

Transmission Alternatives engagement process: consultation paper

29 June 2018



TRANSPOWER



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Why we are consulting

The purpose of this consultation is to seek your feedback on ways we can adapt our existing information and investigations process to better incorporate the opportunities offered by Transmission Alternatives (TAs), including distributed generation (DG), to provide services to our grid.

The paper provides our emerging thinking, and seeks your feedback, on ways we could evolve our approach to TAs, including:

- i. the principles we apply as we consider TA options alongside grid investment options;
- ii. how we think TA providers can engage with us;
- iii. how we propose to engage with TA providers, and
- iv. your views on other potential initiatives we should consider.

We signalled our intention to consult on a draft process in an [open letter](#) to our customers and other stakeholders in April 2018. We use the generic term *transmission alternatives* to capture a broad range of technologies with the potential to provide transmission services, including DG, load reduction, voltage support and electrical energy storage.¹ Our preference is to be agnostic to different forms of TA and between TA and transmission investment. What matters is the ability to reduce or delay expenditure, not the mechanism.

Te Mauri Hiko – Energy Futures and TAs

We anticipate a future where there is a growing opportunity to economically utilise TAs to provide services to our grid, as reflected in our recent release of [Te Mauri Hiko – Energy Futures](#). Te Mauri Hiko examines a range of possible supply, demand and future technology scenarios, to start a conversation about what will be required for New Zealand to maximise the potential of the energy opportunity we are facing.

One of the issues we identified for the industry and Transpower is *“How can New Zealand unleash the growth of distributed generation and storage?”*.

This is consistent with the positions we previously expressed in [Transmission Tomorrow](#) (2016), and the opportunities we signalled for TAs in our [Transmission Planning Report 2017](#):

“As we develop our approach and strategies to dealing with [this] uncertainty we are likely to put a higher value on incremental investment, consider shorter life assets and increase our use of transmission alternatives.”

¹ Details on what a Transmission Alternative is are provided in Appendix 1.

We need your help

This consultation is an opportunity for you to comment on our emerging thinking on ways to improve the visibility of TA options for our grid planning processes and investment decisions.

Your experience and perspectives will be valuable for testing our thinking, and helping us simple low-cost changes to better enable TA providers to engage with us.

Queries

If you have any queries regarding this paper, please contact:

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Submissions

The consultation period is 6 weeks.

Please send submissions to micky.cave@transpower.co.nz by 5pm on Friday, 10 August 2018. We will acknowledge receipt of all submissions.

Submissions will be published on our [website](#).

If your submission contains confidential information please ensure this is clearly identified, and provide a redacted version of your submission that can be published. Please note that all information provided to Transpower is subject to the Official Information Act 1982.

Next steps

Transpower will review submissions and determine next steps to confirm a process for TA providers to work with Transpower going forward. We anticipate these will include consideration of the commercial arrangements required for Transpower to contract with potential TA providers. We will provide submitters, and other customers and stakeholders, with an update after we have considered the submissions and confirmed our planning for the next steps.

List of Questions

The questions we raise in this paper are listed below. While we are specifically interested in responses to these questions, we welcome any other comments or suggestions that you may have in your submission.

Question 1: What comments do you have on the principles we apply when assessing potential TA services?

Question 2: During an investigation, what information would help to determine whether TAs could be an option?

Question 3: Do you think the simple changes we have suggested would help enable greater visibility of TA options for our grid planning processes and investment decisions?

Question 4: What level of information do you think we should hold on a register – if you are potential TA provider what would you want to provide?

Question 5: Do you think the methods we propose for engaging with potential TA providers during investigations will help us identify TA options when we need them? Do you have other ideas?

Question 6: Are there other options or initiatives we should consider to facilitate or better utilise TA to reduce transmission costs over time?

Transmission Alternatives can help Transpower reduce costs over time

As a regulated, commercial business we have incentives to find least-cost solutions to grid investment needs. Our incentive regulation, set by the Commerce Commission under Part 4 of the Commerce Act, rewards us for finding solutions that are least-cost over time, and includes rules for options assessment.

Traditionally, we have met grid system needs by investing in transmission assets. Investments in transmission assets tend to be infrequent and lumpy – due largely to their long economic-life, and to achieve economies of scale. TAs may help us to develop, or procure, grid services incrementally and reduce transmission costs by better matching our ‘build’ with demand for those services over time. TAs may create option value for our grid development plans, such as deferral to a proposed transmission investment that ultimately might mean we avoid the need to invest at all.

Our Transmission Planning Reports (TPRs) present our assessment of the adequacy of the transmission network to meet needs, over a forecast period of 15 years. The reports describe where, and when, we anticipate investment needs to provide the required level of transmission service.

Faced with a confirmed investment need, we identify how to resolve the need following our established investigations process: a sequence of analytical steps to investigate a range of options before deciding on the preferred option. Our economic investigation of the options includes consideration of TA options. However, we need to be aware of TA options to consider them.

We provide more information on our TPR and our investigations process later in this document.

We propose changes to our processes which could help ensure we are better informed about the potential range of TAs available for any specific need. We expect our stakeholders will have other ideas and we would like to hear these and how they could help.

Our approach to Transmission Alternatives: principles

We are interested in finding ways to improve the visibility of TA options for our grid planning processes and investment decisions. We also want to provide TA providers clear, accessible and timely information about potential TA opportunities associated with grid needs.

Improving visibility for both Transpower and potential TA providers should help us fully understand and consider the value of TAs, improve efficiency in decision making, and result in lower total transmission costs over time.

The principles underlying our assessment of potential TA services are as follows:

- i. We have a long-standing incentive to find least-cost solutions to grid investment needs, including transmission alternatives. Our Commerce Act regulation reinforces this.
- ii. We have an interest in finding practical ways of improving the chances of economic transmission alternatives coming forward.

- iii. We do not have a general mandate to provide funding for a transmission alternative exceeding the minimum funding required to defer a proposed transmission investment. We are careful with electricity consumers' money.
- iv. We have to be careful not to invest in transmission alternatives that would produce benefits without our support i.e. investing unnecessarily. On the flip-side, we have to be careful not to invest in transmission alternatives that are uneconomic even with transmission benefits taken into account.
- v. We have to ensure we provide a level playing-field for potential providers of transmission alternatives. We want to ensure that the approach we take is agnostic, and we consider all forms of technology and investment equitably.
- vi. When considering alternatives to investments in connection assets, it is important to recognise the relevant transmission customer's role in funding these investments. We are not the only party to the process.
- vii. Transmission alternative benefits are difficult to quantify, vary over time and can be time-limited. This means that transmission alternative investments payments could be temporary.
- viii. Transmission assets deliver reliable, high quality supply to meet demand. Consequently, TA service provision is likely to require similar reliability performance characteristics.
- ix. We already have a process that produces regular reporting on potential transmission issues (the TPR) and sequences more detailed investigation work at a timing that manages internal resources and minimises wasted effort e.g. from investigating too far ahead of a future need.
- x. We are careful not to provide a free consulting service – we may, depending on resources, be able to bring forward the timing of an investigation if a transmission alternative proponent wishes to contribute to the cost of this work.
- xi. Our ability to engage with all potential providers of TAs, including DG, will be influenced by transaction costs and the size and number of potential providers.
- xii. We will aim to ensure our decision-making process is both transparent and as cost-effective as possible.
- xiii. We are actively exploring transmission alternative approaches to specific transmission issues, including where we see potential to defer new transmission investments by procuring storage services. This means exploring new commercial models and collaboration with our transmission customers and wider interests.

Some additional context follows.

Investment needs on interconnection and connection assets

Investment needs can arise on both interconnection assets (shared by many) and connection assets (typically dedicated to one or two parties).

Confirmed investment needs on interconnection assets are funded by Transpower. Hence Transpower can bilaterally contract with TA providers where the TA is the least cost viable option.

Where investment needs are identified on connection assets our connected customers (distributors, grid connected generators and directly connected load) initiate investment decisions in collaboration with Transpower. Connection asset investment processes are governed by the regulated [Benchmark Agreement](#). Hence our counterparty to that agreement (the distribution company, generator or an

individual load) must be a party to any decision to procure TA services, as they are for any decision to invest in transmission assets at connection locations.

DGPP amendment 2016 by the Electricity Authority

In December 2016, the Authority decided to change the Distributed Generation Pricing Principles (DGPP) policy within the Electricity Industry Participation Code 2010 (the Code). The DGPP provided regulated terms relating to commercial agreements between local distributors and DG operators, and historically allowed distributors to recover the cost of ACOT payments made to DG from consumers through distribution charges.

The Authority's DGPP policy has no impact or influence on how much regulated transmission revenue Transpower can collect (our allowable revenue amount is determined by the Commerce Commission, and doesn't provide for treatment of DG as a 'pass-through' cost), or who we collect it from (the Transmission Pricing Methodology approved by Authority determines who pays how much).

The DGPP Amendment 2016 created an obligation for Transpower to make an assessment of whether existing DG embedded in distributors networks is needed to meet the regulated Grid Reliability Standards (GRS)² between 2015 and 2020. The Authority uses this assessment to decide which existing DG can continue to be paid regulated 'ACOT' payments by its distribution company. The distribution company is able to treat the ACOT payments as a "recoverable cost" and pass them through into higher distribution charges.

The Authority's rules for whether existing DG should continue to be compensated through ACOT payments does not provide a suitable basis for our potential, future, payments to TA providers. Any future payments to TA service providers by Transpower need to result in a lower cost of transmission services over time and recognise the quality of service (performance) the TA can deliver.

Question 1: What comments do you have on the principles we apply when assessing potential TA services?

Our Transmission Planning Reports

Transpower publishes a Transmission Planning Report at least every 2 years, and usually annually. We most recently published a [TPR in July 2017](#). A new TPR will be published in early December 2018.

The TPR describes our assessment of the adequacy of the transmission network to meet demand over the next 15 years also. It provides information on where, and when, we anticipate investment needs, including to meet changes in demand, alleviate constraints, improve operation of the grid, reduce losses or enhance market operation. It also describes our transmission planning processes.

² Refer Electricity Industry Participation Code [Part 6 Schedule 6.4 2A](#)

The information is presented in regional chapters, which is intended to make it easier for stakeholders, including TA providers, to find the information they may be most interested in.

Our investigation process incorporates Transmission Alternatives

Investigation into a system need identified in our TPR starts an appropriate time before the expected need date to accommodate the lead times for potential transmission build. We use our established investigations process to undertake Enhancement and Development³ investigations for:

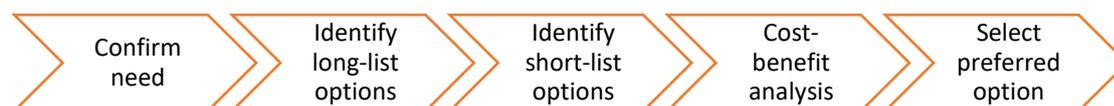
- base capex projects <\$20M; and
- for major capex projects (MCPs) >\$20M.

Both types of investigation follow the same process.

The regulation we operate under⁴ requires extra process steps for MCPs: we are required to consult on our long list of options, on a subsequent short list and how we have applied our regulated cost benefit test.⁵ In addition, the Commerce Commission consults with stakeholders before granting any approval for a MCP investment by Transpower.⁶

The level of analysis is commensurate with the proposed investment cost and complexity of the options being considered. We only commit resource to a formal investigation once we have a high level of certainty the system need will eventuate.

Figure 1 investigation process steps



The investigations process is broadly covered by the 5 stages shown in Figure 1 and as follows.

1. **Confirm the system need:** current load and generation forecasts are analysed against existing grid capacity confirm issues and need dates.
2. **Identify long-list options:** a long-list of potential technical options to resolve the system need is developed. This step includes consideration of TA solutions.

³ Enhancement and Development investigation and projects are those relating to changing grid capability driven by changing load, generation, grid configuration, security or reliability concerns.

⁴ Transpower Capital Expenditure Input Methodology Determination 2012 (Capex IM). Appendix 1 provides some information on specific provisions for TAs in the Capex IM.

⁵ Schedule I, Transpower Capital Expenditure Input Methodology Determination 2012.

⁶ Part 8, Transpower Capital Expenditure Input Methodology Determination 2012.

3. **Identify short-list options:** short-list the most promising options based on assessment (of all long-list options) against selection criteria e.g. technical feasibility, costs, benefits, constructability, environmental and property impact, flexibility, operability, complexity.
4. **Cost-benefit analysis (CBA):** undertake more detailed economic assessment of all short-list options.
5. **Select the preferred option:** based on CBA analysis.

Once we have initiated an investigation we can provide TA providers with detailed technical specification of our need, including need by:

- location: where on the grid (GXP, region, grid backbone);
- type (e.g. need for capacity, voltage support, risks to security);
- size (e.g. extent of capacity gap, high/low voltage, probability of occurrence); and
- timing (peak or off-peak, winter or summer, daily etc).

For providers that want such information prior to our formal investigations process, we may be able to bring forward the timing of an investigation. This would depend on whether we have resource available and the provider wishes to contribute to the cost of the work. We are careful not to provide a free consulting service.

We are interested to understand what would help a potential TA provider identify its service to Transpower for a specific grid need.

Question 2: During an investigation, what information would help to determine whether TAs could be an option?

How TA providers can engage with us

As well as reading the TPR, TA providers can engage directly with Transpower. We think relatively simple changes to our processes could help to enable good visibility of TA options for our grid planning processes and investment decision-making. We propose to:

- Extract information from the TPR relating to needs, to publish a list or index for which needs create potential opportunities for TAs. The list would be published on our website. This could allow TA providers to check for opportunities, and more easily find information in the TPR;
- Provide information alongside the TPR on how to register interest in providing TA services to Transpower, perhaps via a “Register your TA now” feature on our webpage;
- Proactively offer registered TA providers the option to refresh their registration annually, via email or similar. This could help us to keep our list of options current, including ensuring we have current contact information for each registered TA provider; and
- Provide contact information for a person in Transpower TA providers can contact to discuss their TA offering and check for any updates on previously published information.

Question 3: Do you think the changes we have suggested would help enable greater visibility of TA options for our grid planning processes and investment decisions?

Question 4: What level of information do you think we should hold on a register - if you are a potential TA provider what would you want to provide?

TA providers might also wish to consider:

- Registering with our Demand Response (DR) programme, which is a platform for TAs to be paid to provide DR services against specific transmission needs. It offers the potential for cost-effective TA services through aggregation of many small TAs at a 'need' location (refer to Appendix 2); and
- Engaging with Transpower, as the system operator, for the 'common quality' services it procures to meet its Principal Performance Objectives under the Code (refer to Appendix 3).

How we could engage with TA providers

We would like to understand how we could better engage with TA providers as we start to investigate system needs. We propose to utilise the list of registered TA providers discussed above, our existing demand response programme and potentially a request for further interest, during the "Identify Long-List Options" stage.

At this "Long-List stage" we propose to:

- use the information from registered TA providers to contact them for updated information on their proposals and provide investigation updates; and
- formalise our current practice of requesting interest from the demand response programme.

We seek your input on the best ways to communicate we can engage with TA providers during our investigations process for confirmed grid needs.

Question 5: Do you think the methods we propose for engaging with potential TA providers during investigations will help us identify TA options when we need them? Do you have other ideas?

We want to hear your ideas

It is worth reiterating the views expressed in this consultation, including our proposals, are emerging views. We have not formed a firm view on the best way forward. We are interested in what you think about our proposals, and how these potentially could be improved. We also want to hear your views about whether there are other options we have not identified, in this consultation, that we should consider. These could either be complementary to our own proposals or alternative options.

Question 6: Are there other options or initiatives we should consider to facilitate or better utilise TA to reduce transmission costs over time?

Appendix 1: What is a Transmission Alternative?

Any technology or process that could result in capital expenditure deferral is theoretically in scope for consideration as a TA. Capital deferral is most likely where we already have signalled a need to invest via our periodic (five-yearly) capital expenditure proposal to the Commerce Commission.

Transpower's economic activity is regulated under the Commerce Act via Individual price-quality regulation, and a set of rules (called input methodologies) to operate that regulation. Specifically, our capital expenditure input methodology (Capex IM) governs our expenditure and incentives regime.⁷

The Capex IM presents two defined terms applicable to two regulated processes:

- Major capex (enhancement capex >\$20M) uses **Non-transmission solutions**
- Listed projects (reconductoring projects >\$20M) uses **Transmission Alternative**

The definitions are reproduced below.

Major Capex Non-transmission solution	Listed projects Transmission Alternative
<p>non-transmission solution means an alternative to an investment in the grid, which is used by Transpower to-</p> <p>(a) avoid or defer a transmission investment, where the transmission investment would be major capex; or</p> <p>(b) manage operational risks due to unavailability of grid assets during a major capex project</p>	<p>transmission alternative means an alternative to an investment in the grid, which is used by Transpower to-</p> <p>(a) avoid or defer a need for a transmission investment which would be base capex;</p> <p>(b) manage operational risks due to unavailability of grid assets during a base capex project*; or</p> <p>(c) manage operational risks or network constraints due to temporary unavailability of grid assets</p>

*The defined term is used only in conjunction with a **Listed project** process, which is a specific type of **base capex project** (a reconductoring project greater than \$20M). Listed projects are so called because such projects appear in a list in a Schedule ([Schedule L](#)) to our Individual price-quality (IPP) regulation and require specific approval to invest from the Commerce Commission.

⁷ Capex IM available [here](#)

Appendix 2: Demand response programme

We encourage TA providers to consider our Demand Response programme. Information about the programme is available on our website [here](#), and summarised below.

Sometimes there are substantial, short-term increases in electricity demand. Such changes may trigger the need for additional investment in New Zealand's electricity transmission network. Our Demand Response program allows electricity consumers to respond to a signal from us to reduce their electricity demand for a time, in exchange for a payment.

Demand response team: assessment

Questions we ask

- Contact details
- ICP number
- Level of demand response (size of load that can be dropped)
- Price (don't submit if unsure)
- Any establishment costs (yes/no)
- Do you plan to participate by using a generator? (see below)

Further questions for parties wanting to use their small-scale generators as demand response.

- Will you consume all the energy from the generator?
- Do you operate islanded?
- Do you have an agreement with the local distribution company to inject excess?
- Do you have an agreement to sell excess energy to a retailer (or similar party)?

Demand Response team: contract terms and conditions

The Demand Response team manages contracts with TA providers. The contracts cover:

- event calls
- capacity payments
- event fees and
- measurement / verification.

[Contact us](#) about getting involved or [join our mailing list](#) in the meantime to stay updated about the programme's progress, successes, and future application rounds.

Appendix 3: Services provision for system operation

Transpower, as System Operator, co-ordinates and manages the real-time transmission of electricity on the national grid. The System Operator procures the following five ancillary services:

- Frequency Keeping (Multiple Frequency Keeping and Back-up Single Frequency Keeping)
- Instantaneous Reserve
- Over-frequency Reserve
- Voltage Support
- Black Start.

These ancillary services are procured:

- on a “firm quantity procurement” basis: fixed quantity or fixed price basis, regardless of whether the ancillary service is dispatched or not (e.g. over frequency reserve, voltage support and black start); or
- by a closed tender process for frequency keeping and instantaneous reserve. The tender process is conducted between August and November every two years, and we may also enter into contracts outside the tender period when appropriate. These ancillary services are then scheduled according to a half-hour clearing market process. Contracted providers are required to submit offers and are dispatched on a half-hourly basis. The market is settled via the clearing manager.

In 2017, we invited tenders for Frequency Keeping (Multiple Frequency Keeping and Back-up Single Frequency Keeping), Instantaneous Reserve, and Black Start (North Island only).

Our standard contract terms are updated annually. Samples of our standard contract terms for all ancillary services are available on our website [here](#).⁸

For more information please contact Bennet Tucker, Market Security Services Manager bennet.tucker@transpower.co.nz.

⁸ The red lines in the standard contract are updates to from the most recent tender process (ended November 2017).