MBIE Accelerating Renewable Energy and Energy Efficiency Consultation Submission

Transpower

28 Feb 2020

Introduction

Transpower's future, and the future of New Zealand's electricity sector, is framed by the climate change targets we have adopted as a country.

Transpower supports the ambition of a net zero carbon economy by 2050. The introduction of a legislative framework and an independent expert body to put New Zealand on the path toward those 2050 goals, with broad support across the political spectrum, will be a turning point in New Zealand's response to climate change. We expect the regular and public reporting, budgeting and monitoring of progress by the independent Climate Change Commission will change public expectations about the response to climate change.

We also anticipate the Climate Change Commission will highlight for the New Zealand public that there is a lot to do between now and 2030, and 2050.

The work that has been done by the Productivity Commission and the Interim Climate Change Commission shows that for New Zealand to meet its climate change targets in time a substantial proportion of the gains will come from an economy-wide shift to renewable electricity. Transpower agrees that for New Zealand to meet its climate change targets, large scale electrification of the economy will be needed. This involves shifting business activities and transport activities off carbon fuels and onto renewable electricity, across the economy, in time to meet New Zealand's targets.

In 2018 the Productivity Commission said "For New Zealand, it is clear that electrification across the economy, and specifically in transport and process heat, will be needed to achieve a low-emissions economy."[1] Last year the Interim Climate Change Commission agreed, saying "[t]he Commission has identified accelerated electrification as a major opportunity to more rapidly reduce greenhouse gas emissions" and "recommends that the Government implement ambitious transport policies."[2]

The electrification of the economy will require New Zealand businesses to change the way they generate heat in manufacturing and other business processes, it will require New Zealand businesses and households to shift to electric transport options, and it will require the electricity sector to generate and deliver much more renewable electricity.

There is an emerging consensus that this will involve New Zealand increasing its electricity consumption by 50-100% by 2050.

Transpower embraces this challenge, and we are committed to playing our part. Transpower is soon to release *Whakamana i Te Mauri Hiko – Powering our Energy Future.* This paper builds on the work that we presented in our 2018 release of *Te Mauri Hiko.*

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[1] New Zealand Productivity Commission. (2018). Low-emissions economy: Final report. Available from www.productivity.govt.nz/low-emissions.

[2] [2] Interim Climate Change Committee (2019). Accelerated Electrification. Available from www.iccc.mfe.govt.nz.

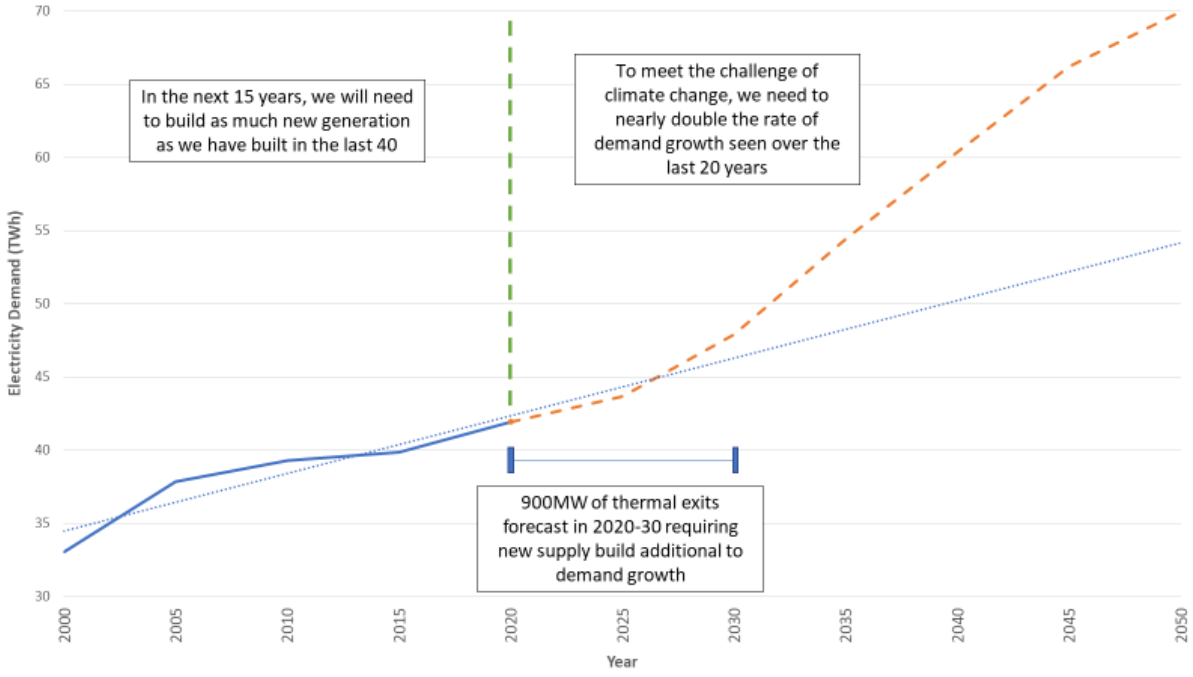
Whakamana I Te Mauri Hiko – Powering our Energy Future provides an update on assumptions and modelling about what this electrified future might look like. It then builds on this with a greater focus on what Transpower, and the wider industry must do to support New Zealand's transition to a low carbon economy.

We are taking responsibility for changing our business to ensure Transpower performs its role. And we are engaging with other industry stakeholders on the policy and regulatory changes needed to facilitate the shift to renewable electricity.

We, along with others in the electricity sector, also feel a responsibility to communicate to New Zealanders outside the sector, who don't live and breathe electricity, the scale of this challenge. This will not be business as usual, or a step up from business as usual. The scale of investment and change required, and the pace at which that change needs to happen, will be unlike anything in the experience of people working today. This will need to happen right across generation, transmission, distribution, in New Zealand businesses, and in New Zealand households.

As an indication of the changes ahead for the electricity sector, our modelling forecasts that we will need to build as much new generation in the next 15 years as we have in the last 40.

Whakamana **i Te Mauri Hiko electricity demand forecast, 2000-2050**



But new generation is only one side of the equation. 70 new grid scale connections will be required between now and 2035. This is predicted to be 40 new generation connections and 30 new connections to accommodate increased demand.

These new connections will get more electricity on and off the grid. We will also need to strengthen the grid to reliably and safely transport these volumes of energy. Our modelling identifies 10 to 15 large grid upgrade projects that need to be done before 2035. This is only 15 years from now, and each one is a major infrastructure project, expected to cost between $20M and $250M. Again, this is a significant scaling up of our infrastructure build compared to recent years.

Whakamana i Te Mauri Hiko aims to help describe the changes in electricity supply, demand and delivery that will be needed between now and 2030, and 2050. Our projections show how significantly demand for electricity must increase over this period, how we need it to become relatively less "peaky" as it grows, how renewable generation capacity must increase, how investment in network infrastructure must anticipate this growth, how the network must evolve to cope with a more diverse and weather dependent electricity supply, and how the wholesale market must too.

One of the challenges facing New Zealand is that each of these important changes (demand growth, demand peak, renewable supply, network investment, network stability, market stability) will not happen fast enough with our current policy and regulatory settings.

Transpower supports the use of market-based mechanisms where possible to prompt and facilitate these changes. We support the central role of the ETS in the climate change response framework, and the recent changes to the ETS to strengthen this price mechanism over time. However, it is also important to recognise and be hard-headed about the scale of change that is required between now and 2030, and 2050. If we rely on the carbon price signal alone then we simply won't get there in time.

This is not a question of degree or judgment, but again reflects the fact that the future needs to be very different to the present and recent past. As one example, right now, in the current regulatory environment we would struggle to build 5 new connections per year, every year, for 15 years. Things need to be done very differently. New Zealand needs to be determined (and bold) about the complementary polices needed to remove barriers to change and to assist with the large-scale transition of activities across the economy onto renewable electricity.

This is the opportunity for policy, and policy makers, to play a role in bridging the "gap" between where we are on current policy settings, and where we need to be if we are serious about moving to a low emissions economy by 2050. The table below gives a sense of the opportunity that New Zealand can seize with good policy development. The ICCC has modelled where New Zealand will be in 2035 on current regulatory settings and our current trajectory, and where New Zealand could be if policy and regulation supported accelerated electrification. Our modelling shows a similar contrast. The opportunity for good policy development to close the gap between where we are currently expecting to be in 2035, and where we need to be, is significant. In the context of meeting our climate change objectives, it is vital.

	ICCC Business As Usual	ICCC Accelerated Electrification	ICCC Implied Policy Gap	Transpower Business As Usual	Transpower Accelerated Electrification	Transpower Implied Policy Gap
	Electricity Consumption p.a.	Electricity Consumption p.a.	CO2-e emissions p.a.	Electricity Consumption p.a.	Electricity Consumption p.a.	CO2-e emissions p.a.
2035 Transport Electrification	2.7 TWh	5.7 TWh	5.7 MT CO2-e	2.3 TWh	4.9 TWh	4.1 MT CO2-e
2035 Process Heat Electrification	0.6 TWh	5.5 TWh		1.5 TWh	4.5 TWh	

When meeting this policy challenge, and bridging this gap between our current trajectory and where we need to be in 15 years, there are two big policy levers that can be pulled. The first is strengthening market mechanisms, like the ETS carbon price and where necessary setting the boundaries to the market (for instance with the phase out of old technologies). The second is

removing the regulatory impediments and barriers to change. Policy needs to prompt change, and facilitate change.

We are committed to working with policy makers and regulators to find the solutions that allow the price signals to work, remove impediments to change, and facilitate the shift to electricity.

In doing so we can play a role in highlighting how policy co-ordinates across the electricity system. In the current context, while MBIE has asked for industry assistance on questions in relation to renewable generation and process heat, when we respond we will also have in mind the important connection with the electrification of transport which, from an electricity system perspective, is difficult to separate.

When making the *Whakamana i Te Mauri Hiko* projections we have assumed that technology development will play its part, in changing how electricity can be produced, stored, delivered, and avoided altogether. This is particularly so the further out we look toward 2050.

In the nearer term, however, where we must make significant climate change gains if New Zealand is to meet its targets. We need to start now in facilitating the economy-wide move to electricity.

In our *Whakamana i Te Mauri Hiko* modelling, we estimate electricity demand will ramp up significantly in the period between 2025 to 2030. This is when we expect the shift of business activities and transport onto electricity to gather momentum, as changes in technology and costs make it practical for New Zealanders to make the switch. To add to the challenge for the electricity sector, this is also the time over which we expect the retirement of thermal power plants.

This sharp increase in electricity demand will be a good thing, but it means that between now and 2025 Transpower needs to get ready to deliver much more renewable electricity, and the generation sector needs to scale up to produce it. When thinking about large infrastructure like transmission and generation, five years is not a long time.

We are working out how to transform our business to meet these challenges. We know we have an important role to play to meet this ramp up after 2025, and that the clock is ticking. Transpower is already experiencing a significant increase in enquiries from potential developers of new generation.

We are updating our system planning to ensure that our future grid plans remain consistent with delivering a net zero carbon future. We are collaborating with customers to help them plan for the decarbonisation of their business. We are improving our processes to accommodate the new volume of connections to our grid, and refreshing the information we give to new customers on the grid connection process to make this more streamlined. And we are planning ahead for a major scaling up in our workforce (an industry-wide challenge).

If large scale electrification is to happen in time to meet New Zealand's climate change targets, we can also see other changes that will need to happen or problems that need to be solved, across the energy sector.

In relation to the scaling up of the transmission grid, these challenges can be tackled in:

- planning (where we support MBIE's proposals for information exchange as part of the push to remove barriers and improve the pace of planning),

- consenting (where the status quo of 3-7 years for consenting a major project and establishing property access arrangements simply has to change if the electricity system is to deliver the gains needed to meet New Zealand's climate change targets in time), and
- delivery (where workforce development and co-ordination across the sector will be important).

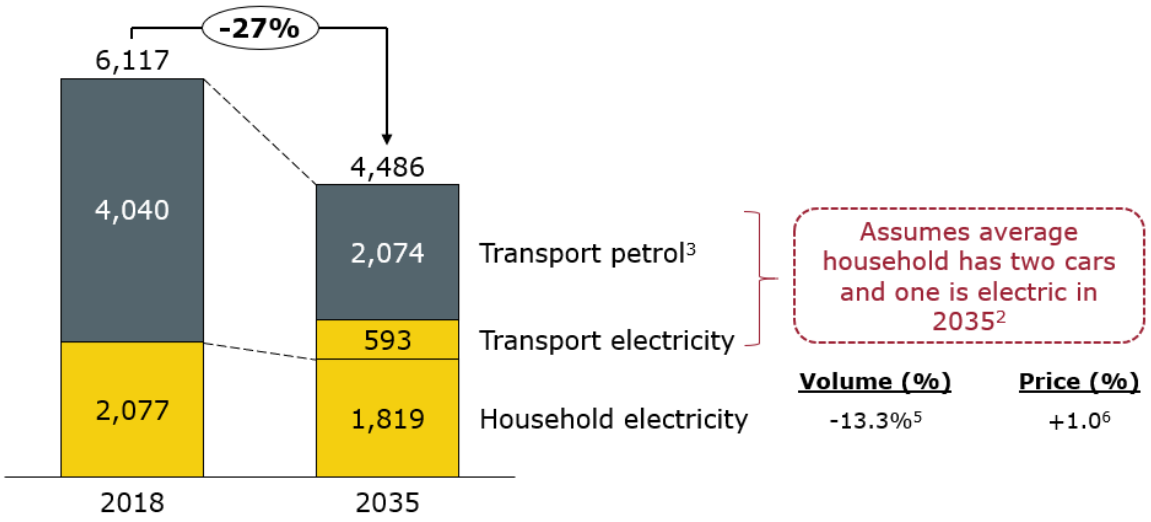
More broadly, policy and regulatory changes will be needed to support the timely shift of business activities and transport to electricity, the moderating of peak demand as these new activities take off and demand grows, the physical investment by renewable generators and New Zealand businesses, and the evolution of the network to ensure that as more of the country's needs are met by weather dependent renewable electricity, which is relatively more volatile, New Zealanders continue to receive a reliable and resilient electricity supply.

Where possible we make these links and highlight how the changes across the system fit together. In doing so, we are conscious that these policy and regulatory issues are ones where others must take the lead and make decisions based on the best information that can be gathered from all stakeholders. We respect that. We will play our role in transforming our business, and highlighting the key interdependencies that must be resolved across the sector if we are to achieve the electrification of the economy in time.

We, like other electricity sector participants, are also focused on ensuring this transition is seen to be just by electricity consumers. This is another interdependency and is not optional – the transition to an electrified economy will not happen if it is not supported by the public. We are confident that the transition to an electrified economy can result in New Zealanders spending less on energy overall even as their spend on electricity increases.

For example, our modelling shows this effect on an average New Zealand household in 2035 with two cars, one of which is electric:

Annual energy bill ($) for a household with two cars in 2035



While more electricity is consumed by this household, the household saves money on energy overall. The transition is positive. The sector needs to explain how the transition will be experienced

in the day to day lives of New Zealanders in a variety of circumstances, and together we need to make the changes that deliver that result.

Transpower commends MBIE for promoting the discussion of how New Zealand accelerates renewable energy and energy efficiency, and raising a broad range of policy options for industry and public engagement. This is a necessary and important discussion, and MBIE has done the sector a service by putting a broad range of policy options "on the table" for comment at an early stage.

In this submission we comment on some of these policy options more than others, where we feel Transpower has expertise and experience it can offer.

In particular we discuss the policy challenges and opportunities with:

- the reform of the RMA system;
- reducing barriers to building new grid connections;
- demand side participation and distributed energy resources; and
- meeting dry year and peak needs.

We look forward to continuing this constructive engagement with MBIE and the sector as the policy options are developed.

Section 1: Addressing information failures

Transpower supports a requirement for large energy users to develop and publish Corporate Energy Transition Plans. We also support the proposal to develop Electricity Information Packs for businesses wanting to transition process heat to electricity, and we will assist with the preparation of these packs. Getting information on how to make the transition into the hands of large users, and receiving information from them on their needs and timing, is going to materially assist the transition of process heat to electricity.

As will be evident from our work and publications in recent years, Transpower is making it a priority to understand what the Grid will need to look like to enable a net zero carbon future. We know that our grid will play an important role, and also that there is a lot we don't know and cannot predict with certainty. We are prioritising our scenario-based system planning (and will be sharing the results with sector participants). We are also working with customers to gain a better understanding of their transition plans to assist us in our planning, and to prepare for new connections to the Grid. This information allows us to plan our workload to better respond to customer needs, and to ensure that the grid is strong enough to accommodate new supply and demand.

The pace of change that will be required to achieve New Zealand's emissions targets will lead to a significant increase in the volume of work, and the pace at which it must be delivered. The earlier that we can receive information the more able we are to begin the planning and consenting process.

For these reasons, Transpower supports the proposed introduction of Corporate Energy Transition Plans to assist with a timely and orderly transition away from carbon intensive fuels. While Transpower already engages in detailed discussion with its customers, any measures to improve the quality and timeliness of this information will allow for more coordinated investment decisions. Correspondingly, we also appreciate that customers require high quality and timely information from Transpower so that they can plan, consent, and deliver their projects. Transpower is currently updating the information that it provides prospective connecting parties. New technologies have provided process heat users with viable pathways to electrify. Transpower is incorporating information about connecting process heat into its updated Grid connection information. As electrification of process heat is nascent, any information that can assist process heat users is valuable.

Therefore, we support MBIE's suggestion that information packages will encourage conversion. We look forward to working with MBIE to develop and distribute this content.

Interdependencies with consenting

Receiving a strong indication of new supply or demand, via high quality, timely information, allows Transpower to plan better. However, unless this improved information is accompanied by improvements to consenting timeframes, the gains made in planning may not result in a material benefit.

Under existing regulation, consenting and access timeframes for large projects can be in the order of 3-7 years before the 2-3 years of build can be commenced. This lengthy time frame is a luxury that New Zealand can no longer afford, as it looks to the future at what is required if we are serious about meeting our climate change objectives. The hard truth is that consenting, and property access timeframes need to be reduced in a material way to achieve the electrification and renewable energy development consistent with New Zealand's Paris commitment and net zero carbon target.

It is therefore imperative that the reforms to the Resource Management Act remove barriers to renewable energy supply and transmission infrastructure, and condense consenting timeframes to allow the industry to play its part.

It is also important that information exchange happens as early as possible, to empower market participants to engage earlier on planning and consenting activities. This will allow the industry to plan and deliver an orderly transition to a low carbon economy.

We discuss the importance of RMA reform in more detail in Section 7.

Corporate Energy Transition Plans

Option 1.1 - Require large energy users to publish Corporate Energy Transition Plans (including reporting emissions) and conduct energy audits

Question 1.1 - Do you support the proposal in whole or in part to require large energy users to report their emissions and energy use annually publish Corporate Energy Transition Plans and conduct energy audits every four years? Why?

Transpower supports the concept of requiring large energy users to report their emissions and energy use, and annually publish Corporate Energy Transition Plans. However Transpower only supports energy audits where the compliance costs and reporting requirements of doing so are kept to a minimum.

Site-specific transition plans which include forecast energy requirements would be of particular value to energy infrastructure providers. This would allow network operators to more accurately forecast electricity demand requirements and ensure that sufficient infrastructure exists to support decarbonisation through electrification.

Transpower already works bilaterally with companies, on a commercial-in-confidence basis, and this avenue could be used to communicate the results of site-specific information between the required parties while maintaining commercial confidence.

Question 1.2 - Which parts (set out in Table 3) do you support or not? What public reporting requirements (listed in Table 3) should be disclosed?

Transpower supports all requirements proposed in Table 3. With provisions:

- If Government reporting could also include site-specific transition plans, then this would encourage an orderly transition.
- We encourage MBIE to align reporting requirements with TCFD requirements.

- In regard to auditing requirements, Transpower is concerned that the compliance costs and reporting requirements for large energy users are kept to a minimum.

Question 1.3 - In your view, should the covered businesses include transport energy and emissions in these requirements?

Yes, as transport electrification is critical. Where transport energy and emissions are material (transport emissions contribute at least 25% of the threshold for reporting as discussed in Q1.2) for a company, transport should be included in the Corporate Energy Transition Plans.

Question 1.4 - For manufacturers: what will be the impact on your business to comply with the requirements? Please provide specific cost estimates if possible.

No Comment

Question 1.5 - In your view, what would be an appropriate threshold to define 'large energy users'?

Transpower understands that MBIE likely wishes to receive recommendations on "$ of energy purchased per annum" or "Energy consumed per annum".

If the threshold were to include a measure of peak power consumption, then this would be helpful. Network investments are driven by peak power consumption rather than energy consumption. Transition plans and reporting from businesses that are large in a peak power consumption sense would provide Transpower, and electricity distribution businesses with valuable foresight of potential future network need, leading to a more orderly transition.

Question 1.6 - Is there any potential for unnecessary duplication under these proposals and the TCFD disclosures proposed in the MBIE-MfE discussion document on Climate-related Financial Disclosures?

Yes – we agree that there could be the overlap between climate related financial disclosures and those proposed in section 1 (for large users who are NZX listed).

We suggest that any duplication should be resolved by aligning with the TCFD approach – as occurred in the Climate Change Response (Carbon Zero) Act for "reporting agencies." As we noted in our submission on the Climate Related Financial Disclosures discussion document, it is important that there is consistency across various Acts and Regulations which require climate change disclosures. This approach will ensure efficient reporting, where a single report or reporting mechanism can meet multiple regulatory or statutory requirements.

Electrification Information package

Option 1.2 - Develop an electrification information package for businesses looking to electrify process heat, and offer EECA's business partners co-funded low-emission heating feasibility studies

Question 1.7 - Do you support the proposal to develop an electrification information package? Do you support customised low-emission heating feasibility studies? Would this be of use to your business?

Yes, Transpower supports the proposal to develop an electrification information package.

Electrification is a new activity for many process heat users, and any information that can be provided to guide their transition would be valuable.

While "the Government and Transpower would incur additional administrative costs to resource and develop the information package", Transpower is of the view that the electrification of process heat provides an attractive avenue for decarbonisation and it is important that we provide prospective process heat electrifiers with a clear and well defined pathway to connect to electricity networks. We acknowledge that there is a cost to providing this information, but we believe that the decarbonisation opportunity greatly outweighs this cost.

Transpower has already commenced work to update the information that we provide prospective connecting parties. This will ensure that connectors have all of the information that they need, and that connections can be delivered more efficiently with higher levels of customer satisfaction.

Yes, Transpower supports customised low-emission heating feasibility studies. We welcome the opportunity to work with prospective connectors to explore the options available to them.

Question 1.8 - In your view, which of the components should be scaled and/or prioritised? Are there any components other than those identified that could be included in an information package?

Transpower believes that well communicated information on processes and technologies will encourage decarbonisation of process heat and lead to a more orderly transition. Transpower looks forward to working with MBIE to develop this information.

Benchmarking in food processing

No Comment

Section 2: Developing markets for bioenergy and direct geothermal use

Transpower supports New Zealand businesses and households using the most appropriate form of sustainable, low-emissions energy for their needs. For many this will be electricity, but we acknowledge bioenergy or direct geothermal will be the right choice for others.

Transpower is not familiar with whether any regional air quality rules or the NESAQ is a barrier to wood energy. However, if barriers are identified through the submission process, Transpower supports those being addressed as wood fuels could have a role in the transition to electrification. Based on our experience in implementing both the NPSET and the NESETA, we expect that non-regulatory means (such as guidance) will not be adequate to reduce barriers. In amending the NESAQ, should that be required, consideration would need to be given to whether any changes need to be made to other NESs with conflicting provisions. We discuss the reforms needed to national direction in section 7.

Guidance on RMA consenting for wood energy plants

No Comment

Amending the National Environmental Standards for Air Quality

No Comment

Facilitating the development of bioenergy markets and industry clusters on a regional basis

No Comment

Section 3: Innovation and building capability

Transitioning business processes to electricity will require New Zealand businesses to develop entirely new capabilities and adopt new technologies and processes. Transpower supports MBIE's proposals for practical measures to increase the amount of information available, reduce the uncertainties, and so increase the pace of change. We have been working with customers on trial projects and sharing the lessons from those.

To achieve the levels of electrification identified in the ICCC's Accelerated Electrification report, a large number of New Zealand businesses will need to adopt new technologies and processes and develop entirely new capabilities. We appreciate that in practice, adopting new technology and new businesses processes is harder than it sounds. From the perspective of the business, there is unfamiliarity and uncertainty about the new technology and processes – uncertainty as to cost, expected gains, how to implement it in practice, who are credible providers and advisors, and so on. These are all very real uncertainties, and they reduce the pace of change in a way that New Zealand cannot afford. MBIE is right to focus on reducing those uncertainties and empowering businesses to make the changes, and secure the benefits, more quickly.

Transpower has participated in early trial projects for process heat users investigating electrification as an avenue to decarbonisation. We believe that these trial projects are key to building a collective understanding of the options available to converting business processes to electricity. We will continue to support initiatives to de-risk these changes in technology and processes and develop capability. Transpower is also using the lessons and insights from these trials to update our processes, and information.

We also suggest that trial projects should focus on building capability in parties that are able to cross-pollinate learnings to other process heat users. Examples could be building the capability of engineering consultants and construction contractors who work with multiple clients.

Technology diffusion and capability-building

Option 3.1 - Expand EECA's grants for technology diffusion and capability-building Expand EECA's grants for technology diffusion and capability-building

Question 3.1 - Do you agree that de-risking and diffusing commercially viable low-emission technology should be a focus of government support on process heat? Is EECA grant funding to support technology diffusion the best vehicle for this?

Transpower agrees that businesses will need to develop new capability to allow for their transition to low-emission technology.

We believe that efforts should be focussed on providing information and building the workforce capability and experience to deliver these types of projects rather than subsidising the installation of new technology. EECA grants to de-risk pilot projects may provide an opportunity for consultants and contractors to build capability and experience. Due to their position in the industry, they will be able to offer that capability more widely than growing it internally to specific businesses.

Question 3.2 - For manufacturers and energy service experts: would peer learning and on-site technology demonstration visits lead to reducing perceived technology risks? Is there a role for the Government in facilitating this?

No Comment

Industrial innovation and transitioning to a low-carbon future

Option 3.2 - Collaborate with EIHI industry to foster knowledge sharing, develop sectoral low-carbon roadmaps and build capability for the future using a Just Transitions approach

For many EIHI industry participants, electricity may not be a core competency. These companies may need support to develop capabilities and to ensure that they have the required information to make informed decisions.

Question 3.3 - For EIHI stakeholders: What are your views on our proposal to collaborate to develop low-carbon roadmaps? Would they assist in identifying feasible technological pathways for decarbonisation?

No comment

Question 3.4 - What are the most important issues that would benefit from a partnership and co-design approach?

No comment

Question 3.5 - What, in your view, is the scale of resourcing required to make this initiative successful?

No comment

Section 4: Phasing out fossil fuels in process heat

Transpower agrees with the proposal to phase in a ban on new coal-fired boilers for low and medium temperature requirements. We also support the proposal to require existing coal fired equipment for low temperature process heat to be phased out by 2030. There are major climate change gains to be made from this transition of low and medium temperature process heat activities off carbon fuels. As a general policy preference we support the use of market mechanisms where possible, including the ETS, but in order to meet our climate change targets these should be supplemented by complementary policy where the change in the economy would not otherwise happen in time.

As an implementation matter, sufficient notice of the ban (of say 5-10 years) will allow businesses (and Transpower) to plan ahead.

Transpower supports MBIE's focus on phasing out fossil fuels in process heat. The ICCC and the Productivity Commission have identified process heat as some of the lowest hanging fruit available to decarbonise the New Zealand economy. The Ministry for the Environment's recently released Marginal Abatement Cost Curves also draw this conclusion.

The ICCC's Accelerated Electrification report identified that 0.6 TWh of process heat would be electrified by 2035 under our Business As Usual policy settings, and that this could increase to 5.5 TWh if a path of accelerated electrification is pursued. This implies a policy opportunity of 4.9 TWh from stimulating and facilitating process heat conversions to electricity.

Whakamana i Te Mauri Hiko finds a similar gap, and similar policy opportunity, of 3 TWh if New Zealand is to achieve the 4.5 TWh of forecast process heat demand by 2035 in the Accelerated Electrification base scenario.

It is clear that on current policy settings New Zealand will not close this gap in 2035. This suggests that the policy opportunity for process heat electrification to make a material contribution toward New Zealand achieving its climate change targets is significant.

As outlined earlier in this submission, to close the gap will require a policy response that consists of both policy and regulation to send the right market signals, and policy and regulation to remove barriers to enable delivery consistent with these market signals. Transpower's response to this section focusses on sending the right market signals for electrification of process heat.

Transpower agrees that the ETS should be the primary policy lever to achieve decarbonisation of the energy sector. However, we doubt whether emissions pricing can single-handedly enable the full realisation of the decarbonisation opportunity. Complementary policies will be required to achieve more widespread decarbonisation. This is particularly relevant for process heat. The carbon price will be reflected in the offer price (bids) of coal and gas-fired generation plant, but it will also be

reflected too in the offer prices of hydro, as it sets the opportunity cost of water as a fuel. Thus, the carbon price will be strongly reflected in the wholesale price of electricity, which is set by the highest offer dispatched. Under current market settings, a high carbon price will accelerate electrification by increasing the cost of direct use of oil, gas and coal, but could also slow it down by increasing also the cost of electricity. This may have negative consequences on the balance of commercial incentives for the electrification of transport and process heat.

Complementary policies that send market signals to transition away from the use of carbon intensive fuels for process heat will be required. Transpower supports MBIE's proposed ban on new coal fired boilers for low and medium temperature process heat, and the proposed ban on the use of coal for low temperature process heat applications from 2030. Transpower acknowledges that these policies will be useful to accelerate the transition away from coal. Additional or strengthened policies may be required after 2025 to drive deeper decarbonisation of process heat.

An important characteristic that should be considered when implementing policies complementary to the ETS is to provide sufficient foresight to market participants to empower them to adjust their activities. Preferably, a policy like a ban on coal use should allow for a 5-10 year notice period to provide businesses with the opportunity to plan and prepare for a future without coal in their business. Sufficient foresight also allows Transpower to work with customers in advance of their requirements and to plan for a future Grid that meets those requirements.

When defining the target of these policies it is important that multi-temperature sites are given careful consideration. If a process heat user requires high temperatures for one of their processes, and uses waste heat from this process to power a secondary, lower temperature process then requiring that lower temperature process to convert to a lower carbon energy source may lead to perverse outcomes.

Interdependencies with consenting

Transpower expects that a large proportion of process heat connections will connect to distribution networks rather than as direct connects to the Grid. This increased demand may require upgrades to distribution networks. In turn, this could require Transpower to build new Grid Exit Points (a substation where distribution networks connect to the National Grid), or deliver upgrades to existing Grid Exit Points. A very large process heat user can connect directly to the National Grid: our modelling suggests only a few connections of this size are expected.

These new or upgraded substation connections may require Transpower to build new or upgrade existing transmission lines to supply them power. In this case, Transpower must acquire land rights, seek consents, and then deliver and commission the project. Under existing regulation, the consenting and access timeframes for large transmission line projects could be as long as 3-7 years to gain approvals. Following approvals, a project might take Transpower 2-3 years to deliver. Transpower is undertaking work to condense the timeline for all parts of delivery. To enable the pace of change required, it is Transpower's view that consenting, and access timeframes need to be shortened. We discuss the reform of the RMA system in more detail in Section 7.

Option 4.1 - Introduce a ban on new coal-fired boilers for low and medium temperature requirements

Question 4.1 - Do you agree with the proposal to ban new coal-fired boilers for low and medium temperature requirements?

We strongly agree with the intent to phase out the use of coal for low and medium temperature process heat.

There are technically and economically feasible low-to-medium temperature electric process heat technologies (as we address in our 2019 paper "Taking the climate heat out of process heat") as well as gas and biomass alternatives.

We broadly agree on a ban for new coal fired boilers for low to medium temperature process heat but believe that it is important that this policy is well considered so as to not result in unintended consequences.

It is important that this ban on new coal fired boilers has sufficient notice, and is accompanied by other complementary policies to ensure that this does not incentivise coal users to extend the life of existing coal fired assets.

One example of a complementary policy would be Option 4.2 of this paper which would protect against this perverse outcome.

Option 4.2 - Require existing coal-fired process heat equipment supplying end-use temperature requirements below 100°C to be phased out by 2030.

Question 4.2 - Do you agree with the proposal to require existing coal-fired process heat equipment for end-use temperature requirements below 100 degrees Celsius to be phased out by 2030? Is this ambitious or is it not doing enough?

We strongly agree with the intent to rapidly phase out the use of coal in low temperature process.

As identified by the Ministry for the Environment's Marginal Abatement Cost Curve analysis, electrification represents one of the lowest cost opportunities to decarbonise. In fact, their analysis indicates that for many low temperature applications electrification is already lower cost than status quo plant.

This form of policy – a ban – should be implemented allowing for a period of sufficient notice to support an orderly transition of the electricity system to satisfy this demand.

Question 4.3 - For manufacturers: referring to each specific proposal, what would be the likely impacts or compliance costs on your business?

No Comment

Question 4.4 - Could the Corporate Energy Transition Plans (Option 1.1) help to design a more informed phase out of fossil fuels in process heat? Would a timetabled phase out of fossil fuels in process heat be necessary alongside the Corporate Energy Transition Plans?

Yes, any foresight that can be given to electricity industry participants would allow for a more orderly transition to low carbon process heat.

Question 4.5 - In your view, could national direction under the RMA be an effective tool to support clean and low GHG-emitting methods of industrial production? If so, how?

No Comment

Question 4.6 - In your view, could adoption of best available technologies be introduced via a mechanism other than the RMA?

No Comment

Section 5: Boosting investment in energy efficiency and renewable energy technologies

EECA has found that energy savings from adopting energy efficient technologies such as LED bulbs, heat pumps, energy efficient water heating, and efficient electric motors could reduce the need for new generation by 4,000 GWh (*Energy Efficiency First: The Electricity Story*). These are significant climate change gains that can also have material economic benefits for New Zealanders. Policy to encourage these efficiency measures will significantly aid New Zealand's transition. Complementary policies to encourage electric vehicle uptake are also important to achieving New Zealand's decarbonisation and should be part of our overall policy response to climate change.

As discussed in section 4 of this submission, Transpower believes that the Emissions Trading Scheme (ETS) should be the primary policy lever to encourage New Zealand's decarbonisation. However, we are clear that on its own, it will not stimulate the degree of change needed for New Zealand to meet its climate change targets. Complementary policy will be required if the New Zealand economy is to make the significant shifts required, and at the pace of change required, to meet the government's Paris and net zero targets.

Modelling done by the ICCC and by Transpower shows a very significant difference between the outcomes under Business As Usual scenarios, where the economy stays on its current policy and regulatory settings, and the Accelerated Electrification scenarios, which is where New Zealand needs to be in 2035. This modelling work shines a spotlight on the gap in outcomes in 2035 that policy reform now must address. We support the complementary policies that are proposed in Section 4 to incentivise process heat conversions.

In addition, we believe that complementary policies to encourage electric vehicle uptake are also important to achieving New Zealand's decarbonisation. Transport represents 20% of New Zealand's emissions, and approximately 30% of emissions when excluding biogenic methane. The ICCC and Productivity Commission identified the electrification of transport as a low-cost abatement opportunity.

> *"EVs are one of New Zealand's most promising mitigation opportunities" – Productivity commission - Low Emissions Economy Report 2018*

While MBIE has asked for industry assistance on questions in relation to renewable generation and process heat, Transpower also acknowledges the important connection with the electrification of transport which, from an electricity system perspective, is difficult to separate.

The ICCC's Accelerated Electrification report identified that 2.7 TWh of transport electrification would occur under Business As Usual by 2035, and that this could increase to 5.7 TWh if a path of

accelerated electrification is pursued. This implies a policy opportunity of 3 TWh from stimulating transport electrification.

Whakamana i Te Mauri Hiko finds a similar gap of 2.6 TWh to be addressed by policy reform if we are to achieve the 4.9 TWh of forecast transport demand by 2035 in the Accelerated Electrification case.

This suggests that the policy opportunity for transport electrification is significant, and that policy reform in transport is an important part of the challenge ahead for New Zealand.

We appreciate that this consultation does not cover the issues and options specific to encouraging renewable energy or improving energy efficiency in the transport sector and look forward to future Government consultations on that subject. However, this consultation does we believe need to cover the likely physical impact of transport electrification on the electricity sector - which we believe will be considerable - and removing barriers to the electricity industry delivering the infrastructure required to support it.

What could be considered to address these issues?

Question 5.1 - Do you agree that complementary measures to the NZ-ETS should be considered to accelerate the uptake of cost-effective clean energy projects?

While the ETS should be the primary policy lever to achieve decarbonisation of the energy sector, it also requires complementary policies to achieve more widespread decarbonisation. For example, an excessively high carbon price may be counter to electrification objectives if it drives up the price of electricity by increasing the cost of gas bids into the wholesale electricity market. As gas is frequently the marginal bidder in the market, a very high carbon price is likely to increase the market clearing price. This may have negative consequences on disincentivising the electrification of transport and process heat.

Furthermore, there are examples where lack of information and/or behavioural biases may lead consumers to be less responsive to carbon price signals. For example, further residential energy efficiency uptake may be better stimulated by improved information and other non-ETS incentives.

Questions 5.2 – 5.5

No Comment

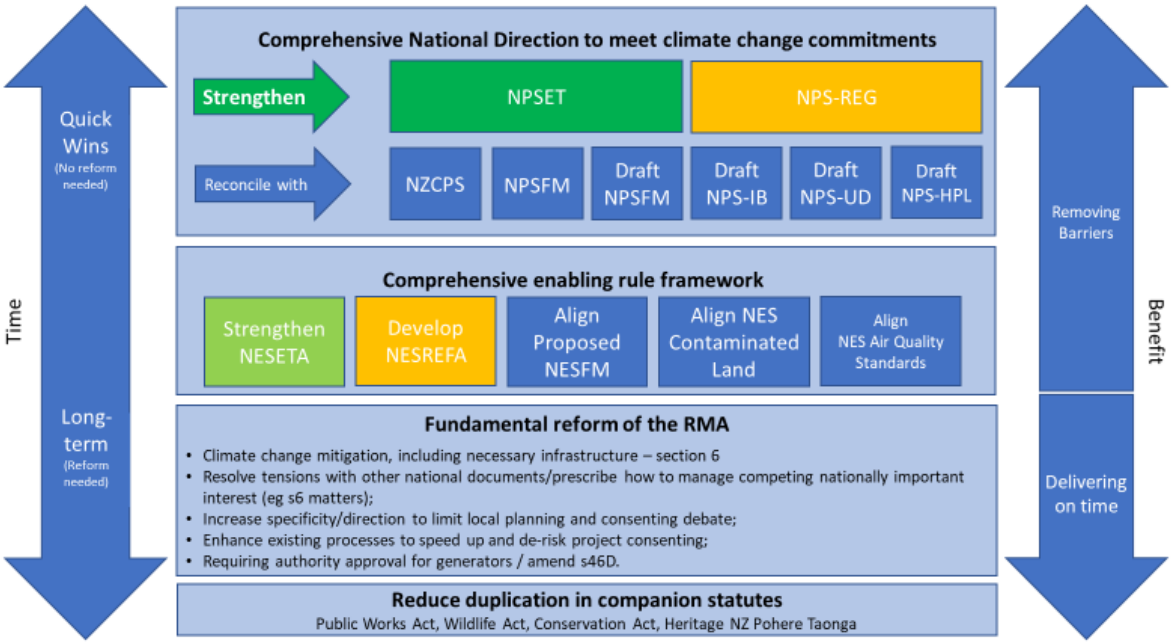
Section 6: Cost recovery mechanisms

No comments

Section 7: Enabling development of renewable energy under the Resource Management Act 1991

If we are to achieve our climate change targets and meet the environmental challenge of our generation, the future needs to be very different from the past. Activities to mitigate climate change need to be approved, quickly, at scale, for a sustained number of decades. Our planning framework, including the RMA and the instruments made under it, must clearly prioritise climate change mitigation over other interests. We need to find a way to ensure there is national consistency, which implies reducing the room at local level for local variation and preferences. And we need to find a way to radically reduce consent and access times for climate change mitigation projects, which implies reducing information requirements, and reducing the time for public input and appeal rights.

Transpower supports the MfE process to transform the RMA system, and we also appreciate that some changes will take longer than others. In the diagram below we summarise changes that are available in the short term – in particular strengthening the wording of the NPS-REG and NPSET to clearly prioritise climate change mitigation, and clearly establishing climate change mitigation as the priority in the system of RMA instruments – and in the longer term, clarifying the priority of climate change mitigation in the Act, and ensuring that is carried through to the local level.



In our introduction to this submission we describe the role that the electricity sector must play in moving the economy onto renewable electricity, and the scale of that challenge.

This role will not be business as usual, or a step up from business as usual. The scale of investment and change required in generation, in transmission, in distribution, in New Zealand businesses, and in New Zealand households, and the pace at which that change needs to happen, will be unlike anything in the experience of people working today.

Transpower approaches the topic of RMA reform against this background. We agree with the Ministry for the Environment (**MfE**) that the resource management system needs to be transformed, and we support its current reform process. New Zealand needs to bold if we are to work toward our climate change targets and address the environmental and resource management challenge of our generation.

We should not shy away from what that means in environmental and planning legislation. Activities to mitigate climate change need to be approved, quickly, at scale, for a sustained number of decades. Our planning framework, including the RMA and the instruments made under it, must clearly prioritise climate change mitigation over other interests. We need to find a way to ensure there is national consistency, which implies reducing the room at local level for local variation and preferences. And we need to find a way to radically reduce consent processing times for climate change mitigation projects, which implies reducing information requirements, the time for public input and appeal rights.

Changes of this magnitude have not been popular or possible in the status quo environment. But the next couple of decades are not going to be like the past. This change was emphasised by the ICCC:

> *A future of accelerated electrification for New Zealand will require building considerably more wind farms, more geothermal and solar generation, more transmission lines, and possibly more hydro storage. All these will have impacts on the environment – some challenging decisions lie ahead for our resource management system. "*[3]

As an indication of the changes ahead for the electricity sector, our modelling forecasts that we will need to build as much new generation in the next 15 years as we have in the last 40.

But new generation is only one side of the equation, 70 new grid scale connections will be required between now and 2035. This is predicted to be 40 new generation connections and 30 new connections to accommodate increased demand. Our modelling also identifies 10 to 15 large grid upgrade projects that need to be done before 2035 to ensure the grid is able to accommodate this new supply and demand. This is only 15 years from now, and each one is a major infrastructure project, expected to cost between $20M and $250M.

[3] Interim Climate Change Committee (2019). Accelerated Electrification. Available from www.iccc.mfe.govt.nz.

If New Zealand is to rise to the environmental challenge of this generation, it must transform the resource management system to clearly prioritise the timely delivery of climate change mitigation activities. While this will require us to make some difficult trade-offs, we all win if New Zealand successfully rises to the challenge of climate change.

A key part of the challenge is that the specific wording of national policy statements matter. These statements can unlock or create regulatory barriers – to enable or hinder climate change mitigation and electrification of the economy.

The Interim Climate Change Committee has made these points clear, as well as highlighting the opportunity the RMA reform presents:[1]

> "The RMA and its current suite of national policy statements do little to assist decision-makers to reconcile or trade off competing national objectives. Such ambiguities or gaps do not simply affect existing hydropower … but increase legal uncertainty for many potential renewable electricity generation opportunities.
>
> …
>
> Such a reform process is a major opportunity to not just remove barriers to emissions reducing activities, but to fully enable resource management legislation to actively support needed mitigation efforts. Alignment of policy efforts is a fundamental mechanism to address climate change. Resource management legislation and associated regulation should complement, rather than dampen the effect of, core climate change policies …"

For this reason, a policy reform challenge that is of national and generational significance can quickly focus on what seems like detail. But that is the task. The importance of rigour and coherence in relation to national policy statements has been repeatedly emphasised by the New Zealand courts in recent years.

The New Zealand Supreme Court in *Environmental Defence Society v King Salmon* has said:[2]

> "it is apparent that the various objectives and policies are expressed in deliberately different ways. Some policies give decision-makers more flexibility or are less prescriptive than others. … By contrast, other policies are expressed in more specific and directive terms... These differences matter.
>
> …
>
> The decision-maker must first identify those policies that are relevant, paying careful attention to the way in which they are expressed. Those expressed in more directive terms will carry greater weight than those expressed in less directive terms. Moreover, it may be that a policy is stated in such directive terms that the decision-maker has no option but to implement it. So, "avoid" is a stronger direction than "take account of"".

This decision from our Supreme Court was a wakeup call. After *King Salmon,* the outcomes from applying the national policy statements in practice are highly dependent on the strength and clarity of their wording – a break from the practice prior to that point, which had emphasised a weighing of the considerations. In this new environment, the National Policy Statement on Renewable Electricity

Generation (**NPSREG**) is weak. It simply is not directive enough to ensure that decision-makers have 'no option but to implement it'. More generally, the Supreme Court is emphasising the importance of stating clearly the priority outcomes we want from our system.

The view from the top is consistent with more recent High Court and Environment Court cases. The recent Environment Court decision in relation to Blueskin Energy rings alarm bells for New Zealand's ability to focus on the need to respond to climate change. In that case, the community ultimately sought consent for a single wind turbine as part of a response to climate change.[3] The Court considered the NPS-REG, and concluded that the national policy statement as currently worded does not mandate the grant of consent. As the Court stated, the

> "direction that the benefits of renewable electricity generation are "recognised and provided for" is an indication as to the weight to be attributed to those benefits under s 104(1)(a). It does not follow from this that the benefits must be given more weight than the other matters …".[4]

In the Blueskin Energy case, the plans at local government level contained a strongly worded direction on landscape effects. The Court recognised the benefits of renewable generation as a matter of national significance, and the benefits of the project, in line with the NPSREG.[5] However, the Court also found that the turbine would have significant adverse landscape and visual amenity effects (note, it was not within an outstanding natural landscape, or the coastal environment).[6] It gave those findings significant weight given the strength of the direction in the district plan relating to landscape outcomes.[7] The Court declined consent.

Following *King Salmon*, the Courts and local authorities have been faced with applying national policy statements that were not developed with this new approach in mind. National policy statements had been developed expecting they would be applied "in the round", and so were prepared in silos to deal with one priority and without undue attention to specifying clear priorities. As a result, current national policy does not provide overall direction on national priorities, and leaves critical issues and conflicts to be fought out in planning and consenting processes. It is essential that national policy for renewable electricity generation and the National Grid is updated with the *King Salmon* approach in mind to provide comprehensive direction and ensure development can proceed at the speed needed to respond to climate change.

The Productivity Commission's *Low-emissions economy* report[4] finds that the NPS-REG has made no difference to the time, complexity and cost of obtaining consents for renewable generation, and resource consenting processes are likely to hinder expansion of renewables.[5] This is a damning conclusion and a call to action. The Productivity Commission also emphasises that investments in

[4] New Zealand Productivity Commission. (2018). Low-emissions economy: Final report. Available from www.productivity.govt.nz/low-emissions.

[5] Page 401-402.

the transmission grid and distribution networks will be needed to complement the expansion of renewable generation.[6] The Productivity Commission recommended that the Government:[7]

> *"…give priority to revising both the NPS-REG and the NPS-ET to ensure that local authorities give sufficient weight to the role that renewable electricity generation and upgrades to the transmission network and distribution grid will play in New Zealand's transition to a low-emissions economy. This will likely require making the language of the NPS-REG and the NPS-ET more directive, and to be more explicit about how the benefits of renewable electricity generation should be recognised and given effect in regional and territorial authority planning instruments."*

Transpower agrees with this statement. It is inevitable that national direction on renewable energy and on the National Grid will overlap. Dual regimes are necessary because not all National Grid matters relate to renewable energy, and the technical requirements are very different. However, the regimes need to work together effectively, and be consistent. It will not work to review the NPS-REG in a silo.

An example of where we need to improve our planning performance on both transmission investment as well as renewable generation investment are the trends we are seeing, and expect, in connecting new renewable generation. In recent years, this has been predominantly geothermal and wind generation. For these technologies, the development timeline of the power plant is longer than the development timeline for the connection to the grid. Currently, from the developer's perspective, Transpower's delivery of the connection does not define their project timeline.

In the future however, new technologies such as solar, batteries, electric boilers, and heat pumps will be able to be deployed faster than their connection to the Grid. For example, the 100MW Hornsdale battery deployed in Australia was completed by Tesla in 63 days following contract signing. In these instances, the Grid connection would become the bottleneck to the commissioning of these projects. As we get into that operating environment, benefits of any changes to NPS-REG will not be realised unless commensurate changes to NPS-ET are also made.

We are also very conscious that not all of the responsibility for the current protracted timetables falls at the feet of the RMA. Current arrangements for securing land access (either ownership or access rights) necessary for a transmission or generation project also add years to a project before construction can begin. In the context of projects with national significance, in some instances, the length of this delay could be seen as excessive.

In addition, the rule framework for renewable generation and Grid connections needs to become more enabling. Transpower supports amendments to Resource Management (National Environmental Standards for Electricity Transmission Activities) Regulations 2009 and development of a national environmental standard for renewable electricity generation activities. Any development and strengthening of these activities must occur in a way that reconciles the conflict and barriers in other NESs that are in development (such as the NESFM).

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[6] Page 403.

[7] R13.3.

Until now, the current state of affairs has been inefficient but liveable for New Zealand's national planning framework. Looking forward, that is not a luxury this generation can afford, and if we do not change it is something that future generations will look back on as a critical failure.

While we want to be clear-eyed about the challenge in the RMA context, Transpower recognises the practical reality that fundamental reform of the resource management system will take some time – many years. Our response to this is twofold.

First, this fundamental reform process is still an important investment in the response to climate change and we agree with MfE's decision to get it underway. We are looking to reform the legal settings that will either help or hinder activities between now and 2050. Even if the outcome is several years away, a transformed legal framework will be important in New Zealand's success to respond to climate change. Transpower's submission on *Transforming the resource management system: Opportunities for Change Issues and Options Paper* (**Issues and Options Paper**) sets out our optimal package of reform. A summary of priority reforms and sequencing is contained in **Appendix 3** of this submission. In summary, we suggest:

- Including renewable generation, grid investment and other climate change mitigation in section 6 of the RMA
- Prescribing how to prioritise climate change mitigation and manage other nationally important interests (for example other section 6 interests). The promulgation of new national direction, without property resolving the relationship with existing national direction needs to be resolved, to avoid the continued "watering down" of what was intended to be comprehensive national direction for both the Grid and renewable generation.
- Giving greater direction to the local planning process. When regulatory barriers are created at regional or district level, planning processes are highly resource intensive and slow. We support consolidating plan requirements (including through combined plans) to ensure that efforts can be focussed on ensuring the quality of a smaller number of plans. Plan making processes should also provide for adequate participation, without allowing for multiple rounds of litigation.
- Streamlining consenting processes. The process for obtaining approvals for major projects has become significantly more onerous over the lifetime of the RMA. "Fast-tracked" processes have been introduced, but they have resulted in extremely resource intensive condensed processes, rather than any streamlining. Transpower supports providing a bespoke process for nationally significant infrastructure that properly responds to the challenges faced in obtaining approvals for such projects.

Second, while progressing this reform we can also be looking for quicker wins now. As identified in this submission, changes are possible within the existing framework and instruments which are helpful in the short term, even if they fall well short of what is needed over the decades ahead.

Amend the National Policy Statement for Renewable Electricity Generation

Proposal 7.1 - Amend the National Policy Statement for Renewable Electricity Generation, including potential expansion of its scope to cover a broader range of renewable energy activities

Transpower has around a decade of experience implementing the NPSET and NESETA. Although much of chapter 7 is about renewable electricity generation, Transpower's positive and negative experience can assist with the delivery of an improved NPS-REG and new NESREFA/Planning Standards on renewable energy.

Key lessons from a decade of experience with the NPSET are the need to:

1.1 increase specificity/direction to limit local planning and consenting debate;
1.2 resolve tensions with other national documents/prescribe how to manage competing nationally important interest (eg. s6 matters); and
1.3 enhance existing processes to speed up and de-risk project consenting.

Transpower understands that Proposal 7.1 involves amending the NPS-REG to include both the renewable generation, and the Grid or distribution line connection interests. On page 50 the discussion document states:

> "*Catering for the need to develop transmission and distribution networks for connection to REG facilities, eg. clarifying the linkage between the NPSREG and the NPSET and the NESETA by setting out more specific policies for such networks in the NPSREG and cross-referencing the NPSET and NESETA*."

As a result, we comment on amendments to the NPS-REG from this perspective, as well as our experience in implementing the NPS-ET.

Our 'optimal package' of RMA reforms involves strengthening both the NPS-REG and the NPS-ET – as grid connections will not only be needed for generation (where they could be addressed in the NPS-REG), but also process heat (where they cannot).

However, if the NPS-ET is not to be amended in the near future, our preference would be for the national direction for Grid connections to be strengthened in the NPS-REG. This strengthening would be a positive step. (We set out the reasons why the NPS-ET requires amendment in response to question 7.20.)

Question 7.1 - Do you consider that the current NPSREG gives sufficient weight and direction to the importance of renewable energy?

No – strongly disagree.

Question 7.2 - What changes to the NPSREG would facilitate future development of renewable energy? In particular, what policies could be introduced or amended to provide sufficient direction to councils regarding the matters listed in points a-i mentioned on page 59 of the discussion document?

Transpower considers that the NPSREG needs to be strengthened to include strongly worded directive policies which:

- provide for the locational and technical constraints of generation and associated Grid connections;
- recognise that not all effects can be avoided;
- cover the field in terms of natural environments considered; and

- reconcile the NPSREG with other NPSs with strong protective policies in order to prevent outright barriers to renewable energy development.

We expand on these types of policies below, drawing on Transpower's experience with implementing the NPSET (which is neither adequately directive and nor comprehensive.)

Policy 8 of the NPSET provides: "*In rural environments, planning and development of the transmission system should seek to avoid adverse effects on outstanding natural landscapes, areas of high natural character and areas of high recreation value and amenity and existing sensitive activities.*" This "seek to avoid" approach was intended to require Transpower to apply a rigorous process to avoid impacts on high value natural areas, while recognising that it is not practical to avoid such effects in all circumstances.

This type of policy is useful, provided it covers the field in terms of environments covered, and its relationship with other NPSs is addressed.

Decision-makers must consider Policy 8 alongside other NPSs. The strong/directive policies of the New Zealand Coastal Policy Statement 2010 (*NZCPS*). Policies 11, 13 and 15 of the NZCPS require adverse effects on certain environments to be avoided absolutely. There is a potential conflict between the policy direction in the NPSET and NZCPS.

Because of Policy 8, Transpower has (through mediated outcomes) developed a planning policy and rule approach that requires a very robust assessment of National Grid transmission projects, but does not create a 'jurisdictional bar' to considering applications (that blanket 'avoidance' policies inherently create).

In contrast, other infrastructure providers (who do not have the benefit of a NPS) have not been able to achieve a similar outcome, including in the context of the Proposed Bay of Plenty Coastal Environment Plan. The High Court in *Royal Forest and Bird Protection Society of New Zealand Inc v Bay of Plenty Regional Council* [2017] NZHC 3080 determined that a policy and rule framework that would allow regionally significant infrastructure in high value coastal areas in limited circumstances failed to "give effect" to the NZCPS policies (including the 'protective' policies 11, 13 and 15 where were determined to be more directive than the 'enabling' policy 6 in the NZCPS). The outcome in the Bay of Plenty example will likely follow in all situations where there is an absence of NPS, an NPS does not cover the field, or it is weakly drafted.

As discussed above, the Supreme Court decision in *Environmental Defence Society Inc v New Zealand King Salmon Company Ltd* [2014] NZSC 38 emphasises the critical importance of applying accurate language in national policy statements and being very directive where intended. This decision from our highest court underlines the issues with the NPSREG (and the NPSET). Neither document is directive enough to ensure that decision-makers have 'no option but to implement it'.

This issue is exacerbated as more and more national direction is prepared. The NPSREG, NZCPS and the National Policy Statement for Freshwater Management (*NPSFM*) 2011 were developed around the same time. However, their preparation was not integrated.

The NPSFM was subsequently updated in 2014, without updates being made to the NPSREG (or NPSET) at the same time. Further, the Government is now consulting on further amendments to the

NPSFM, as well as a draft National Policy Statement for Indigenous Biodiversity (*NPSIB*), National Policy Statement for Highly Productive Land (*NPSHPL*), National Policy Statement on Urban Development (*NPSUD)*. These new statements risk further undermining the policy framework for renewables as they include more directive provisions than the NPSREG (and NPSET).

Transpower considers all of the potential options (presented on page 59) for amending the NPSREG could assist with facilitating the future development of renewable energy, subject to the details of the amendments. The following paragraphs address each of those options.

(a) Considering the national benefits of REG: The national benefits of renewable electricity generation (and associated Grid connections) need to be recognised at all levels of the resource management system in a clear and uncomplicated way. This recognition is important for accelerating renewables and to ensure any NPSREG policy is workable.

It must start at the top. Part 2 of the RMA currently requires decision-makers to "*have particular regard to… the benefits to be derived from the use and development of renewable energy*" (section 7(j)). However, the hierarchy in Part 2 means that a number of matters (such as outstanding natural features and landscapes in section 6(a)) can be prioritised above renewable energy.

Further, the statutory framework creates further interpretative complexity in that renewables (and electricity transmission in the NPSET) is recognised as a matter of "national significance" in the NPS. However, s6 of the RMA provides for matters of "national importance". And, the enabling provision for NPSs in the RMA - s45 – refers to the purpose of national policy statements as being "*to state objectives and policies for matters of national significance <u>that are relevant to achieving the purpose of this Act.</u>*" This relatively broad language creates potential conflicts when weighing the benefits of renewables/electricity transmission against other s6 matters of national importance. This matter then flows through to whether other NPSs can, or should be, a barrier to renewables (and trump the NPSREG.)

As set out in Transpower's submission on the *Issues and Options Report*, Transpower considers the statutory principles should be rewritten to better reflect the challenges of the current (and future) environment. The 'first tier' of the statutory principles should recognise the life-supporting capacity of air, water, soil and ecosystems. Climate change mitigation should be recognised in the same manner given the potential for this issue to compromise the options available for future generations. In addition, built infrastructure that is critical to the baseline wellbeing of people and communities, including electricity transmission, should be equally recognised in the statutory principles. The 'second tier' of statutory principles should recognise matters that are important – but not critical, and should not be subject to bottom lines. This would contain primarily 'amenity' matters.

It must then flow into national direction. The NPSREG does require decision-makers to recognise and provide for the benefits of renewable electricity generation (Policy A). However, there is no direction as to how those benefits are to be weighed against the impacts of REG. In that context, Policy A is weakly drafted, and likely to have little impact on decision-making. We consider that the NPS-REG needs to provide a comprehensive regime for the management of renewable electricity generation activities. It must ensure that the benefits of renewable electricity generation are 'taken as read' and do not need to be proven. It must provide clear direction on assessment of the effects of

renewable electricity generation (and line connections if they are to be included), including any effects that could 'trump' the benefits, and the effects that simply need to be managed properly.

The recent High Court decision in *Environmental Defence Society Incorporated v Otago Regional Council* [2019] NZHC 2278 reiterates that the words used in national policy statements are critical. An enabling 'recognise' policy for an activity is not sufficiently directive when viewed alongside an effects-based 'avoid' policy. It is therefore important that the NPS-REG addresses both the positive and negative aspects of renewables (and line connections), and directs decision-makers to an outcome – rather than simply identifying matters to be considered in the round.

It must then flow into planning documents. The NPS-REG currently requires planning documents to include provisions to "provide for" renewable electricity generation activities (Policies E1-E4) – meaning that each district/region must develop its own provisions. In light of such weak direction, it is inevitable that some districts/regions will not adequately provide for renewables.

(b) Locating and planning strategically: Objectives and policies in relation to spatial planning could potentially be beneficial. Spatial planning in New Zealand to date has been inconsistent – there is no clear or consistent view on what it is. It is important that any spatial planning approach does not add an additional layer to the system, creating additional complexity and burden for stakeholders. Further, spatial planning is a resource intensive process. The legal weight given to spatial plans needs to reflect the level of resource invested in the process.

Spatial planning could potentially be a useful tool for identifying areas where renewable energy resources are located. However, strong and comprehensive national direction (in particular) would still be required to enable renewable generation activities, and would need to sit above spatial plans in the policy hierarchy. We do not consider it appropriate for councils to develop "specific strategies or policies for renewable energy development" (as suggested in bullet point (b)(ii)).

There are potential, but limited certainty benefits in identifying areas where certain types of renewable generation should not be developed (i.e. 'no-go' areas'). Any regulatory approach would need to provide adequate flexibility to allow for innovation. Further, and more importantly, given the nature of renewable energy and its source locations (coastal environments, natural landscapes), 'no-go' areas could be very limiting on new renewable generation. In implementing the NPSET, Transpower has continued to resist the National Grid being subject to 'no-go areas' for the very reason that it is hard, if not impossible, in many cases to avoid all sensitive areas. The issue is particularly relevant in defining wide-reaching landscapes or features as of high/significant natural importance, which could limit the use of huge areas of land and renewable electricity resources.

(c) The relationship between the NPSREG and freshwater management decisions: As discussed above, the NPSREG needs to provide a comprehensive regime for the management of renewable electricity generation activities. It is important that other national direction (existing or future) does not undermine the objectives sought by the NPSREG – including the current and proposed NPSFM. Transpower's submission on the *RM Review Panel Issues and Options Paper* sets out process improvements to provide for consistency between national direction (a rolling Board of Inquiry to consider proposed national direction (including integration across documents), and a requirement to review national direction as a package every ten years or sooner when needed to respond to particular triggers – see paragraph 105). In the shorter term, consistency can also be achieved

through the drafting of the NPSREG itself. Further, the revised NPSREG should include policies that any change in minimum flows affecting hydro-generation needs to be considered at a national level, so that the cumulative impacts on resilience and security of electricity supply, electricity prices, and negative impacts on climate change (due to consequential need for oil or gas-fired peakers) can be appropriately evaluated.

(d) Facilitating upgrades of new and existing renewable generation facilities: The NPSREG needs to address both new and existing technologies. The definition of renewable electricity generation refers to generation of electricity from particular sources, and should be updated to ensure all foreseeable future technologies are captured. There is considerable information about the effects of existing technologies, and therefore these could be enabled through comprehensive national standards (or NES). Future technologies may require a higher degree of assessment, but should be supported by enabling policies as a minimum. It is important that future technologies are not barred by an overly conservative 'precautionary' approach. Therefore, the NPSREG could provide guidance about appropriate levels of assessment for new technologies.

(e) Facilitating renewal of lapsing consents: Infrastructure providers should be encouraged to strategically plan for future works, including by seeking approvals in advance of planned construction. However, the lapsing of consents (and designations, for requiring authorities) is a barrier to such strategic planning. There are two issues relating to lapse dates. First, consents that have already been issued, and will shortly lapse. The reissuing of these consents could be supported by an enabling policy in the NPSREG (recognising the existing consent as a 'baseline') and a controlled activity rule in a NES. Second, longer lapse dates should be enabled for future applications for consent. This could be achieved through a NPSREG policy, and potentially matters of discretion/assessment criteria in a NES.

(f) Facilitating renewal of existing consents: Transpower agrees that the NPSREG (and associated NES) should provide for the renewal of existing consents, including to enable generation output to benefit from improvements in technology. The permitted baseline (s104(2) RMA) allows decision-makers to disregard the effects of activities permitted under a plan, but not activities permitted under an existing consent. It requires the decision-maker to consider an artificial reality, whereby the existing activity is presumed not to exist. The direction in s104(2A) RMA to consider the existing investment of consent holders is not sufficient. It does not reflect the reality that the environment and community has experienced while the existing consent has been in use.

(g) Development of transmission and distribution networks: As discussed above, we have read paragraph (g) as suggesting an intention to expand the NPSREG to include provisions for transmission and distribution networks. Transpower is supportive of this as a first step, although, our strong preference is for the NPSET to be strengthened. We are also concerned that if the NPSREG is strengthened, any benefit will be undermined if the NPSET remains weak.

It is inevitable that national direction on renewable electricity generation and on the National Grid will overlap (the NPSET and NPSREG already overlap in that the National Grid fits within the definition of "renewable electricity generation activities"). Dual regimes are still necessary because not all National Grid matters relate to renewable electricity generation (including demand-based connections to businesses) and the technical aspects of renewable electricity generation activities and National Grid activities are very different. Instead, the NPSREG must work with, and be

consistent with, the NPSET to ensure that National Grid connections for renewable electricity generation can be provided in a timely and cost-effective manner. However, amendments to the NPSREG alone are unlikely to be sufficient. The NPSET must also be reviewed and updated concurrently with the NPSREG, as discussed in response to Q7.21 below.

(h) Small-scale renewable electricity generation: We agree that the NPSREG should be strengthened to enable small-scale renewables – for the same reasons as stated in relation to renewable generation (albeit on a smaller scale). We also note the Blue Skin bay example, where consent was declined due to adverse effects on amenity values trumping the benefits of renewable generation – discussed further in answer to 7.4/Q82 below).

(i) Acknowledging local benefits and impacts of renewable electricity generation: A revised NPSREG should provide a comprehensive regime for addressing the positive and negative effects of renewable electricity generation activities. The potential conflict with other national direction needs to be addressed. Further, it would be efficient if relevant objectives and policies were directly inserted into regional and district planning documents.

Question 7.3 - How should the NPSREG address the balancing of local environmental effects and the national benefits of renewable energy development in RMA decisions?

As discussed in response to Q7.2 above, Policy 8 of the NPSET requires a "seek to avoid" approach to be applied to effects of the National Grid on high value natural areas. Policy 4 requires consideration of the extents to which the site, route and method selection process has avoided, remedied or mitigated adverse effects. A similar effects-management approach could be required by the NPSREG. Linear infrastructure, such as the National Grid, is constrained by the location of existing lines, new generation, and new demand, which it must connect. Renewable electricity generation activities are constrained by the location of natural resources, such as wind. In light of such circumstances, it will not always be possible to locate, design and manage renewable electricity generation activities such that the desired benefits are achieved, and adverse effects are all avoided. That 'perfect outcome' cannot be the bottom line in a world that requires a significant increase in renewables. Instead, the NPSREG should put in place priorities and processes to guide applicants and decision-makers to ensure balanced outcomes are achieved on a project-by-project basis, with the overall goal of increased REG being achieved at a national level.

We note that the Board of Inquiry considering the proposed NPSREG recommended a policy A.2 that required decision-makers to "*give greater weight to such national significance [of REG] over local environmental matters*" (particularly local amenity values). The Board considered that policy would promote the national significance objective in the NPSREG.[8] The Minister for the Environment did not accept that recommendation, based on concerns about a lack of clear definition of "local environmental matters" making the application of the policy uncertain where different section 6 and 7 matters were relevant.[9]

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[8] Report and Recommendations of the Board of Inquiry into the Proposed National Policy Statement for Renewable Electricity Generation, (March 2010), paras [51], [91].

[9] Ministry for the Environment. 2011. National Policy Statement for Renewable Electricity Generation: Summary of Board of Inquiry recommendations and Minister for the Environment's decision, page 9.

Question 7.4 - What are your views on the interaction and relative priority of the NPSREG with other existing or pending national direction instruments?

Transpower agrees with the conclusions of the Interim Climate Change Commission[10], Productivity Commission[11] and Ministry for the Environment[12] that the position of the NPSREG relative to other NPSs is weak.

As discussed in response to Q7.2 above, the lack of direction in the NPSREG is particularly problematic in light of the promulgation of other NPSs, the Supreme Court decision in *Environmental Defence Society Inc v New Zealand King Salmon Company Ltd* [2014] NZSC 38 and High Court decision *Environmental Defence Society Incorporated v Otago Regional Council* [2019] NZHC 2278. The lack of direction in the NPSREG means that generators have been in a more similar position to other infrastructure providers (who do not have the benefit of a NPS at all).

The relationship between the NPSREG and NZCPS is different from the NPSREG relationship with other NPSs. The RMA implicitly prioritises coastal issues through its separate sections addressing the NZCPS (ss56-58A) and other NPSs (ss45-45A). This reflects the key environmental issues that existed at the time the RMA was prepared, but not today's challenges. The impact of this differentiation has been limited to date, however High Court authority suggests it could become problematic – particularly given the likelihood of renewable electricity generation being located in coastal areas. In *Transpower v Auckland Council* [2017] NZHC 281 the Court said:[13]

> … the New Zealand Coastal Policy Statement …, and the NPSET, derive from different sections of the Act, which use different terms. Section 56 makes it clear that the purpose of the New Zealand Coastal Policy Statement is to state policies in order to achieve the purpose of the Act. In contrast, the NPSET was promulgated under s 45(1). Its purpose is to state objectives and policies that are relevant to achieving the purpose of the Act. Section 56 suggests that the New Zealand Coastal Policy Statement is intended to give effect to the Part 2 provisions in relation to the coastal environment. A national policy statement promulgated pursuant to s 45 contains provisions relevant to achieving the Resource Management Act's purpose. The provisions are not an exclusive list of relevant matters and they do not necessarily encompass the statutory purpose … the NPSET is not as all embracing of the Resource Management Act's purpose set out in s 5 as is the New Zealand Coastal Policy Statement.

We consider that the NPSREG is weaker than both the proposed NPSFM and NPS-Indigenous Biodiversity. The concept of Te Mana O Te Wai in the NPSFM, together with the protectionist policies mean that a realistic consenting pathway may not exist, even for nationally significant infrastructure. Transpower's submission on the *Action for Healthy Waterways* discussion document expands on these issues. Similar issues arise in relation to the strong policies in the NPS-Indigenous

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[10] Interim Climate Change Committee (2019). Accelerated Electrification. Available from www.iccc.mfe.govt.nz.

[11] New Zealand Productivity Commission. (2018). Low-emissions economy: Final report. Available from www.productivity.govt.nz/low-emissions.

[12] Ministry for the Environment. (2016). Report of the Outcome Evaluation of the National Policy Statement for Renewable Electricity Generation. Available from www.mfe.govt.nz/more/energy/national-policy-statement-renewable-electricity-generation/about-nps.

[13] *Transpower v Auckland Council* [2017] NZHC 281, paras [83-84].

Biodiversity, to the extent that it is a barrier to both renewable generation and Grid connections in its current form.

Question 7.5 - Do you have any suggestions for how changes to the NPSREG could help achieve the right balance between renewable energy development and environmental outcomes?

See response to Q7.3 above.

Question 7.6 - What objectives or policies could be included in the NPSREG regarding councils' role in locating and planning strategically for renewable energy resources?

Mapping of areas where renewable energy resources are located could potentially be useful. However, we consider that the role of locating and strategic planning should not be required of councils. This is due to the operational and functional requirements of generation infrastructure being within the knowledge of the infrastructure operator, rather than councils. We address spatial planning more generally, including its limits, in response to Q7.2(b).

Question 7.7 - Can you identify any particular consenting barriers to development of other types of renewable energy than REG, such as green hydrogen, bioenergy and waste-to-energy facilities? Can any specific policies be included in a national policy statement to address these barriers?

The potential for consenting authorities to be too conservative when faced with a consent application for new types of renewable electricity generation (or new technology) is a potential barrier. The application of a 'precautionary approach' could hinder the consenting of these REG activities. This is likely to be a particular issue in the coastal environment, where Policy 3 of the NZCPS requires decision makes to "*[a]dopt a precautionary approach towards proposed activities whose effects on the coastal environment are uncertain, unknown, or little understood, but potentially significantly adverse*". NPSREG policies to enable new technologies will need to address this potential barrier specifically (a general enabling policy will not be enough). A NES could minimise the risks associated with non-complying rules in plans, by providing a 'catch all' rule for renewable electricity generation activities that is discretionary at the most stringent.

Transpower's submission to the RM Review Panel suggested that a rolling Board of Inquiry be established to consider national direction, and there be a statutory requirement to review national direction regularly and in response to triggers. These mechanisms would help to ensure national direction is kept up-to-date in the face of new technologies (i.e. to add comprehensive standards for other types of REG as they become more understood).

Question 7.8 - What specific policies could be included in the NPSREG for small-scale renewable energy projects?

Transpower has limited technical expertise in relation to small-scale renewable energy projects that would enable it to comment on specific policy content.

However, we note that some of the challenges for small-scale renewable generation have been, or are, the same as for larger scale renewables. In particular, the Blue Skin bay example (summarised at page 58 of the discussion document) highlights the tensions between a weakly drafted NPS-REG and the elevation of amenity values in section 7 of the RMA. In that instance, amenity values outweighed the benefits of renewable generation.

As discussed at **XX**, it is important that the RMA provides a realistic approval pathway for renewable generation of any scale. Strong enabling policies are required. In drafting specific enabling policies, consideration needs to be given to the protectionist policies in existing NPSs (such as the NZCPS) and proposed NPSs (such as the NPS-IB and NPS-FM) to ensure they are not a barrier to renewable energy projects.

In the absence of a rolling review of national direction (as we propose in our 'Optimal Package of RMA reform"), this resolution between the various NPSs needs to occur in the NPS-REG (and any other NPSs that are being developed).

Question 7.9 - The NPSREG currently does not provide any definition or threshold for "small and community-scale renewable electricity generation activities". Do you have any view on the definition or threshold for these activities?

No Comment

Question 7.10 - What specific policies could be included to facilitate re-consenting consented but unbuilt wind farms, where consent variations are needed to allow the use of the latest technology?

A key issue is that applications for renewal of existing consents are considered afresh, without any formal recognition of a 'baseline' formed by the existing consents/activities (because the permitted baseline test is limited to plan rules, the existing environment test is focused on the off-site environment, and existing use rights don't apply in the context). Another key issue is that changes/variations to consent conditions under s127 RMA are limited by the scope of the original application for consents. Inevitably, new technology is often outside that scope (i.e. it is "materially different"), and new consents are required rather than a change/variation.

Transpower considers the NPSREG should include policies that enable the renewal of existing consents by recognising existing consents/activities as establishing a 'baseline' of appropriate effects. This policy direction should be supported by a controlled activity rule in a NES (or national planning standards), which allows the renewal of existing consents to be focused on conditions for managing effects, rather than whether or not consent should be granted.

Question 7.11 - Are there any downsides or risks to amending the NPSREG?

There are few downsides to amending the NPSREG, as it is weakly drafted and ineffective.

However, there are risks to amending the NPSREG in a vacuum. As discussed above, it is necessary to ensure that the NPSREG is comprehensive, and any potential policy conflicts with other national direction are resolved at the level of the NPSREG, rather than leaving that task to local plans. As

discussed in response to Q7.20 below, Transpower considers that the NPSET needs to be reviewed and amended in parallel so that the two documents work together to deliver the renewable energy development needed.

Scope National Environmental Standards or National Planning Standards specific to renewable energy

Proposal 7.2 - Scope National Environmental Standards for Renewable Energy Facilities and Activities or scope additional renewable-energy-related content for inclusion in the National Planning Standards

Question 7.12 - Do you think National Environmental Standards (NES) would be an effective and appropriate tool to accelerate the development of new renewables and streamline re-consenting? What are the pros and cons?

Yes - subject to the content and drafting of the document(s).

The key benefit of an NES is the immediate impact on the rule framework applying to activities, which avoids the delays and resources required to implement NPSs into local plans.

To maximise this impact, an NES would provide a comprehensive regime for renewable electricity generation activities. Transpower's experience with the NESETA demonstrates the issues that arise from a partial regime. The NESETA has proved useful for activities on existing National Grid lines, although a number of gaps have emerged over time, including not keeping up with changes in technology and industry standards. The lack of a NES for third party activities is a key issue however (as discussed at Q7.20 below).

The relationship between any NESREFA and plan rules also needs to be carefully considered. Section 44A RMA requires local plans to remove rules that duplicate or conflict with a NES, which includes the removal of more lenient rules, unless clearly set out in the NES. This has been an issue with NESETA which does not expressly allow for more lenient rules. Any NESREFA should not rely on planning rules determining its impact. For example, the definition of 'natural area' in NESETA is linked to planning rules, requiring Transpower to keep a close eye on relevant local authority planning processes. That is inconsistent with the objective of NESs of reducing the need to participate in planning processes.

The relationship between any NESREFA and designations also needs to be addressed (if the RMA is amended so that generators can become requiring authorities). Section 43D RMA means that designations cannot be used for activities regulated by an NES, reducing the consenting tools available for no clear purpose. Designations provide longer term flexibility than resource consents, and applicants should be enabled to choose the tool that is most appropriate to the project. This issue needs to be addressed as a priority. A simple option to address this issue is to amend s43D RMA to allow a NES to provide a tailored approach for its relationship with designations. A specific NES could therefore maintain the default approach in s43D, or provide flexibility for applicants to choose the appropriate tool in certain circumstances.

Finally, the document will need to be regularly reviewed and amended to ensure they continue to be fit-for-purpose (including to provide for new technologies).

Question 7.13 - What do you see as the relative merits and priorities of changes to the NPSREG compared with work on NES?

We consider that strengthening the NPSREG should be a priority over developing an NES – as a strong NPSREG is important to overcome barriers created by other NPSs.

However, we consider that both a NPS and NES would provide a beneficial package of national direction for renewable electricity generation. The strengthened NPSREG would set the policy framework (including national priorities) and the NES would set the rule framework. Both documents are needed to provide a comprehensive framework for renewable electricity generation. Both documents may be relevant to consenting (e.g. NPSREG policies will guide consenting of discretionary activities).

An NPS alone can lead to long and resource intensive processes to give effect to the document. For example, the NPSET addresses third party activities, but a NES on the topic was not progressed. This gap has required Transpower to invest considerable time and effort in ensuring local plans give effect to the policy direction in the NPSET. This issue could be mitigated in part by more directive policies or policies that are directly inserted into plans, however that would not address the rule framework.

A NES alone, unsupported by overarching policy, can result in debate about interpretation. Further, NPSREG policy guidance is needed for decision-making on some consent applications (e.g. discretionary activities) even with a NES in place.

Question 7.14 - What are the downsides and risks to developing NES?

A key downside is the impact on the ability to use designations, as discussed in response to Q7.12 above.

An emerging risk is the expanding suite of national direction. For example, the NESETA was intended to provide a near-comprehensive management regime for existing transmission lines, but the Proposed National Environmental Standards for Freshwater will introduce a new regulatory layer. The RMA does not currently address the relationship between different NESs. The relationship may be addressed in the standards themselves, but it may not be. For example, the Proposed National Environmental Standards for Freshwater specifically address overlaps with the National Environmental Standards for Plantation Forestry[14], but not other national environmental standards. This example suggests that it is not unreasonable or impractical to address overlaps between standards. It is critical that any NESREFA does not simply add another layer of regulation, but does result in simplification. The relationship with other NESs will therefore need to be specifically addressed in any document.

[14] It is proposed that the NESPF will prevail over the wetland rules in the NESF pending review of the documents.

Another key risk is the potential for overlap between the NESETA and a NESREFA given the definition of renewable electricity generation activities includes "the system of electricity conveyance". The line between the two regulatory documents will need to be clear to avoid confusion and (potentially) a doubling-up of regulation. We note that the discussion document (at "g" on page 62) states the NESREFA could potentially set out:

> "*the consenting framework for high voltage lines that are connected to REG facilities but are not part of the National Grid (Note: High voltage lines that are not part of the National Grid are not covered by the existing NPSET and NESETA.)*"

While the NPSET applies to all National Grid assets, the NESETA only applies to National Grid lines that were able to be operated and in existence at 15 January 2010. Accordingly, it does not apply to new lines (or substations).

Question 7.15 - What renewables activities (including both REG activities and other types of renewable energy) would best be suited to NES?

As noted in response to Q7.14 above, there needs to be a clear line between activities regulated by the NESREG and the NESETA to avoid confusion and (potentially) a doubling-up of regulation.

Question 7.16 - Do you have any suggestions for what rules or standards could be included in NES or National Planning Standards to help achieve the right balance between renewable energy development and environmental outcomes?

The rules for existing technologies could reflect the national benefits of renewable electricity generation, and assume approval unless there is a critical flaw (e.g. controlled or restricted discretionary status). The rules could ensure the positive effects of the project are considered (a key gap in the NESETA, as discussed below), and focus on ensuring adverse effects are appropriately managed through well-known best practice techniques.

Future technologies may require a higher degree of assessment, but a 'catch all' discretionary activity rule would ensure that non-complying activity status is not a barrier to such projects. Guidance on appropriate levels of assessment for new technologies (e.g. information requirements, assessment criteria) would assist.

Question 7.17 - Would National Planning Standards or any other RMA tools be more suitable for providing councils with national direction on renewables than the NPSREG or NES?

Transpower considers NPS and NES are more suitable for providing national direction on renewables, as national planning standards sit lower in the RMA hierarchy compared to NPS and NES. National Planning Standards must give effect to NPSs and be consistent with NESs (s58C RMA). Further, NPS and NES are more well-known and well understood planning tools, and this experience has taken many years to be developed. There is therefore less risk in developing NPS and NES.

Question 7.18 - Are there opportunities for non-statutory spatial planning techniques to help identify suitable areas for renewables development (or no go areas)?

There is no clear or consistent view on what spatial planning is. We consider it important that any spatial planning requirements are clear on what they intend to achieve and the benefits of the process.

The benefit of non-statutory spatial planning is that it could be updated more frequently and potentially without undue process.

Mapping areas where generation resource could be located, and also potential "no-go" areas could be beneficial. (Various maps of generation resource are available publicly.) A map of this kind at a national level may potentially assist in understanding whether there is sufficient resource available to meet our climate change commitments. However, it is not clear whether preparation of such a map requires a spatial planning process to be followed.

Question 7.19 - Do you have any comments on potential options for pre-approval of renewable developments?

Infrastructure providers should be encouraged to strategically plan for future works. Transpower agrees that a 'pre-approval' process that gives a high degree of certainty to an operator that they will obtain the required approvals is needed. Transpower's submission to the RM Review Panel proposed a "staged" approval process that would provide for strategic planning of nationally significant infrastructure.

The "staged" process would provide for a 'concept approval' to be obtained to enable strategic planning of infrastructure, with the detail to be determined through a 'conditions approval' stage (which could be many years later). A project would be identified as "nationally significant" similar to the existing process. The legal tests would require the national significance of the project to be recognised in the decision-making process. The information requirements for the 'concept approval' stage would be high level, with detailed plans and conditions considered at the 'conditions approval' stage. Public notification would occur at the 'concept approval' stage, with no or limited notification at the 'conditions approval' stage. Both stages would be managed by the EPA, with an Independent Hearings Panel as decision-maker. Appeals would be limited to points of law only.

Transpower prefers this "staged" approval process to options A to C set out in the Discussion Document.

Question 7.20 - Are the current NPSET and NESETA fit-for-purpose to enable accelerated development of renewable energy? Why?

No. Neither the NPSET nor NESETA is fit-for-purpose to enable accelerated renewables or demand connections for electrification of process heat in industry or electrification of transport. The NPSET contains gaps, requires avoidance of environments that are not practical or which are not appropriately subject to "bottom lines" and is generally weakly drafted in comparison to the existing and new NPSs –consenting barriers will result. See Q7.2 for a fuller discussion of these issues.

The NESETA does also contains gaps and has some workability issues – it has not kept pace with technology. It also does not apply to new lines, substations or cables.

We expand on these issues below.

The Productivity Commission has recommended that the Government "*prioritise strengthening*" the NPSET to ensure local authorities give sufficient weight to the role that the transmission network will play in New Zealand's transition to a low-emissions economy. It specifically recommended that the language of the NPSET become "*more directive*".[15] The Ministry for the Environment also recently undertook a review of the NPSET (and NESETA).[16] The review concluded in light of changes in technology and the significant programme of upcoming works "*the instrument could be revisited to support the Government's priority of "secure and affordable energy" … and move towards a climate-resilient Aotearoa New Zealand*".[17]

NPSET issues

The promulgation of new national direction, without properly resolving the relationship with existing national direction is resulting in conflicts, interpretation issues that result in litigation and the continued 'watering down' of what was intended to be comprehensive national direction for the National Grid.

See Q7.2 for the issues in relation to policy 8 of the NPSET and policies 11,13 and 15 of the NZCPS, in light of King Salmon.

In addition to the known issues created by NPSs developed after the NPSET, new NPSs are currently being developed. This new national direction is being produced in an ad hoc and siloed way, and will raise new interpretation issues as multiple documents need to be applied in planning and approval processes. The creation of new statements, without consequential review of the NPSET, also risks diluting the comprehensive framework that the NPSET was intended to provide for the National Grid. This could lead to additional barriers that make consenting new National Grid connections difficult, complex, slow and costly. The approach to interpreting the NPSET in this emerging context is likely to be more uncertain and onerous, giving rise to new risks for consenting for the National Grid.

Further, even with the NPSET in place, Transpower is required to actively participate in planning processes to advocate for planning provisions that give effect to the NPSET. This process is highly resource intensive and, even with Transpower's involvement, there are inconsistencies in the extent to which, and how, planning documents reflect the directions set out in the NPSET. By way of example, over the last 5 years, Transpower has participated in over 40 regional and district planning processes across New Zealand. Since 2013, the cost to Transpower alone is in excess of $10 million. There are several other parties also regularly involved in these discussions. It is highly inefficient for

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[15] New Zealand Productivity Commission, Low-emissions economy: Final report (August 2018), page 404.

16 Ministry for the Environment and Ministry for Business, Innovation and Employment. 2019. *Evaluation of the National Policy Statement on Electricity Transmission and National Environmental Standards for Electricity Transmission Activities*. Wellington: Ministry for the Environment and Ministry of Business, Innovation and Employment.

[17] Ministry for the Environment and Ministry for Business, Innovation and Employment. 2019. *Evaluation of the National Policy Statement on Electricity Transmission and National Environmental Standards for Electricity Transmission Activities*. Page 5.

these efforts to be repeated across New Zealand, where the planning outcome for the National Grid should be consistent across the country.

It is critical that the NPSET provide a comprehensive regime for all National Grid issues in all environments, and front-foot any potential conflicts with other national direction, in order to ensure it can effectively enable accelerated development of REG.

There are also a number of gaps and issues with the NPSET that need to be addressed:

- The NPSET is now 10 years old and the drafting is showing its age. It creates some uncertainties, particularly when the NPSET is considered alongside subsequent national direction (for example, the NPSET refers to high natural character areas, but the NZCPS subsequently introduced the concept of outstanding natural character areas). Another key issue is the different ways the term 'upgrade' is used throughout the document.

- The preamble does not reflect current resource management challenges (e.g. climate change adaptation and mitigation) and includes expressions of the law that are no longer correct following case law developments (e.g. *Environmental Defence Society Inc v New Zealand King Salmon Company Ltd*).

- The approach to managing the effects of the National Grid, including in high value natural areas, needs to be updated, and more direction provided. The NPSET needs to resolve potential tensions with other NPSs addressing management of environmental effects. The urban-rural approach in Policies 7 and 8 creates interpretation issues, and needs to be revisited. Policy 6 leads to pressure to underground lines, which does not reflect the cost of underground lines being 7-10x greater than aboveground lines. The approach to electric and magnetic fields is out-of-date, and needs to reflect the latest guidance.

- The approach to third party activities could be updated, and more direction provided, to reflect the approach that has now been agreed in most districts.

Requirements for objectives/policies to be directly inserted into regional policy statements, regional plans and district plans should also be considered to minimise the implementation burden on Transpower and councils.

Question 7.21 - What changes (if any) would you suggest for the NPSET and NESETA to accelerate the development of renewable energy?

See appendices for requested amendments to the NPSET, NESETA and new standards.

Question 7.22 - Can you suggest any other options (statutory or non-statutory) that would help accelerate the future development of renewable energy?

Yes. Transpower's submission to the *RM Review Panel* addresses broader resource management system reforms that would help accelerate the future development of renewable energy. Those reforms include recognition of climate change mitigation in the statutory purpose and principles, and other amendments to ensure that climate change is a relevant matter in resource management decision-making. Another helpful reform would be to make requiring authority status available to renewable energy generators.

Designations could also offer a tool to help accelerate the future development of renewable energy. In addition to allowing the requiring authority to use land for the designated purpose, designations restrict activities that would prevent or hinder the designated works, and provide landowner rights to access compensation. The role/scope of designations could be extended to occupation of the coastal marine area and regional consents.

Statutory improvements

Transpower's submission to the RM Review Panel seeks a number of improvements sought to the statutory framework for national direction to enable a more nimble response to new issues and technologies. In summary, those improvements are:

- A rolling Board of Inquiry could be established to consider submissions and provide recommendations on national direction. The Board could be supported by advisory groups on the particular issues addressed in each piece of national direction. It could also consider integration across national direction documents, and recommend consequential amendments where necessary. The rolling Board of Inquiry could also receive reviews of existing national direction, and be tasked with recommending amendments. f

- A requirement to review national direction, as a package, every ten years (as for local authority plans) and/or sooner when needed to respond to particular triggers (such as significant case law or new international obligations) would ensure that documents are kept up-to-date, fit for purpose, and aligned as a broader suite of national direction.

Transpower's submission to the RM Review Panel also notes the contenting challenges that face National Grid upgrade and development projects that are not regulated by NESETA, even with the NPSET in place. The process for obtaining approvals for major infrastructure projects have become significantly more onerous over the lifetime of the RMA. The approvals processes under the RMA also do not provide for long term strategic planning and certainty over a 20-30 year horizon. The existing bespoke process for "nationally significant proposals is accordingly extremely resource intensive, and few infrastructure providers have chosen to use it. Transpower's submission proposes improvements to the current "nationally significant proposal" process to better recognise the critical importance of infrastructure and respond to the particular approvals' challenges faced by infrastructure. Those process improvements would support improved national direction for the National Grid.

These amendments to the statutory framework are focused on long term improvements. In the short term however, improvements to the national direction for the National Grid are needed urgently and can be progressed within the current statutory framework.

Section 8: Supporting renewable electricity generation investment

Transpower supports MBIE's intent to significantly increase the proportion of renewable generation in the electricity supply.

MBIE has asked for input on six potential areas for policy action. Transpower has more expertise in some of these areas than others and we feel that we can provide MBIE with value by providing detail in these areas. As such, we have discussed demand side participation and strategic reserve in detail, while in other areas we have not provided as much detail.

Demand side response and participation is essential in ensuring the affordability of New Zealand's transition. Increasing the level of demand side participation will increase the pace and stability of New Zealand's shift to renewable electrification, and lower the cost and equity concerns. For this reason, we spend some time exploring MBIE's suggestion of a national Distributed Energy Resources Market to facilitate demand side participation by New Zealand businesses and households.

The strategic reserve is a conversation about ensuring the electricity system can respond to the dry year and winter evening peaks in a system of nearly total renewable energy sources. MBIE is to be commended for progressing this discussion. Transpower is not sure that a strategic reserve as hypothesised in the discussion document is the best option, and encourages a sector conversation on the range of options to address these very real policy objectives.

Power Purchase Agreement (PPA) Platform

Our analysis in *Whakamana i Te Mauri Hiko* indicates that renewable generation provides a low-cost path to meeting the forecast growth in electricity demand. Modelling undertaken in the project finds that due to declining renewable generation technology costs and increasing carbon prices, renewable electricity is forecast to represent 95% of electricity supply in 2035 in our Accelerated Electrification scenario.

We acknowledge that a number of new renewable energy plants are being built now in the absence of additional policies. The possible emergence of commercial PPAs could accelerate this transition.

Option 8.1 - Introduce a Power Purchase Agreement (PPA) Platform

Question 8.1 - Do you agree there is a role for government to provide information, facilitate match-making and/or assume some financial risk for PPAs?

Transpower agrees that a PPA platform and market should be introduced, but we are agnostic as to who provides it.

A functioning PPA market would reduce barriers to entry for renewables investment. Large energy users could also hedge their electricity pricing for many years in advance (10+) which provides greater price certainty than is available via, for example, the ASX electricity futures. Additionally, it is likely to flow through to wholesale market benefits through over the counter competition.

Question 8.2 - Would support for PPAs effectively encourage electrification and new renewable generation investment?

Yes, it is Transpower's view that a PPA platform and market would encourage electrification and new renewable generation investment.

It would provide potential new generation build with access to more potential demand sources, increasing liquidity for new generation build.

It could also provide energy users with access to power with price certainty for a significant period of time. This could 'underwrite' increased electrification investment, particularly where uncertainty over future electricity prices is an impediment to investment in increased electrification for energy users.

Question 8.3 - How could any potential mismatch between generation and demand profiles be managed by the Platform and/or counterparties?

If an electricity purchaser has an offtake with an intermittent renewable energy generator, then it may need to hedge the remaining firming generation either via a bilateral contract with a generator via the futures market or via an arrangement with their retailer.

Question 8.4 - What are your views and preferences in relation to different options A to D above?

Option A – Contract matching service

It is Transpower's view that this could be the form that a medium-term mature PPA market in New Zealand might take. It provides many of the benefits of a clearing house but does not require the volumes of transaction that are required to make a clearing house worthwhile.

Option B – State sector-led

If the government wishes to encourage new generation build, then the establishment of a PPA platform is desirable. Focusing on state sector conversions first may provide a strong mechanism to begin the process of developing this market.

Option C – Government guaranteed contracts

If the government opts for Option B then the early PPA market would be developed with implicit government guarantees. Once wider adoption seems likely, then the need for government guarantees for private transactions could be assessed with better information.

Option D – Clearing house

This would be an ideal long term end state for a PPA market, however the size of market in New Zealand must be carefully considered before adopting this model.

Questions 8.5-8.6

No Comment

Demand-side participation and demand response

In Transpower's view, this is one of the most important topics in MBIE's discussion document. Demand-side participation offers a significant opportunity to ensure that New Zealand's transition to a low carbon economy is more renewable and affordable.

Demand-side participation provides flexibility to the electricity system which supports a greater amount of renewable electricity integration. The expected major increase in intermittent generation on the electricity system – wind and solar, whether connected directly to the Grid or embedded in households or in distribution networks – will materially increase volatility of supply. To balance this in real-time we currently rely on flexible hydro plant, but that can only do so much. To meet the increasingly volatile supply we will also need to harness demand flexibility. Fortunately, the potential for demand-side flexibility increases as the penetration of Electric Vehicles (EVs), smart appliances and stationary batteries increases.

Our modelling in the *Whakamana i Te Mauri Hiko* project suggests that through the 2020s and 2030s there will be an exponential increase in the number of distributed energy resources (DER) in New Zealand, as illustrated below. Development of markets for DER needs to continue at pace in order to maximise the economic value of these DER and ensure their efficient integration into the system.

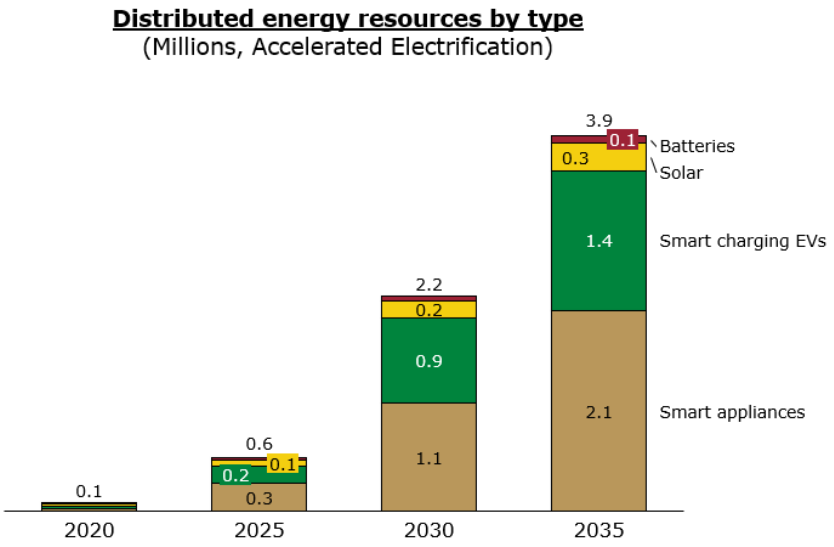


Figure 1: Forecast Distributed Energy Resources out to 2035

Demand-side participation also has the potential to lower the overall cost of transitioning the economy to renewable electricity. Costs for electricity network infrastructure are largely driven by peak demand rather than volumes of energy. Effective network peak pricing combined with demand-side participation provides an opportunity to transition large volumes of energy to low carbon sources while limiting peaks, and therefore the cost to New Zealanders.

Our modelling in the *Whakamana i Te Mauri Hiko* project forecasts a compound annual growth rate (CAGR) in energy demand increasing from about 1% in the last two decades to 1.7% over the next three, with growth in peak demand increasing far more slowly from 0.8% to 1%. This leads by 2050 to 68% growth in energy, but only a 40% growth in peak demand, as illustrated below:

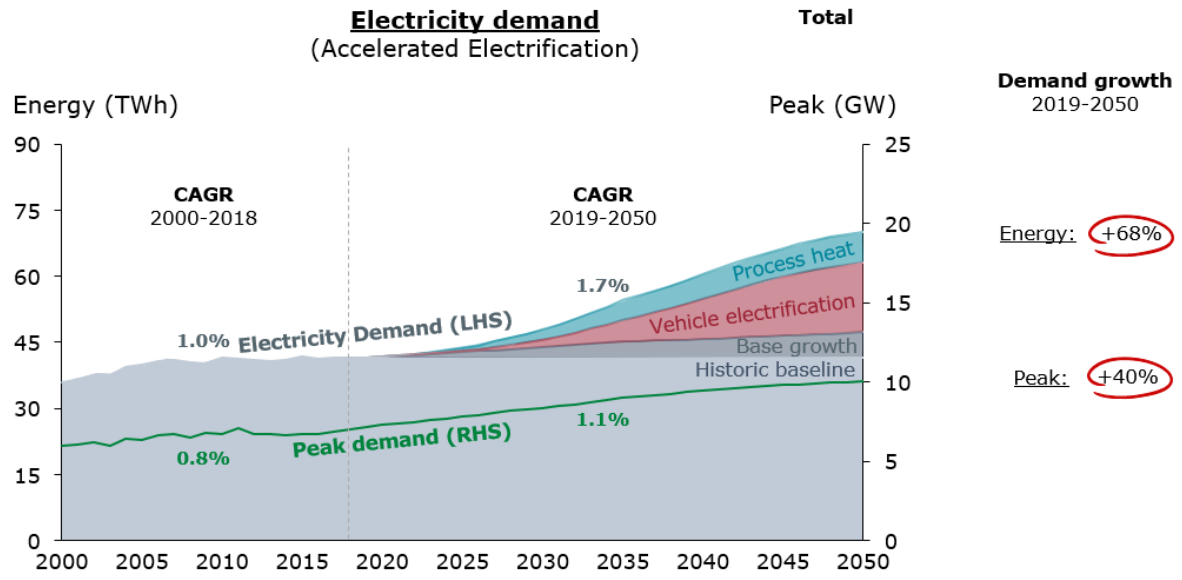


Figure 2: Forecast electricity growth out to 2050

This divergence in energy demand growth and peak demand growth is based on assumptions that include effective demand-side participation and uptake of smart technologies like smart chargers for EVs.

In addition to decreasing the cost of electricity transmission, reducing peaks also lowers the need for peaking generation plant. This is significant because peaking is a role that is likely to continue to be filled by gas generators for the foreseeable future. By limiting peak growth and flattening daily demand variation, demand-side participation can reduce the need for gas peaking plants.

Conversely, not effectively managing peaks during such a significant increase in electricity demand could have severe impacts on electricity affordability and equity. For example, it will be important as we convert New Zealand's vehicle fleet to EVs that we ensure that smart EV charging enables us to avoid unnecessary peaking issues arising. The illustration below portrays a 2035 daily demand profile with and without smart EV charging and time of use (TOU) pricing, demonstrating the large difference this could make to peak use. By way of context, if this 1.9GW of peak capacity was to instead be met with gas-fired generation, the total cost of these gas generators and associated transmission and distribution infrastructure would be approximately $3 billion. This is relevant not only to the overall cost of the transition but also the fairness – we must avoid a situation where the benefits of EVs fall to the households who can adopt them early, while the costs of any unnecessary peaks are socialised to those who are unable to adopt EVs.

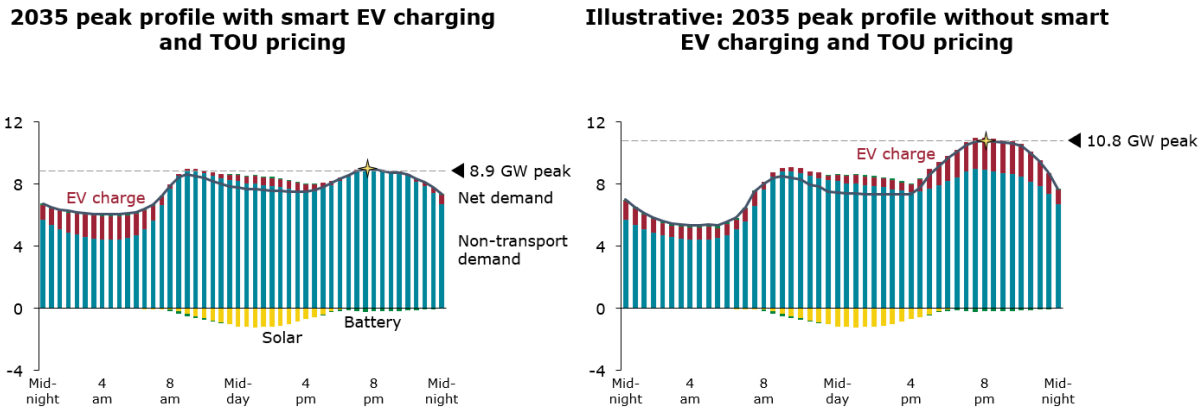
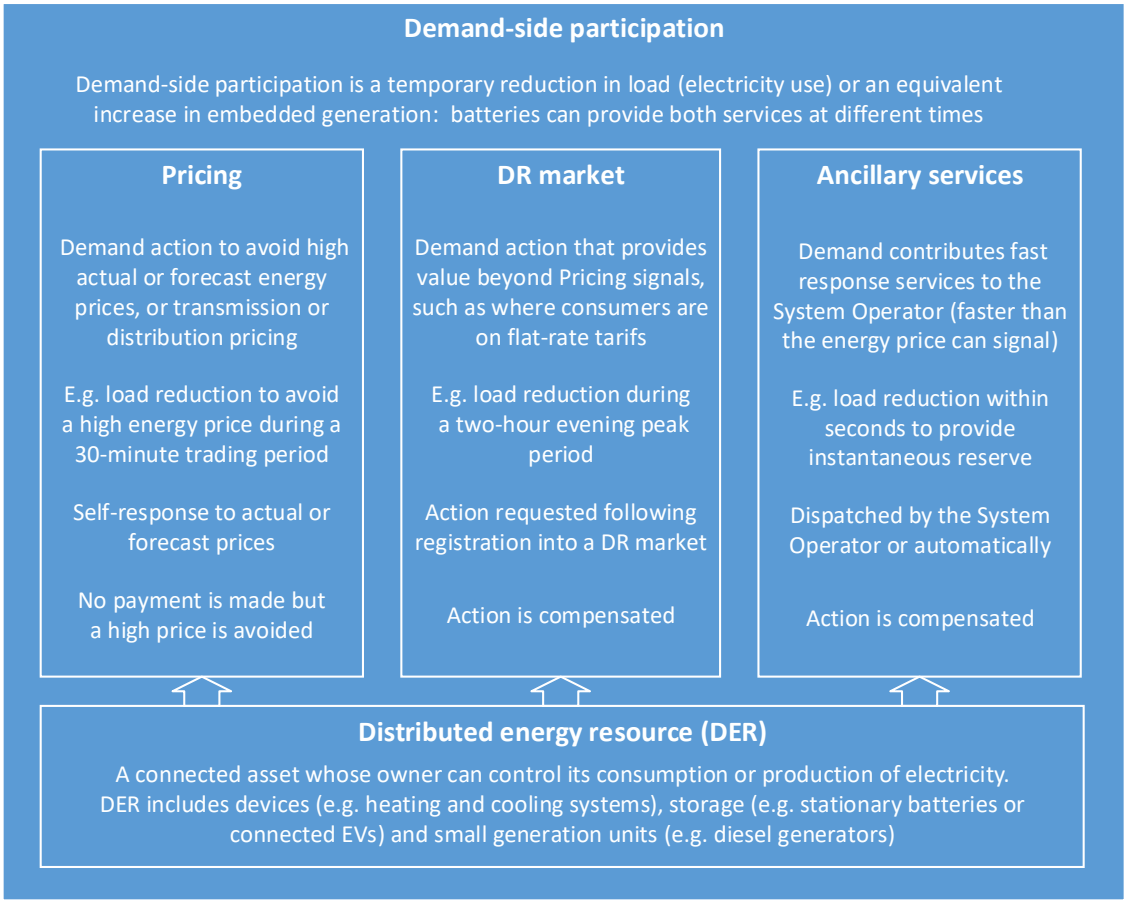


Figure 3: Effective peak management minimises the cost of New Zealand's transition to a low carbon economy

Terminology for demand response

Before we outline potential options for demand side management, it can be helpful to provide an overview of the different terms that relate to this topic:

Benefits of Demand Side Management



To facilitate a meaningful scale of demand response some market-making infrastructure will be needed. However, the modest cost of establishing a DR market for New Zealand could realise disproportionate benefits by:

- Avoiding unnecessary investment in peaking generation (typically gas-fired)
- Avoidance of transmission and distribution investments
- Encouraging renewable generation through providing the demand-side flexibility required to firm intermittent energy (wind and solar), and so enable greater quantities of renewables while maintaining system security
- Encouraging consumer investment in renewable energy solar/battery or wind/battery systems
- Encouraging electrification through enabling the full value of assets such as process heaters and batteries (including those in EVs) to be realised, and hence bolstering their business cases

Enabling Demand Side Management

For demand-side participation to be effective it will require policy development in four areas: pricing, DR markets, technology standards and DR platforms. In overview:

1. **Pricing**: The current energy price sends strong time-of use signals to minimise the cost of electricity production and transmission congestion, which will get even stronger with the planned introduction of real-time pricing (RTP)[18]. However, the energy price does not reflect network investment costs, does not reflect distribution network congestion, and is often muted by the prevalence of flat-rate retail tariffs. Transmission and distribution peak pricing supported by retail time-of-use pricing is essential to incentivise and reward consumers for investing in distributed energy resources (DER) and providing demand response (DR). Without the correct price signals, customers are unable to respond to minimise their price and hence system costs. As Grid owner, Transpower is especially concerned that transmission pricing retains and continually improves its ability to send peak price signals to encourage the economic shifting of energy consumption from peak periods, and thereby minimise the need for avoidable transmission investment.

2. **DR markets**: DR market development is required to enable new value streams to be accessed by consumers, and 'fill the gaps' that energy and network pricing does not address. In a sense, prices provide the primary 'stick' incentive for demand response to avoid high prices, while DR markets provide a secondary 'carrot' incentive to reward efficient response. This would provide some technologies with the true economic value they provide. For example, to incentivise battery investment, the market must ensure consumers are able to be rewarded for multiple services valued by a range of stakeholders. Work undertaken by the Rocky Mountain Institute has identified that distributed batteries can provide 13 services ranging from consumer demand management and solar generation time-shifting, to investment deferral for network owners and system stability services for the system operator.[19] The illustration below highlights the importance of unlocking the additional value streams in order to incentivise efficient levels of distributed battery investment:

[18] In industry conversation, there has been concern raised that the introduction of real-time pricing (RTP) will create conflict with DR markets. We envisage that for the foreseeable future demand response will be operated hours ahead (e.g. the request for demand to respond to a 5pm evening peak might be sent at 3pm) so there will be no conflict. Forecasting will need to be updated to reflect DR action more fulsomely.

[19] The Rocky Mountain Institute's '*The Economics of Battery Energy Storage'* (see rmi.org/insight/economics-battery-energy-storage/) provides a detailed description of batteries potential services and value streams: we have interpreted this and other issues for the New Zealand context in our papers on *Battery storage in New Zealand* (see www.transpower.co.nz/about-us/transmission-tomorrow/battery-storage-new-zealand).

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Summary of distributed battery value streams

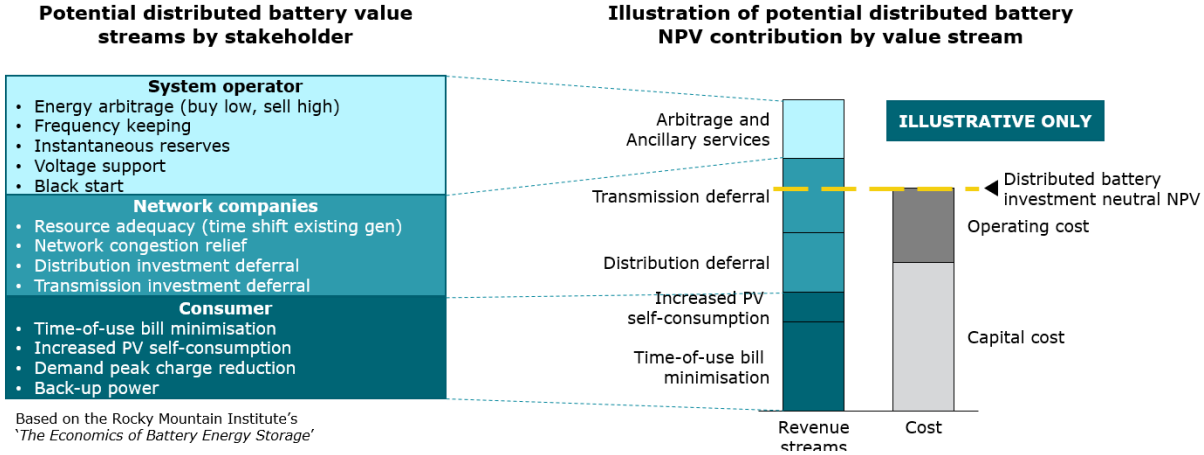

Figure 4: Value streams that DER owners can offer

3. **Technology standards**: Technology standards need to rapidly and continually evolve to ensure distributed technologies such as solar inverters, residential batteries and EV chargers are able to connect and communicate effectively with New Zealand's grid. We already have non-compliant DER on the system, and need to both limit this before it causes security issues, and develop a workable process for developing and maintaining standards as technology changes. Incentivising the use of smart chargers for EVs will be especially important because it will alleviate the risk that a sub-set of less price sensitive consumers might choose to continue to charge on-peak, despite higher prices, and trigger ultimately unnecessary network investment, the cost of which is then spread across all consumers. We acknowledge that issues relating to EV charging infrastructure are outside the scope of this consultation, but improving our price signals, DR markets and technology standards will all be important pre-requisites for its efficient growth.

4. **DR platforms**: Software platforms will be required to allow for consumers' DER to interface with DR markets, electricity networks and the electricity system. We discuss DR platforms in more detail below.

Demand response (DR) platforms

Distributed energy resources (DER) are growing in number and variety. Heating and cooling systems are DERs that are extensively deployed at industrial, commercial and domestic levels. Batteries are here and from our modelling - and in line with overseas markets - we expect their number to increase exponentially. Enabling DER to be deployed and integrated effectively while optimising consumer returns on DER investments requires a platform that connects DER with those that value its response: distribution and transmission owners, the system operator, and retailers. Such a platform is known as a DR platform[20].

Without a DR platform, consumers may not be able to contribute DER; aggregators, retailers and network companies may not be able to interconnect between customers and the physical network;

[20] DR platforms are sometimes referred to as Distributed Energy Resource Management Systems (DERMS) or Demand Response Management Systems (DRMS).

and system operators may lack visibility of and ability to integrate DER which could compromise system security.

An effective DR platform supports security of electricity supply in four ways. It ensures consumers can get the most out of their DER investments, incentivising them to invest in technologies that can respond to price and reduce utility scale peak demand pressure. It enables transmission and distribution owners to better manage congestion in their networks. It enables alignment with technology standards for active DER, as that can be made a condition of DER registration. Finally, a DR platform enables existing retailers, along with new players, such as aggregators acting as virtual power plants (VPPs), to offer their customers competitive products and services, promoting innovation in DER use without compromising system security.

DR platforms with the capability to perform the following market-enabling services are becoming established technologies:

- **Registration** so that consumers or 'prosumers' can offer their DER services and conditions of response, e.g. price and required notice for response
- **Aggregation** so that multiple small sources can be combined as a virtual large source (including virtual power plants (VPPs) but also for example virtual grid-scale batteries aggregated from multiple distributed batteries including EVs, and large load reductions aggregated from a myriad of consumer appliances)
- **Instruction** to DER owners to respond, whether automatically or manually
- **Verification and settlement** of DER response
- **Communications** to support the above services (there are international standards for DR communications protocols).

Options for a DR market for New Zealand

Transpower has recently investigated how DR platforms could be used to operate a DR market for New Zealand. We have considered the IPAG's *Advice on creating equal access to electricity networks*[21], the ENA's *Network Transformation Roadmap*[22] and Australia's *Open Energy Networks*[23], along with our own DR experience. Transpower has reviewed these and identified some draft principles and three conceptual DR market options. This is our current thinking and we would like to feed these ideas into the dialogue for further discussion.

We believe that development of a DR market for New Zealand should satisfy a number of principles:

- **Simple and profitable consumer participation**: It should be easy for consumers or prosumers who own DER to engage in the market and find the highest value uses for their DER. Ideally, a consumer with a DER could register it once to access multiple markets, deciding who to offer

[21] Innovation and Participation Advisory Group (IPAG): www.ea.govt.nz/development/advisory-technical-groups/ipag

[22] Electricity Network Association (ENA): www.ena.org.nz

[23] Conducted by the Australian Energy Market Operator (AEMO) and the Australian Energy Networks Association (ENA): www.energynetworks.com.au/projects/open-energy-networks

any DER control to and under what conditions (e.g. price and required notice for response). Increasingly one can expect that products and services (devices and apps) will support 'plug and play', and will be imported as well as home-grown in New Zealand. We must make it easy for consumers to use these.

- **Support multiple markets**: It should be easy for retailers, aggregators and network companies to establish markets for demand response to address their needs and provide value to DER owners. A DER owner should be able to "value stack" across markets to obtain maximum return from their investment, to incentivise efficient investment in DER, and to maximise DER's ability to support the system. For example, when providing services to Transpower as Grid owner for peak reduction, the DR provider may also be able to access value from energy or ancillary market benefits. This would provide some technologies with the true economic value they provide. This will increase competition, provide incentives to renewables investment and electrification, and avoid unnecessary network investment.
- **Encourage competition, innovation and customer choice** in the provision of DR services for customers. These principles are always important, but particularly so for demand-side participation as it is an emerging rather than mature activity, in New Zealand as it is overseas.
- **Functional integration with the wholesale market**: To maximise value, the DR market needs to operate at wholesale as well as retail levels, with the ability for aggregated DER to be bid and offered into, and be dispatched by, the market systems as a virtual large dispatchable-demand load, virtual power plant (VPP) or virtual large battery. For DER to participate in these markets, it is important that rules and market systems are made technology agnostic to ensure that DER can offer their value. This will also increase visibility of actual and planned DER activity to the market and System Operator, facilitating its effective integration across the network. Consideration will need to be given to the means of aggregating DER that are embedded behind multiple GXPs to avoid interference with congestion management.
- **Support secure system operation**: An active DR market will, in general, support system operation through the demand-side engaging with the market and easing network congestion. Demand-side markets must integrate seamlessly into system and market operations, by informing the System Operator's real-time and planning-time security analysis. There is a risk that multiple value streams (e.g. transmission deferral, distribution deferral, energy etc) could lead to physical 'double-dipping' whereby DR services are provided simultaneously into the same value stream (e.g. into the energy market twice), which could compromise system security and lead to market failures. Information on connected DERs and actual and planned DR activity will need to be readily available to the System and Network Operator, to prevent this and to inform their real-time and planning-time security analysis.
- **Minimise transaction and industry costs**: The costs of participating in DR markets should be minimised to lower barriers to entry and increase participation. Functional integration of DR platforms using for example the existing demand and generation bid, offer and dispatch processes could provide an efficient path to including DR.
- **Evolutionary approach**: DR markets are emerging in New Zealand. DER markets must be allowed to evolve naturally over time with the changing penetration of DER and rapid shifts in energy technology. We should not try to 'solve' the DR market today with an enduring, one-size-fits-all solution but instead be comfortable with actively monitoring and incorporating changes to design when required.

The three conceptual options for a DR market for New Zealand that we have identified are centralised, decentralised and hybrid, which we discuss and illustrate in turn below.

Centralised DR market

In this model a single DR platform operates the entire national DR market. Consumers with DER who want to participate in the market would be required to do so directly through this platform.

An issue here is that the operator of a single, centralised DR platform may not be able to manage the close relationships with small consumers and their small DER that retailers and aggregators could achieve via their platforms.

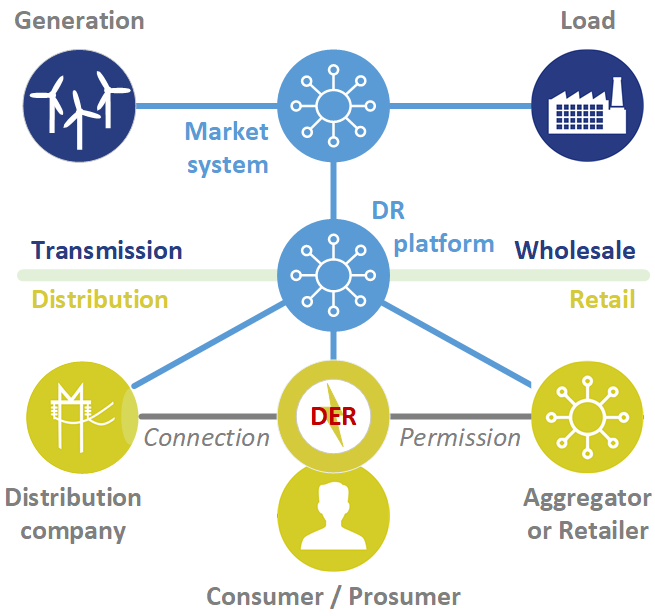

Figure 5a: A conceptual framework for a centralised DR market for New Zealand

Decentralised DR market

In this model any number of DR platforms can exist and can interface directly with the wholesale market. Potential participants with DER could choose which platform they want to interface with.

Ensuring that the DR platforms can interface effectively with the System Operator is an important design consideration for the decentralised market.

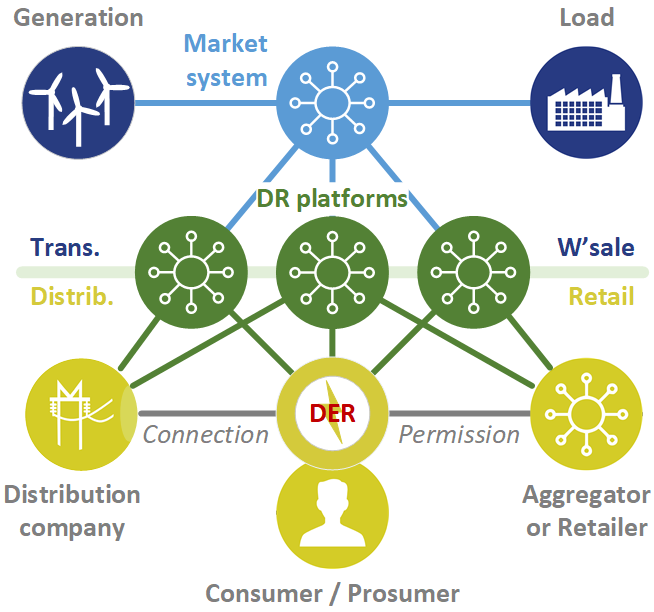

Figure 6b: A conceptual framework for a decentralised DR market for New Zealand

Hybrid DR market

In this model there is a central DR market portal (itself a DR platform) that collects and collates bids from any number of other DR platforms, providing a single DER interface to the market system. Aggregated DER could be bid and offered as 'dispatchable demand', a virtual power plant (VPP) or virtual large battery. The DR market portal becomes a point at which one or many DR platforms interact with the wider electricity market systems.

Other DR platforms could operate in the retail markets and distribution systems, but could only participate in the wholesale market by aggregating into the central DR market portal.

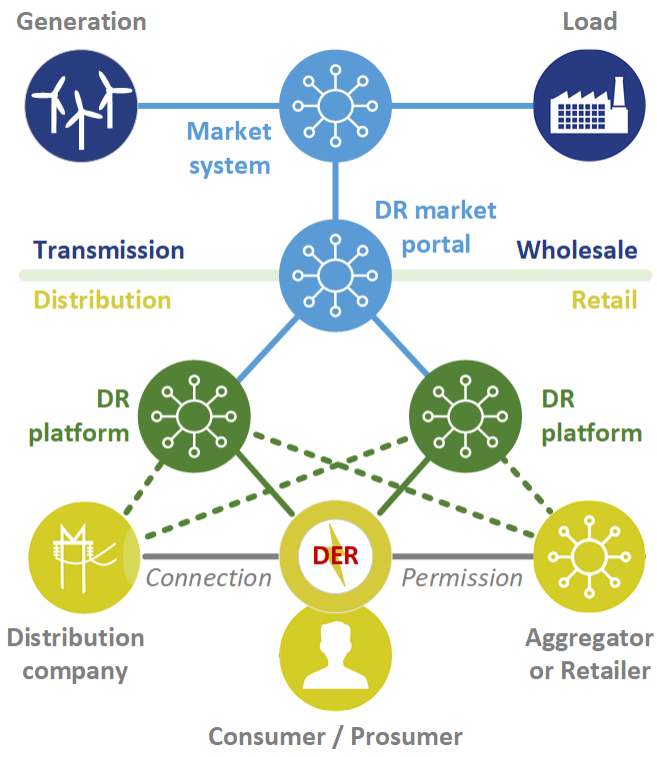

Figure 7c: A conceptual framework for a hybrid DR market for New Zealand

We have also developed a few general observations relating to DR markets:

- Communications between DR platforms, DER and DER owners are critical. International, open-source DR communications standards have emerged and continue to evolve: we should use them.
- Traditionally, much DR has been from diesel generators which are relatively cheap to run but may not produce the best decarbonisation outcomes. 'Green' DR products could easily be developed and offered, providing further value to and hence encouraging investment in electrification and small-scale renewable generation.
- While some DERs can respond at short notice e.g. minutes or less, some DERs such as industrial processes require longer notice e.g. hours. Another key enabler of effective demand response market is therefore the hours-ahead forecasts for both price and peak MW. Investment in improved load forecasting, including of embedded intermittent generation (wind and solar), and actual or planned DR activity, is likely to be warranted.

Implementation

There would need to be visibility of DER sources, and actual and planned DR activity to System and Network Operators to avoid creating security issues as DR markets take off: this would be a low compliance cost given that active DER will need to register in at least one DR platform or, preferably,

a central verified DER register. Creating access to the wholesale market, such as through a DR market portal, would require additional rules on aggregation: a subject the Electricity Authority is progressing. There are international standards for many of the market-enabling services and Transpower has already adopted some.

For these reasons, it would be quite achievable to start a DR market for New Zealand and expand and evolve it as we learn. We are in favour of such an evolutionary approach. We predict a significant ramp-up in intermittent generation, DER and base demand from around the mid-2020s. We therefore believe there is urgency to implement a DR market for New Zealand in the early 2020s in readiness for this, and to incentivise efficient DER investments. We are keen to work with the industry and regulators to explore and start implementing the right DR model for New Zealand.

Option 8.2 - Encourage greater demand-side participation and develop the demand response market

Question 8.7 - Do you consider the development of the demand response (DR) market to be a priority for the energy sector?

Yes, Transpower believes that the development of a demand response market is a very important priority for the energy sector. Transpower predicts a significant ramp-up in intermittent generation, DER and base demand from around the mid-2020s. We therefore believe there is urgency in implementing a DR market for New Zealand in the early 2020s in readiness, and that this implementation is achievable.

We agree with your analysis and offer the following additional considerations.

Within New Zealand's electricity system, there is an increasing pool of Distributed Energy Resources (DER) including small generation plant such as embedded solar, wind or diesel generators, with or without an integrated battery, controllable heating and cooling technologies such as cool stores: indeed, practically any device that consumes or generates electricity. Some such DER is already participating in local or national DR pilots. Ripple control of hot water heating is a long-established and effective form of DR for distribution network management, in which compensation is provided through reduced tariffs. The widespread adoption of this capability by distribution networks demonstrates the value that they derive from demand flexibility.

As EVs and static battery penetration increases, it is foreseeable that within five to ten years its contribution will be significant: already in California a network of 6000 EVs provides a 30MW/70MWh virtual power plant (VPP). The management of charging and use of DER to provide electricity within the network enables distributors to prevent uncontrolled peak use (such as by EV charging) which could result in unnecessary investment in thermal peaking generation and network capacity. Markets and management would encourage efficient levels of investment in DER.

Improving network peak pricing is crucial. Ideally, demand would respond directly to market price signals. The current energy price is calculated with great precision with 30 minute (soon to be 5 minute) and by-GXP resolution. Network prices are much less precise: transmission pricing does signal peak use, but through a high-level 'RCPD' signal which could be improved upon. Some

distribution pricing already has peak signalling, and there is ongoing work and some progress on improving this.

However, such prices still need to reach the consumer. Current retail pricing mechanisms do not ensure that pricing signals reach all end users and potential DR providers. Time of use pricing is being promoted, but consumers can choose their preferred tariff structure from a competitive retail market. New Zealand is not unique here – the same issues arise overseas, and the accepted, emerging solution is to fill this gap with what have come to be known as DR markets, in which DER response can be rewarded for the contribution it makes to the wider system.

DER can contribute significantly to system support too: those ancillary services such as frequency keeping and instantaneous reserves that need to act much faster than can be achieved through 5 or 30-minute price signals.

Some international markets have calculated the value and impacts of the participation of DR on their wholesale electricity market. In the Texan ERCOT network (around four times larger than the NZ market) managed DER with wholesale market interaction has been valued and estimated to save Texan consumers US$3 billion over 10 years in price reductions. There are expected additional savings on distribution and transmission investments.

The role that DER can play in a DR market and for system support are addressed in the response to the questions below.

Question 8.8 - Do you think that DR could help to manage existing or potential electricity sector issues?

Yes. Improved network pricing signals and expansion into a full DR market is a priority for managing increasing intermittent generation as well as peak electricity use and hence peaking generation and network congestion requirements. Some DER technologies lend themselves ideally to providing frequency keeping and instantaneous reserves services, and in future perhaps new services to firm generation intermittency and support voltage.

While we agree with MBIE that “DR markets alone will not deliver significant growth in renewables nor encourage demand-side electrification at scale”, such a market can be a real value-multiplier. That is, the modest cost of establishing a DR market could realise disproportionate benefits by:

- Avoiding unnecessary investment in peaking generation (typically gas-fired)
- Avoiding transmission and distribution investments

- Encouraging renewable generation through providing the demand-side flexibility required to firm intermittent energy (wind and solar), and so enable greater quantities of renewables while maintaining system security
- Encouraging consumer access to value streams and hence investment in renewable energy solar/battery or wind/battery systems
- Encouraging electrification through enabling the full value of assets such as process heaters and batteries (including those in EVs) to be realised, and hence bolstering their business cases.

Question 8.9 - What are the key features of demand response markets? For instance, which features would enable load reduction or asset use optimisation across the energy system, or the uptake of distributed energy resources?

DR markets need to provide the flexibility to accommodate both different DER technologies and different consumer preferences. For example, some industrial DER may require hours of notice to operate, while other DER such as batteries can react almost instantaneously. Such flexibility will allow the full value of DER to both its owner and the system to be realised, encouraging efficient generation, network and DER investment. DR markets need to provide this flexibility for different users too – system operator, network companies (transmission and distribution), energy market (e.g. VPPs) and enable competition amongst aggregators to drive innovation.

The net position of DR and demand at any point in a distribution or transmission network needs to be visible to the distribution operator and/or the system operator to ensure that system and network security is maintained, and load forecasts are not compromised. DR markets should enable and encourage new participants and provide a central verified register to ensure that DR offers are operationally effective. The overall DR market needs to be designed to interact with the wholesale electricity market so that, for example, virtual power plants can be active participants.

The ability for DER to access multiple DR markets as well as ancillary services (with appropriate safeguards to prevent physical 'double-dipping') will enable DERs to 'value stack' and contribute to multiple markets. For example, when providing services to Transpower as Grid owner for peak reduction, the DR provider may also be able to access value from energy or ancillary market benefits. This would provide some technologies with the true economic value they provide. Batteries are an example that can provide many different types of economic benefit simultaneously, but currently batteries can access few of these value streams: until this is addressed, there will be uneconomically low investment in these promising new technologies.

Transpower is developing thinking on options for how such markets could evolve in New Zealand, discussed above (and described at a higher level in our soon to be released *Whakamana i Te Mauri Kio – Powering our Energy Future* white paper, which updates and expands on our 2018 *Te Mauri Hiko*).

With regard to the idea of setting up a centralised distribution system operator (DSO) to work with Transpower and other DR market participants, we have found the term DSO to mean very different things to different parties. We believe that introducing a DR market for New Zealand would provide distribution companies with services that enable them to manage network congestion, hence providing a useful 'DSO' capability with no additional agency.

The transition from our centralised grid supply model to a fully interactive DR market needs to be staged over time. Effective changes to enable DR to be established as bilateral contracts with visibility to the System Operator and the distribution company would be an effective first step.

As the DER resources and participants' interest in purchasing DER grows it may be effective to form an interim flexibility market that enables a trading and aggregation platform that intersects with the System Operator and the wholesale market.

Our preference for a staged approach is drawn from our experience in valuing and aggregating DR through our development programme which started with our fist DR pilot in 2007.

Question 8.10 - What types of demand response services should be enabled as a priority? Which services make sense for New Zealand?

A game-changer for demand response in New Zealand will be batteries, whether stationary or in EVs, and whether or not coupled with generation such as solar or wind. We should design our systems, standards and rules to include batteries, but they should be flexible enough to accommodate all forms of demand response. Priority should be given to:

- effective and consistent peak pricing in both transmission and distribution pricing methodologies
- introducing a DR market for New Zealand, requiring some Code changes (e.g. to allow aggregators) and DER performance, registration, aggregation, verification and communications protocols and standards
- evolving our existing ancillary services market (through code and market system changes) to be technology and participant-size agnostic in allowing all types and sizes of DER to participate
- ensuring that the System Operator and each distribution company knows what DER is connected, and actual or planned DR activity, to inform their system security analysis

Transpower predicts a significant ramp-up in intermittent generation, DER and base demand from around the mid-2020s. We believe that the above four priorities should all be implemented in the early 2020s in readiness, and that this is achievable.

Energy efficiency obligations

Option 8.3 - Deploy energy efficiency resources via retailer/distributor obligations

Transpower strongly agrees with MBIE's intent to increase energy efficiency in New Zealand. Energy efficiency uptake is a key enabler of our transition to a low emissions economy.

EECA's *Energy Efficiency First: The Electricity Story* study found that energy savings from adopting energy efficient technologies such as LED bulbs, heat pumps, energy efficient water heating, and efficient electric motors could reduce the need for new generation by 4,000 GWh. Policy to encourage these efficiency measures will significantly aid New Zealand's transition.

We caution the use of obligations and believe that goal could be better achieved through mechanisms that inform consumers and allow them to apply pressure to suppliers to improve the energy efficiency of their products.

One international example would be the mandatory NABERS scheme in Australia. Extension of New Zealand's NABERSNZ scheme may similarly apply consumer led pressure for energy efficiency measures.

Another option might be the expansion of other energy efficiency labelling programmes, or a complementary scheme that informs consumers as to the carbon impact of products.

Questions 8.11-814

No Comment

Developing offshore wind assets

The transmission or distribution connection implications of developing offshore wind assets are significant and would need to be investigated in detail for any such proposal. Transpower would begin conducting these investigations if it became apparent that offshore wind assets were likely to eventuate.

Questions 8.15-8.16

No Comment

Renewable electricity certificates and portfolio standards

Option 8.5 - Renewable electricity certificates and portfolio standards

Transpower's position is that the ETS should be the primary lever for emissions reduction, as stated above. We believe that this will be sufficient to drive investment in new renewable electricity generation and are observing the effects of this in the electricity market.

We support the establishment of a trustworthy renewable (or zero-carbon) certification scheme with voluntary participation.

Our current modelling shows that without a mandatory scheme, NZ can reach 95% renewable electricity by 2035 with an increasing carbon price accompanied by declining renewable energy technology costs. This is our Accelerated Electrification scenario, and so assumes that the policy opportunities discussed in this submission to encourage and facilitate renewable energy generation and consumption are taken up, but it does not forecast the need for a mandatory renewables scheme.

However, if it becomes apparent that the carbon price is not driving the correct outcomes in delivering renewable energy investment, then we support a mandatory renewable energy certificate mechanism.

We support the establishment of a trustworthy renewable certification scheme with voluntary participation to allow customers to purchase 100% green energy from their retailers. An example of this is the Greenpower scheme that operates in Australia. This will enable consumer driven, as well as generator driven renewable generation investment. It is also a necessary precursor to any authoritative green-labelling of products manufactured using grid supplied electricity, such as green hydrogen.

In addition to the benefits that consumers and renewable generators may receive by opting in to such a renewable certification scheme, it would also set the necessary framework should the introduction of a mandatory scheme be required at a later point in time.

Questions 8.17-8.23

No Comment

Phase down thermal baseload and place in strategic reserve

We agree with MBIE's intent to reduce the amount of high emitting generation that is dispatched on the New Zealand electricity system while ensuring that sufficient generation capacity remains to meet winter evening peaks and dry years.

We interpret that MBIE are proposing policies to achieve two goals:

- Decrease the amount of fossil fuel energy that is dispatched into the electricity system, while
- Ensuring that sufficient generation capacity and energy storage remains available to cover winter evening peaks and dry years.

The electricity market has worked over the last 20 years to ensure that supply remains secure, and has evolved to fit the changing industry landscape over this period. We expect that it will continue to evolve to meet the context of a Net Zero future for New Zealand.

Transpower does not see an immediate need for change to ensure security of supply and we are not advocating for market redesign. However, if the need for further market evolution to ensure security of supply arises in the future, it would be beneficial for the industry to have had a discussion about possible solutions to potential shortfalls in peak or dry year cover.

Having this discussion now ensures that the industry can be well prepared and will allow us to move quickly if the need were to arise. We don't profess to have the answers. This is a conversation that will require broad participation throughout the industry. We present here a range of potential solutions to contribute to this discussion and look forward to input from others as we build shared understanding of how the electricity sector can support New Zealand's net zero future.

Decreasing the amount of fossil fuel energy that is dispatched into the electricity system

Our work in *Whakamana i Te Mauri Hiko* predicts that New Zealand will reach 95% renewable energy by 2035 without the introduction of an accelerated phase down. We have observed natural market forces pushing thermal baseloading plant to close due to unprofitability. Otahuhu,

Southdown, and Contact Energy's recent announcements about the Taranaki Combined Cycle plant are examples.

It is expected that this theme will continue as thermal baseloading plants are naturally out-competed by lower cost renewable generation.

If MBIE wishes to accelerate this schedule, then a mandated phase down is one option to achieve that goal. However, it is likely to cause significant change in the behaviour of remaining participants which would be hard to predict, and so would need to be very carefully designed. If such a measure were to be implemented, then Transpower would be happy to work closely with MBIE, regulators, and the wider industry to ensure that the mechanism developed was robust.

Ensuring that sufficient generation capacity and energy storage remains available to cover winter evening peaks and dry year

MBIE has suggested implementing a strategic reserve mechanism to ensure that sufficient generation remains available if the need were to arise. While a strategic reserve is one option, there are many ways to ensure system security is retained.

Whakamana i Te Mauri Hiko predicts that meeting peak demand will become more challenging as peak demand increases by ~40 per cent out to 2050. The challenge of meeting dry year risk increases with energy demand, which Whakamana i Te Mauri Hiko predicts will increase by ~70% by 2050. Both of these would be exacerbated by the exit of thermal plant. Transpower is actively planning for the eventual retirement (date unknown) of the Taranaki Combined Cycle gas-fired power station and the potential unavailability of coal/gas-fired Rankine units at Huntly.

These plants contribute to system stability and Transpower needs to ensure it is ready to respond when decisions are made around the future of these assets. (The 'WUNIVM' proposal that Transpower recently submitted to the Commerce Commission addresses the voltage stability implications of Huntly Rankine units becoming unavailable.[1])

Introducing policy that discourages these plants from running might require the introduction of other incentives to ensure that sufficient energy and capacity are still available to meet peak and dry year needs.

While this is important, it should also be noted that these incumbent plants are not the only generators that are able to fill this role and a solution should be agnostic to who provides peak capacity, and dry year security. To demonstrate this, the table below summarises the relative strengths of potential physical solutions.

[1] The Waikato and Upper North Island Voltage Management Investigation (WUNIVM): see www.transpower.co.nz/waikato-and-upper-north-island-voltage-management-investigation

Table 1: Relative strengths of physical solutions to supply security concerns

Technology	Ability to contribute to peak demand	Ability to contribute to dry year	Comments
Gas (Combined cycle)	◐	●	Lower flexibility challenges economics, emits carbon
Gas (Open cycle/Peaker)	●	●	High flexibility, emits carbon
Hydrogen peaker	●	●	Currently very expensive
Biomass	●	●	More expensive than gas, needs net zero fuel source
Short duration pumped hydro energy storage	●	◐	Dry year contribution limited by size, sites need to be identified
Long duration pumped hydro energy storage	●	●	Environmental consenting may be difficult
Renewable overbuild	○	●	Could be expensive
Batteries	●	○	May need multiple value streams to be economic
Renewable overbuild and batteries	●	●	Could be expensive
Additional HVDC capacity	●	○	Allows SI hydro to contribute more to NI peaks
Demand response	●	○	Allows peaks to be managed, potentially at least cost
Large scale load interruption	○	●	Prolonged shutdown of major loads

If it appears that these solutions are not likely to be developed within the incentive framework provided by the 'energy only' market, a number of market and regulatory changes could incentivise investment. The table below summarises a number of potential options to remedy the situation.

Table 2: Potential mechanisms to make investment in security of supply attractive

Market option	Primarily targets peaks	Primarily targets dry year	Comments
Increase Customer Compensation Scheme payments		√	Mechanism that exists today which could be scaled up – requires retailers to pay a weekly charge if their customers need to reduce energy use
Firm energy market		√	Procures additional 'firm energy' to cover dry years – it is the dry year equivalent of a capacity market
Increase lake level requirements leading into winter		√	Would allow for more energy cover entering winter – may still require additional firm energy in a dry summer to reach higher lake levels
Strategic reserve mechanism		√	Designed to protect thermal baseload capacity for energy shortages. Likely be better designed as a market-based mechanism to provide other options
Retailer reliability obligation (RRO)		√	Requires retailers to contract sufficient 'on demand' resources. Only triggered when material reliability gaps are identified in advance. Could be designed to target peaks, dry year, or both
Capacity market	√		Procures the availability of peaking plant and/or demand response
Ensuring market settings allow batteries to realise true economic value	√		Requires batteries to access multiple value streams (e.g. network deferral, energy, ancillary markets) simultaneously.
Balancing market	√		A balancing market that operates between one and five minutes could provide a stronger price signal for flexible generation

In principle, Transpower supports a system that signals the need for security of supply to the market and provides participants with the opportunity to remedy the situation. If this is insufficient, and an additional security of supply mechanism is required, it should be a market-based mechanism that

allows participants to competitively solve the issue. These mechanisms could be supplemented with a clear, triggered assurance if the market does not resolve the concern.

One example of an additional security of supply mechanism that addresses these principles would be Australia's Retailer Reliability Obligations. Under this regime:

- the Australian Energy Market Operator (AEMO) identifies any security of supply concerns within the next five years and signals these to the market. The market is then provided the opportunity to remedy the concerns.
- If any of these concerns still remain within three years and three months, then AEMO can trigger the *Retailer Reliability Obligation*.
- Once triggered, liable entities will be on notice to enter into sufficient qualifying contracts to cover their demand. A *Market Liquidity Obligation* placed on generators ensures that there are contracts available to smaller players. This additional security of supply mechanism still places the onus on the market to competitively remedy the concerns.
- If the concerns remain one year out, then all retailers must disclose their contract positions to the Australian Energy Regulator who may pursue enforcement action against non-compliant retailers. AEMO may then commence procurement of emergency reserves with costs being recovered through a *Procurer of Last Resort* mechanism.

This mechanism aims to induce a proxy market for over the counter firming contracts and provides the regulator and system operator with emergency powers if this mechanism proves insufficient.

We present this example for demonstrative purposes only, rather than as a recommendation. In the New Zealand context, the Customer Compensation Scheme might be adjusted to provide similar outcomes, or other similar mechanisms might be investigated. It is one of many options that will each be best suited to different emerging situations.

A firm energy or capacity market could be developed to incentivise investment by providing a form of "insurance" compensation to holders of dry year generation assets. This is likely to be cheaper than assuming a coal-only solution but still relatively expensive, with the costs flowing through to consumers. We observe that Columbia's firm energy market, while not without its issues, has successfully procured a mix of renewable as well as fossil-fuel powered firm energy solutions.

If a strategic reserve mechanism were to be introduced, Transpower's preference would be for a design that selects assets for the reserve via a competitive market-based mechanism.

Other options include pairing market mechanisms with regulatory changes such as requiring higher lake levels leading into winter, and incentivising large-scale industrial demand response.

Finally, if market and regulatory changes are not enough, Government could consider incentivising investment in or investing directly in 'silver bullet' options. For example, by funding the development of a large-scale pumped hydro energy storage scheme at Lake , funding a hydrogen programme to cover dry year risk or by incentivising renewables overbuild.

Regardless of which options are deemed to be the best, our dry year risk is a challenge that has the potential to disrupt our journey towards a decarbonised economy and materially set it back. While

we all have a role to play, this is the challenge which requires wide consultation, and clear and decisive ownership of the decision around what we must do.

Demand side participation as discussed in Option 8.2 would also go some way to lessening the impacts of these thermal closures by reducing our requirement for peaking capacity, as well as providing an additional means to manage extreme winter peaks operationally.

Option 8.5 - Phase down baseload thermal generation and place in strategic reserve

Question 8.24 - This policy option involves a high level of intervention and risk. Do you think that another policy option could better achieve our goals to encourage renewable energy generation investment? Or, could this policy option be re-designed to better achieve our goals?

We believe that increasing carbon costs should strongly incentivise new renewable build which in turn makes existing fossil fuelled plant less competitive in the market.

If measures need to be taken to ensure New Zealand's security of supply then market led mechanisms should be explored first.

Question 8.25 - Do you support the managed phase down of baseload thermal electricity generation?

Transpower notes that market dynamics are showing a trend away from thermal baseloading. Our modelling in *Whakamana i Te Mauri Hiko* predicts that we could reach 95% renewable energy by 2035 due to carbon pricing and decreasing renewable energy technology costs.

If a more accelerated phasedown is desired then Transpower would be happy to work with MBIE and regulators to determine the most appropriate solution.

Question 8.26 - Would a strategic reserve mechanism adequately address supply security and reduce emissions affordably during a transition to higher levels of renewable electricity generation?

A well-designed strategic reserve mechanism is one of a number of measures which could address supply security if it is threatened. Whichever approach is adopted, Transpower would work with MBIE to ensure that the mechanism achieves its stated goals.

Question 8.27 - Under what market conditions should thermal baseload held in a strategic reserve be used? For example, would you support requiring thermal baseload assets to operate as peaking plants or during dry winters?

Thresholds for strategic reserve would need to be determined through rigorous study, building on our experience with triggers based on hydro risk curves. These studies may need to be revisited and adjusted after a strategic reserve is implemented as market participant behaviour can be expected to change materially.

Question 8.28 - What is the best way to meet resource adequacy needs as we transition away from fossil-fuelled electricity generation and towards a system dominated by renewables?

There are many pathways to decreasing the carbon intensity of electricity generation.

Ensuring resource adequacy is currently achieved through the energy market. If this mechanism proves insufficient then a market led solution would be Transpower's preferred approach.

Any such measure would require detailed analysis and industry consultation prior to being implemented.

Question 8.29 - Should a permanent capacity market which also includes peaking generation be considered?

If capacity is expected to become a significant issue in the near future, then a capacity market should be considered. The market should be open a full range of generation, storage and demand side solutions. The introduction of any such market would require detailed analysis and industry consultation prior to being implemented.

Other options exist to achieve the same goals as a capacity market. We welcome the opportunity to participate in an industry wide discussion on these options.

Other options considered

Question 8.30 - Do you have any views regarding the above options to encourage renewable electricity generation investment that we considered, but are not proposing to investigate further?

We believe that a voluntary renewables generation verification scheme could be introduced to allow consumer- as well as generation-led renewable generation investment and back green labelling for exports.

Section 9: Facilitating local and community engagement in renewable energy and energy efficiency

No Comment

Section 10: Connecting to the national grid

Transpower appreciates MBIE raising discussion of barriers and market failures that may be impeding efficient connection to, and investment in, the national grid.

We support changes being made to ensure that the full range of climate change mitigation benefits can be considered when the Commerce Commission is assessing transmission investment proposals. This cannot happen at present and it creates the risk of transmission investment that would otherwise support decarbonisation of the economy not being approved. We suggest that the implementation of this change be discussed with the Commerce Commission to ensure all practicalities from their perspective are identified and addressed.

We also support changes being made to address the "first mover disadvantage" co-ordination problem faced by customers who would benefit from co-operative connection investment but face material timing and cost sharing co-ordination challenges. Our suggestion is that the investment be taken to the Commerce Commission for scrutiny and approval in the same way as interconnection investments, and for so long as there is spare capacity in the connection asset that is added to the RAB and recovered from the broad customer base in the same way as interconnection investments.

We have discussed in this submission the challenge, and the opportunity, that New Zealand's climate change objectives present for the electricity sector. The scale of activity and change required of the sector is totally different from what we currently experience. However, we can rise to this challenge, and play a major part in New Zealand addressing climate change, if everyone in the sector plays their part.

We have been working hard on the role that Transpower must play in the decades ahead. Transpower's modelling, presented in *Whakamana i Te Mauri Hiko*, forecasts that 70 new grid scale connections may be required between now and 2035. This is predicted to be 40 new generation connections and 30 new connections to accommodate increased demand. The modelling also identifies 10 to 15 large grid upgrade projects ($20m+ interconnections) that need to be completed before 2035 to accommodate this additional supply and demand. We have a lot to do over the next 15 years.

Whakamana i Te Mauri Hiko has identified opportunities to update our system planning to better align grid plans with a net zero future, streamline our connections process, and to improve the information and services we provide prospective connectors. These internal improvements will help to ensure that we are ready to enable this future volume of work.

However, there are also policy and regulatory changes that will need to be made to assist with delivering these volumes in time. Solving many of the issues identified by MBIE in Section 10, will be important for ensuring that the forecast connections and interconnections can be delivered in a timely and efficient manner. We appreciate MBIE tabling these issues for discussion. In particular, improvements to the investment test administered by the Commerce Commission and removal of

the first mover disadvantage faced by our customers will assist with the delivery of transmission investments required to enable low carbon infrastructure.

The Grid Investment Test

At present the Commerce Commission scrutinises investment proposed by Transpower, where the project is expected to cost over $20m, using a "grid investment test" that considers the costs and benefits of the project "arising in the electricity market". Benefits of the project that fall outside of the electricity market are not considered. This limits the ability of the Commission to approve major transmission investments that would assist New Zealand's transition to a low carbon economy where the climate change benefits fall outside the electricity market.

When applying the test some regard is had to climate change effects. Transpower currently includes carbon costs in the assessment of investments to support generation, by incorporating a forecast cost of carbon under the New Zealand Emissions Trading Scheme. Transpower is able to include this because it impacts the cost of delivered electricity arising "in the electricity market". In this way, climate change benefits are partially incorporated into the investment test already for supply-side investments.

The carbon price that Transpower applies is the base case MBIE forecast for NZUs in the NZ Emissions Trading Scheme. This increases from $25/tCO2-e today to $80/tCO2-e in 2050. Transpower currently applies a commercial discount rate of 7% to all costs and benefits in the investment test, including carbon costs.

However, Transpower does not include carbon costs in the assessment of demand-side investments (e.g. arising from more electric vehicles or electrified process heat), because this does not impact the cost of delivered electricity arising "in the electricity market". The investment test does not currently permit consideration of benefits arising outside of the electricity market. Transpower is therefore not able to include these climate change mitigation benefits in our quantitative analyses (we continue to note it as a qualitative benefit).

Transpower strongly supports MBIE's suggestion that there be recognition of the full range of climate change mitigation benefits in the investment test. Given the policy challenges facing New Zealand over the next decades, ensuring that climate change benefits are recognised when relevant across all policy frameworks seems like low hanging fruit. In the electricity transmission context, greater incorporation of climate change benefits in the investment test may assist with bringing forward projects that are key enablers for decarbonisation.

Greater consideration of climate change benefits could be achieved by allowing the investment assessment process to recognise demand-side emission reductions and by recognising the social cost of carbon. We elaborate on each of these briefly below.

If Transpower could include demand-side emissions reductions in our applications of the investment test, this would ensure that benefits from reduced emissions from electric vehicles and electrified process heat could be factored into the cost benefit analysis for transmission investments. We will be guided by MBIE and the Commerce Commission as to the best way to make this change. It may be that it could be actioned through a change in the Commerce Commission's Capex IM, it may also

be the Commerce Commission's preference that the government issue a Government Policy Statement (or similar) requiring the Commerce Commission to have regard to the full range of climate change mitigation benefits. Transpower is agnostic as to the mechanism and strongly endorses the need to make a change and secure this outcome.

The social cost of carbon is a concept used by policy-makers worldwide, in establishing appropriate climate change mitigation policy. The social cost of carbon attempts to value all of the social benefits of reducing carbon emissions, including such effects as improved health and mitigation of sea level rise. These kinds of benefits are not reflected in ETS values, hence the social cost of carbon is likely to be higher than the ETS value.

At the current 7% commercial discount that Transpower applies to the investment test, the forecast $80/tCO2-e in 2050 is worth $10.50 today in net present value terms. Using a social discount rate of 3%, recommended by the US Interagency Working Group on the Social Cost of Carbon (IWG) in its social cost of carbon calculations, the forecast $80/tCO2-e in 2050 is worth $33.00 today in net present value terms. Using a commercial discount rate to value climate change mitigation benefits significantly undervalues the welfare of future generations by substantially underestimating the present cost of future climate change impacts.

We note that use of a social discount rate is consistent with discounting social costs, but that use of a social discount rate, alongside the default 7%, is already allowed for in the investment test. Hence, even if the use of a social cost of carbon is not favoured, we could still contemplate using a different discount rate for emission savings, on its own. This approach would also become easier to incorporate in our analyses if the government were to issue a Government Policy Statement (or similar) requiring the Commerce Commission to have regard to analyses we undertake which align with government climate change objectives, as requiring the Commerce Commission to review social costs of carbon may have inherent complexity.

Transpower appreciates that MBIE has also asked whether better recognition of the climate change benefits of transmission investment proposals will help resolve the first mover disadvantage that can be faced by our customers. For the reasons discussed below we don't think that is the case. However, it would improve the likelihood of spare connection capacity (either supply or demand connections) receiving Commerce Commission approval if the investment aids decarbonisation and Transpower's proposed solution for the first mover disadvantage is adopted (discussed below).

The first mover disadvantage

Status quo

Under the status quo, the cost of a connection asset is always recovered by Transpower from the parties directly connected to the connection assets.

Our operational policy is that:

- We always recover the cost of investment in new connection assets (new substations, extra capacity/features at existing substations, investment ahead of time etc) through bilateral investment contracts with the connecting customer, and not through the Transmission Pricing Methodology (TPM).

- Reinvestment in and refurbishment of connection assets, and relevant opex, is recovered via the connection charge component of the TPM.

If customers want to connect directly to the Grid, and Transpower needs new capacity to connect them, Transpower will negotiate with our counterparty or counterparties on the configuration, features, capacity and commercial terms of the new connection assets. Where multiple parties are involved, Transpower requires agreement from all parties in order to ensure we can receive a commercial return on the asset.

The first mover disadvantage can arise with both supply and demand investments:

- For joint supply-side investments (for example, renewable generation clusters) all connecting parties must agree in order to build a shared connection. If agreement cannot be reached then in theory these parties could build connections individually. However if the cost to build the connection individually makes all individual projects uneconomic, then no project proceeds. The co-ordination problem leads to a missed opportunity for these projects to be developed. Further, even if the parties do build their connections individually, there is a lost opportunity of lower cost delivery of the projects which may be borne by electricity consumers. The first mover disadvantage for supply investments is particularly relevant for high quality generation resources that are located further away from the grid. In these instances, dividing the cost of the longer distance connection can help to make high quality generation projects economic.
- For joint demand-side investments (e.g. large industrial facilities or industrial clusters) a similar dynamic is at play. The issue can be exacerbated if the demand electrifies in stages. In some instances, it may be more economic for early stage electrification to occur via connections to distribution networks. As more industrial plants electrify, or as an individual plant electrifies in stages, the aggregate demand on that distribution connection might mean that a new transmission grid connection is eventually the most economic option. If this occurs, then the investments in the distribution network can become sunk and an additional grid connection may need to be built, stranding the distribution investment.

Resolving the First Mover Disadvantage

There are two main dynamics that need to be addressed in order to resolve the first mover disadvantage. The first issue relates to the incentives and arrangements for commercial parties to enter into joint agreements. Commercial parties are reluctant to disclose commercially sensitive information about their development plans making it difficult to reach agreements. Even if parties fully disclose their intentions, reaching a cost sharing arrangement can be difficult.

The second issue relates to the development timing, as this is a difficult coordination exercise across multiple commercial entities. Even if an arrangement on cost sharing is reached, if timelines for development do not align, the party that has to move first is left with a risk of subsequent parties not developing, leaving them with an expensive, underutilised connection asset.

There are a number of options to address these issues, including:

- Prior to construction, potential subsequent connectors to the line purchase a transferrable option from the first mover to use the line in future, the cost of which is the incremental cost

of building their required capacity into the line. If they exercise this option, the cost sharing mechanism reimburses the first mover. These arrangements could be struck today, but are difficult to execute due to the issues outlined above.

- The Crown could underwrite the spare capacity on the asset (the line capacity remaining after the first mover connects). Potential subsequent connectors to the line could purchase a transferrable option from the Crown to use the line in future and the Crown would be compensated and unwind their position as each additional party connects. However, it is uncertain as to how the Crown would determine if this is a good use of tax payers' funds.
- The spare capacity of the asset could be passed through to all electricity consumers via the TPM. This would require the spare capacity of the connection asset to be added to Transpower's Regulated Asset Base (RAB). As each new party purchases some or all of this additional capacity, the amount paid to Transpower would be matched by a corresponding reduction in RAB. In effect, the cost of spare line capacity passed through to consumers would reduce as each new party purchases some of this spare line capacity. At its logical conclusion, all the capacity on the line would be purchased and the asset would no longer be on Transpower's RAB, and consequentially there would no longer be a capital TPM charge to customers for this line. Transpower would then recover the full cost of the shared connection via bilateral (or multilateral) agreements with the connecting parties as it ordinarily does.

The last option is Transpower's preferred option. However, two features would need to be worked through:

- investments made by Transpower that are passed through the TPM to consumers would need to be approved by the Commerce Commission to ensure that they provide net benefits to electricity consumers. This would assure industry participants and consumers that there is independent scrutiny of any decision to invest.
- the TPM does not currently allow for investment in connection assets to be recovered more broadly from consumers in this manner. Changes would need to be made to allow for the spare connection capacity to have the same treatment as interconnection assets, which are recovered from a broader base of consumers.

Question 10.1 - Which option or combination of options proposed, if any, would be most likely to address the first mover disadvantage?

Option 10.1 may assist in relieving the first mover disadvantage, but is unlikely to significantly solve the issue. As outlined in the introduction to section 10 we think that further incorporating climate change mitigation benefits in the investment test will assist with the many important interconnection investments required to enable decarbonisation through electrification and/or renewable electricity generation. We very strongly support the inclusion of climate change mitigation benefits being reflected in investment test analysis, but think that the benefit of this will be much larger for enabling key interconnections investments that drive decarbonisation, than for solving the first mover disadvantage issue.

Option 10.2 suggests some changes to negotiating approaches. The changes suggested do change the problem, but because the changes still require cooperation between commercial entities, they unfortunately seem unlikely to succeed. Transpower's previous attempts at trying to build consensus

between competing generators have failed. Competitive behaviour stifled discussions and consensus was not possible. This is not a criticism – it is simply the market at work. In our view the options proposed in Option 10.2 would strike the same issues.

Option 10.3 seems an unnecessary consideration in this context. It would typically be in electricity consumer interests for a single asset to be built, even when there are multiple potential users. It does not seem unreasonable that electricity consumers should wear the risks and resultant costs of solving this issue.

As outlined in our section 10 introduction Transpower believes that best way to deal with the first mover disadvantage is:

When it is clear, through application of the Investment Test, that it is in the interests of electricity consumers to build connection assets with spare capacity, that spare capacity could be passed through to all electricity consumers via the TPM. This would require the spare capacity of the connection asset to be added to Transpower's Regulated Asset Base (RAB). As each new party purchases some or all of this additional capacity, the amount paid to Transpower would be matched by a corresponding reduction in RAB. In effect, the cost of spare line capacity passed through to consumers would reduce as each new party purchases some of this spare line capacity. At its logical conclusion, all the capacity on the line would be purchased and the asset would no longer be on Transpower's RAB, and consequentially there would no longer be a TPM charge to customers for this line. Transpower would then recover the full cost of the shared connection via bilateral (or multilateral) agreements with the connecting parties as it ordinarily does. This is Transpower's preferred option, however it does require a change to the TPM.

We would like to reiterate our support for Option 10.1 (more fully explained in our section 10 introduction) and the proposal to include the economic benefits of climate change mitigation in our application of the investment test. In our view this would provide significant value to New Zealand by incentivising or bringing forward investment in connections and interconnections that enable decarbonisation independent of the first mover disadvantage.

Question 10.2 - What do you see as the disadvantages or risks with these options to address the first mover disadvantage?

Please refer to our section 10 introduction and our response to Q10.1.

Question 10.3 - Would introducing a requirement, or new charge, for subsequent customers to contribute to costs already incurred by the first mover create any perverse incentives?

As discussed above, we do not believe that retrospective cost recovery would solve the first mover disadvantage. From the perspective of the first mover, they are still expected to wear the risk that other connected parties will emerge, which is not a very different risk to what they face without retrospective cost recovery.

Question 10.4 - Are there any additional options that should be considered?

Please refer to the front piece to section 10 and our response to Q10.1. Amending the TPM could remove the first mover disadvantage.

Gaps in publicly available and independent information

Transpower welcome's MBIEs focus on ensuring that market participants, existing and new, are provided with the information that they need to make decisions.

Transpower has been supporting MBIE's work to build renewed understanding of potential generation resource throughout New Zealand. This is important information to allow us to forecast the future requirements of the grid.

Question 10.5 - Do you think that there is a role for government to provide more independent public data? Why or why not?

Yes, centralised government production of some data for the public domain can be lower cost than many parties creating their own information.

However, we recommend that such data should be limited to physical data (e.g. wind speeds, solar irradiance) and that economic data should not be included. Physical data does not change, whereas economic data requires numerous assumptions and would change constantly. Armed with physical data, investors are best placed to evaluate the economics of potential investments, according to their own circumstances.

Question 10.6 - Is there a role for Government to provide independent geospatial data (e.g. wind speeds for sites) to assist with information gaps?

Yes. Please refer to our response to Q10.5

Question 10.7: Should MBIE's EDGS be updated more frequently? How often?

MBIE's EDGS provide crucial information for Transpower's investigations and it is important the information is as up-to-date as possible. Given future uncertainty about the uptake of distributed energy resources, it would be prudent to update the EDGS more frequently than is current practice.

The investigations we undertake (to evaluate the economics of upgrading the grid) are often in a particular region of the grid and the data we need is localised. We tend to use the assumptions in the EDGS (localised demand assumptions and potential for new local generation), updated where relevant, to build relevant scenarios, rather than use the published EDGS themselves in their entirety.

For that reason, we suggest that an annual update of the EDGS assumptions would be useful (e.g. demand growth drivers, generation stack). Full updates, including the national scenarios themselves, could be produced on a less regular basis, perhaps assessed on a materiality basis.

One additional point that Transpower believes is absolutely critical for decarbonisation is that the MBIE EDGS cases should align to a net zero carbon future, which they currently does not. This is understandable as the last MBIE EDGS forecasts were developed prior to the passing of the Zero

Carbon Bill. However now that this legislation has passed, the MBIE EDGS cases should align to this future. This is important because Transpower is required to use MBIE EDGS' forecasts in its MCP proposals to the Commerce Commission under the Capex IM. Having forecasts that align with net zero carbon, will therefore allow for approval decisions made by the Commerce Commission that consider input assumptions that align to a net zero carbon future.

Question 10.8: Should MBIE's EDGS be more granular, for example, providing information at a regional level?

From Transpower's perspective, adding more granularity to the existing EDGS would have little use. As mentioned above, we need to tailor the EDGS to be relevant for each particular investigation and this approach would not change even if the EDGS were regional. Producing regional EDGS would require significantly more work by MBIE and from Transpower's perspective, have little benefit.

Section 11: Local network connections and trading arrangements

No Comment

Other items that are critical to delivering Accelerated Renewable Energy and Energy Efficiency

Electricity Industry Workforce

Already there is a significant gap in New Zealand in terms of skilled workers in the electricity industry. With every sector of the industry soon to be requiring a much greater volume of skilled electrical labour, Transpower supports the Government's vocational education settings adjustment to encourage and incentivise development of a highly skilled workforce in New Zealand.

The decline in vocational training poses a significant challenge for New Zealand's energy transformation. A recent survey by the Tertiary Education Commission found that 42 per cent of 18-24-year-old respondents did not have a positive view of vocational training.

This view results in school leavers who may be very well suited for field roles being pushed into universities. The decline in demand for vocational training has resulted in closure of some training schemes while past restructures of nationwide apprenticeship schemes have made the remaining schemes fragmented and difficult to scale.

Meeting supply through targeted international recruiting, which has typically filled the workforce supply gap left by the vocational training pathway, has also become more difficult due to immigration policy changes. The changes include the exclusion of constrained roles such as cable jointers from the Essential Skills List.

Finally, early electrification and renewable generation investment overseas, particularly in Australia, has drained people who have trained to work in New Zealand's electricity industry. International competition is a trend which is likely to grow as electrification and renewable generation investment increases internationally and New Zealand is recognised as a source of capable people. Competition from other sectors of the New Zealand economy is also expected to increase as infrastructure construction activity begins to climb.

As New Zealand transitions to a new, decarbonised future, it is vital that the electricity sector grows, and retains the highly skilled people that enable this transition. We applaud the government's recognition of issues in the vocational training space and stress that if we wish to have a workforce in time to meet the challenges of climate change over the coming years, then the establishment of this pipeline needs to happen urgently.

Electric Vehicles

Electric vehicles provide one of the most attractive opportunities to electrify New Zealand's economy. So attractive in fact, that it is expected that New Zealand will stand to save money by transferring the fleet to electric vehicles while achieving our decarbonisation objectives.

Electric vehicles are gaining traction both here and overseas. But for electric vehicles to contribute materially to New Zealand's decarbonisation, we must extend this trend beyond early adopters to the broader public.

The rate at which we replace our old fossil fuelled vehicles with new electric vehicles needs to increase if we are to meet our climate objectives.

Where process heat users are sensitive to operating costs driven by carbon pricing, consumers tend to be less so. Policies which complement the ETS are therefore of the utmost importance to encourage the electrification of the transport fleet. Sticker price parity between electric vehicles and combustion driven vehicles is an important milestone on the way to popular uptake.

While essential to New Zealand's decarbonisation, deploying this number of electric vehicles onto the electricity system needs to be carefully managed to ensure that the transition is just and affordable. Various parts of government must ensure that their policies are working towards the common goal of an orderly and just transition of New Zealand's electric vehicle fleet.

Ensuring that smart charging of these vehicles is the norm is vital to achieving this to manage peaks in distribution networks and the grid. If this goal is not achieved then avoidable expense in network infrastructure, and peaking generation will be imposed on New Zealanders to support their electric vehicle uptake.

Appendix 1 – Suggested changes to the national policy statement on electricity transmission (Question 7.21 of discussion document/ question 106 of online form)

1 The NPSET requires amendment to provide a comprehensive regime for all National Grid assets and issues in all environments. It needs to provide the highest possible level of policy direction. It needs to work effectively with the NPSREG. It also needs to resolve any potential conflict with other NPSs.

2 The strengthened NPSET should set out objectives/policies that are required to be directly inserted into regional policy statements, regional plans and district plans to minimise the implementation burden on Transpower and councils, and to ensure the updates can have immediate impact. Principles to guide the drafting of amendments to the NPSET are set out in the table below.

3 Further amendments may be required as the strengthened NPSREG is developed to ensure alignment between the two documents.

Proposal	**Benefits**
Strong direction	
More directive provisions.	Speed up implementation, address the huge delays experienced in giving effect to the current version. Minimise debate focussed on local effects versus national benefits.
Objectives/policies that have immediate effect in regional policy statements, regional plans and district plans.	Minimise implementation burden. Ensure the updates have immediate utility/impact for electrification projects.
Clarify that NPSET is a comprehensive regime for all National Grid assets and issues in all environments. It will sit alongside other NPSs, but prevail in the event of any conflict.	Reduce interpretation debate. Makes NPS a stronger tool for achieving its objective.
Preamble	
Retain much of the existing preamble.	Generally helpful guidance on the importance of the Grid's potential effects and the operational and technical constraints it has.
Stronger emphasis on the role of National Grid in accelerating electrification to address climate change. Identify the key challenges, including the	Preamble contains inadequate guidance on the importance of the Grid.

large number of new connections required, the constraint on renewable generation being located where the resources are in a range of natural environments.	Emphasises the importance of the NPSET in helping achieve zero carbon goals.
Stronger emphasis on need for long term strategic planning.	May support spatial planning tools (dependant on how they are used). Enable 'concept approvals' for new assets with less detail and longer lapse dates.
Emphasise the significant overlaps with the NPS-REG, that it is complementary document, but note the reasons for their separation.	Make the two documents work together more effectively. Reduce interpretation debate. Ensure the documents are focussed on their respective purposes – enabling renewable e v enabling National Grid projects.
Remove outdated references to the law (subject to Part 2, a relevant consideration).	Reduce interpretation debate and attempts to watering down effect of provisions that have been experienced with the current version.
Review	
Require the NPSET to be regularly reviewed to ensure it remains fit for purpose and effective (including to address new technology, new NPSs).	Maintain the usefulness of the tool over time.
Definitions	
A range of changes proposed to clarify wording and align with other RMA language. New definitions to complement new/updated policies discussed below.	Reduce debates over meaning of words, and conflict with other NPS and RMA provisions.
Matters of national significance	
Stronger emphasis on the importance of the National Grid and its role in climate change mitigation.	Reduce potential for debate on the appropriateness of National Grid projects. Stronger recognition of the benefits, as against potential effects.
Objective	

Stronger emphasis on the importance of the National Grid and its role in climate change mitigation.	Reduce potential for debate on the appropriateness of National Grid projects. Stronger recognition of the benefits, as against potential effects.
Emphasise that NPSET is a comprehensive regime for all National Grid assets and issues in all environments.	Reduce interpretation debate. Makes NPS a stronger tool for achieving its objective.
Benefits of transmission activities	
Amend policy 1. Remove less directive language (e.g. in achieving the purpose of the Act, list of benefits is not intended to be exhaustive). Add direction to ensure the significant national benefits of new National Grid connections are presumed. Recognise that benefits from an activity may not be realised until another activity occurs.	Ensure benefits receive maximum weighting. Reduce need to prove benefits, and focus attention on how to achieve those benefits.
Managing environment effects	
Amend policy 2. Provide for a highly enabling regime for operation, maintenance and upgrading activities. Provide for an enabling regime for development activities, with policies to specify the required effects management approach.	Ensure works to provide for security of supply of electricity can proceed, recognising their low level of effects can be managed through normal industry standards. Facilitate generation and electrification by enabling connections.
Amend policy 3. Retain the recognition of the technical and operational requirements of the network, but expand to address functional needs. Amend to provide stronger direction. Recognise that measures to avoid, remedy or mitigate one effect may result in other effects.	Recognise functional, technical and operational requirements can mean that avoidance of effects is impossible. Ensure practical constraints are appropriately considered, and do not prevent new connections being established. Link to NPS-REG re constraints on renewable generation location.

Amend policy 4. Retain the recognition of the route, site and method selection process. Amend to provide stronger direction. Add linkages to the functional, technical and operational needs policy, and effects management policies.	Stronger emphasis on the route, site and method selection process as an appropriate tool to manage adverse effects. Avoid decision-makers interrogating the options and their evaluation. Provide clarity about information requirements for applications.
Amend policy 5. Require potential effects of operation, maintenance and upgrading activities to be managed through normal industry standards.	Ensure works to provide for security of supply of electricity can proceed without limitation.
Replace policies 6 – 8. Address all effects and all environments. Gaps in the NPSET regarding biodiversity, cultural values, etc to be filled. Provide a tiered approach for management of potential effects of development, recognising that significant/outstanding values require a higher standard. Set out an effects management process to be followed, including the identification of values, potential effects, application of the route, site and method selection process, and clear tests for appropriateness of effects. Require opportunities to reduce existing effects to be considered, but do not direct such reduction.	Provide a comprehensive regime. Ensure effects of development activities are approximately managed without creating a 'bar' that would make new connections unconsentable, or consenting processes overly onerous, such that Grid benefits would not be achieved. Underground lines are around 10-15x more costly than aboveground lines, and a requirement is reduce existing effects is cost prohibitive for works in urban areas.
Update the approach to electric and magnetic fields.	Reflect current international guidelines.
Managing third party effects	
Remove less directive language (eg in achieving the purpose of the Act, reasonably possible). Remove direction in Policy 11 for councils to consult with Transpower regarding a corridor, and amend NESETA, or create a new NES, to address third party effects instead.	Policy framework to support the well settled corridor and yard approach that will be codified in NES updates.

Strategic planning	
Replace Policies 13 and 14 with policies that better provide for strategic planning, including providing for 'concept approval' consents, long lapse periods, and long durations.	Stronger support for strategic planning of investment.

Appendix 2 – Suggested changes to the national environmental standards for electricity transmission activities (question 7.21 of decision document/Question 106 online form)

1 The NESETA currently addresses existing transmission lines. It requires amendment to provide a comprehensive RMA regime for all National Grid assets and issues in all environments.

2 Amendments to the provisions for existing transmission lines will be required. New sections addressing new transmission lines (and possibly substations) and third party activities will be required.

3 Principles to guide the drafting of amendments to the NESETA are set out in the table below.

Proposal	Benefits
Improved rule framework for existing transmission lines	
Matters of control and discretion Require the benefits of the National Grid project to be considered. For relocation, require any other infrastructure benefits to be considered (i.e. where transmission lines are relocated to enable other infrastructure works).	Ensure the benefits of projects can be given appropriate weight alongside any effects. Recognise that National Grid lines may need to be moved to ensure other infrastructure projects with benefits.
Gaps in coverage Fill gaps in the NESETA that result, or may result, in common activities being regulated by the default discretionary activity rule in Regulation 39 (e.g. adding a new structure to an existing transmission line, steel monopoles). Confirm that regulations 28 and 29 cover discharges to land (as well as discharges to water). Provide an enabling framework for above-ground and marine conductors that are not on an overhead transmission line (e.g. the Cook Strait cable).	Ensure the NES covers all common maintenance and upgrading activities, and does not impose an unnecessarily restrictive activity status because of gaps.

Permit maintenance or replacement of underground telecommunication cables (not covered by regulation 7).	
Trees and vegetation Ensure trimming/removal of trees/vegetation that is required to reduce electrical hazards, to maintain access tracks, and remove weed species, is permitted in all environments. Amend problematic permitted rule conditions (referring to a rule that "prohibits or restricts" trimming/removal and "a natural area" and Department of Conservation land) to refer to scheduled trees and mapped significant ecological areas.	Ensure the rule framework for trees and vegetation is practical and clear. Provide for maintenance and safety works. Manage effects on high value trees and vegetation through clear conditions/standards.
Earthworks Extend the scope of the NES to include earthworks subject to a regional rule. Amend the definition of earthworks to exclude activities that do not involve excavation (e.g. placing and stockpiling cleanfill). Amend problematic permitted rule conditions (referring to "a natural area") to refer to mapped significant ecological areas or mapped outstanding natural landscapes and features. Amend the condition providing thresholds for earthworks in a natural area to clarify the meaning of "100m^2 per access track". Amend regulation 33(9) and 36 so that sampling and disturbance of soil is a permitted activity, as per regulation 8 of the NES Soil. Amend the regulations to expressly provide for mid-span earthworks.	Provide a comprehensive rule framework. Manage effects on high value areas through clear conditions/standards. Ensure the rule framework for earthworks is practical and clear. Address inconsistencies with other NESs.
Address inconsistencies with the NPSET (e.g. the definition of National Grid, the definition of sensitive land use).	Ensure the NPSET and NESETA work together as a comprehensive framework.

Address a range of other drafting and technical issues and uncertainties, which were addressed in detail in Transpower's submissions to the Ministry for the Environment and Ministry for Business, Innovation and Employment *Evaluation of the National Policy Statement on Electricity Transmission and National Environmental Standards for Electricity Transmission Activities*.	Improve the clarity and practical workability of the NES.
New rule framework for National Grid development activities	
An enabling rule framework for all activities relating to National Grid infrastructure development (structures, earthworks, vegetation disturbance, discharges, reclamation, etc) in all environments (land, coastal marine area, lakes and rivers, etc). The application of this rule framework will be supported by the NPSET policies described above (including those relating to high values).	Provide a comprehensive and enabling framework for development activities to implement the policy direction in the NPSET. Ensure the rules do not create a 'bar' that would make new connections unconsentable, or consenting processes overly onerous, such that Grid benefits would not be achieved.
Specify when public notification and/or limited notification is precluded.	Provide certainty over the appropriate timing and extent of public involvement.
Prescribe the form and content of applications for consent to provide for a standardised and consistent assessment process.	Provide certainty over information requirements, and ensure they are commensurate to the potential effects. Provide for more efficient consenting processes. Recognise that applications may be higher level/less detailed when sought for strategic planning purposes ('concept approvals') rather than immediate construction.
Consider providing an enabling rule framework for activities relating to new substations.	Provide flexibility for Transpower to choose the most appropriate approvals tool for substations. This proposal could only progress alongside amendments to s43D of the RMA (sought in Transpower's submission to the RM Review Panel), otherwise it would limit Transpower's ability to designate sites for substations.
New rule framework for third party activities	

Codify the National Grid yard and corridor approach. Transpower has standard drafting of provisions that informs its engagement on District Plans.	The approach is well settled. Codification would reduce costs for Transpower and councils in ensuring the approach is implemented and maintained in all districts.

Appendix 3 - Summary table of optimal package of reform and sequencing

Note 1: "Short-term" changes can be made within the existing regulatory framework, and should occur as soon as possible. "Long-term" changes require RMA and other reform.

In terms of sequencing, we assume that short-term changes will occur before long-term changes. The numeric value refers to suggested sequencing within each timeframe, with "1" being the priority.

Note 2: In providing comments about potential changes to the NPS-REG and development of the NESREFA, Transpower has drawn on its experience in implementing the NPS-ET and NESETA.

Initiative	Priority	Benefits/risks of not acting
NPSREG strengthened		
Stronger recognition of benefits	Short-term 1	Greater weight given to benefits in decision-making, avoid need to prove appropriateness of renewable electricity generation projects
Directive policies to facilitate upgrades/renewals	Short-term 1	Bring well-progressed renewable electricity generation projects online sooner Avoids risk of losing existing investment by requiring new applications
Directive policies to enable new renewable electricity generation projects	Short-term 1	Enable new renewable electricity generation projects, remove consenting barriers in light of *King Salmon* line of cases
Directive policies to provide for new types of renewable electricity generation	Short-term 1	Enable new technologies, address potential for precautionary approach to bar improvements
Resolve conflicts with other NPSs	Short-term 1	Reduce interpretation debate, ensure NPS achieves its objectives
Provide for spatial planning	Short-term 3	Potential long-term benefits
NES for renewable energy facilities and activities		
Highly enabling rule framework for upgrades/renewals	Short-term 2	Bring well-progressed renewable electricity generation projects online sooner Avoids risk of losing existing investment by requiring new applications

Enabling rule framework for new renewable electricity generation projects, with clear effects management approach	Short-term A2	Enable new renewable electricity generation projects Clarity over effects managements required
Establish rule framework for new types of renewable electricity generation	Short-term 3	Provide guidance to decision-makers considering applications for new technologies
Address application requirements, notification requirements, etc	Short-term 2	Streamline consenting process, more certainty
NPSET amendments		
Stronger recognition of benefits	Short-term 1	Greater weight given to benefits in decision-making, avoid need to prove appropriateness of Grid projects
Directive policies to facilitate development projects	Short-term 1	Enable projects, remove consenting barriers in light of *King Salmon* line of cases
Resolve conflicts with other NPSs	Short-term 1	Reduce interpretation debate, ensure NPS achieves its objectives
Strategic planning	Short-term 2	Potentially provide clarity regarding location of lines and streamline processes
NESETA amendments		
Address issues with rules for existing transmission lines	Short-term 2	Fill gaps, provide certainty, address inconsistencies
Enabling rule framework for development projects Address application requirements, notification, etc	Short-term 1	Enable new renewable electricity generation projects Clarity over effects managements required Streamline consenting process, more certainty
Codify rule framework for third party activities	Short-term 3	Codify well-settled approach to minimise implementation burden through district planning processes Less relevant to climate change objectives

RMA amendments		
Amend purpose and principles to reflect climate change mitigation	Long-term 1	Ensure challenges are appropriately recognised at the top of the system Relevant to how NPSs provides for renewable electricity generation and Grid connections (as NPSs give effect to Part 2).
Reintroduce overall broad judgement for nationally significant infrastructure	Long-term 1	Removes impact of King Salmon line of cases in limited circumstances. Will avoid the need to reconcile all NPSs.
Improved national direction processes (including regular and robust review)	Long-term 1	Ensure national direction is robust and up-to-date
Better plan making processes	Long-term 1	Minimise participation burden Improved quality outcomes
Improved approvals processes	Long-term 1	Streamline consenting process, more certainty Provide for strategic planning of infrastructure
Requiring authority status for generators	Long-term 1	Provide alternative approvals tool to generators, opening up land acquisition options
Public Works Act amendments		
Improved compulsory acquisition processes	Long-term 2	Streamline processes, which largely duplicate RMA designation tests/processes.
Allow consequential acquisition of land by party initiating the project.	Long-term 2	Clarity provided that initiating party can acquire land for all enabling works, including where land is required to relocate other works. Avoids barriers by other party being unable to establish need.

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COMPLETE

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Page 1: Introduction

Q1 Name (first and last name)

Richard Hobbs

Q2 Email

Privacy of natural persons

Q3 Is this an individual submission, or is it on behalf of a group or organisation?

On behalf of a group or organisation

Q4 Which group do you most identify with, or are representing?

Transmission or distribution sector

Q5 Business name or organisation (if applicable)

Transpower NZ Ltd

Q6 Position title (if applicable)

General Manager Strategy

Q7 Important information about your submission (important to read)The information provided in submissions will be used to inform the Ministry of Business, Innovation and Employment's (MBIE's) work on Accelerating renewable energy and energy efficiency.We will upload the submissions we receive and publish them on our website. If your submission contains any sensitive information that you do not want published, please indicate this in your submission.The Privacy Act 1993 applies to submissions. Any personal information you supply to MBIE in the course of making a submission will only be known by the team working on the Accelerating renewable energy and energy efficiency.Submissions may be requested under the Official Information Act 1982. Submissions provided in confidence can usually be withheld. MBIE will consult with submitters when responding to requests under the Official Information Act 1982.We intend to upload submissions to our website at www.mbie.govt.nz. Can we include your submission on the website?	**Yes**
Q8 Can we include your name?	**Yes**
Q9 Can we include your organisation (if submitting on behalf of an organisation)?	**Yes**
Q10 All other personal information will not be proactively released, although it may need to be released if required under the Official Information Act. Please indicate if there is any other information you would like withheld.	**Respondent skipped this question**

Page 2

Q11 Where are you located?	**Respondent skipped this question**
Q12 In what region or regions does your organisation mostly operate?	**All of New Zealand**

Page 3: Areas you wish to provide feedback on

Q13 Part A relates to process heat.Please indicate which sections, if any, you would like to provide feedback on.	**Section 1: Addressing information failures,** **Section 2: Developing markets for bioenergy and direct geothermal use** **,** **Section 3: Innovating and building capability,** **Section 4: Phasing out fossil fuels in process heat,** **Section 5: Boosting investment in renewable energy and energy efficiency technologies**

Q14 Part B relates to renewable electricity generation. Please indicate which sections, if any, you would like to provide feedback on.

Section 7: Enabling renewables uptake under the Resource Management Act 1991

,

Section 8: Supporting renewable electricity generation investment

,

Section 10: Connecting to the national grid

Page 4: Section 1: Addressing information failures

Q15 Option 1.1 would require large energy users to report their emissions and energy use annually, publish Corporate Energy Transitions Plans and conduct energy audits every four years.Do you support this option?

Yes - I fully support this option

Q16 Please explain your answer

Transpower supports the concept of requiring large energy users to report their emissions and energy use, and annually publish Corporate Energy Transition Plans and believe that this information will help ensure an orderly transition to low carbon fuels. However, Transpower only supports energy audits where the compliance costs and reporting requirements of doing so are kept to a minimum.

Q17 Which parts (set out in Table 3) do you support?

Target group - companies with an annual energy spend of greater than $2 million per annum

,

Public reporting,

Government reporting,

Energy auditing,

Compliance

Q18 Please explain your answer

- If Government reporting could also include site-specific transition plans, then this would encourage an orderly transition.
- We encourage MBIE to align reporting requirements with TCFD requirements.
- In regard to auditing requirements, Transpower is concerned that the compliance costs are kept to a minimum.

Q19 What public reporting requirements (listed in Table 3) should be disclosed?

Respondent skipped this question

Q20 In your view, should businesses be expected to include transport energy and emissions in these reporting requirements?

Yes,
Please explain your answer:
Transport electrification is critical tp New Zealand's decarbonisation. Where transport energy and emissions are material (transport emissions contribute at least 25% of the threshold for reporting as discussed in Q1.2) for a company, transport should be included in the Corporate Energy Transition Plans.

Q21 For manufacturers: what will be the impact on your business to comply with the requirements?

Respondent skipped this question

Q22 Option 1.1. Suggests that requirements to publish Corporate Energy Transition Plans should apply to large energy users, and propses defining large energy users as those with an annual energy spend (purchased) of greater than $2 million per annum.Do you agree with this definition?

Respondent skipped this question

Q23 If you selected no, please describe what in your view would be an appropriate threshold to define ‘large energy users’.

Transpower understands that MBIE likely wishes to receive recommendations on “$ of energy purchased per annum” or “Energy consumed per annum”.
If the threshold were to include a measure of peak power consumption, then this would be helpful. Network investments are driven by peak power consumption rather than energy consumption. Transition plans and reporting from businesses that are large in a peak power consumption sense would provide Transpower, and electricity distribution businesses with valuable foresight of potential future network need, leading to a more orderly transition

Q24 Is there any potential for unnecessary duplication under these proposals and the disclosures proposed in the MBIE-Ministry for the Environment discussion document Climate-related Financial Disclosures – Understanding your business risks and opportunities related to climate change, October 2019?

Yes (please explain):
We agree that there could be the overlap between climate related financial disclosures and those proposed in section 1 (for large users who are NZX listed). We suggest that any duplication should be resolved by aligning with the TCFD approach – as occurred in the Climate Change Response (Carbon Zero) Act for “reporting agencies.” As we noted in our submission on the Climate Related Financial Disclosures discussion document, it is important that there is consistency across various Acts and Regulations which require climate change disclosures. This approach will ensure efficient reporting, where a single report or reporting mechanism can meet multiple regulatory or statutory requirements.

Page 5: Section 1 - Option 1.2: Electrification information package and feasibility studies

Q25 Do you support the proposal to develop an electrification information package?

Yes

Q26 Would an electrification information package be of use to your business?

Respondent skipped this question

Q27 Do you support customised low-emission heating feasibility studies?

Yes

Q28 In your view, which of the components should be scaled up and/or prioritised?

Respondent skipped this question

Q29 Would a customised low-emission heating feasibility study be of use to your business?

Respondent skipped this question

Q30 Please describe any components other than those identified that could be included in an information package.

Yes, Transpower supports the proposal to develop an electrification information package.
Electrification is a new activity for many process heat users, and any information that can be provided to guide their transition would be valuable.
While “the Government and Transpower would incur additional administrative costs to resource and develop the information package”, Transpower is of the view that the electrification of process heat provides an attractive avenue for decarbonisation and it is important that we provide prospective process heat electrifiers with a clear and well defined pathway to connect to electricity networks. We acknowledge that there is a cost to providing this information, but we believe that the decarbonisation opportunity greatly outweighs this cost.
Transpower has already commenced work to update the information that we provide prospective connecting parties. This will ensure that connectors have all of the information that they need, and that connections can be delivered more efficiently with higher levels of customer satisfaction.
Yes, Transpower supports customised low-emission heating feasibility studies. We welcome the opportunity to work with prospective connectors to explore the options available to them.

Page 6: Section 1 - Option 1.3: Provide benchmarking information for food processing industries

Q31 Do you support benchmarking in the food processing sector?

Respondent skipped this question

Q32 Would benchmarking be suited to, and useful for, other industries, such as wood processing?

Respondent skipped this question

Q33 Do you believe government should have a role in facilitating this or should it entirely be led by industry?

Respondent skipped this question

Q34 Please explain your answer

Respondent skipped this question

Page 7: Section 2: Developing markets for bioenergy and direct geothermal use

Q35 Do you agree that some councils have regional air quality rules that are barriers to wood energy?

Respondent skipped this question

Q36 Please provide examples of regional air quality rules that you see as barriers to wood energy. Please also note which council's plan you are referring to.

Transpower is not familiar with whether any regional air quality rules or the NESAQ is a barrier to wood energy. However, if barriers are identified through the submission process, Transpower supports those being addressed as wood fuels could have a role in the transition to electrification. Based on our experience in implementing both the NPSET and the NESETA, we expect that non-regulatory means (such as guidance) will not be adequate to reduce barriers. In amending the NESAQ, should that be required, consideration would need to be given to whether any changes need to be made to other NESs with conflicting provisions. We discuss the reforms needed to national direction in section 7.

Q37 Do you agree that a National Environmental Standards for Air Quality (NESAQ) users' guide on the development and operation of the wood energy facilities will help to reduce regulatory barriers to the use of wood energy for process heat?

Respondent skipped this question

Q38 What do you consider a NESAQ users' guide should cover? Please provide an explanation if possible.

Respondent skipped this question

Q39 Please describe any other options that you consider would be more effective at reducing regulatory barriers to the use of wood energy for process heat.

Respondent skipped this question

Q40 In your opinion, what technical rules relating to wood energy would be better addressed through the NESAQ than through the proposed users' guide (option 2.1)?

Respondent skipped this question

Page 8: Section 2 - continued: Developing markets for bioenergy and direct geothermal use

Q41 In your view, could the Industry Transformation Plans stimulate sufficient supply and demand for bioenergy to achieve desired outcomes?

Respondent skipped this question

Q42 What other options are worth considering?

Respondent skipped this question

Q43 Is Government best placed to provide market facilitation in bioenergy markets?

Respondent skipped this question

Q44 How could Government best facilitate bioenergy markets?Please be as specific as possible, giving examples.

Respondent skipped this question

Q45 In your view, how can government best support direct use of geothermal heat?

Respondent skipped this question

Q46 What other options are worth considering?

Respondent skipped this question

Page 9: Section 3: Innovating and building capability

Q47 Do you agree that de-risking commercially viable low-emission technology should be a focus of government support on process heat?

Neither agree nor disagree,
Please explain your answer:
To achieve the levels of electrification identified in the ICCC's Accelerated Electrification report, a large number of New Zealand businesses will need to adopt new technologies and processes and develop entirely new capabilities. We appreciate that in practice, adopting new technology and new businesses processes is harder than it sounds. From the perspective of the business, there is unfamiliarity and uncertainty about the new technology and processes – uncertainty as to cost, expected gains, how to implement it in practice, who are credible providers and advisors, and so on. These are all very real uncertainties, and they reduce the pace of change in a way that New Zealand cannot afford. MBIE is right to focus on reducing those uncertainties and empowering businesses to make the changes, and secure the benefits, more quickly. EECA grants to de-risk pilot projects may provide an opportunity for consultants and contractors to build capability and experience. Due to their position in the industry, they will be able to offer that capability more widely than growing it internally to specific businesses.

Q48 Do you agree that diffusing commercially viable low-emission technology should be a focus of government support on process heat?

Agree,
Please explain your answer:
Transitioning business processes to electricity will require New Zealand businesses to develop entirely new capabilities and adopt new technologies and processes. Transpower supports MBIE's proposals for practical measures to increase the amount of information available, reduce the uncertainties, and so increase the pace of change. Transpower has participated in early trial projects for process heat users investigating electrification as an avenue to decarbonisation. We believe that these trial projects are key to building a collective understanding of the options available to converting business processes to electricity. We will continue to support initiatives to de-risk these changes in technology and processes and develop capability. Transpower is also using the lessons and insights from these trials to update our processes, and information. We also suggest that trial projects should focus on building capability in parties that are able to cross-pollinate learnings to other process heat users. Examples could be building the capability of engineering consultants and construction contractors who work with multiple clients.

Q49 Is Energy Efficiency and Conservation Authority (EECA) grant funding to support technology diffusion the best vehicle for this?

Respondent skipped this question

Q50 For manufacturers and energy service experts: would peer learning and lead to reducing perceived technology risks?	**Respondent skipped this question**
Q51 For manufacturers and energy service experts: would on-site technology demonstration visits lead to reducing perceived technology risks?	**Respondent skipped this question**
Q52 Is there a role for the Government in facilitating this?	**Respondent skipped this question**

Page 10: Section 3 (continued): Innovating and building capability

Q53 For emissions-intensive and highly integrated (EIHI) stakeholders: What are your views on our proposal to collaborate to develop low-carbon roadmaps?	**Respondent skipped this question**
Q54 Would low-carbon roadmaps assist in identifying feasible technological pathways for decarbonisation?	**Respondent skipped this question**
Q55 What are the most important issues that would benefit from a partnership and co-design approach?	**Respondent skipped this question**
Q56 What, in your view, is the scale of resourcing required to make this initiative successful?	**Respondent skipped this question**

Page 11: Section 4: Phasing out fossil fuels in process heat

Q57 Do you agree with the proposal to ban new coal-fired boilers for low and medium temperature requirements?	**Strongly agree**
Q58 Do you agree with the proposal to require existing coal-fired process heat equipment for end-use temperature requirements below 100 degrees Celsius to be phased out by 2030?	**Strongly agree**

Q59 Referring to Question 56 - is this ambitious or is it not doing enough?

Please explain your answer:
Transpower supports MBIEs focus on phasing out fossil fuels in process heat. The ICCC and the Productivity Commission have identified process heat as some of the lowest hanging fruit available to decarbonise the New Zealand economy. The Ministry for the Environment's recently released Marginal Abatement Cost Curves also draw this conclusion. The ICCC's Accelerated Electrification report identified that 0.6 TWh of process heat would be electrified by 2035 under our Business As Usual policy settings, and that this could increase to 5.5 TWh if a path of accelerated electrification is pursued. This implies a policy opportunity of 4.9 TWh from stimulating and facilitating process heat conversions to electricity. Whakamana i Te Mauri Hiko finds a similar gap, and similar policy opportunity, of 3 TWh if New Zealand is to achieve the 4.5 TWh of forecast process heat demand by 2035 in the Accelerated Electrification base scenario. It is clear that on current policy settings New Zealand will not close this gap in 2035. This suggests that the policy opportunity for process heat electrification to make a material contribution toward New Zealand achieving its climate change targets is significant. As outlined earlier in this submission, to close the gap will require a policy response that consists of both policy and regulation to send the right market signals, and policy and regulation to remove barriers to enable delivery consistent with these market signals. Transpower's response to this section focusses on sending the right market signals for electrification of process heat. Transpower agrees that the ETS should be the primary policy lever to achieve decarbonisation of the energy sector. However, we doubt whether emissions pricing can single-handedly enable the full realisation of the decarbonisation opportunity. Complementary policies will be required to achieve more widespread decarbonisation. This is particularly relevant for process heat. The carbon price will be reflected in the offer price (bids) of coal and gas-fired generation plant, but it will also be reflected too in the offer prices of hydro, as it sets the opportunity cost of water as a fuel. Thus, the carbon price will be strongly reflected in the wholesale price of electricity, which is set by the highest offer dispatched. Under current market settings, a high carbon price will accelerate electrification by increasing the cost of direct use of oil, gas and coal, but will slow it down by increasing also the cost of electricity. This may have negative consequences on the balance of commercial incentives for the electrification of transport and process heat. Complementary policies that send market signals to transition away from the use of carbon intensive fuels for process heat will be required. Transpower supports MBIE's proposed ban on new coal fired boilers for low and medium temperature process heat, and the proposed ban on the use of coal for low temperature process heat applications from 2030. Transpower acknowledges that

	these policies will be useful to accelerate the transition away from coal. Additional or strengthened policies may be required after 2025 to drive deeper decarbonisation of process heat. An important characteristic that should be considered when implementing policies complementary to the ETS is to provide sufficient foresight to market participants to empower them to adjust their activities. Preferably, a policy like a ban on coal use should allow for a 5-10 year notice period to provide businesses with the opportunity to plan and prepare for a future without coal in their business. Sufficient foresight also allows Transpower to work with customers in advance of their requirements and to plan for a future Grid that meets those requirements. When defining the target of these policies it is important that multi-temperature sites are given careful consideration. If a process heat user requires high temperatures for one of their processes, and uses waste heat from this process to power a secondary, lower temperature process then requiring that lower temperature process to convert to a lower carbon energy source may lead to perverse outcomes.
Q60 For manufacturers: what would be the likely impacts or compliance costs on your business of a ban on new coal-fired process heat equipment?	**Respondent skipped this question**
Q61 For manufacturers: what would be the likely impacts or compliance costs on your business of requiring existing coal-fired process heat equipment supplying end-use temperature requirements below 100°C to be phased out by 2030.	**Respondent skipped this question**
Q62 Could the Corporate Energy Transition Plans (Option 1.1) help to design a more informed phase out of fossil fuels in process heat?	**Yes**
Q63 Would a timetabled phase out of fossil fuels in process heat be necessary alongside the Corporate Energy Transition Plans?	Please explain your answer: Any foresight that can be given to electricity industry participants would allow for a more orderly transition to low carbon process heat.
Q64 In your view, could national direction under the Resource Management Act (RMA) be an effective tool to support clean and low greenhouse gas-emitting methods of industrial production?	**Respondent skipped this question**
Q65 If yes, how?	**Respondent skipped this question**
Q66 In your view, could adoption of best available technologies be introduced via a mechanism other than the RMA?	**Respondent skipped this question**

Page 12: Section 5: Boosting investment in energy efficiency and renewable energy technologies

Q67 Do you agree that complementary measures to the New Zealand Emissions Trading Scheme (NZ-ETS) should be considered to accelerate the uptake of cost-effective clean energy projects?	**Strongly agree**

Q68 Would you favour regulation, financial incentives or both?

Please explain your answer:
Transpower believes that the Emissions Trading Scheme (ETS) should be the primary policy lever to encourage New Zealand's decarbonisation. However, we are clear that on its own, it will not stimulate the degree of change needed for New Zealand to meet its climate change targets. Complementary policy will be required if the New Zealand economy is to make the significant shifts required, and at the pace of change required, to meet the government's Paris and net zero targets. Modelling done by the ICCC and by Transpower shows a very significant difference between the outcomes under Business As Usual scenarios, where the economy stays on its current policy and regulatory settings, and the Accelerated Electrification scenarios, which is where New Zealand needs to be in 2035. This modelling work shines a spotlight on the gap in outcomes in 2035 that policy reform now must address. We support the complementary policies that are proposed in Section 4 to incentivise process heat conversions. In addition, we believe that complementary policies to encourage electric vehicle uptake are also important to achieving New Zealand's decarbonisation. Transport represents 20% of New Zealand's emissions, and approximately 40% of emissions when excluding biogenic methane. The ICCC and Productivity Commission identified the electrification of transport as a low-cost abatement opportunity. "EVs are one of New Zealand's most promising mitigation opportunities" – Productivity commission - Low Emissions Economy Report 2018 While MBIE has asked for industry assistance on questions in relation to renewable generation and process heat, Transpower also acknowledges the important connection with the electrification of transport which, from an electricity system perspective, is difficult to separate. The ICCC's Accelerated Electrification report identified that 2.7 TWh of transport electrification would occur under Business As Usual by 2035, and that this could increase to 5.7 TWh if a path of accelerated electrification is pursued. This implies a policy opportunity of 3 TWh from stimulating transport electrification. Whakamana i Te Mauri Hiko finds a similar gap of 2.6 TWh to be addressed by policy reform if we are to achieve the 4.9 TWh of forecast transport demand by 2035 in the Accelerated Electrification case. This suggests that the policy opportunity for transport electrification is significant, and that policy reform in transport is an important part of the challenge ahead for New Zealand. We appreciate that this consultation does not cover the issues and options specific to encouraging renewable energy or improving energy efficiency in the transport sector and look forward to future Government consultations on that subject. However, this consultation does we believe need to cover the likely physical impact of transport electrification on the electricity sector - which we believe will be considerable - and removing barriers to the

	electricity industry delivering the infrastructure required to support it.
Q69 In your view what is a bigger barrier to investment in clean energy technologies, internal competition for capital or access to capital?	**Respondent skipped this question**
Q70 If you favour financial support, what sort of incentives could be considered?	**Respondent skipped this question**
Q71 What are the benefits of these incentives?	**Respondent skipped this question**
Q72 What are the risks of these incentives?	**Respondent skipped this question**
Q73 What are the costs of these incentives?	**Respondent skipped this question**
Q74 What measures other than those identified above could be effective at accelerating investment in clean energy technologies?	**Respondent skipped this question**

Page 13: Section 6: Cost recovery mechanisms

Q75 What is your view on whether cost recovery mechanisms should be adopted to fund policy proposals in Part A of the Accelerating renewable energy and energy efficiency discussion document?	**Respondent skipped this question**
Q76 What are the advantages of introducing a levy on consumers of coal to fund process heat activities?	**Respondent skipped this question**
Q77 What are the disadvantages of introducing a levy on consumers of coal to fund process heat activities?	**Respondent skipped this question**

Page 14: Section 7: Enabling development of renewable energy under the Resource Management Act 1991

Q78 Do you agree that the current NPSREG gives sufficient weight and direction to the importance of renewable energy?	**Strongly disagree**

Q79 What changes to the NPSREG would facilitate future development of renewable energy?

Transpower considers that the NPSREG needs to be strengthened to include strongly worded directive policies which:

- provide for the locational and technical constraints of generation and associated Grid connections;
- recognise that not all effects can be avoided;
- cover the field in terms of natural environments considered; and
- reconcile the NPSREG with other NPSs with strong protective policies in order to prevent outright barriers to renewable energy development.

We expand on these types of policies below, drawing on Transpower's experience with implementing the NPSET (which is neither adequately directive and nor comprehensive.)

Policy 8 of the NPSET provides: "In rural environments, planning and development of the transmission system should seek to avoid adverse effects on outstanding natural landscapes, areas of high natural character and areas of high recreation value and amenity and existing sensitive activities." This "seek to avoid" approach was intended to require Transpower to apply a rigorous process to avoid impacts on high value natural areas, while recognising that it is not practical to avoid such effects in all circumstances.

This type of policy is useful, provided it covers the field in terms of environments covered, and its relationship with other NPSs is addressed.

Decision-makers must consider Policy 8 alongside other NPSs. The strong/directive policies of the New Zealand Coastal Policy Statement 2010 (NZCPS). Policies 11, 13 and 15 of the NZCPS require adverse effects on certain environments to be avoided absolutely. There is a potential conflict between the policy direction in the NPSET and NZCPS.

Because of Policy 8, Transpower has (through mediated outcomes) developed a planning policy and rule approach that requires a very robust assessment of National Grid transmission projects, but does not create a 'jurisdictional bar' to considering applications (that blanket 'avoidance' policies inherently create).

In contrast, other infrastructure providers (who do not have the benefit of a NPS) have not been able to achieve a similar outcome, including in the context of the Proposed Bay of Plenty Coastal Environment Plan. The High Court in Royal Forest and Bird Protection Society of New Zealand Inc v Bay of Plenty Regional Council [2017] NZHC 3080 determined that a policy and rule framework that would allow regionally significant infrastructure in high value coastal areas in limited circumstances failed to "give effect" to the NZCPS policies (including the 'protective' policies 11, 13 and 15 where were determined to be more directive than the 'enabling' policy 6 in the NZCPS). The outcome in the Bay of Plenty example will likely follow in all situations where there is an absence of NPS, an NPS does not cover the field, or it is weakly drafted.

As discussed above, the Supreme Court decision in Environmental Defence Society Inc v New Zealand King Salmon Company Ltd [2014] NZSC 38 emphasises the critical importance of applying accurate language in national policy statements and being very directive where intended. This decision from our highest court underlines the issues with the NPSREG (and the NPSET). Neither document is directive enough to ensure that decision-makers have 'no option but to implement it'.

This issue is exacerbated as more and more national direction is prepared. The NPSREG, NZCPS and the National Policy Statement for Freshwater Management (NPSFM) 2011 were developed around the same time. However, their preparation was not integrated.

The NPSFM was subsequently updated in 2014, without updates being made to the NPSREG (or NPSET) at the same time. Further, the Government is now consulting on further amendments to the NPSFM, as well as a draft National Policy Statement for Indigenous Biodiversity (NPSIB), National Policy Statement for Highly Productive Land (NPSHPL), National Policy Statement on Urban Development (NPSUD). These new statements risk further undermining the policy framework for renewables as they include more directive provisions than the NPSREG (and NPSET).

Transpower considers all of the potential options (presented on page 59) for amending the NPSREG could assist with facilitating the future development of renewable energy, subject to the details of the amendments. The following paragraphs address each of those options.

(a) Considering the national benefits of REG: The national benefits of renewable electricity generation (and associated Grid connections) need to be recognised at all levels of the resource management system in a clear and uncomplicated way. This recognition is important for accelerating renewables and to ensure any NPSREG policy is workable.

It must start at the top. Part 2 of the RMA currently requires decision-makers to "have particular regard to… the benefits to be derived from the use and development of renewable energy" (section 7(j)). However, the hierarchy in Part 2 means that a number of matters (such as outstanding natural features and landscapes in section 6(a)) can be prioritised above renewable energy.

Further, the statutory framework creates further interpretative complexity in that renewables (and electricity transmission in the NPSET) is recognised as a matter of "national significance" in the NPS. However, s6 of the RMA provides for matters of "national importance". And, the enabling provision for NPSs in the RMA - s45 – refers to the purpose of national policy statements as being "to state objectives and policies for matters of national significance that are relevant to achieving the purpose of this Act." This relatively broad language creates potential conflicts when weighing the benefits of renewables/electricity transmission against other

s6 matters of national importance. This matter then flows through to whether other NPSs can, or should be, a barrier to renewables (and trump the NPSREG.)

As set out in Transpower's submission on the Issues and Options Report, Transpower considers the statutory principles should be rewritten to better reflect the challenges of the current (and future) environment. The 'first tier' of the statutory principles should recognise the life-supporting capacity of air, water, soil and ecosystems. Climate change mitigation should be recognised in the same manner given the potential for this issue to compromise the options available for future generations. In addition, built infrastructure that is critical to the baseline wellbeing of people and communities, including electricity transmission, should be equally recognised in the statutory principles. The 'second tier' of statutory principles should recognise matters that are important – but not critical, and should not be subject to bottom lines. This would contain primarily 'amenity' matters.

It must then flow into national direction. The NPSREG does require decision-makers to recognise and provide for the benefits of renewable electricity generation (Policy A). However, there is no direction as to how those benefits are to be weighed against the impacts of REG. In that context, Policy A is weakly drafted, and likely to have little impact on decision-making. We consider that the NPS-REG needs to provide a comprehensive regime for the management of renewable electricity generation activities. It must ensure that the benefits of renewable electricity generation are 'taken as read' and do not need to be proven. It must provide clear direction on assessment of the effects of renewable electricity generation (and line connections if they are to be included), including any effects that could 'trump' the benefits, and the effects that simply need to be managed properly.

The recent High Court decision in Environmental Defence Society Incorporated v Otago Regional Council [2019] NZHC 2278 reiterates that the words used in national policy statements are critical. An enabling 'recognise' policy for an activity is not sufficiently directive when viewed alongside an effects-based 'avoid' policy. It is therefore important that the NPS-REG addresses both the positive and negative aspects of renewables (and line connections), and directs decision-makers to an outcome – rather than simply identifying matters to be considered in the round.

It must then flow into planning documents. The NPS-REG currently requires planning documents to include provisions to "provide for" renewable electricity generation activities (Policies E1-E4) – meaning that each district/region must develop its own provisions. In light of such weak direction, it is inevitable that some districts/regions will not adequately provide for renewables.

(b) Locating and planning strategically: Objectives and policies in relation to spatial planning could potentially be beneficial. Spatial planning in New Zealand to date has been inconsistent – there is no clear or consistent view on what it is. It is important that any spatial planning approach does not add an additional layer to the system, creating additional complexity and burden for stakeholders. Further, spatial planning is a resource intensive process. The legal weight given to spatial plans needs to reflect the level of resource invested in the process.

Spatial planning could potentially be a useful tool for identifying areas where renewable energy resources are located. However, strong and comprehensive national direction (in particular) would still be required to enable renewable generation activities, and would need to sit above spatial plans in the policy hierarchy. We do not consider it appropriate for councils to develop "specific strategies or policies for renewable energy development" (as suggested in bullet point (b)(ii)).

There are potential, but limited certainty benefits in identifying areas where certain types of renewable generation should not be developed (i.e. 'no-go' areas'). Any regulatory approach would need to provide adequate flexibility to allow for innovation. Further, and more importantly, given the nature of renewable energy and its source locations (coastal environments, natural landscapes), 'no-go' areas could be very limiting on new renewable generation. In implementing the NPSET, Transpower has continued to resist the National Grid being subject to 'no-go areas' for the very reason that it is hard, if not impossible, in many cases to avoid all sensitive areas. The issue is particularly relevant in defining wide-reaching landscapes or features as of high/significant natural importance, which could limit the use of huge areas of land and renewable electricity resources.

(c) The relationship between the NPSREG and freshwater management decisions: As discussed above, the NPSREG needs to provide a comprehensive regime for the management of renewable electricity generation activities. It is important that other national direction (existing or future) does not undermine the objectives sought by the NPSREG – including the current and proposed NPSFM. Transpower's submission on the RM Review Panel Issues and Options Paper sets out process improvements to provide for consistency between national direction (a rolling Board of Inquiry to consider proposed national direction (including integration across documents), and a requirement to review national direction as a package every ten years or sooner when needed to respond to particular triggers – see paragraph 105). In the shorter term, consistency can also be achieved through the drafting of the NPSREG itself. Further, the revised NPSREG should include policies that any change in minimum flows affecting hydro-generation needs to be considered at a national level, so that the cumulative impacts on resilience and security of electricity supply, electricity prices, and negative impacts on climate change (due to consequential need for oil or gas-fired peakers) can be appropriately evaluated.

(d) Facilitating upgrades of new and existing renewable generation facilities: The NPSREG needs to address both new and existing technologies. The definition of renewable electricity generation refers to generation of electricity from particular sources, and should be updated to ensure all foreseeable future technologies are captured. There is considerable information about the effects of existing technologies, and therefore these could be enabled through comprehensive national standards (or NES). Future technologies may require a higher degree of assessment, but should be supported by enabling policies as a minimum. It is

important that future technologies are not barred by an overly conservative ‘precautionary’ approach. Therefore, the NPSREG could provide guidance about appropriate levels of assessment for new technologies.
(e) Facilitating renewal of lapsing consents: Infrastructure providers should be encouraged to strategically plan for future works, including by seeking approvals in advance of planned construction. However, the lapsing of consents (and designations, for requiring authorities) is a barrier to such strategic planning. There are two issues relating to lapse dates. First, consents that have already been issued, and will shortly lapse. The reissuing of these consents could be supported by an enabling policy in the NPSREG (recognising the existing consent as a ‘baseline’) and a controlled activity rule in a NES. Second, longer lapse dates should be enabled for future applications for consent. This could be achieved through a NPSREG policy, and potentially matters of discretion/assessment criteria in a NES.
(f) Facilitating renewal of existing consents: Transpower agrees that the NPSREG (and associated NES) should provide for the renewal of existing consents, including to enable generation output to benefit from improvements in technology. The permitted baseline (s104(2) RMA) allows decision-makers to disregard the effects of activities permitted under a plan, but not activities permitted under an existing consent. It requires the decision-maker to consider an artificial reality, whereby the existing activity is presumed not to exist. The direction in s104(2A) RMA to consider the existing investment of consent holders is not sufficient. It does not reflect the reality that the environment and community has experienced while the existing consent has been in use.
(g) Development of transmission and distribution networks: As discussed above, we have read paragraph (g) as suggesting an intention to expand the NPSREG to include provisions for transmission and distribution networks. Transpower is supportive of this as a first step, although, our strong preference is for the NPSET to be strengthened. We are also concerned that if the NPSREG is strengthened, any benefit will be undermined if the NPSET remains weak.
It is inevitable that national direction on renewable electricity generation and on the National Grid will overlap (the NPSET and NPSREG already overlap in that the National Grid fits within the definition of “renewable electricity generation activities”). Dual regimes are still necessary because not all National Grid matters relate to renewable electricity generation (including demand-based connections to businesses) and the technical aspects of renewable electricity generation activities and National Grid activities are very different. Instead, the NPSREG must work with, and be consistent with, the NPSET to ensure that National Grid connections for renewable electricity generation can be provided in a timely and cost-effective manner. However, amendments to the NPSREG alone are unlikely to be sufficient. The NPSET must also be reviewed and updated concurrently with the NPSREG, as discussed in response to Q7.21 below.
(h) Small-scale renewable electricity generation: We agree that the NPSREG should be strengthened to enable small-scale renewables – for the same reasons as stated in relation to renewable generation (albeit on a smaller scale). We also note the Blue Skin bay example, where consent was declined due to adverse effects on amenity values trumping the benefits of renewable generation – discussed further in answer to 7.4/Q82 below).
(i) Acknowledging local benefits and impacts of renewable electricity generation: A revised NPSREG should provide a comprehensive regime for addressing the positive and negative effects of renewable electricity generation activities. The potential conflict with other national direction needs to be addressed. Further, it would be efficient if relevant objectives and policies were directly inserted into regional and district planning documents.

Q80 What policies could be introduced or amended to provide sufficient direction to councils regarding the matters listed in points a-i mentioned on pages 60-61 of the discussion document?

Transpower considers all of the potential options (presented on page 59) for amending the NPSREG could assist with facilitating the future development of renewable energy, subject to the details of the amendments. The following paragraphs address each of those options.

(a) Considering the national benefits of REG: The national benefits of renewable electricity generation (and associated Grid connections) need to be recognised at all levels of the resource management system in a clear and uncomplicated way. This recognition is important for accelerating renewables and to ensure any NPSREG policy is workable.

It must start at the top. Part 2 of the RMA currently requires decision-makers to "have particular regard to… the benefits to be derived from the use and development of renewable energy" (section 7(j)). However, the hierarchy in Part 2 means that a number of matters (such as outstanding natural features and landscapes in section 6(a)) can be prioritised above renewable energy.

Further, the statutory framework creates further interpretative complexity in that renewables (and electricity transmission in the NPSET) is recognised as a matter of "national significance" in the NPS. However, s6 of the RMA provides for matters of "national importance". And, the enabling provision for NPSs in the RMA - s45 – refers to the purpose of national policy statements as being "to state objectives and policies for matters of national significance that are relevant to achieving the purpose of this Act." This relatively broad language creates potential conflicts when weighing the benefits of renewables/electricity transmission against other s6 matters of national importance. This matter then flows through to whether other NPSs can, or should be, a barrier to renewables (and trump the NPSREG.)

As set out in Transpower's submission on the Issues and Options Report, Transpower considers the statutory principles should be rewritten to better reflect the challenges of the current (and future) environment. The 'first tier' of the statutory principles should recognise the life-supporting capacity of air, water, soil and ecosystems. Climate change mitigation should be recognised in the same manner given the potential for this issue to compromise the options available for future generations. In addition, built infrastructure that is critical to the baseline wellbeing of people and communities, including electricity transmission, should be equally recognised in the statutory principles. The 'second tier' of statutory principles should recognise matters that are important – but not critical, and should not be subject to bottom lines. This would contain primarily 'amenity' matters.

It must then flow into national direction. The NPSREG does require decision-makers to recognise and provide for the benefits of renewable electricity generation (Policy A). However, there is no direction as to how those benefits are to be weighed against the impacts of REG. In that context, Policy A is weakly drafted, and likely to have little impact on decision-making. We consider that the NPS-REG needs to provide a comprehensive regime for the management of renewable electricity generation activities. It must ensure that the benefits of renewable electricity generation are 'taken as read' and do not need to be proven. It must provide clear direction on assessment of the effects of renewable electricity generation (and line connections if they are to be included), including any effects that could 'trump' the benefits, and the effects that simply need to be managed properly.

The recent High Court decision in Environmental Defence Society Incorporated v Otago Regional Council [2019] NZHC 2278 reiterates that the words used in national policy statements are critical. An enabling 'recognise' policy for an activity is not sufficiently directive when viewed alongside an effects-based 'avoid' policy. It is therefore important that the NPS-REG addresses both the positive and negative aspects of renewables (and line connections), and directs decision-makers to an outcome – rather than simply identifying matters to be considered in the round.

It must then flow into planning documents. The NPS-REG currently requires planning documents to include provisions to "provide for" renewable electricity generation activities (Policies E1-E4) – meaning that each district/region must develop its own provisions. In light of such weak direction, it is inevitable that some districts/regions will not adequately provide for renewables.

(b) Locating and planning strategically: Objectives and policies in relation to spatial planning could potentially be beneficial. Spatial planning in New Zealand to date has been inconsistent – there is no clear or consistent view on what it is. It is important that any spatial planning approach does not add an additional layer to the system, creating additional complexity and burden for stakeholders. Further, spatial planning is a resource intensive process. The legal weight given to spatial plans needs to reflect the level of resource invested in the process.

Spatial planning could potentially be a useful tool for identifying areas where renewable energy resources are located. However, strong and comprehensive national direction (in particular) would still be required to enable renewable generation activities, and would need to sit above spatial plans in the policy hierarchy. We do not consider it appropriate for councils to develop "specific strategies or policies for renewable energy development" (as suggested in bullet point (b)(ii)).

There are potential, but limited certainty benefits in identifying areas where certain types of renewable generation should not be developed (i.e. 'no-go' areas'). Any regulatory approach would need to provide adequate flexibility to allow for innovation. Further, and more importantly, given the nature of renewable energy and its source locations (coastal environments, natural landscapes), 'no-go' areas could be very limiting on new renewable generation. In implementing the NPSET, Transpower has continued to resist the National Grid being subject to 'no-go areas' for the very reason that it is hard, if not impossible, in many cases to avoid all sensitive areas. The issue is particularly relevant in defining wide-reaching landscapes or features as of high/significant natural

sensitive areas. The issue is particularly relevant in defining wide-reaching landscapes or features as of high/significant natural importance, which could limit the use of huge areas of land and renewable electricity resources.

(c) The relationship between the NPSREG and freshwater management decisions: As discussed above, the NPSREG needs to provide a comprehensive regime for the management of renewable electricity generation activities. It is important that other national direction (existing or future) does not undermine the objectives sought by the NPSREG – including the current and proposed NPSFM. Transpower's submission on the RM Review Panel Issues and Options Paper sets out process improvements to provide for consistency between national direction (a rolling Board of Inquiry to consider proposed national direction (including integration across documents), and a requirement to review national direction as a package every ten years or sooner when needed to respond to particular triggers – see paragraph 105). In the shorter term, consistency can also be achieved through the drafting of the NPSREG itself. Further, the revised NPSREG should include policies that any change in minimum flows affecting hydro-generation needs to be considered at a national level, so that the cumulative impacts on resilience and security of electricity supply, electricity prices, and negative impacts on climate change (due to consequential need for oil or gas-fired peakers) can be appropriately evaluated.

(d) Facilitating upgrades of new and existing renewable generation facilities: The NPSREG needs to address both new and existing technologies. The definition of renewable electricity generation refers to generation of electricity from particular sources, and should be updated to ensure all foreseeable future technologies are captured. There is considerable information about the effects of existing technologies, and therefore these could be enabled through comprehensive national standards (or NES). Future technologies may require a higher degree of assessment, but should be supported by enabling policies as a minimum. It is important that future technologies are not barred by an overly conservative 'precautionary' approach. Therefore, the NPSREG could provide guidance about appropriate levels of assessment for new technologies.

(e) Facilitating renewal of lapsing consents: Infrastructure providers should be encouraged to strategically plan for future works, including by seeking approvals in advance of planned construction. However, the lapsing of consents (and designations, for requiring authorities) is a barrier to such strategic planning. There are two issues relating to lapse dates. First, consents that have already been issued, and will shortly lapse. The reissuing of these consents could be supported by an enabling policy in the NPSREG (recognising the existing consent as a 'baseline') and a controlled activity rule in a NES. Second, longer lapse dates should be enabled for future applications for consent. This could be achieved through a NPSREG policy, and potentially matters of discretion/assessment criteria in a NES.

(f) Facilitating renewal of existing consents: Transpower agrees that the NPSREG (and associated NES) should provide for the renewal of existing consents, including to enable generation output to benefit from improvements in technology. The permitted baseline (s104(2) RMA) allows decision-makers to disregard the effects of activities permitted under a plan, but not activities permitted under an existing consent. It requires the decision-maker to consider an artificial reality, whereby the existing activity is presumed not to exist. The direction in s104(2A) RMA to consider the existing investment of consent holders is not sufficient. It does not reflect the reality that the environment and community has experienced while the existing consent has been in use.

(g) Development of transmission and distribution networks: As discussed above, we have read paragraph (g) as suggesting an intention to expand the NPSREG to include provisions for transmission and distribution networks. Transpower is supportive of this as a first step, although, our strong preference is for the NPSET to be strengthened. We are also concerned that if the NPSREG is strengthened, any benefit will be undermined if the NPSET remains weak.

It is inevitable that national direction on renewable electricity generation and on the National Grid will overlap (the NPSET and NPSREG already overlap in that the National Grid fits within the definition of "renewable electricity generation activities"). Dual regimes are still necessary because not all National Grid matters relate to renewable electricity generation (including demand-based connections to businesses) and the technical aspects of renewable electricity generation activities and National Grid activities are very different. Instead, the NPSREG must work with, and be consistent with, the NPSET to ensure that National Grid connections for renewable electricity generation can be provided in a timely and cost-effective manner. However, amendments to the NPSREG alone are unlikely to be sufficient. The NPSET must also be reviewed and updated concurrently with the NPSREG, as discussed in response to Q7.21 below.

(h) Small-scale renewable electricity generation: We agree that the NPSREG should be strengthened to enable small-scale renewables – for the same reasons as stated in relation to renewable generation (albeit on a smaller scale). We also note the Blue Skin bay example, where consent was declined due to adverse effects on amenity values trumping the benefits of renewable generation – discussed further in answer to 7.4/Q82 below).

(i) Acknowledging local benefits and impacts of renewable electricity generation: A revised NPSREG should provide a comprehensive regime for addressing the positive and negative effects of renewable electricity generation activities. The potential conflict with other national direction needs to be addressed. Further, it would be efficient if relevant objectives and policies were directly inserted into regional and district planning documents.

Q81 How should the NPSREG address the balancing of local environmental effects and the national benefits of renewable energy development in RMA decisions?

As discussed in response to Q7.2 (Q76) above, Policy 8 of the NPSET requires a “seek to avoid” approach to be applied to effects of the National Grid on high value natural areas. Policy 4 requires consideration of the extents to which the site, route and method selection process has avoided, remedied or mitigated adverse effects. A similar effects-management approach could be required by the NPSREG. Linear infrastructure, such as the National Grid, is constrained by the location of existing lines, new generation, and new demand, which it must connect. Renewable electricity generation activities are constrained by the location of natural resources, such as wind. In light of such circumstances, it will not always be possible to locate, design and manage renewable electricity generation activities such that the desired benefits are achieved, and adverse effects are all avoided. That ‘perfect outcome’ cannot be the bottom line in a world that requires a significant increase in renewables. Instead, the NPSREG should put in place priorities and processes to guide applicants and decision-makers to ensure balanced outcomes are achieved on a project-by-project basis, with the overall goal of increased REG being achieved at a national level.
We note that the Board of Inquiry considering the proposed NPSREG recommended a policy A.2 that required decision-makers to “give greater weight to such national significance [of REG] over local environmental matters” (particularly local amenity values). The Board considered that policy would promote the national significance objective in the NPSREG. The Minister for the Environment did not accept that recommendation, based on concerns about a lack of clear definition of “local environmental matters” making the application of the policy uncertain where different section 6 and 7 matters were relevant.

Q82 What are your views on the interaction and relative priority of the NPSREG with other existing or pending national direction instruments?

Transpower agrees with the conclusions of the Interim Climate Change Commission , Productivity Commission and Ministry for the Environment that the position of the NPSREG relative to other NPSs is weak.
As discussed in response to Q7.2 above, the lack of direction in the NPSREG is particularly problematic in light of the promulgation of other NPSs, the Supreme Court decision in Environmental Defence Society Inc v New Zealand King Salmon Company Ltd [2014] NZSC 38 and High Court decision Environmental Defence Society Incorporated v Otago Regional Council [2019] NZHC 2278. The lack of direction in the NPSREG means that generators have been in a more similar position to other infrastructure providers (who do not have the benefit of a NPS at all).
The relationship between the NPSREG and NZCPS is different from the NPSREG relationship with other NPSs. The RMA implicitly prioritises coastal issues through its separate sections addressing the NZCPS (ss56-58A) and other NPSs (ss45-45A). This reflects the key environmental issues that existed at the time the RMA was prepared, but not today’s challenges. The impact of this differentiation has been limited to date, however High Court authority suggests it could become problematic – particularly given the likelihood of renewable electricity generation being located in coastal areas. In Transpower v Auckland Council [2017] NZHC 281 the Court said:

… the New Zealand Coastal Policy Statement …, and the NPSET, derive from different sections of the Act, which use different terms. Section 56 makes it clear that the purpose of the New Zealand Coastal Policy Statement is to state policies in order to achieve the purpose of the Act. In contrast, the NPSET was promulgated under s 45(1). Its purpose is to state objectives and policies that are relevant to achieving the purpose of the Act. Section 56 suggests that the New Zealand Coastal Policy Statement is intended to give effect to the Part 2 provisions in relation to the coastal environment. A national policy statement promulgated pursuant to s 45 contains provisions relevant to achieving the Resource Management Act’s purpose. The provisions are not an exclusive list of relevant matters and they do not necessarily encompass the statutory purpose … the NPSET is not as all embracing of the Resource Management Act’s purpose set out in s 5 as is the New Zealand Coastal Policy Statement.

We consider that the NPSREG is weaker than both the proposed NPSFM and NPS-Indigenous Biodiversity. The concept of Te Mana O Te Wai in the NPSFM, together with the protectionist policies mean that a realistic consenting pathway may not exist, even for nationally significant infrastructure. Transpower’s submission on the Action for Healthy Waterways discussion document expands on these issues. Similar issues arise in relation to the strong policies in the NPS-Indigenous Biodiversity, to the extent that it is a barrier to both renewable generation and Grid connections in its current form.

Q83 Do you have any suggestions for how changes to the NPSREG could help achieve the right balance between renewable energy development and environmental outcomes?

See response to Q7.3 (Q 77)above.

Q84 What objectives or policies could be included in the NPSREG regarding councils' role in locating and planning strategically for renewable energy resources?

Mapping of areas where renewable energy resources are located could potentially be useful. However, we consider that the role of locating and strategic planning should not be required of councils. This is due to the operational and functional requirements of generation infrastructure being within the knowledge of the infrastructure operator, rather than councils. We address spatial planning more generally, including its limits, in response to Q7.2 (Q76) (b) and following.
Locating and planning strategically: Objectives and policies in relation to spatial planning could potentially be beneficial. Spatial planning in New Zealand to date has been inconsistent – there is no clear or consistent view on what it is. It is important that any spatial planning approach does not add an additional layer to the system, creating additional complexity and burden for stakeholders. Further, spatial planning is a resource intensive process. The legal weight given to spatial plans needs to reflect the level of resource invested in the process.
Spatial planning could potentially be a useful tool for identifying areas where renewable energy resources are located. However, strong and comprehensive national direction (in particular) would still be required to enable renewable generation activities, and would need to sit above spatial plans in the policy hierarchy. We do not consider it appropriate for councils to develop "specific strategies or policies for renewable energy development" (as suggested in bullet point (b)(ii)).
There are potential, but limited certainty benefits in identifying areas where certain types of renewable generation should not be developed (i.e. 'no-go' areas'). Any regulatory approach would need to provide adequate flexibility to allow for innovation. Further, and more importantly, given the nature of renewable energy and its source locations (coastal environments, natural landscapes), 'no-go' areas could be very limiting on new renewable generation. In implementing the NPSET, Transpower has continued to resist the National Grid being subject to 'no-go areas' for the very reason that it is hard, if not impossible, in many cases to avoid all sensitive areas. The issue is particularly relevant in defining wide-reaching landscapes or features as of high/significant natural importance, which could limit the use of huge areas of land and renewable electricity resources

Q85 Can you identify any particular consenting barriers to development of other types of renewable energy than REG, such as green hydrogen, bioenergy and waste-to-energy facilities?

The potential for consenting authorities to be too conservative when faced with a consent application for new types of renewable electricity generation (or new technology) is a potential barrier. The application of a 'precautionary approach' could hinder the consenting of these REG activities. This is likely to be a particular issue in the coastal environment, where Policy 3 of the NZCPS requires decision makes to "[a]dopt a precautionary approach towards proposed activities whose effects on the coastal environment are uncertain, unknown, or little understood, but potentially significantly adverse". NPSREG policies to enable new technologies will need to address this potential barrier specifically (a general enabling policy will not be enough). A NES could minimise the risks associated with non-complying rules in plans, by providing a 'catch all' rule for renewable electricity generation activities that is discretionary at the most stringent.
Transpower's submission to the RM Review Panel suggested that a rolling Board of Inquiry be established to consider national direction, and there be a statutory requirement to review national direction regularly and in response to triggers. These mechanisms would help to ensure national direction is kept up-to-date in the face of new technologies (i.e. to add comprehensive standards for other types of REG as they become more understood).

Q86 Can any specific policies be included in a national policy statement to address these barriers?

Transpower has limited technical expertise in relation to small-scale renewable energy projects that would enable it to comment on specific policy content.
However, we note that some of the challenges for small-scale renewable generation have been, or are, the same as for larger scale renewables. In particular, the Blue Skin bay example (summarised at page 58 of the discussion document) highlights the tensions between a weakly drafted NPS-REG and the elevation of amenity values in section 7 of the RMA. In that instance, amenity values outweighed the benefits of renewable generation

Q87 What specific policies could be included in the NPSREG for small-scale renewable energy projects?

Transpower has limited technical expertise in relation to small-scale renewable energy projects that would enable it to comment on specific policy content.
However, we note that some of the challenges for small-scale renewable generation have been, or are, the same as for larger scale renewables. In particular, the Blue Skin bay example (summarised at page 58 of the discussion document) highlights the tensions between a weakly drafted NPS-REG and the elevation of amenity values in section 7 of the RMA. In that instance, amenity values outweighed the benefits of renewable generation.
It is important that the RMA provides a realistic approval pathway for renewable generation of any scale. Strong enabling policies are required. In drafting specific enabling policies, consideration needs to be given to the protectionist policies in existing NPSs (such as the NZCPS) and proposed NPSs (such as the NPS-IB and NPS-FM) to ensure they are not a barrier to renewable energy projects.
In the absence of a rolling review of national direction (as we propose in our 'Optimal Package of RMA reform"), this resolution between the various NPSs needs to occur in the NPS-REG (and any other NPSs that are being developed).

Q88 The NPSREG currently does not provide any definition or threshold for "small and community-scale renewable electricity generation activities". Do you have any view on the definition or threshold for these activities?

Respondent skipped this question

Q89 What specific policies could be included to facilitate re-consenting consented but unbuilt wind farms, where consent variations are needed to allow the use of the latest technology?

A key issue is that applications for renewal of existing consents are considered afresh, without any formal recognition of a 'baseline' formed by the existing consents/activities (because the permitted baseline test is limited to plan rules, the existing environment test is focused on the off-site environment, and existing use rights don't apply in the context). Another key issue is that changes/variations to consent conditions under s127 RMA are limited by the scope of the original application for consents. Inevitably, new technology is often outside that scope (i.e. it is "materially different"), and new consents are required rather than a change/variation.
Transpower considers the NPSREG should include policies that enable the renewal of existing consents by recognising existing consents/activities as establishing a 'baseline' of appropriate effects. This policy direction should be supported by a controlled activity rule in a NES (or national planning standards), which allows the renewal of existing consents to be focused on conditions for managing effects, rather than whether or not consent should be granted.

Q90 Are there any downsides or risks to amending the NPSREG?

There are few downsides to amending the NPSREG, as it is weakly drafted and ineffective.
However, there are risks to amending the NPSREG in a vacuum. As discussed above, it is necessary to ensure that the NPSREG is comprehensive, and any potential policy conflicts with other national direction are resolved at the level of the NPSREG, rather than leaving that task to local plans. As discussed in response to Q7.20 below, Transpower considers that the NPSET needs to be reviewed and amended in parallel so that the two documents work together to deliver the renewable energy development needed.

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Q91 Do you agree that National Environmental Standards (NES) would be an effective and appropriate tool to accelerate the development of new renewables and streamline re-consenting?

Agree

Q92 What are the pros of using National Environmental Standards as a tool to accelerate the development of new renewables and streamline re-consenting?

The key benefit of an NES is the immediate impact on the rule framework applying to activities, which avoids the delays and resources required to implement NPSs into local plans.
To maximise this impact, an NES would provide a comprehensive regime for renewable electricity generation activities. Transpower's experience with the NESETA demonstrates the issues that arise from a partial regime. The NESETA has proved useful for activities on existing National Grid lines, although a number of gaps have emerged over time, including not keeping up with changes in technology and industry standards. The lack of a NES for third party activities is a key issue however (as discussed at Q7.20 below).
The relationship between any NESREFA and plan rules also needs to be carefully considered. Section 44A RMA requires local plans to remove rules that duplicate or conflict with a NES, which includes the removal of more lenient rules, unless clearly set out in the NES. This has been an issue with NESETA which does not expressly allow for more lenient rules. Any NESREFA should not rely on planning rules determining its impact. For example, the definition of 'natural area' in NESETA is linked to planning rules, requiring Transpower to keep a close eye on relevant local authority planning processes. That is inconsistent with the objective of NESs of reducing the need to participate in planning processes.
The relationship between any NESREFA and designations also needs to be addressed (if the RMA is amended so that generators can become requiring authorities). Section 43D RMA means that designations cannot be used for activities regulated by an NES, reducing the consenting tools available for no clear purpose. Designations provide longer term flexibility than resource consents, and applicants should be enabled to choose the tool that is most appropriate to the project. This issue needs to be addressed as a priority. A simple option to address this issue is to amend s43D RMA to allow a NES to provide a tailored approach for its relationship with designations. A specific NES could therefore maintain the default approach in s43D, or provide flexibility for applicants to choose the appropriate tool in certain circumstances.
Finally, the document will need to be regularly reviewed and amended to ensure they continue to be fit-for-purpose (including to provide for new technologies).

Q93 What are the cons of using National Environmental Standards as a tool to accelerate the development of new renewables and streamline re-consenting?

The key benefit of an NES is the immediate impact on the rule framework applying to activities, which avoids the delays and resources required to implement NPSs into local plans.
To maximise this impact, an NES would provide a comprehensive regime for renewable electricity generation activities. Transpower's experience with the NESETA demonstrates the issues that arise from a partial regime. The NESETA has proved useful for activities on existing National Grid lines, although a number of gaps have emerged over time, including not keeping up with changes in technology and industry standards. The lack of a NES for third party activities is a key issue however (as discussed at Q7.20 below).
The relationship between any NESREFA and plan rules also needs to be carefully considered. Section 44A RMA requires local plans to remove rules that duplicate or conflict with a NES, which includes the removal of more lenient rules, unless clearly set out in the NES. This has been an issue with NESETA which does not expressly allow for more lenient rules. Any NESREFA should not rely on planning rules determining its impact. For example, the definition of 'natural area' in NESETA is linked to planning rules, requiring Transpower to keep a close eye on relevant local authority planning processes. That is inconsistent with the objective of NESs of reducing the need to participate in planning processes.
The relationship between any NESREFA and designations also needs to be addressed (if the RMA is amended so that generators can become requiring authorities). Section 43D RMA means that designations cannot be used for activities regulated by an NES, reducing the consenting tools available for no clear purpose. Designations provide longer term flexibility than resource consents, and applicants should be enabled to choose the tool that is most appropriate to the project. This issue needs to be addressed as a priority. A simple option to address this issue is to amend s43D RMA to allow a NES to provide a tailored approach for its relationship with designations. A specific NES could therefore maintain the default approach in s43D, or provide flexibility for applicants to choose the appropriate tool in certain circumstances.
Finally, the document will need to be regularly reviewed and amended to ensure they continue to be fit-for-purpose (including to provide for new technologies).

Q94 What do you see as the relative merits and priorities of changes to the NPSREG compared with work on NES?

We consider that strengthening the NPSREG should be a priority over developing an NES – as a strong NPSREG is important to overcome barriers created by other NPSs.
However, we consider that both a NPS and NES would provide a beneficial package of national direction for renewable electricity generation. The strengthened NPSREG would set the policy framework (including national priorities) and the NES would set the rule framework. Both documents are needed to provide a comprehensive framework for renewable electricity generation. Both documents may be relevant to consenting (e.g. NPSREG policies will guide consenting of discretionary activities).
An NPS alone can lead to long and resource intensive processes to give effect to the document. For example, the NPSET addresses third party activities, but a NES on the topic was not progressed. This gap has required Transpower to invest considerable time and effort in ensuring local plans give effect to the policy direction in the NPSET. This issue could be mitigated in part by more directive policies or policies that are directly inserted into plans, however that would not address the rule framework.
A NES alone, unsupported by overarching policy, can result in debate about interpretation. Further, NPSREG policy guidance is needed for decision-making on some consent applications (e.g. discretionary activities) even with a NES in place.

Q95 What are the downsides and risks to developing NES?

A key downside is the impact on the ability to use designations, as discussed in response to Q7.12 above.
An emerging risk is the expanding suite of national direction. For example, the NESETA was intended to provide a near-comprehensive management regime for existing transmission lines, but the Proposed National Environmental Standards for Freshwater will introduce a new regulatory layer. The RMA does not currently address the relationship between different NESs. The relationship may be addressed in the standards themselves, but it may not be. For example, the Proposed National Environmental Standards for Freshwater specifically address overlaps with the National Environmental Standards for Plantation Forestry , but not other national environmental standards. This example suggests that it is not unreasonable or impractical to address overlaps between standards. It is critical that any NESREFA does not simply add another layer of regulation, but does result in simplification. The relationship with other NESs will therefore need to be specifically addressed in any document.
Another key risk is the potential for overlap between the NESETA and a NESREFA given the definition of renewable electricity generation activities includes “the system of electricity conveyance”. The line between the two regulatory documents will need to be clear to avoid confusion and (potentially) a doubling-up of regulation. We note that the discussion document (at “g” on page 62) states the NESREFA could potentially set out:
“the consenting framework for high voltage lines that are connected to REG facilities but are not part of the National Grid (Note: High voltage lines that are not part of the National Grid are not covered by the existing NPSET and NESETA.)”
While the NPSET applies to all National Grid assets, the NESETA only applies to National Grid lines that were able to be operated and in existence at 15 January 2010. Accordingly, it does not apply to new lines (or substations).

Q96 What renewables activities (including both REG activities and other types of renewable energy) would best be suited to NES?

As noted in response to Q7.14 (Q90) above, there needs to be a clear line between activities regulated by the NESREG and the NESETA to avoid confusion and (potentially) a doubling-up of regulation.

Q97 What technical issues could best be dealt with under a standardised national approach?

We have not answered this question as the question is not raised in the discussion document.

Q98 Would it be practical for NES to set different types of activity status for activities with certain effects, for consenting or re-consenting?

Please explain your answer:
We have not answered this question as the question is not raised in the discussion document.

Q99 Are there any aspects of renewable activities that would have low environmental effects and would be suitable for having the status of permitted or controlled activities under the RMA? Please provide details.

We have not answered this question as the question is not raised in the discussion document.

Q100 Do you have any suggestions for what rules or standards could be included in NES or National Planning Standards to help achieve the right balance between renewable energy development and environmental outcomes?

The rules for existing technologies could reflect the national benefits of renewable electricity generation, and assume approval unless there is a critical flaw (e.g. controlled or restricted discretionary status). The rules could ensure the positive effects of the project are considered (a key gap in the NESETA, as discussed below), and focus on ensuring adverse effects are appropriately managed through well-known best practice techniques.
Future technologies may require a higher degree of assessment, but a 'catch all' discretionary activity rule would ensure that non-complying activity status is not a barrier to such projects. Guidance on appropriate levels of assessment for new technologies (e.g. information requirements, assessment criteria) would assist.

Q101 Compared to the NPSREG or National Environment Standards, would National Planning Standards or any other RMA tools be more suitable for providing councils with national direction on renewables ?

NPSREG or NES are sufficient

Q102 Please explain your answer

Transpower considers NPS and NES are more suitable for providing national direction on renewables, as national planning standards sit lower in the RMA hierarchy compared to NPS and NES. National Planning Standards must give effect to NPSs and be consistent with NESs (s58C RMA). Further, NPS and NES are more well-known and well understood planning tools, and this experience has taken many years to be developed. There is therefore less risk in developing NPS and NES.

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Q103 Are there opportunities for non-statutory spatial planning techniques to help identify suitable areas for renewables development (or no go areas)?

Yes,
Please explain your answer:
There is no clear or consistent view on what spatial planning is. We consider it important that any spatial planning requirements are clear on what they intend to achieve and the benefits of the process. The benefit of non-statutory spatial planning is that it could be updated more frequently and potentially without undue process. Mapping areas where generation resource could be located, and also potential "no-go" areas could be beneficial. (Various maps of generation resource are available publicly.) A map of this kind at a national level may potentially assist in understanding whether there is sufficient resource available to meet our climate change commitments. However, it is not clear whether preparation of such a map requires a spatial planning process to be followed.

Q104 Do you have any comments on potential options for pre-approval of renewable developments?

Infrastructure providers should be encouraged to strategically plan for future works. Transpower agrees that a ‘pre-approval’ process that gives a high degree of certainty to an operator that they will obtain the required approvals is needed. Transpower’s submission to the RM Review Panel proposed a “staged” approval process that would provide for strategic planning of nationally significant infrastructure.
The “staged” process would provide for a ‘concept approval’ to be obtained to enable strategic planning of infrastructure, with the detail to be determined through a ‘conditions approval’ stage (which could be many years later). A project would be identified as “nationally significant” similar to the existing process. The legal tests would require the national significance of the project to be recognised in the decision-making process. The information requirements for the ‘concept approval’ stage would be high level, with detailed plans and conditions considered at the ‘conditions approval’ stage. Public notification would occur at the ‘concept approval’ stage, with no or limited notification at the ‘conditions approval’ stage. Both stages would be managed by the EPA, with an Independent Hearings Panel as decision-maker. Appeals would be limited to points of law only.
Transpower prefers this “staged” approval process to options A to C set out in the Discussion Document.

Q105 Are the current National Policy Statement on Electricity Transmission (NPSET) and National Environmental Standards for Electricity Transmission Activities (NESETA) fit-for-purpose to enable accelerated development of renewable energy?

NPSET

NOT fit-for-purpose

NESETA

NOT fit-for-purpose

Please explain your answer

Neither the NPSET nor NESETA is fit-for-purpose to enable accelerated renewables or demand connections for electrification of process heat in industry or electrification of transport. The NPSET contains gaps, requires avoidance of environments that are not practical or which are not appropriately subject to “bottom lines” and is generally weakly drafted in comparison to the existing and new NPSs – consenting barriers will result. See Q7.2 for a fuller discussion of these issues. The NESETA does also contains gaps and has some workability issues – it has not kept pace with technology. It also does not apply to new lines, substations or cables. We expand on these issues below. The Productivity Commission has recommended that the Government “prioritise strengthening” the NPSET to ensure local authorities give sufficient weight to the role that the transmission network will play in New Zealand’s transition to a low-emissions economy. It specifically recommended that the language of the NPSET become “more directive”. The Ministry for the Environment also recently undertook a review of the NPSET (and NESETA). The review concluded in light of changes in technology and the significant programme of upcoming works “the instrument could be revisited to support the Government’s priority of “secure and affordable energy” … and move towards a climate-resilient Aotearoa New Zealand”. NPSET issues The promulgation of new national direction, without properly resolving the relationship with existing national direction is resulting in conflicts, interpretation issues that result in litigation and the continued ‘watering down’ of what was intended to be comprehensive national direction for the National Grid. See Q7.2 for the issues in relation to policy 8 of the NPSET and policies 11,13 and 15 of the NZCPS, in light of King Salmon. In addition to the known issues created by NPSs developed after the NPSET, new NPSs are currently being developed. This new national direction is being produced in an ad hoc and siloed way, and will raise new interpretation issues as multiple documents need to be applied in planning and approval processes. The creation of new statements, without consequential review of the NPSET, also risks diluting the comprehensive framework that the NPSET was intended to provide for the National Grid. This could lead to additional barriers that make consenting new National Grid connections difficult, complex, slow and costly. The approach to interpreting the NPSET in this emerging context is likely to be more uncertain and onerous, giving rise to new risks for consenting for the National Grid. Further, even with the NPSET in place, Transpower is required to actively participate in planning processes to advocate for planning

provisions that give effect to the NPSET. This process is highly resource intensive and, even with Transpower's involvement, there are inconsistencies in the extent to which, and how, planning documents reflect the directions set out in the NPSET. By way of example, over the last 5 years, Transpower has participated in over 40 regional and district planning processes across New Zealand. Since 2013, the cost to Transpower alone is in excess of $10 million. There are several other parties also regularly involved in these discussions. It is highly inefficient for these efforts to be repeated across New Zealand, where the planning outcome for the National Grid should be consistent across the country. It is critical that the NPSET provide a comprehensive regime for all National Grid issues in all environments, and front-foot any potential conflicts with other national direction, in order to ensure it can effectively enable accelerated development of REG. There are also a number of gaps and issues with the NPSET that need to be addressed: • The NPSET is now 10 years old and the drafting is showing its age. It creates some uncertainties, particularly when the NPSET is considered alongside subsequent national direction (for example, the NPSET refers to high natural character areas, but the NZCPS subsequently introduced the concept of outstanding natural character areas). Another key issue is the different ways the term 'upgrade' is used throughout the document. • The preamble does not reflect current resource management challenges (e.g. climate change adaptation and mitigation) and includes expressions of the law that are no longer correct following case law developments (e.g. Environmental Defence Society Inc v New Zealand King Salmon Company Ltd). • The approach to managing the effects of the National Grid, including in high value natural areas, needs to be updated, and more direction provided. The NPSET needs to resolve potential tensions with other NPSs addressing management of environmental effects. The urban-rural approach in Policies 7 and 8 creates interpretation issues, and needs to be revisited. Policy 6 leads to pressure to underground lines, which does not reflect the cost of underground lines being 7-10x greater than aboveground lines. The approach to electric and magnetic fields is out-of-date, and needs to reflect the latest guidance. • The approach to third party activities could be updated, and more direction provided, to reflect the approach that has now been agreed in most districts. Requirements for objectives/policies to be directly inserted into regional policy statements, regional plans and district plans should also be considered to minimise the implementation burden on Transpower and councils. Question 7.21 - What changes (if any) would you suggest for the NPSET and NESETA to accelerate the

development of renewable energy? See appendices for requested amendments to the NPSET, NESETA and new standards. Question 7.22 - Can you suggest any other options (statutory or non-statutory) that would help accelerate the future development of renewable energy? Yes. Transpower's submission to the RM Review Panel addresses broader resource management system reforms that would help accelerate the future development of renewable energy. Those reforms include recognition of climate change mitigation in the statutory purpose and principles, and other amendments to ensure that climate change is a relevant matter in resource management decision-making. Another helpful reform would be to make requiring authority status available to renewable energy generators. Designations could also offer a tool to help accelerate the future development of renewable energy. In addition to allowing the requiring authority to use land for the designated purpose, designations restrict activities that would prevent or hinder the designated works, and provide landowner rights to access compensation. The role/scope of designations could be extended to occupation of the coastal marine area and regional consents. Statutory improvements Transpower's submission to the RM Review Panel seeks a number of improvements sought to the statutory framework for national direction to enable a more nimble response to new issues and technologies. In summary, those improvements are: • A rolling Board of Inquiry could be established to consider submissions and provide recommendations on national direction. The Board could be supported by advisory groups on the particular issues addressed in each piece of national direction. It could also consider integration across national direction documents, and recommend consequential amendments where necessary. The rolling Board of Inquiry could also receive reviews of existing national direction, and be tasked with recommending amendments. f • A requirement to review national direction, as a package, every ten years (as for local authority plans) and/or sooner when needed to respond to particular triggers (such as significant case law or new international obligations) would ensure that documents are kept up-to-date, fit for purpose, and aligned as a broader suite of national direction. Transpower's submission to the RM Review Panel also notes the contenting challenges that face National Grid upgrade and development projects that are not regulated by NESETA, even with the NPSET in place. The process for obtaining approvals for major infrastructure projects have become significantly more onerous over the lifetime of the RMA. The approvals processes under the RMA also do not provide for long

term strategic planning and certainty over a 20-30 year horizon. The existing bespoke process for "nationally significant proposals is accordingly extremely resource intensive, and few infrastructure providers have chosen to use it. Transpower's submission proposes improvements to the current "nationally significant proposal" process to better recognise the critical importance of infrastructure and respond to the particular approvals' challenges faced by infrastructure. Those process improvements would support improved national direction for the National Grid. These amendments to the statutory framework are focused on long term improvements. In the short term however, improvements to the national direction for the National Grid are needed urgently and can be progressed within the current statutory framework.

Q106 What changes (if any) would you suggest for the NPSET and NESETA to accelerate the development of renewable energy?

The NESETA currently addresses existing transmission lines. It requires amendment to provide a comprehensive RMA regime for all National Grid assets and issues in all environments.
Amendments to the provisions for existing transmission lines will be required. New sections addressing new transmission lines (and possibly substations) and third party activities will be required.
Principles to guide the drafting of amendments to the NESETA are set out in the table below.
See Appendices 1 and 2 of Transpower's written submission. These appendices provide comprehensive proposals for change and the benefits of change, for the NPSET (Appendix 1 of our uploaded document) and for the NESETA (Appendix 2 of the uploaded document).

Q107 Can you suggest any other options (statutory or non-statutory) that would help accelerate the future development of renewable energy?

Yes. Transpower's submission to the RM Review Panel addresses broader resource management system reforms that would help accelerate the future development of renewable energy. Those reforms include recognition of climate change mitigation in the statutory purpose and principles, and other amendments to ensure that climate change is a relevant matter in resource management decision-making. Another helpful reform would be to make requiring authority status available to renewable energy generators.

Designations could also offer a tool to help accelerate the future development of renewable energy. In addition to allowing the requiring authority to use land for the designated purpose, designations restrict activities that would prevent or hinder the designated works, and provide landowner rights to access compensation. The role/scope of designations could be extended to occupation of the coastal marine area and regional consents.

Statutory improvements

Transpower's submission to the RM Review Panel seeks a number of improvements sought to the statutory framework for national direction to enable a more nimble response to new issues and technologies. In summary, those improvements are:

- A rolling Board of Inquiry could be established to consider submissions and provide recommendations on national direction. The Board could be supported by advisory groups on the particular issues addressed in each piece of national direction. It could also consider integration across national direction documents, and recommend consequential amendments where necessary. The rolling Board of Inquiry could also receive reviews of existing national direction, and be tasked with recommending amendments.
- A requirement to review national direction, as a package, every ten years (as for local authority plans) and/or sooner when needed to respond to particular triggers (such as significant case law or new international obligations) would ensure that documents are kept up-to-date, fit for purpose, and aligned as a broader suite of national direction.

Transpower's submission to the RM Review Panel also notes the contenting challenges that face National Grid upgrade and development projects that are not regulated by NESETA, even with the NPSET in place. The process for obtaining approvals for major infrastructure projects have become significantly more onerous over the lifetime of the RMA. The approvals processes under the RMA also do not provide for long term strategic planning and certainty over a 20-30 year horizon. The existing bespoke process for "nationally significant proposals is accordingly extremely resource intensive, and few infrastructure providers have chosen to use it. Transpower's submission proposes improvements to the current "nationally significant proposal" process to better recognise the critical importance of infrastructure and respond to the particular approvals' challenges faced by infrastructure. Those process improvements would support improved national direction for the National Grid.

These amendments to the statutory framework are focused on long term improvements. In the short term however, improvements to the national direction for the National Grid are needed urgently and can be progressed within the current statutory framework.

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Q108 Do you agree there is a role for government to provide information, facilitate match-making and/or assume some financial risk for PPAs?

Respondent skipped this question

Q109 Would support for PPAs effectively encourage electrification?

Yes - support for PPAs would effectively encourage electrification

Q110 Would support for PPAs effectively encourage new renewable generation investment?

Yes - support for PPAs would effectively renewable generation investment

Q111 How could any potential mismatch between generation and demand profiles be managed by the Platform and/or counterparties?

Our analysis in Whakamana i Te Mauri Hiko indicates that renewable generation provides a low-cost path to meeting the forecast growth in electricity demand. Modelling undertaken in the project finds that due to declining renewable generation technology costs, renewable electricity is forecast to represent 95% of electricity supply in 2035 in our Accelerated Electrification scenario.
We acknowledge that a number of new renewable energy plants are being built now in the absence of additional policies. The possible emergence of commercial PPAs could accelerate this transition.
If an electricity purchaser has an offtake with an intermittent renewable energy generator, then it may need to hedge the remaining firming generation either via a bilateral contract with a generator via the futures market or via an arrangement with their retailer.

Q112 Please rank the following variations on PPA Platforms in order of preference.1 = most preferred, 4 = least preferred.

Respondent skipped this question

Q113 What are your views on Contract Matching Services?

It is Transpower's view that this could be the form that a medium-term mature PPA market in New Zealand might take. It provides many of the benefits of a clearing house but does not require the volumes of transaction that are required to make a clearing house worthwhile.

Q114 What are your views on State sector-led PPAs?

If the government wishes to encourage new generation build, then the establishment of a PPA platform is desirable. Focusing on state sector conversions first may provide a strong mechanism to begin the process of developing this market.

Q115 What are your views on Government guaranteed contracts?

If the government opts for Option B then the early PPA market would be developed with implicit government guarantees. Once wider adoption seems likely, then the need for government guarantees for private transactions could be assessed with better information.

Q116 What are your views on a Clearing house for PPAs?

This would be an ideal long - term end state for a PPA market, however the size of market in New Zealand must be carefully considered before adopting this model.

Q117 For manufacturers: what delivered electricity price do you require to electrify some or all of your process heat requirements?

Respondent skipped this question

Q118 For manufacturers: is a long-term electricity contract an attractive proposition if it delivers more affordable electricity?

Respondent skipped this question

Q119 For investors / developers: what contract length and price do you require to make a return on an investment in new renewable electricity generation capacity?

Respondent skipped this question

Q120 For investors / developers: is a long-term electricity contract an attractive proposition if it delivers a predictable stream of revenues and a reasonable return on investment?

Respondent skipped this question

Page 18: Section 8 - continued

Q121 Do you consider the development of the demand response (DR) market to be a priority for the energy sector?

Yes,

Please explain your answer:

Please refer to Transpower's uploaded written submission for our full analysis of the role for DR (and DG) in the energy sector. The discussion below is enhanced by the graphics in our uploaded submission. In Transpower's view, this is one of the most important topics in MBIE's discussion document. Demand-side participation offers a significant opportunity to ensure that New Zealand's transition to a low carbon economy is more renewable and affordable. Demand-side participation provides flexibility to the electricity system which supports a greater amount of renewable electricity integration. The expected major increase in intermittent generation on the electricity system – wind and solar, whether connected directly to the Grid or embedded in households or in distribution networks – will materially increase volatility of supply. To balance this in real-time we currently rely on flexible hydro plant, but that can only do so much. To meet the increasingly volatile supply we will also need to harness demand flexibility. Fortunately, the potential for demand-side flexibility increases as the penetration of EVs, smart appliances and stationary batteries increases. Our modelling in the Whakamana i Te Mauri Hiko project suggests that through the 2020s and 2030s there will be an exponential increase in the number of distributed energy resources (DER) in New Zealand. Development of markets for DER needs to continue at pace in order to maximise the economic value of these DER and ensure their efficient integration into the grid. Our modelling forecasts a compound annual growth rate (CAGR) in energy demand increasing from about 1% in the last two decades to 1.7% over the next three, with growth in peak demand increasing far more slowly from 0.8% to 1%. This leads by 2050 to 68% growth in energy, but only a 40% growth in peak demand. This divergence in energy demand growth and peak demand growth is based on assumptions that include effective demand-side participation and uptake of smart technologies like smart chargers for EVs. Demand-side participation also has the potential to lower the overall cost of transitioning the economy to renewable electricity. Costs for electricity network infrastructure are largely driven by peak demand rather than volumes of energy. Effective network peak pricing combined with demand-side participation provides an opportunity to transition large volumes of energy to low carbon sources while limiting peaks, and therefore the cost to New Zealanders.

Q122 Do you think that demand response (DR) could help to manage existing or potential electricity sector issues?

Yes

Q123 What are the key features of demand response markets?

DR markets need to provide the flexibility to accommodate both different DER technologies and different consumer preferences. For example, some industrial DER may require hours of notice to operate, while other DER such as batteries can react almost instantaneously. Such flexibility will allow the full value of DER to both its owner and the system to be realised, encouraging efficient generation, network and DER investment. DR markets need to provide this flexibility for different users too – system operator, network companies (transmission and distribution), energy market (e.g. VPPs) and enable competition amongst aggregators to drive innovation.
The net position of DR and demand at any point in a distribution or transmission network needs to be visible to the distribution operator and/or the system operator to ensure that system and network security is maintained, and load forecasts are not compromised. DR markets should enable and encourage new participants and provide a central verified register to ensure that DR offers are operationally effective. The overall DR market needs to be designed to interact with the wholesale electricity market so that, for example, virtual power plants can be active participants.
The ability for DER to access multiple DR markets as well as ancillary services (with appropriate safeguards to prevent physical 'double-dipping') will enable DERs to 'value stack' and contribute to multiple markets. For example, when providing services to Transpower as Grid owner for peak reduction, the DR provider may also be able to access value from energy or ancillary market benefits. This would provide some technologies with the true economic value they provide. Batteries are an example that can provide many different types of economic benefit simultaneously, but currently batteries can access few of these value streams: until this is addressed, there will be uneconomically low investment in these promising new technologies.
Transpower is developing thinking on options for how such markets could evolve in New Zealand, discussed above (and described at a higher level in our soon to be released Whakamana i Te Mauri Kio – Powering our Energy Future white paper, which updates and expands on our 2018 Te Mauri Hiko).
With regard to the idea of setting up a centralised distribution system operator (DSO) to work with Transpower and other DR market participants, we have found the term DSO to mean very different things to different parties. We believe that introducing a DR market for New Zealand would provide distribution companies with services that enable them to manage network congestion, hence providing a useful 'DSO' capability with no additional agency.
The transition from our centralised grid supply model to a fully interactive DR market needs to be staged over time. Effective changes to enable DR to be established as bilateral contracts with visibility to the System Operator and the distribution company would be an effective first step.
As the DER resources and participants' interest in purchasing DER grows it may be effective to form an interim flexibility market that enables a trading and aggregation platform that intersects with the System Operator and the wholesale market.
Our preference for a staged approach is drawn from our experience in valuing and aggregating DR through our development programme which started with our fist DR pilot in 2007.

Q124 Which features of a demand response market would enable load reduction or asset use optimisation across the energy system?

Improving network peak pricing is crucial. Ideally, demand would respond directly to market price signals. The current energy price is calculated with great precision with 30 minute (soon to be 5 minute) and by-GXP resolution. Network prices are much less precise: transmission pricing does signal peak use, but through a high-level 'RCPD' signal which could be improved upon. Some distribution pricing already has peak signalling, and there is ongoing work and some progress on improving this.
However, such prices still need to reach the consumer. Current retail pricing mechanisms do not ensure that pricing signals reach all end users and potential DR providers. Time of use pricing is being promoted, but consumers can choose their preferred tariff structure from a competitive retail market. New Zealand is not unique here – the same issues arise overseas, and the accepted, emerging solution is to fill this gap with what have come to be known as DR markets, in which DER response can be rewarded for the contribution it makes to the wider system.
DER can contribute significantly to system support too: those ancillary services such as frequency keeping and instantaneous reserves that need to act much faster than can be achieved through 5 or 30-minute price signals.

Q125 Which features of a demand response market would enable the uptake of distributed energy resources?

DR markets need to provide the flexibility to accommodate both different DER technologies and different consumer preferences. For example, some industrial DER may require hours' notice to operate, while other DER such as batteries can react almost instantaneously. Such flexibility will allow the full value of DER to both its owner and the system to be realised, encouraging efficient generation, network and DER investment. DR markets need to provide this flexibility for different users too – system operator, network companies (transmission and distribution), energy market (e.g. VPPs) and enable competition amongst aggregators to drive innovation.

The net position of DR and demand at any point in a distribution or transmission network needs to be visible to the distribution operator and/or the system operator to ensure that system and network security is maintained, and load forecasts are not compromised. DR markets should enable and encourage new participants and provide a central verified register to ensure that DR offers are operationally effective. Ultimately, the DR market could be designed to interact with the wholesale electricity market so that, for example, virtual power plants can be active participants.

The ability for DER to access multiple DR markets as well as ancillary services (with appropriate safeguards to prevent physical 'double-dipping') will enable DERs to "value stack" and contribute to multiple markets. For example, when providing services to Transpower for peak reduction, the DR provider may also be able to access value from energy or ancillary market benefits. This would provide some technologies with the true economic value they provide. Batteries are an example that can provide many different types of economic benefit simultaneously, but currently batteries typically not have access to all of these value streams, which disincentivises more batteries being developed.

Q126 What types of demand response services should be enabled as a priority?

The game-changer for demand response in New Zealand will be batteries, whether stationary or in EVs, and whether or not coupled with generation such as solar or wind. We should design our systems, standards and rules to include batteries, but they should be flexible enough to accommodate all forms of demand response. Priority should be given to:

- effective and consistent peak pricing in both transmission and distribution pricing methodologies.
- introducing a DR market such as that discussed above, requiring some Code changes (e.g. to allow aggregators) and DER performance, registration, aggregation, verification and communications protocols and standards
- evolving our existing ancillary services market (through code changes) to be technology and participant-size agnostic in allowing all types and sizes of DER to participate
- ensuring that the System Operator and each distribution company knows what DER is connected, to inform their system security analysis

Transpower predicts a significant ramp-up in intermittent generation, DER and base demand from around the mid-2020s. We believe that the above four priorities should all be implemented in the early 2020s in readiness, and that this is achievable.

Q127 Which services make sense for New Zealand?

Transpower has recently investigated how DR platforms could be used to operate a DR market for New Zealand. We have considered the IPAG's Advice on creating equal access to electricity networks , the ENA's Network Transformation Roadmap and Australia's Open Energy Networks , along with our own DR experience. Transpower has reviewed these and identified some draft principles and three conceptual DR market options. This is our current thinking and we would like to feed these ideas into the dialogue for further discussion.

We believe that development of a DR market for New Zealand should satisfy a number of principles:

- Simple and profitable consumer participation: It should be easy for consumers or prosumers who own DER to engage in the market and find the highest value uses for their DER. Ideally, a consumer with a DER could register it once to access multiple markets, deciding who to offer any DER control to and under what conditions (e.g. price and required notice for response). Increasingly one can expect that products and services (devices and apps) will support 'plug and play', and will be imported as well as home-grown in New Zealand. We must make it easy for consumers to use these.
- Support multiple markets: It should be easy for retailers, aggregators and network companies to establish markets for demand response to address their needs and provide value to DER owners. A DER owner should be able to "value stack" across markets to obtain maximum return from their investment, to incentivise efficient investment in DER, and to maximise DER's ability to support the system. For example, when providing services to Transpower as Grid owner for peak reduction, the DR provider may also be able to access value from energy or ancillary market benefits. This would provide some technologies with the true economic value they provide. This will increase competition, provide incentives to renewables investment and electrification, and avoid unnecessary network investment.
- Encourage competition, innovation and customer choice in the provision of DR services for customers. These principles are always important, but particularly so for demand-side participation as it is an emerging rather than mature activity, in New Zealand as it is overseas.
- Functional integration with the wholesale market: To maximise value, the DR market needs to operate at wholesale as well as retail levels, with the ability for aggregated DER to be bid and offered into, and be dispatched by, the market systems as a virtual large dispatchable-demand load, virtual power plant (VPP) or virtual large battery. For DER to participate in these markets, it is important that rules and market systems are made technology agnostic to ensure that DER can offer their value. This will also increase visibility of actual and planned DER activity to the market and System Operator, facilitating its effective integration across the network. Consideration will need to be given to the means of aggregating DER that are embedded behind multiple GXPs to avoid interference with congestion management.
- Support secure system operation: An active DR market will, in general, support system operation through the demand-side engaging with the market and easing network congestion. However, demand-side markets must integrate seamlessly into system we well as market operations to ensure this, by informing the System Operator's real-time and planning-time security analysis. There is a risk that multiple value streams (e.g. transmission deferral, distribution deferral, energy etc) could lead to physical 'double-dipping' whereby DR services are provided simultaneously into the same value stream (e.g. into the energy market twice), which could compromise system security and lead to market failures. Information on connected DERs and actual and planned DR activity will need to be readily available to the System and Network Operator, to prevent this and to inform their real-time and planning-time security analysis.
- Minimise transaction and industry costs: The costs of participating in DR markets should be minimised to lower barriers to entry and increase participation. Functional integration of DR platforms using for example the existing demand and generation bid, offer and dispatch processes could provide an efficient path to including DR.
- Evolutionary approach: DR markets are emerging in New Zealand. DER markets must be allowed to evolve naturally over time with the changing penetration of DER and rapid shifts in energy technology. We should not try to 'solve' the DR market today with an enduring, one-size-fits-all solution but instead be comfortable with actively monitoring and incorporating changes to design when required.

Page 19: Section 8 - continued

Q128 Would energy efficiency obligations effectively deliver increased investment in energy efficient technologies across the economy?

Respondent skipped this question

Q129 Is there an alternative policy option that could deliver on this aim more effectively?

Yes (please specify):
Transpower strongly agrees with MBIE's intent to increase energy efficiency in New Zealand. Energy efficiency uptake is a key enabler of our transition to a low emissions economy. EECA's Energy Efficiency First: The Electricity Story study found that energy savings from adopting energy efficient technologies such as LED bulbs, heat pumps, energy efficient water heating, and efficient electric motors could reduce the need for new generation by 4,000 GWh. Policy to encourage these efficiency measures will significantly aid New Zealand's transition. We caution the use of obligations and believe that goal could be better achieved through mechanisms that inform consumers and allow them to apply pressure to suppliers to improve the energy efficiency of their products. One international example would be the mandatory NABERS scheme in Australia. Extension of New Zealand's NABERSNZ scheme may similarly apply consumer led pressure for energy efficiency measures. Another option might be the expansion of other energy efficiency labelling programmes, or a complementary scheme that informs consumers as to the carbon impact of products.

Q130 If progressed, what types of energy efficiency measures and technologies should be considered in order to meet retailer/distributor obligations?

We caution the use of obligations and believe that goal could be better achieved through mechanisms that inform consumers and allow them to apply pressure to suppliers to improve the energy efficiency of their products.
One international example would be the mandatory NABERS scheme in Australia. Extension of New Zealand's NABERSNZ scheme may similarly apply consumer led pressure for energy efficiency measures.
Another option might be the expansion of other energy efficiency labelling programmes, or a complementary scheme that informs consumers as to the carbon impact of products.

Q131 Should these be targeted at certain consumer groups?

Respondent skipped this question

Q132 Do you support the proposal to require electricity retailers and/or distributors to meet energy efficiency targets?

Respondent skipped this question

Q133 Which entities would most effectively achieve energy savings?

Respondent skipped this question

Q134 What are the likely compliance costs of this policy?

Respondent skipped this question

Page 20: Section 8 - continued

Q135 Do you agree that the development of an offshore wind market should be a priority for the energy sector?

Respondent skipped this question

Q136 What do you perceive to be the major benefits to developing offshore wind assets in New Zealand?

Respondent skipped this question

Q137 What do you perceive to be the major costs to developing offshore wind assets in New Zealand?

Respondent skipped this question

Q138 What do you perceive to be the major risks to developing offshore wind assets in New Zealand?

The transmission or distribution connection implications of developing offshore wind assets are significant and would need to be investigated in detail for any such proposal. Transpower would begin conducting these investigations if it became apparent that offshore wind assets were likely to eventuate.

Page 21: Section 8 - continued

Q139 This policy option involves a high level of intervention and risk. Would another policy option better achieve our goals to encourage renewable energy generation investment?

Respondent skipped this question

Q140 Could the proposed policy option be re-designed to better achieve our goals?

Respondent skipped this question

Q141 Should the Government introduce Renewable Portfolio Standards (RPS) requirements?

Respondent skipped this question

Q142 At what level should a RPS quota be set to incentivise additional renewable electricity generation investment?

Transpower's position is that the ETS should be the primary lever for emissions reduction, as stated above. We believe that this will be sufficient to drive investment in new renewable electricity generation and are observing the effects of this in the electricity market.
We support the establishment of a trustworthy renewable (or zero-carbon) certification scheme with voluntary participation.
Our current modelling shows that without a mandatory scheme, NZ can reach 95% renewable electricity by 2035 with an increasing carbon price accompanied by declining renewable energy technology costs. This is our Accelerated Electrification scenario, and so assumes that the policy opportunities discussed in this submission to encourage and facilitate renewable energy generation and consumption are taken up, but it does not forecast the need for a mandatory renewables scheme.
However, if it becomes apparent that the carbon price is not driving the correct outcomes in delivering renewable energy investment, then we support a mandatory renewable energy certificate mechanism.
We support the establishment of a trustworthy renewable certification scheme with voluntary participation to allow customers to purchase 100% green energy from their retailers. An example of this is the Greenpower scheme that operates in Australia. This will enable consumer driven, as well as generator driven renewable generation investment. It is a necessary precursor too to any authoritative green-labelling of products manufactured using grid supplied electricity, such as green hydrogen.
In addition to the benefits that consumers and renewable generators may receive by opting in to such a renewable certification scheme, it would also set the necessary framework should the introduction of a mandatory scheme be required at a later point in time.

Q143 Should RPS requirements apply to all electricity retailers?

Respondent skipped this question

Q144 Should RPS requirements apply to all major electricity users?	**Respondent skipped this question**
Q145 What would be an appropriate threshold for the inclusion of major electricity users (i.e. annual consumption above a certain GWh threshold)?	**Respondent skipped this question**
Q146 Would a government backed certification scheme support your corporate strategy and export credentials?	**Respondent skipped this question**
Q147 What types of renewable projects should be eligible for renewable electricity certificates?	**Respondent skipped this question**
Q148 If this policy option is progressed, should electricity retailers be permitted to invest in energy efficient technology investments to meet their renewable portfolio standards? (See option 8.3 on energy efficiency obligations).	**Respondent skipped this question**
Q149 If this policy option is progressed, should major electricity users be permitted to invest in energy efficient technology investments to meet their renewable portfolio standards? (See option 8.3 on energy efficiency obligations).	**Respondent skipped this question**
Q150 What are the likely administrative and compliance costs of this policy for your organisation?	**Respondent skipped this question**

Page 22: Section 8 - continued

Q151 This policy option involves a high level of intervention and risk. Would another policy option better achieve our goals to encourage renewable energy generation investment?	**Respondent skipped this question**

Q152 Could this policy option be re-designed to better achieve our goals?

Yes (please expand):
We agree with MBIE's intent to reduce the amount of high emitting generation that is dispatched on the New Zealand electricity system while ensuring that sufficient generation capacity remains to meet winter evening peaks and dry years. We interpret that MBIE are proposing policies to achieve two goals: decrease the amount of fossil fuel energy that is dispatched into the electricity system, while ensuring that sufficient generation capacity and energy storage remains available to cover winter evening peaks and dry year. The electricity market has worked over the last 20 years to ensure that supply remains secure, and has evolved to fit the changing industry landscape over this period. We expect that it will continue to evolve to meet the context of a Net Zero future for New Zealand. Transpower does not see an immediate need for change to ensure security of supply and we are not advocating for market redesign. However, if the need for further market evolution to ensure security of supply arises in the future, it would be beneficial for the industry to have had a discussion about possible solutions to potential shortfalls in peak or dry year cover. Having this discussion now ensures that the industry can be well prepared and will allow us to move quickly if the need were to arise. We don't profess to have the answers. This is a conversation that will require broad participation throughout the industry. We present here a range of potential solutions to enrich this discussion and look forward to input from others as we build shared understanding of how the electricity sector can support New Zealand's net zero future.

Q153 Do you support the managed phase down of baseload thermal electricity generation?

Respondent skipped this question

Q154 Would a strategic reserve mechanism adequately address supply security, and reduce emissions affordably, during a transition to higher levels of renewable electricity generation?

Respondent skipped this question

Q155 Under what market conditions should thermal baseload held in a strategic reserve be used?

Transpower notes that market dynamics are showing a trend away from thermal baseloading. Our modelling in Whakamana i Te Mauri Hiko predicts that we could reach 95% renewable energy by 2035 due to carbon pricing and decreasing renewable energy technology costs.
If a more accelerated phasedown is desired then Transpower would be happy to work with MBIE and regulators to determine the most appropriate solution.
A well-designed strategic reserve mechanism is one of a number of measures which could address supply security if it is threatened. Whichever approach is adopted, Transpower would work with MBIE to ensure that the mechanism achieves its stated goals. Thresholds for strategic reserve would need to be determined through rigorous study, building on our experience with triggers based on hydro risk curves. These studies may need to be revisited and adjusted after a strategic reserve is implemented as market participant behaviour can be expected to change materially.

Q156 Would you support requiring thermal baseload assets to operate as peaking plants or during dry winters?

Respondent skipped this question

Q157 What is the best way to meet resource adequacy needs as we transition away from fossil-fuelled electricity generation and towards a system dominated by renewables?

There are many pathways to decreasing the carbon intensity of electricity generation.
Ensuring resource adequacy is currently achieved through the energy market. If this mechanism proves insufficient then a market led solution would be Transpower's preferred approach.
Any such measure would require detailed analysis and industry consultation prior to being implemented.

Page 23: Section 8 - continued

Q158 Do you have any views regarding the options to encourage renewable electricity generation investment that we considered, but are not proposing to investigate further? (See pages 90 - 92 of the Accelerating renewable energy and energy efficiency discussion document).

Respondent skipped this question

Page 24: Section 9: Facilitating local and community engagement in renewable energy and energy efficiency

Q159 Should New Zealand be encouraging greater development of community energy projects?

Respondent skipped this question

Q160 What types of community energy project are most relevant in the New Zealand context?

Respondent skipped this question

Q161 What are the key benefits of a focus on community energy?

Respondent skipped this question

Q162 What are the key downsides or risks of a focus on community energy?

Respondent skipped this question

Q163 Have we accurately identified the barriers to community energy proposals?

Respondent skipped this question

Q164 Which barriers do you consider most significant? You may select more than one answer.

Respondent skipped this question

Q165 Are the barriers noted above in relation to electricity market arrangements adequately covered by the scope of existing work across the Electricity Authority and electricity distributors?

Respondent skipped this question

Q166 What do you see as the pros of a clear government position on community energy?	**Respondent skipped this question**
Q167 What do you see as the cons of a clear government position on community energy?	**Respondent skipped this question**
Q168 What do you see as the pros of government support for pilot community energy projects?	**Respondent skipped this question**
Q169 What do you see as the cons of government support for pilot community energy projects?	**Respondent skipped this question**
Q170 Are there any other options you can suggest that would support further development of community energy initiatives?	**Respondent skipped this question**

Page 25: Section 10: Connecting to the national grid

Q171 Please select the option or combination of options, if any, that would be most likely to address the first mover disadvantage.	Other (please specify): For all Section 10 questions, please refer to our written uploaded submission.
Q172 What do you see as the disadvantages or risks of Option 10.1?	**Respondent skipped this question**
Q173 What do you see as the disadvantages or risks of Option 10.2?	**Respondent skipped this question**
Q174 What do you see as the disadvantages or risks of Option 10.3.1?	**Respondent skipped this question**
Q175 What do you see as the disadvantages or risks of Option 10.3.2?	**Respondent skipped this question**
Q176 Would introducing a requirement, or new charge, for subsequent customers to contribute to costs already incurred by the first mover create any perverse incentives?	**Respondent skipped this question**
Q177 Are there any additional options that should be considered?	**Respondent skipped this question**

Page 26: Section 10 (continued): Connecting to the national grid

Q178 Do you think that there is a role for government to provide more independent public data?	**Respondent skipped this question**

Q179 Is there a role for Government to provide independent geospatial data (e.g. wind speeds for sites) to assist with information gaps?	**Respondent skipped this question**
Q180 Should MBIE's Electricity Demand and Generation Scenarios (EDGS) be updated more frequently?	**Respondent skipped this question**
Q181 If you said yes, how frequently should they be updated?	**Respondent skipped this question**
Q182 Should MBIE's EDGS provide more detail, for example, information at a regional level?	**Respondent skipped this question**
Q183 Should the costs to the Crown of preparing EDGS be recovered from Transpower, and therefore all electricity consumers (rather than tax-payers)?	**Respondent skipped this question**
Q184 Would you find a users' guide (on current regulation and approval process for getting an upgraded or new connection) helpful?	**Respondent skipped this question**
Q185 What information would you like to see in such a guide?	**Respondent skipped this question**
Q186 Who would be best placed to produce a guide?	**Respondent skipped this question**

Page 27: Section 10 (continued): Connecting to the national grid

Q187 Do you think that there is a role for government in improving information sharing between parties to enable more coordinated investment?	**Respondent skipped this question**
Q188 Is there value in the provision of a database (and/or map) of potential renewable generation and new demand, including location and potential size?	**Respondent skipped this question**
Q189 If so, who would be best to develop and maintain this?	**Respondent skipped this question**
Q190 How should it be funded?	**Respondent skipped this question**
Q191 Should measures be introduced to enable coordination regarding the placement of new wind farms?	**Respondent skipped this question**

Q192 Are there other information sharing options that could help address investment coordination issues? What are they?

Respondent skipped this question

Page 28: Section 11: Local network connections and trading arrangements

Q193 Have you experienced, or are you aware of, significant barriers to connecting to the local networks? Please describe them.

Respondent skipped this question

Q194 Are there any barriers that will not be addressed by current work programmes outlined on pages 118 - 122 of the discussion document?

Respondent skipped this question

Q195 Should the option to produce a users' guide (see Option 10.6 on page 110) also include the process for getting an upgraded or new distribution line?

Respondent skipped this question

Q196 Are there other Section 10 information options that could be extended to include information about local networks and distributed generation?

Respondent skipped this question

Q197 Do the work programmes outlined on pages 118 - 122 cover all issues to ensure the settings for connecting to and trading on the local network are fit for purpose into the future?

Respondent skipped this question

Q198 Are there things that should be prioritised, or sped up?

Respondent skipped this question

Q199 What changes, if any, to the current arrangements would ensure distribution networks are fit for purpose into the future?

Respondent skipped this question

Page 29: Additional comments

Q200 Do you have any additional feedback?

Yes, please refer to our uploaded written submission.

Q201 You may upload additional feedback as a file.File size limit is 16MB. We accept PDF or DOC/DOCX.

Transpower Submission - MBIE Accelerating Renewable Energy and Energy Efficiency - FINAL.pdf (1.3MB)