contact the Authority (TPM@ea.govt.nz or 04 460 8860) to discuss alternative arrangements.

1.6 Please note the Authority intends to publish all submissions we receive. If you consider that we should not publish any part of your submission, please:

(a) indicate which part should not be published

(b) explain why you consider the Authority should not publish that part, and

(c) provide a version of your submission that the Authority can publish (if we agree not to publish your full submission).

1.7 If you indicate there is a part of your submission that should not be published, the Authority will discuss with you before deciding whether to not publish that part of your submission.

1.8 However, please note that all submissions received by the Authority, including any parts that we do not publish, can be requested under the Official Information Act 1982. This means the Authority would be required to release material not published unless good reason existed under the Official Information Act to withhold it. We would normally consult with you before releasing any material that you said should not be published.

When to make a submission

1.9 Please deliver your submission by **5pm** on **Wednesday, 18 May 2022**.

1.10 Authority staff will acknowledge receipt of all submissions electronically. Please contact the Authority (TPM@ea.govt.nz or 04 460 8860) if you do not receive electronic acknowledgement of your submission within two business days.

2. The first issue: some information Transpower may need to more accurately calculate gross energy is not available

2.1 Under the new TPM, the residual charge[3] and any transitional cap applicable to a transmission customer rely on Transpower's assessment of the customer's gross electricity load (gross energy).[4]

2.2 Gross energy comprises *all* electricity consumption by a customer, regardless of whether the electricity is produced by generation connected to the grid or generation on the customer's side of its point of connection to the grid (ie, generation behind the GXP).

2.3 Transpower uses information on behind-the-GXP generation quantities to calculate gross energy. This includes information on behind-the-GXP generation quantities at points of connection with both generation and load. However, some relevant behind-the-GXP generation information is not available to Transpower.

The residual charge uses two measures of gross energy

2.4 Under the new TPM the residual charge uses two measures of gross energy:

(a) Maximum gross electricity demand (MW).

(b) Gross electricity use (MWh).

2.5 The first pricing year under the new TPM (pricing year starting on 1 April 2023) requires gross load information for the period from 1 July 2014 to 30 June 2019.[5] Subsequent pricing years will each require an additional year of data.

2.6 To use these two measures, Transpower needs to know, for the relevant time window[6] and each trading period:

(a) A transmission customer's grid offtake, and

(b) The sum of all electricity generated at installation control points (ICPs) on the customer's network[7] / premises,[8] *less* any coincident injection of electricity from the customer's network / premises into the grid (this is the customer's embedded electricity).

2.7 Transpower also needs to know a subset of this information to calculate any transitional caps for transmission customers. For the first pricing year, Transpower needs information on customers' gross energy up to 31 March 2022.[9]

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3 See clauses 68–74 of the new TPM. The residual charge will recover unallocated costs and the remaining costs of the historical transmission investments that are not recovered through benefit-based charges or connection charges.

4 See clauses 110–112 of the new TPM.

5 For example, the "anytime maximum demand (residual) baseline" or "AMDR baseline" reflects the average anytime maximum gross electricity demand over the four-year period 1 July 2014 to 30 June 2018.

6 For example, for pricing year 1 the relevant time window is 1 July 2014 to 30 June 2019.

7 For distributors.

8 For direct consumers.

9 See clause 111 of the new TPM.

The Code does not require separate recording of electricity consumed and generated at a point of connection

2.8 Transpower has available to it each transmission customer's grid offtake quantities, because Transpower is responsible for metering the quantities of electricity conveyed at GXPs.[10] However, Transpower does not have available to it all quantities of electricity generated behind each GXP. This is particularly so for transmission customers that are distributors. It is also sometimes the case for direct consumers.

2.9 Currently, the Code does not require the separate recording of electricity consumed and electricity generated at an ICP or a grid point of connection. Instead, the Code requires the separate recording of electricity *imported and exported* at points of connection to a network for:

(a) Larger (category 3 and above) metering installations.

(b) Smaller (category 1 and 2) metering installations where the capability to import and export electricity exists.[11]

2.10 This is not the same as recording any electricity generated at an ICP or a grid point of connection separately from any electricity consumed at the ICP or grid point of connection. It means only the net quantity of any electricity consumed and generated, as conveyed through the point of connection, is known.[12]

2.11 This net consumption/generation data is what the reconciliation manager receives as part of the reconciliation of the wholesale electricity market. This data is the information Transpower will receive from the reconciliation manager for the purpose of estimating transmission customers' gross energy.[13]

The problem with the required information not being available to Transpower

2.12 If Transpower does not have access to all the information it needs to determine gross energy, residual charge allocations and any transitional caps may be less accurate. The residual charge and any transitional caps are likely to be under-allocated for some transmission customers and over-allocated for other customers.

2.13 The Authority considers this issue should be addressed to reduce potentially inefficient incentives for additional investment aimed at avoiding the residual charge by participants with existing large generation plant (co-located with load).

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10 See clause 10(4) of the new TPM for a list of data Transpower may use to calculate allocations, including residual charge allocations.

11 See clause 10.13A of the Code.

12 See clause 10.13(1) of the Code.

13 The Code also permits embedded generators to not always provide to the reconciliation manager their metered quantities of electricity exported through the embedded generator's point of connection to the network to which it is connected — see clauses 15.5 and 15.13 of the Code. In such instances, a metering equipment provider is not required to measure the electricity conveyed through the embedded generator's point of connection to the network — see clause 10.13(4) of the Code. The Authority notes this is very rare, as the generator will not be paid for the electricity it exports through its point of connection to the network.

The problem the Authority would like to address

2.14 As noted in paragraph 2.5, the initial residual charge for each load customer reflects historical information on the customer's gross load over the five-year period 1 July 2014 to 30 June 2019.

2.15 Practically speaking, this use of lagged information limits the Authority's ability to remedy a shortfall in any historical information. Any actions the Authority puts in place now to remedy such a shortfall have to rely on existing information sources.

The Authority is looking at generation of 10 MW or more co-located with material load

2.16 Subject to considering further voluntary data disclosures, the Authority is considering remedying any information shortfall associated with behind-the-GXP generation with a capacity of 10 MW or more, where there is a material amount of load at the point of connection. The Authority is satisfied that this approach represents a reasonable balance between accuracy and pragmatism, and will result in an appropriately robust measurement of a key residual charge input, noting:

(a) If the amount of load co-located with generation at a point of connection is small relative to the generation, the generation quantities provided to the reconciliation manager will allow a reasonable approximation of gross load at the point of connection, and thus no further information is needed.

(b) The 10 MW threshold is consistent with information requirements in the Code , where 10 MW is also the minimum threshold for measurement (refer to Appendix B for a summary).

(c) Given this consistency, it is more likely that historical data on quantities of electricity generated from 1 July 2014 will be available, ie, because of existing Code provisions regarding information about the intended and actual output of embedded generating stations.[14] Aside from being inconsistent with the general information requirement in the Code, the Authority considers that a lower threshold in relation to historical data may impose unreasonable information requirements on customers (eg, customers may not have information) or providing information may not be cost effective.

2.17 The Authority's assessment has identified three customers where it may require further information, and has been in contact with these customers.[15]

Suggested fallback mechanisms in case of missing/unsuitable information

2.18 The Authority's proposed Code amendment includes fallback mechanisms, in case:

(a) historical generation quantities requested by the Authority are not provided to Transpower

(b) Transpower considers the historical generation data to be unsuitable for use in calculating a transmission customer's gross energy or any transitional cap.

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14 The Code defines an embedded generating station as one or more generating units that are directly connected to a local network or an embedded network and that injects into a local network or an embedded network at a single point of injection.

15 The Authority's assessment considered information in the Authority's EMI *Installed distributed generation trends* database, information available to Transpower, and targeted information sought from parties potentially impacted by the proposed Code amendment.

2.19 The purpose of the suggested fallback mechanisms is to assist in meeting the objective of enabling Transpower to make a reasonable determination of the residual charge and any transitional caps.

2.20 We note that, based on the Authority's initial engagement with parties potentially affected by the proposed Code amendment, we do not expect that these fallback mechanisms will be used.

Fallback mechanism for the residual charge

2.21 If a customer's historical generation information provided to Transpower has missing or unsuitable generation quantities, the Authority's suggested fallback mechanism for the residual charge is:

> *Transpower should, for the purposes of assessing the gross energy values to be used in calculating the residual charge, assume the generation operated at capacity over the period of the data request*.

2.22 The Authority considers this approach is reasonable for the purpose of calculating the residual charge because behind-the-meter generation often runs at capacity during peak demand periods, for example due to the incentive to do so under the avoided cost of transmission (ACOT) payments regime.

Fallback mechanism for the transitional price cap

2.23 If a customer's historical generation information provided to Transpower has missing or unsuitable generation quantities, the Authority's suggested fallback mechanism for the transitional price cap is:

> *Transpower should, for the purpose of assessing the gross energy values to be used in calculating the transitional price cap, assume the generation operated at capacity over the period of the data request, except where a specific source for gross energy is given in the TPM*.

2.24 Under the new TPM, there are a few different components of the transitional price cap calculation that require gross energy. For distributors, some but not all of these components require Transpower to source gross energy data from the distributors' information disclosures under Part 4 of the Commerce Act.[16] The disclosures include behind-the-GXP generation quantities and this information source was part of the Authority's TPM consultation. Any additional information requested by the Authority would only be used for calculating gross energy where an information source is not already specified in the TPM

2.25 For a direct connect customer, the Authority recognises that calculating any transitional cap using this fallback mechanism may result in the cap being overestimated, meaning the direct consumer's transmission charges are less likely to be capped. However, in the absence of data we consider this solution to be more reasonable than alternative approaches, such as selecting an arbitrary percentage of capacity the generation operated at.

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16 For the purpose of calculating any transitional cap for a distributor, the TPM defines the distributor's gross energy to be "electricity entering system for supply to consumers' connection points" as disclosed in the distributor's Report on Network Demand (Schedule 9e) under the *Electricity Distribution Information Disclosure Determination 2012*

The Authority intends to look further at ongoing data needs in a future Code amendment proposal

2.26 Regardless of whether it makes the Code change relating to behind-the-GXP generation being proposed in this paper, the Authority expects the unavailability of information needed for Transpower to calculate the residual charge will become an increasingly material problem over time. This is because of, in particular:

(a) Electrification of New Zealand's economy, and

(b) The increasing number of consumers investing in embedded generation (including batteries), as distributed energy resources (DER) continue to evolve and become more affordable for consumers.

2.27 For example, electrified cars[17] comprised 14 percent of new vehicle sales in New Zealand for 2021, with an electric vehicle inside the top 10 for vehicle sales (and top five for passenger vehicle sales) in New Zealand for the first time.[18] There were also over 40,000 ICPs with installed embedded generation as of 28 February 2022.

2.28 As increasingly large numbers of consumers buy electric vehicles and install embedded generation and batteries, Transpower's ability to accurately assess a transmission customer's gross energy is likely to diminish.

2.29 The rate of growth in embedded generation is unlikely to be even across transmission customers. This will be due to factors such as demographic and socio-economic composition, and available fuel (eg, solar irradiance). It will be important for Transpower to capture this when calculating the residual charge, to promote the efficiency and durability of the proposed TPM.

2.30 Hence, it will likely become increasingly important over time to capture information about behind-the-GXP generation quantities more precisely.

2.31 Over the coming months the Authority wants to consider a solution to the longer-term issue with behind-the-GXP generation information, noting that this information may have uses beyond transmission pricing. Therefore, the Authority has decided to consult separately on a Code amendment proposal that looks to address Transpower's longer term information requirements, likely later in 2022.[19] [20]

Q1. Do you agree with the Authority's proposal to enable Transpower to access additional information to more accurately calculate gross energy ?

17 Battery electric vehicles, plug-in hybrid electric vehicles and hybrid vehicles.

18 See https://www.stuff.co.nz/motoring/127441675/recordsetting-2021-a-huge-year-for-new-car-sales.

19 Noting that any changes to the way in which generation and consumption are metered and recorded now will not be used by Transpower for the purpose of calculating the residual charge and any transitional caps for several years because of the lagged use of the information.

20 The Authority notes that at this time we consider such a Code amendment proposal would focus only on Transpower's future data requirements. The proposal would not seek to change obligations around the provision of historical information covered by the Code amendment proposed in this consultation paper.

3. The second issue: the Code prevents the system operator disclosing information relevant to calculating transmission charges

3.1 Clause 10(4) of the new TPM says Transpower *may* use indications and measurements an industry participant must provide to the system operator under the Code, including under Technical Code C of Schedule 8.3, that are published or made available to Transpower.

3.2 However, the system operator may be prevented from disclosing this information by clause 3(2) of Technical Code A of Schedule 8.3 of the Code, or by participant claims of confidentiality.

The problem the Authority would like to address

3.3 Currently the system operator has information relevant to calculating transmission charges that Transpower, as the grid owner, does not have. One example is SCADA information held by the system operator, which Transpower, as the grid owner, could use in assessing a load customer's gross energy.

3.4 Another example is information about proposed or commissioned changes to plant. It is important Transpower has access to timely information about plant changes, including large embedded plant changes, to enable:

(a) the correct application of Part F of the new TPM (adjustment events), and

(b) the correct calculation of gross energy (which may depend on plant capacity).

3.5 In the absence of this information, Transpower's allocations of transmission charges, particularly residual charge allocations and any transitional caps, may be inaccurate. Charges may be under-allocated for some transmission customers and over-allocated for other customers.

3.6 The Authority considers information required for TPM purposes should be provided in the most efficient way. The Authority proposes to allow Transpower, as the grid owner, to use information already held by Transpower, as the system operator. We consider the alternative of requiring participants to provide this information directly to Transpower, as the grid owner, would be inefficient as it would require participants to provide the information to Transpower twice.

3.7 The Authority considers the Code should not provide for any potential competitive advantage to Transpower as a result of holding both grid owner and system operator roles. As such, we propose that the information provided by the system operator must not be used by Transpower, as the grid owner, for any other purpose than calculating transmission charges.[21]

Q2. Do you agree with the Authority's proposal to allow the system operator to disclose information to Transpower that is needed to calculate transmission charges?

[21] While the proposed amendments do not allow general use by Transpower, as the grid owner, of information provided by the system operator, there are exceptions where the use of that data is provided for under this Code, is required by law, if the information is or becomes publicly available, if the information is or has been provided to Transpower other than under the proposed clause and without restriction on its use, or otherwise as may be agreed with the participant or other person who is the subject of the information.

4. The third issue: the Code is unclear as to the Authority's ability to use sections 39 and 40 of the Act in respect of the TPM

4.1 Subpart 4 of Part 12 of the Code sets out process requirements that must be met to review and replace the TPM. These process requirements could be interpreted as constraining the Authority's ability to make minor amendments to the TPM using the processes set out in sections 39(3) and 40 of the Act.

Implementation issues may arise that require the TPM to be refined

4.2 The new TPM represents the culmination of some 14 years of analysis, consultation, and debate. It is relatively complex and represents a significant change from the current TPM. These factors mean that, despite a significant assurance process occurring during the development of the new TPM Code, there is a risk of errors or problems with the workability of the new TPM arising during its implementation that need a relatively straightforward but urgent correction to the TPM Code. Additionally, issues may arise during the new TPM's implementation that were not anticipated when the TPM was drafted, and require a short consequential addition to the TPM Code.

4.3 The Authority considers these implementation issues may all be valid reasons for amending the relevant aspect(s) of the TPM in appropriate circumstances.

The problem the Authority would like to address

4.4 The problem the Authority wants to address with this Code amendment is to ensure that the process requirements in Subpart 4 of Part 12 of the Code do not apply to certain amendments of the new TPM - to ensure that it can be implemented in a workable and appropriate way.

4.5 The Authority is therefore proposing a clarifying amendment to ensure that Subpart 4 of Part 12 of the Code does not prevent it from making amendments to the new TPM under section 39(3) of the Act (technical and non-controversial / widespread support / adequate prior consultation) — this section provides for the Code to be amended where the usual consultation and regulatory statement requirements do not need to be met.

4.6 In addition, the Authority is considering a further clarifying amendment to the Code to ensure that Subpart 4 of Part 12 of the Code does not prevent it from making amendments to the new TPM under section 40 of the Act, ie, where amendments can be made urgently and without consultation if desirable in the public interest. The Authority considers that it is highly unlikely that this power would be needed during Transpower's implementation of the new TPM, and notes that it is in any case a power that should only be used sparingly given its compressed process requirements. As with all other areas of the Code, having this power in reserve is an important safeguard to have available (eg, in a scenario where Transpower and the Authority were agreed that a strict implementation of the Code would be inconsistent with the intent of (say) the 2020 TPM guidelines).

4.7 The Authority has deliberately limited this proposed clarification of the Code to these specific circumstances, ie, to address issues that arise in implementation of the new TPM Code. We intend to consult later in the year, with a longer period for feedback, about whether Subpart 4 of Part 12 of the Code remains fit for purpose, or whether the

TPM should be able to be re-opened in other circumstances. However, we are aware of the importance for stakeholders of certainty at this point in time, particularly after such an extended period of TPM reform. These proposed clarifications are in no way intended to bring any uncertainty to the new direction of the TPM that has been settled by the Authority.

Q3. Do you agree that the process requirements in Subpart 4 should not apply to amendments to the TPM that are technical and non-controversial, or where there is widespread support, or adequate prior consultation?

Q4. Do you agree that the process requirements in Subpart 4 should not apply to amendments to the TPM that are desirable in the public interest to be made urgently?

5. Regulatory statement for the proposed amendments

Objectives of the proposed amendments

5.1 The objectives of the proposed Code amendments are described in the preceding chapters of this paper.

Q5. Do you agree with the objectives of the proposed amendments? If not, why not?

The proposed amendments

5.2 The Authority proposes to amend Part 12 of the Code as described in the preceding chapters of this paper.

The proposed amendments' benefits are expected to outweigh their costs

5.3 The Authority has assessed the benefits and costs of the proposed Code amendments and expects them to deliver a net benefit.

5.4 Relative to the status quo arrangements:

(a) the expected incremental benefits of the proposed amendments are as follows:

(i) to help ensure the new TPM delivers on the purpose of the TPM Code change by enabling the calculation of residual charges and any transitional caps based on a more accurate assessment of gross energy

(ii) reduce the likelihood of inefficient new investment, particularly inefficient investment in embedded generation mainly for the purpose of avoiding the residual charge

(iii) enabling any errors and workability problems with the new TPM that may be identified during the implementation of the new TPM to be addressed in a timely manner (and therefore leading to the TPM delivering on its expected benefits quicker than waiting for an operational review to resolve any issues)

(b) the expected incremental costs of the proposed amendments are as follows:

(i) the cost for those participants requested by the Authority to provide Transpower with historical generation quantities for generation plant with a capacity of 10 MW or more to do so

(ii) the cost to the Authority and participants if the Authority were to address errors and workability problems with the new TPM identified during its implementation.

5.5 Table 1 summarises the expected incremental benefits and costs of the proposed amendments relative to the counter factual of no changes being made to the Code. Benefits arising from the proposed Code change relating to behind-the-GXP generation (Issue 1) are assessed subject to considering further voluntary data disclosures, including whether those voluntary disclosures are sufficient to provide robust data and whether the impact of that generation on the measurement of gross energy during the historical period is significant enough to warrant a change to the gross energy measure Transpower uses to calculate residual charges and the transitional cap.

Table 1: Summary of the proposed amendments' expected benefits and costs

Benefit / Cost	Magnitude of benefit / cost
Issue 1: missing historical generation information	
The *benefit* from avoiding inefficient investment in embedded generation	$0 to >$100,000
The *cost* to implement the proposal	< $5,000
The ongoing *cost* for industry participants to operate under the proposal	$0
Net benefit	**From cost neutral to significant benefits**
Issue 2: information held by the system operator	
The *benefit* from avoiding inefficient investment in embedded generation	$0 to >$100,000
The *cost* to implement the proposal	< $10,000
The ongoing *cost* for industry participants to operate under the proposal	$0
Net benefit	**From cost neutral to significant benefits**
Issue 3: addressing TPM implementation issues	
The *benefit* from addressing, in a timely manner, any errors and workability problems with the new TPM identified during its implementation	Unquantified, but expected to be more than any corresponding cost
The *cost* to implement the proposal	$0
The ongoing *cost* from addressing, in a timely manner, any errors and workability problems with the new TPM identified during its implementation	Unquantified, but expected to be less than any corresponding benefit
Net benefit	**Positive net benefits**

The proposed amendments' benefits

Similar efficiency benefits are expected in respect of Issues 1 and 2

5.6 The main benefit the Authority expects under the Issues 1 and 2 proposals is to reduce the potential for inefficient new investment aimed at avoiding residual charge by participants with existing large generation plant (co-located with load). Without

information on behind-the-meter generation reflected in charges, these participants may decide to invest in additional generation capacity to limit the ongoing adjustments to their residual charges. Discouraging even just one investment that is mainly aimed at avoiding residual charges would likely be worth several hundreds of thousands of dollars. This estimated dynamic efficiency improvement is based on the size of the loads at the points of connection that are the subject of the Issues 1 and 2 proposals (particularly the Issue 1 proposal).

5.7 Given the small number of participants likely directly impacted by the proposed Code change, and that the case for making additional investments would depend on participant specific circumstances, a more conservative estimate would be to assume no change in dynamic efficiency.

5.8 Improving the accuracy of information used by Transpower to set the residual charge and any transitional cap may also improve the durability of the new TPM.

An efficiency benefit is expected under the proposal to address Issue 3

5.9 The Authority expects the Issue 3 proposal will deliver efficiency benefits should errors and workability problems with the new TPM be identified during its implementation. This is because the Authority anticipates that we would address such errors and workability problems only if we considered there was a sufficient net benefit from doing so. This would be consistent with the Code amendment principles,[22] in the Authority's Consultation Charter.[23]

5.10 For the reasons set out in paragraph 4.2, the Authority considers the likelihood to be more than de minimis that errors or problems with the workability of the new TPM will arise during its implementation that are best addressed by an amendment to the TPM.

The proposed amendments' costs

Participants will incur incremental costs under the Issue 1 proposal

5.11 The Authority's understanding is that up to three points of connection may be affected by the proposal to address Issue 1. The Authority's understanding is that there will be a minor incremental cost for the affected participants to provide the consumption and generation information to Transpower.

5.12 Given our understanding of the incremental costs of the proposal to address Issue 1, we have estimated these to be less than $5,000.

Transpower will incur incremental costs under the Issue 2 proposal

5.13 The Authority anticipates that only Transpower will incur incremental costs under the proposal to address Issue 2. The Authority expects these incremental costs to be less than $10,000.

5.14 The Authority expects some minor changes will be required to policies and procedures, but minimal changes to systems and processes are anticipated.

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22 See, in particular, Principle 9, which applies when the cost-benefit analysis of Code amendment options is inconclusive that a Code amendment would yield net benefits and there are no options that are small-scale, flexible, scalable and relatively easily reversible.

23 The consultation charter is one of the Authority's foundation documents and is available at: Foundation documents — Electricity Authority (ea.govt.nz)

Participants and the Authority may incur costs under the Issue 3 proposal

5.15 The proposal to address Issue 3 would not result in incremental costs. As noted in paragraph 6.11, the Authority anticipates addressing errors and workability problems with the new TPM identified during its implementation only if we consider that doing so would further the Authority's statutory objective and deliver a net benefit.

Q6. Do you agree the benefits of the proposed amendments outweigh their costs?

The Authority has not identified any viable alternative options

5.16 The Authority has not identified viable alternative means of addressing the proposed Code amendments' objectives.

5.17 In relation to Issue 1, the Authority considered a generation capacity threshold below 10 MW. We explain our choice of the 10 MW threshold — consistency with information requirements in the Code and the need for reasonable information requirements — at paragraph 2.16. In addition to these reasons for the 10 MW choice, we also note that given the new TPM commencement date of 1 April 2023, it may not be practical to gather information that may be required under a lower threshold in time for the first pricing year. A lower threshold, applicable to a wider set of embedded generators, and residual charges with historical baselines that may be revised after the start of the new TPM would create uncertainty with likely limited benefits (eg, further improvements in accuracy).

5.18 In relation to Issue 2, the Authority considered whether other participants can provide at least some of the information that Transpower, as the grid owner, may seek from the system operator for charging purposes. For example, distributors might provide Transpower with information on new and changed embedded plant on their networks.

5.19 We concluded that no single participant had all of the information that Transpower was likely to seek from the system operator for charging purposes. Also the transaction costs associated with multiple parties (eg, distributors) providing information would be higher.

Q7. Do you agree there are no viable alternatives to the proposed amendments? If you disagree, please explain your preferred alternative option in terms consistent with the Authority's statutory objective in section 15 of the Electricity Industry Act 2010.

The proposed amendments comply with section 32(1) of the Act

5.20 The Authority's objective under section 15 of the Act is to promote competition in, reliable supply by, and efficient operation of, the electricity industry for the long-term benefit of consumers.

5.21 Section 32(1) of the Act says the Code may contain any provisions that are consistent with the Authority's objective and are necessary or desirable to promote one or all of the following:

Table 2: How the proposed amendment complies with section 32(1) of the Act

(a) competition in the electricity industry;	The proposed amendments are not expected to have a material impact on competition in the electricity industry.
(b) the reliable supply of electricity to consumers;	The proposed amendments are not expected to have a material impact on the reliable supply of electricity to consumers.
(c) the efficient operation of the electricity industry;	The proposed amendments improve the efficient operation of the electricity industry by: (a) improving the accuracy of information used by Transpower in calculating the residual charge and any transitional caps (b) removing incentives for additional embedded generation to avoid the residual charge (c) enabling errors and workability problems to be addressed in a timely manner.
(d) the performance by the Authority of its functions;	The proposed amendments will improve the Authority's performance of its statutory functions.
(e) any other matter specifically referred to in this Act as a matter for inclusion in the Code.	The proposed amendments will not materially affect any other matter specifically referred to in the Act for inclusion in the Code.

Q8. Do you agree the Authority's proposed amendment complies with section 32(1) of the Act?

The Authority has given regard to the Code amendment principles

6.1 When considering Code amendments, the Authority is required by our Consultation Charter[24] to have regard to the following Code amendment principles, to the extent we consider them to be applicable. Table 3 describes the Authority's regard for the Code amendment principles in the preparation of the proposed Code amendments.

[24] The consultation charter is one of the Authority's foundation documents and is available at: Foundation documents — Electricity Authority (ea.govt.nz)

Table 3: Regard for Code amendment principles

Principle	Comment
1. Lawful	The proposed amendments are lawful and consistent with the statutory objective (see section 6) and with the empowering provisions of the Act.
2. Provides clearly identified efficiency gains or addresses market or regulatory failure	The efficiency gains are set out in the evaluation of the costs and benefits (section 6).
3. Net benefits are quantified	The extent to which the Authority has been able to estimate the efficiency gains is set out in the evaluation of the costs and benefits (section 6).
4. Preference for small-scale 'trial and error' options	Not applicable.
5. Preference for greater competition	Not applicable.
6. Preference for market solutions	Not applicable.
7. Preference for flexibility to allow innovation	Not applicable.
8. Preference for non-prescriptive options	Not applicable.
9. Risk reporting	Not applicable.

Appendix A Proposed Code amendments

A.1 Set out below are the proposed Code amendments.

Amending the transmission pricing methodology

12.94A Amending the transmission pricing methodology

Despite anything else in this Code, the **Authority** may amend the **transmission pricing methodology** under section 38 of the **Act** if—

(a) the **Authority** is satisfied on reasonable grounds regarding any of the matters in section 39(3)(a), (b) or (c) of the **Act** (in which case sections 39(1)(b) and (c) of the **Act** will not apply to the amendment); or

(b) section 40 of the **Act** applies (in which case section 39(1) of the **Act** will not apply to the amendment).

Information for calculating transmission charges

12.102A Information held by system operator may be used to calculate charges

The **system operator** may provide to **Transpower** any information the **system operator** holds that the **system operator** or **Transpower** considers **Transpower** reasonably needs to calculate charges under the **transmission pricing methodology**. **Transpower** may use any information provided to it by the **system operator** under this clause to calculate charges under the **transmission pricing methodology**. **Transpower** must not use the information for any other purpose except—

(a) as provided for in this Code; or

(b) as required by **law**; or

(c) if the information is or becomes publicly available; or

(d) if the information is or has been provided to **Transpower** other than under this clause and without restriction as to **Transpower's** use of it for the other purpose; or

(e) otherwise as may be agreed with the **participant** or other person who is the subject of the information.

12.102B Information about embedded generation

(1) In this clause, "AMDR", "capacity", "difference cap", and "embedded" have the meanings given to those terms in the **transmission pricing methodology**.

(2) This clause applies where the **Authority** or **Transpower** reasonably considers a **participant** owns embedded **generating plant** of capacity 10 **MW** or more.

(3) If subclause (2) applies, the **Authority** or **Transpower** may request that the **participant** provide the information specified in subclause (4) to **Transpower** in a format reasonably requested by the **Authority** or **Transpower**.

(4) The information referred to in subclause (3) is any information about the **electricity** generated by the **participant's** embedded **generating plant** referred to in subclause (2) (whether **metered** or estimated) for any **trading period** or **trading periods** specified by the **Authority** or **Transpower** from (and including) **trading period** 1 on 1 July 2014 to

(and including) **trading period** 48 on the day immediately before the date of the request under subclause (3).

(5) **Transpower** may use any information provided to it by a **participant** under this clause to calculate charges under the **transmission pricing methodology**. **Transpower** must not use the information for any other purpose except—

(a) as provided for in this Code; or

(b) as required by **law**; or

(c) if the information is or becomes publicly available; or

(d) if the information is or has been provided to **Transpower** other than under this clause and without restriction as to **Transpower's** use of it for the other purpose; or

(e) otherwise as may be agreed with the **participant**.

(6) Subject to subclause (8), if—

(a) a **participant** does not provide to **Transpower** any or all of the information requested by the **Authority** or **Transpower** under subclause (4) within 20 **business days** (or such longer period as provided for by the **Authority** or **Transpower**) of the date of the request under subclause (3); or

(b) any or all of the information provided is not provided in the requested format or another format **Transpower** can reasonably use for calculating charges under the **transmission pricing methodology**; or

(c) **Transpower** reasonably considers any or all of the information provided is not sufficiently reliable for calculating charges under the **transmission pricing methodology**,

Transpower must use the values specified in subclause (7) to calculate charges under the **transmission pricing methodology** in place of the information that is not provided, is not in the requested format or another format **Transpower** can reasonably use, or is not sufficiently reliable.

(7) The values referred to in subclause (6) are—

(a) for calculating the relevant **designated transmission customer's** AMDR under the **transmission pricing methodology**, a value or values of **electricity** generated by the embedded **generating plant** calculated as if it were operating at its capacity; and

(b) to the extent required for calculating the relevant **designated transmission customer's** difference cap under the **transmission pricing methodology**, a value or values of **electricity** generated by the embedded **generating plant** calculated as if it were operating at its capacity.

(8) Subclause (6) is subject to any requirement on **Transpower** in this Code or the **transmission pricing methodology** to use information from a specific source to calculate charges under the **transmission pricing methodology**.

Q9. Do you have any comments on the drafting of the proposed amendments?

Appendix B Existing information provision requirement

B.1 Under the Code, the system operator may require an embedded generator to provide information regarding the intended output of each embedded generating station greater than 10 MW as either:

(a) an offer submitted in accordance with subpart 1 of Part 13 of the Code,[25] or

(b) in a form and manner agreed between the system operator and the embedded generator.[26]

B.2 The Code also says the Authority may require an embedded generator to provide the system operator with information about the intended output of a group of embedded generating stations that total greater than 10 MW in capacity and that are connected to the same GXP.[27]

B.3 Existing Code requirements also mean the reconciliation manager receives half-hour generation quantities (and any consumption quantities) for each generating station:

(a) that is connected to the grid

(b) that is an embedded generating station with a nameplate capacity of 10 MW or more.[28]

25 Embedded generators are then required to provide metering information to the relevant grid owner.

26 See clause 8.25(5) of the Code.

27 See clause 8.25(6) of the Code.

28 This occurs because of the requirement under clause 7 of Schedule 11.1 of the Code for distributors to assign a loss category code to any ICP at which there is an embedded generating station with a capacity of 10 MW or more. Volume information from such generation is then separately identified in submission information provided to the reconciliation manager (as a result of volume information being aggregated by loss category code).

Appendix C Format for submissions

Submitter	

Question		Comment
Q1.	Do you agree with the Authority's proposal to enable Transpower to access additional information to more accurately calculate gross energy ?	
Q2.	Do you agree with the Authority's proposal to allow the system operator to disclose information to Transpower that is needed to calculate transmission charges?	
Q3.	Do you agree that the process requirements in Subpart 4 should not apply to amendments to the TPM that are technical and non-controversial, or where there is widespread support, or adequate prior consultation?	
Q4.	Do you agree that the process requirements in Subpart 4 should not apply to amendments to the TPM that are desirable in the public interest to be made urgently?	
Q5.	Do you agree with the objectives of the proposed amendments? If not, why not?	
Q6.	Do you agree the benefits of the proposed amendments outweigh their costs?	
Q7.	Do you agree there are no viable alternatives to the proposed amendments? If you disagree, please explain your preferred alternative option in terms consistent with the Authority's statutory objective in section 15 of the Electricity Industry Act 2010.	
Q8.	Do you agree the Authority's proposed amendment complies with section 32(1) of the Act?	
Q9.	Do you have any comments on the drafting of the proposed amendments?	

Glossary of abbreviations and terms

ACOT	avoided cost of transmission
AMDR	anytime maximum demand (residual)
Authority	Electricity Authority
Act	Electricity Industry Act 2010
Code	Electricity Industry Participation Code 2010
DER	distributed energy resources
EMI	Electricity Market Information
GXP	grid exit point
ICP	installation control point
kW	Kilowatt
MW	Megawatt
MWh	megawatt hour
RCPD	regional coincident peak demand
SCADA	supervisory control and data acquisition
TPM	transmission pricing methodology