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Submission on ACOT – proposed TPM-related amendments

Introduction

This submission has been prepared by Ngāwhā Generation Limited (NGL) in response to the Electricity Authority's (the Authority) Consultation Paper: 'Avoided Cost of Transmission (ACOT) – proposed TPM-related amendments' – September 2022 (the Consultation Paper).

NGL owns and operates four geothermal generation plant; OEC1, 2 & 3, as well as the new OEC4 plant which more than doubled our generation capacity to 57 MW (together Ngāwhā). The four plant are situated on the Ngāwhā geothermal field which is located approximately 5 km east of Kaikohe.

NGL is owned by Top Energy Limited, but is operated separately under arm's length arrangements with limited exemptions to the Electricity Industry Act 2010 (the Act) as agreed with the Authority. Ngawha is embedded in Top Energy electricity distribution network and regularly exports into Transpower's Kaikohe grid connection (KOE) to supply electricity to the wider grid.

OEC 1-3 are classified as eligible DG (pre-2017) under Part 6 of the Electricity Industry Participation Code (Part 6 or the Code). NGL receives ACOT payments from Top Energy for OEC 1-3, related to the avoidance of future transmission costs associated with potential upgrades to the transmission network north of Maungatapere GXP (MPE). This relates to the single circuit transmission line between MPE and KOE that Transpower has identified would need to be upgraded if Ngāwhā did not generate.

ACOT provisions should be refocused on the avoidance of future transmission costs, as opposed to the reallocation of existing transmission charges

The fundamental principle of the new Transmission Pricing Methodology (TPM) is that those who benefit from investments in the transmission network should pay for them in proportion to those benefits, through benefits-based charges (BBCs). Where there are historic investments, Transpower can recover its costs through residual charges (RCs). This reflects a forward-looking approach to creating efficiency in new grid investments whilst accepting that legacy investments require cost recovery if they remain in use.

We agree in principle to amending the ACOT provisions under Part 6 to reflect recent changes to the TPM. A primary goal of the Authority's ACOT reform is to remove incentives for inefficient avoidance of transmission charges, particularly that result in the reallocation of charges which do not result in national savings to end-consumers. We support changes to Part 6 that recognises this issue.

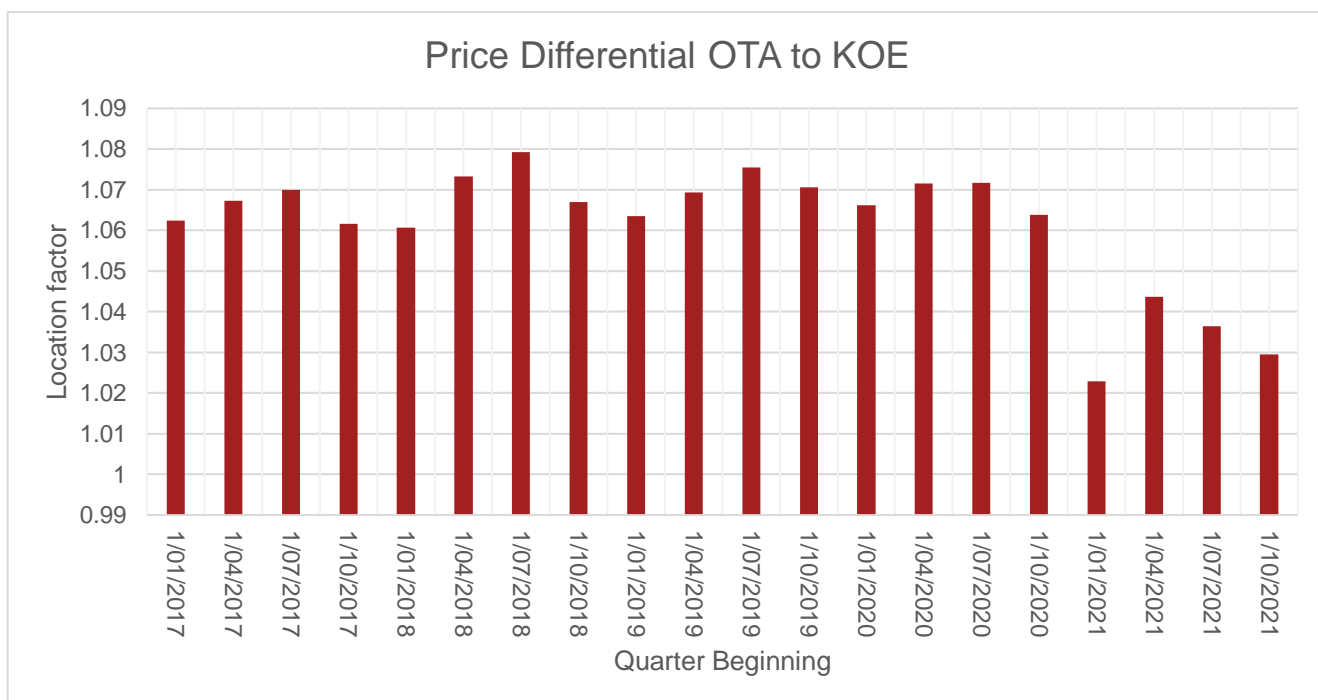
However, we do not support the Authority’s proposed approach to remove ACOT in its entirety, in situations when DG provides grid support that avoids future transmission costs. We recommend that provisions are maintained in Part 6 to clarify that payments of ACOT that contribute to the avoidance of Transpower’s future grid costs are permissible. This will support efficient operation and investment in the grid by incentivising DG that reduces future grid costs.

ACOT is an important incentive for Ngawha to provide grid support

The Consultation Paper starts from the position that no DG provides any benefit to consumers, Electricity Distribution Businesses (EDBs), or Transpower in respect of transmission costs. The Authority indicates that it will deal with any case to the contrary directly, and in time. By doing this, the Authority has relied on an untested assumption that there are sufficient other incentives for DG to continue to generate in the interim to support efficient operation and investment in the grid. We believe this puts at risk grid reliability and lower cost grid alternatives for the means of regulatory expediency.

The position in the Consultation Paper that DG are sufficiently incentivised from increased wholesale nodal prices where there is a grid constraint is incorrect, at least for Ngāwhā. Prices at the KOE node have historically been high due to the losses incurred from being at the end of the transmission line and, at times, the constraints through the grid from Auckland north. However, Ngāwhā alleviates these issues and therefore provides support to both the wholesale market and Transpower:

- **Ngāwhā alleviates grid constraints which reduces wholesale prices:** Ngāwhā generation actually alleviates the wholesale market constraints in the Northland region, reducing wholesale prices at KOE. As evidence of this, we observed that when OEC4 started generating in December 2020, the price at KOE (ie location factor) relative to the Otahuhu GXP materially decreased (see graph below). Prices would be higher if Ngāwhā were not generating, highlighting that there is an unrecognised benefit to consumers in the wider region which Ngāwhā is not fully compensated for.



- **Transpower avoids grid upgrade costs due to Ngāwhā without compensation.** Our position, and this is supported by recent planning reports from Transpower (see extracts from the 2022 Transmission Planning Report below), is that we provide grid reliability services north of Auckland and help Transpower meet its N-1 grid reliability standard in the Far North. If Ngāwhā was not generating or was constrained at critical times, a number of projects between Henderson GXP and KOE would need to be brought forward.

7.4.1 Henderson–Wellsford transmission capacity

Issue

The 110 kV double-circuit “backup” Henderson–Wellsford–Maungaturoto–Maungatapere line operates in parallel with a higher capacity 220 kV double-circuit “main” Huapai–Marsden–Bream Bay line. These circuits supply all of the Northland region’s load (beyond what local generation supplies). The 110 kV circuits have a:

- total nominal installed capacity of 111/136 MVA (summer/winter)
- n-1 capacity of 56/68 MVA (summer/winter).

The Henderson–Wellsford–Maungaturoto–Maungatapere circuits do not have line circuit breakers at Wellsford and Maungaturoto; a fault on any section of the Henderson–Wellsford–Maungaturoto–Maungatapere circuit will disconnect the entire circuit.

Issues that affect the Henderson–Wellsford transmission capacity are:

- The restoration plan for an extended outage of both “main” 220 kV Northland circuits supplying Northland is via the 110 kV “backup” Henderson–Wellsford–Maungaturoto circuits. At present, the maximum load that can be restored is limited by the n-1 capacity of the Henderson–Wellsford circuit sections, and regional generation output.
- From winter 2030 during regional peak load periods, an outage of a Henderson–Wellsford–Maungaturoto–Maungatapere circuit will cause the Henderson–Wellsford section of the remaining circuit to exceed its winter rating. Wellsford supply bus voltage may drop below 0.95 p.u.
- During an outage of a “main” 220 kV Northland circuit followed by the other 220 kV circuit tripping, the Henderson–Wellsford circuit section may overload and/or there may be low voltages or voltage collapse when load is high in the Northland area towards the end of the forecast period. At present, this risk is managed by opening the 110 kV circuits at Maungatapere, putting Northland on n security.

This analysis is based on an assumption that the Ngawha (geothermal) station is generating 50 MW. **Reduced output at Ngawha will bring forward the timing of the overload issue.**

What next?

The Ngawha generation will relieve but not resolve the constraint on the Henderson–Wellsford circuit sections.

We will install a special protection scheme (as part of line protection replacement) on the Henderson–Wellsford–Maungaturoto–Maungatapere circuits to avoid overloading of the

7.5.2 Kaikohe supply capacity

Issue

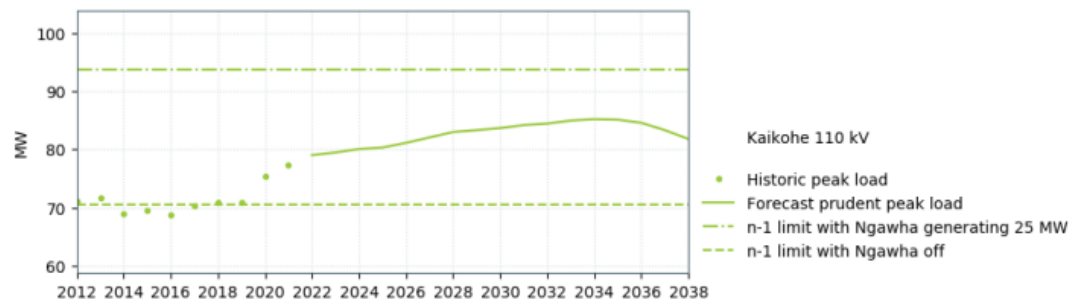
The 110 kV substation equipment at Kaikohe is owned by Top Energy so only the line capacity constraints are included in the TPR. See Figure 7-5 for the peak load forecast at Kaikohe.

Two 110 kV Kaikohe–Maungatapere circuits supply Kaikohe. The 110 kV circuits have a:

- total nominal installed capacity of 126/154 MVA (summer/winter)
- n-1 capacity of 63/77 MVA (summer/winter).

Without Ngawha generation, the peak load at Kaikohe is forecast to exceed the n-1 capacity of the Kaikohe–Maungatapere circuits from winter 2022 (see Figure 7-5). With Ngawha generation, the peak load will be within the n-1 capacity of the circuits for the forecast period.

Figure 7-5: Kaikohe supply capacity



Note: Any difference in the supply capacity on the graph (in MW) and the asset rating (in MVA) is due to load power factor and impedance.

What next?

Ngawha generation will be used to provide n-1 security for the load. Ngawha has multiple generating units, and security to the load is maintained even with the largest unit out of service for the forecast period (see Figure 7-5).

We now find ourselves in the position of having to ascertain if it is commercially viable to continue to operate OEC 1-3 without ACOT. We soon need to decide whether to refurbish the plant to extend their life. Should we decide that it isn't viable, we will place the people of the Far North in a potentially precarious position, between continued security of supply constraints and increased transmission charges from the requirement to upgrade the transmission lines to maintain N-1 security.

We feel the Authority may be relying on our shared ownership with Top Energy to incentivise Ngawha to provide reliability services in the Far North, but this is contrary to our arms-length mandate and should not be relied upon. We are a commercial entity that makes decisions in order to provide a market based return to our shareholder, who are ultimately the electricity consumers in the Far North region. Although we have a social license to the community in which we operate, our statement of corporate intent requires us to operate on commercial terms and maximise the returns from the geothermal resource. There needs to be an appropriate commercial incentive for DG to operate to alleviate a grid constraint and this is consistent with the Energy Companies Act 1992 which requires us to operate as a successful business.

Alignment to statutory purpose

Section 32(1) of the Electricity Industry Act 2010 (the Act) states that the Code may contain any provisions that are consistent with the objectives of the Authority. The objective of the Authority is:

“to promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers”

We consider that the proposed amendments to Part 6 do not give effect to this statutory objective as it puts at risk the reliability of grid supply (particularly for Top Energy where Ngāwhā is not incentivised to generate) and the efficiency of Transpower's investment decisions.

The best long-term decision that can be made for consumers is to fully assess the benefits provided from DG that provide grid support and to put in place a new incentive mechanism. The promise of a future potential review or ad hoc retrospective assessments does not provide sufficient certainty for DG investors and operators to make decisions that support the efficiency and reliability principles in the Authority's statutory purpose.

More work is required on DG that provide grid support

ACOT payments can be justified where there is benefit to the end-consumer from the DG existing. If Transpower considers it could make a more efficient investment (reducing the long-term cost to consumers) then it should identify this with sufficient lead time for the DG to manage its costs in expectation that it will no longer provide the same benefit. This would align with the RCs Transpower is able to recover.

We refer to paragraph 2.6 of the Consultation Paper:

“Following the 2016 amendment, the Authority published lists of DG that would remain eligible for ACOT payments. The lists were informed by what was effectively a high-level assessment of locations in the grid where DG potentially contributes to grid reliability – ie, the lists are not confirmation that any given DG is essential to reliability (or that ACOT payments are required to ensure its ongoing operation).”

It is our understanding that after the 2016 amendment Transpower has not conducted any further analysis to determine if any given DG is in fact “essential to reliability”. This cannot be where the analysis is left, and we consider that this paragraph signals an intent to resolve and give confirmation on this matter.

Appendix A of the Consultation Paper refers to consultation which has been based around charges, not costs, or the mechanism rather than the principle. Now that the TPM has been changed (but not yet applied) there should be consultation on how this impacts ACOT, before determining an approach to amend the Code. Consideration of, and consultation on how ACOT payments can be used to avoid network upgrades, which will reduce costs to customers in the long term, has not yet been undertaken.

Further, it could also be the case that not only the host network is benefitting from the DG and that there are regional benefits. This is the sort of issue which the Authority needs to resolve before amending the Code and if it doesn't then it may be enacting regulation which is contrary to its statutory purpose.

We refer to paragraph C.4 of the Consultation Paper

“Distributed generation is relevant to these objectives because it can potentially (in certain circumstances) provide an efficient substitute for investment in network capacity.”

Our view is this proposed amendment creates uncertainty for how “efficient substitutes” might be identified and compensated.

Eligibility rules should be updated to recognise major DG that provide grid support

It would be possible for Transpower to identify DG that provides grid support by applying the benefits measurement approach used in the TPM for new investments. In fact, large DG (including Ngāwhā) are already included in modelling the system to determine benefits under the new TPM. We suggest that a similar counterfactual approach could be applied to DG to determine whether they provide a material benefit, or not,

and to whom. Transpower also identify in its planning documents the DG that are required to meet its security of supply standard. This could be used to update the eligibility rules

This evidence should be used to replace the current list of ACOT eligible DG plant in Part 6.

Who is best to administer ACOT?

Transpower would be best placed in the future to administer ACOT based on the avoidance of future transmission costs for core grid assets.

EDBs may however be best placed to assess the trade-offs between grid supply and transmission alternatives (including DG or other distributed energy resource (DER)). For example, ACOT payments associated with avoided transmission 'connection assets' could be managed by EDBs as they are responsible for contracting Transpower to provide connection services. It may be best to clarify this in the definition of Avoided Costs of Distribution (ACOD).

Risks of expediency

Our position is that removal of ACOT in its entirety was never signalled. Our understanding of the signalled intent, was that ACOT would no longer be relevant in its current form, because the Regionally Coincident Peak Demand (RCPD) charge would be removed under the new TPM. The presence of the 2016 DG exemptions list suggested that ACOT would be maintained for eligible DG for other forms of ACOT.

We do not agree that the benefits of the proposed amendments outweigh their costs. We consider the approach to be risky and without full consideration. The new TPM will, by its nature, minimise ACOT. Therefore, the cost and risk to consumers of delaying a regulatory response until there is certainty over the roles that specific DG play in the system, will be minimal.

We do not agree with the phase out option, but we advocate for a delayed application of Part 6 amendments to allow time for Transpower to fully assess which generators provide grid support. With this information the Authority and Transpower could develop alternative frameworks to compensate DG that provide network benefits.

DGs are commercial enterprises with a profit motive. By removing a source of revenue with less than a year's notice, the proposed amendment will force outcomes that may not be in the interests of consumers and may be difficult to retrench. We highlight that annual contracting of ACOT with Top Energy is usually done in December prior to taking effect, and the proposed consultation process provides little to no notice of the final decision.

Our expectation was that along with the new TPM, there would be a review of eligible DG that met with the principles underpinning the changes. Our view is what was signalled is that the ACOT associated with avoided charges (i.e. RCPD) would disappear with the new TPM. We have had no indication that all ACOT payments would be considered unnecessary. We could have no expectation that OEC1-3 would cease to be eligible for ACOT payments at such short notice. The Consultation Paper has indicated that this was signalled, but we disagree.

Further, Transpower will not be incentivised to investigate the benefits provided by DG without explicit regulatory guidance in place. As the regulator, the Authority must ensure that new arrangements are in place, ahead of executing an amendment to ACOT.

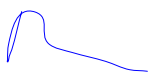
Uncertainty in signalling

We consider that the Authority will have ongoing work in assessing appropriate price signals for any third party (not Transpower or grid connected customers) participant providing grid support. The proposed amendment provides no certainty or incentive to any such party or its host to investigate providing such services. The manner in which the Authority approaches this amendment will provide a platform from which future opportunities will be assessed. We see there is significant risk in what is being signalled to the market by this proposed amendment and that this is inconsistent with the Government's objectives to expedite investment in DER.

Summary

In summary our key points are summarised as follows:

- 1.) We recommend that a mechanism should be retained in Part 6 to allow for ACOT being paid to DG that reduces Transpower's future transmission costs.
- 2.) We recommend that eligible DG are redefined as those DG that:
 - a. have been identified in Transpower's planning documents as providing grid support that result in avoided costs, or
 - b. show a net positive benefit under the TPM new investment benefit test.
- 3.) We support the need to shift administration of ACOT from EDBs to Transpower, if there are appropriate regulatory frameworks in place.
- 4.) A new ACOT framework involving Transpower needs to be in place before the existing ACOT arrangements are withdrawn. We therefore do not support the staged transition measure or immediate amendment. We would support an amendment to the Code this year to clarify that generators should not receive ACOT associated with the reallocation of existing transmission charges, and that the focus should be on future avoided transmission costs.
- 5.) We consider the costs and risks of retaining some form of the status quo, while the TPM is embedded and the Authority can have more certainty of impacts, to be low.



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