MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
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Accelerating renewable energy and energy efficiency

Summary of submissions

Introduction

1. This paper summarises the main points received in submissions on the *Accelerating Renewable Energy and Energy Efficiency* Discussion Paper.

Overview of submissions

1. 2,597 submissions were received on the discussion paper, directly via email and through an online survey on the MBIE website. A breakdown of submitters is as follows:

Submitter	# submissions	Submitter	# submissions
Form submission facilitated by Greenpeace	2,425	Research institute / academia	9
Electricity sector	23	Transmission/distribution sector	8
Iwi or hapū	7	Industry and industry advocates	12
General public	26	Central government	1
Environmental	10	Community organisation	3
Local government	12	Energy intensive and highly integrated industry	6
Large energy user	14	Oil and gas sector	5
Biomass or geothermal sector	8	Consultant, financial services etc…	19
Coal sector	3	Other	12

Approach to submissions analysis

2. The discussion paper included a large number of questions across 11 sections. Some of the questions of the discussion paper sought “yes or no” answers, while others required more qualitative responses. This submissions analysis therefore focuses on the key themes to emerge in submissions, rather than trying to quantify support for particular options.

3. Longer sections include a summary of key points. An overview summary also is provided for Part A (sections 1-6), due to the highly interrelated issues and submissions.

Submission Analysis - Part A: Encouraging energy efficiency and the uptake of renewable fuels in industry

Summary of key points

4. Large energy users, industry associations, and the oil and gas sector expressed concern at the scope and pace of the Government's climate change policy development. Submitters were uncertain how options in the discussion document might be considered alongside ETS changes and other climate change work being undertaken across government. They would value further information to aid understanding of the dependencies between policies proposed in this discussion document, and other government initiatives.
5. One underlying concern from large energy users is that the potential effects of changes to the New Zealand Emissions Trading Scheme (NZ ETS) have yet to materialise. The ETS Reform Bill and proposed settings will result in significant changes to the cost incurred by NZ ETS participants, which should drive additional investment in energy efficiency and renewable energy. A regulatory approach that overlaps with the NZ ETS risks introducing excessive costs on business and delivering poor outcomes.
6. A major issue for emissions intensive trade exposed (EITE) firms is industrial allocation policy (a part of the NZ ETS reforms). Policy uncertainty on phase down rates and resetting the Electricity Allocation Factor is creating investment uncertainty. Stakeholder positions on some of the options in this discussion document will be influenced by industrial allocation policy decisions.
7. The Transmission Pricing Methodology (TPM) review is another source of investment uncertainty for many large energy users. Under the current TPM proposal many large energy users would face higher transmission costs. Positions on some of the options in the discussion document could be impacted by the outcome of the TPM review.
8. Many large energy users and some other submitters identified that there are significant differences in the availability of alternative energy sources at a regional level. More work needs to be done in identifying and enabling the economically efficient use of alternatives to coal and gas for regions with limited biomass or geothermal resources and restricted access to the transmission grid.
9. The majority of submitters agree that sustained investment in renewable energy resources and related infrastructure will be necessary to enable the decarbonisation of process heat and transport.

Section 1: Addressing information failures

Summary of key points

1. There was general support for Corporate Energy Transition Plans from environmental groups, the majority of individual submitters and academics, and most submitters from the electricity, bioenergy, and consultancy sectors. Some large energy users and industry associations supported the principle of the option but not the regulatory approach.

2. The majority of submitters supported an electrification information package. However, only a small portion of large energy users agreed that this would be useful to their business. Many submitters agreed the co-funding of electrification feasibility studies would be more useful.

Option 1.1 - Corporate Energy Transition Plans

3. Large energy users expressed some concerns about the concept of Corporate Energy Transition Plans (CETPs). In particular, submitters were concerned about the costs of reporting requirements adding an extra burden on industry in addition to changes being proposed in the NZ-ETS reforms.

Mandatory reporting of energy use and emissions

4. Large energy users (including industry associations) were split on the necessity of additional energy use and emissions reporting. While many agreed that there is a need for Government to have good energy and emissions data to inform climate policy, submitters noted the following:

    - Some indicated they would prefer closer cooperation with Government on information/data exchange to inform the emissions budgets and the design of complementary climate policies, rather than mandatory requirements.
    - Some stakeholders noted that they are already disclosing their annual aggregated emissions to the public. These stakeholders tended to support mandated public disclosure on aggregated emissions and energy use. Other large energy users expressed concern about public reporting due to commercial sensitivities.
    - Some stakeholders already report site specific energy use and emissions to the Government. More consideration needs to be given to linking up existing government data and aligning regulatory regimes. Most argued there was significant overlap between the CETPs and the proposed Climate Related Financial Disclosures.

5. Some large users have concerns that the Government may consider requirements for blanket reduction targets once disclosure has been mandated. The same submitters expressed concern that those who have already made significant emission reductions won’t be recognised if reporting is introduced.

6. Some noted the lack of detail in the CETP option makes it difficult for business to understand what information will be gathered, analysed and reported.

7. Most non-large users agreed that CETP reporting requirements would provide useful information to support the energy transition. Objective, verifiable and consistent information is essential to initiate, monitor and improve strategies to reduce New Zealand's emissions. Transparency is needed for the Government to maintain credibility and achieve the targets set out in the Climate Change Amendment (Zero Carbon) Act.

8. Many electricity sector, geothermal and biomass organisations support the reporting requirements of the CETPs as good data is crucial to formulating appropriate policy, and planning energy infrastructure. Good energy use information will help facilitate the matching of available alternative energy supply with potential demand.

9. Some academics and consultants argued that reporting will help ensure companies with the highest impact on energy use and emissions focus on the energy transition, and are held to account on their progress. It also will allow other interested stakeholders to access information on energy transition plans and progress, including shareholders (particularly relevant for non-NZX listed companies), the general public and the communities that the businesses are operating in.

10. If reporting is to be mandated, it was identified that:

    - A well-defined and understood framework will be required.
    - Further work is required to ensure the regime aligns with existing reporting requirements, avoids duplication of work and minimises compliance costs for business.
    - Energy use and emissions from transport should be included in scope.
    - Equity of treatment is required for all large energy users.

11. Some submitters (energy suppliers and small and medium enterprises (SMEs)) called for this option to take a broader view of information failures in the understanding of renewable energy opportunities.

Mandatory energy audits by site every four years

12. The majority of large energy users and industry associations opposed mandatory energy audits. They indicated that:

    - Audits were seen to impose unnecessary and high compliance costs for potential low impact.
    - Many large energy users already have internal energy auditing and energy management expertise. Knowledge of processes is often specialised and site-specific. External auditors are unlikely to identify opportunities that provide benefit.
    - The Energy Efficiency and Conservation Authority (EECA) already offers co-funding for energy audits. This could be further utilised to support SMEs without energy management expertise.
    - Incentives to improve energy efficiency already exist for large energy users and will only increase as the ETS price rises.
    - Over four years a business can change or grows significantly, making audit-based baselining and measurement inaccurate. Much of the time required may be spent justifying change instead of adding value to business performance.
    - They consider many of the easily identifiable “low hanging fruit” energy efficiency projects have already been identified and acted on.

13. Many individual submitters, research organisations, community groups, and environmental groups, and some stakeholders from the electricity and biomass sectors supported mandatory energy audits. They submitted that the energy transition will require commitment and action from all parties involved, including the identification and delivery of energy efficiency and emission reduction opportunities.

14. Some submitters indicated that the Government could provide technical and financial support to facilitate energy audits, especially for SMEs.

15. Some energy efficiency service providers (ESP) did not support the requirement for a prescriptive approach to energy audits every four years. Instead they recommended MBIE explore a more detailed data-driven approach to measuring energy use at a process-specific level (detailed real-time metering). This detailed data could help identify energy efficiency opportunities, accurately measure energy use and emissions, and help facilitate 'Industry 4.0'.

Option 1.2 – Electrification information package

16. The majority of submitters generally supported an electrification information package. However, only a small portion of large energy users agreed that this would be useful to their business. Large energy users already actively engage with Transpower on grid connections and network issues. SMEs indicated that this would be helpful though they did not identify it as a priority.

17. There was widespread support for customised low-emission feasibility studies to be provided by EECA. Co-funding of the feasibility studies could be prioritised, followed by the development of electrification information packages that provide information about ways to increase reliability and resilience of electricity supply.

Option 1.3 – Benchmarking for food processing

18. The majority of submitters considered that if benchmarking progressed Government should have a 'light touch' policy with the majority of the investment and effort from industry.

19. Some submitters argued that benchmarking needs to be independently assessed, while noting that this will have a cost. This cost could be initially funded by government to get the system established, and subsequent updates funded by industry.

Section 2: Developing markets for bioenergy and direct geothermal

Option 2.1 – A users' guide on application of the National Environmental Standard for Air Quality (NESAQ)

20. Most submitters were neutral on this issue. Submitters from the bioenergy sector agreed that some councils have regional air quality rules that create a barrier to the use of wood energy. Environment Canterbury's air quality regulations were used as an example. Most submitters from the bioenergy sector agreed that a user's guide would be helpful to address this issue.

21. Some large energy users also suggested the option of changing the NESAQ to include the use of wood energy as an RMA controlled or permitted activity, with environmental standards included.

Facilitating the development of bioenergy markets and industry clusters

Bioenergy

22. Many submitters believe biomass will play a key role in reducing fossil fuel use for processes not suited for electrification. Some large energy users, individual submitters and environmental groups believe central and local governments could show leadership by converting their heat plants from coal or gas to bioenergy.

23. Some biomass suppliers argue the biomass market is currently working well. This has been shown by new entrants in the supply market for wood pellets and recent large scale announcements like Fonterra's Te Awamutu plant switching from coal to wood pellets. Pressure on large emitters to decarbonise will only support this market further.

24. Some individual submitters and submitters in the biomass sector did not agree with the underlying analysis in the discussion document. They considered MBIE and EECA seem to be using out of date knowledge especially around the availability of bioenergy and pricing, which is driving incorrect assumptions.

25. Some large energy users and biomass suppliers indicated that development of biomass markets could be supported by the Bioenergy Association of New Zealand (BANZ). In particular, they identified the need for bioenergy market facilitation, to identify potential buyers and sellers and match demand to supply. This could take the form of an online trading forum, similar to the Government Electronic Tender Service (GETS) but with a joint BANZ and Government collaborative approach.

26. Some submitters, including large energy users, the electricity sector, and the fossil fuel sector pointed out that biomass may not be a viable long term option for many large energy users, given it is a limited and exclusive resource that is regionally dependent. Long term uncertainty over secure supply of the resource undermines its viability as an input for some large energy users.

27. Individual submitters, large energy users and industry associations argued that actions that support foresters in further residue recovery, or wood processers in supplying excess residues to the market would assist the supply of biomass.

28. The following views were expressed by the fossil fuel sector and some individual submitters:

    - Bioenergy via biomass may not be a viable long term option for most large energy users.
    - For biomass to be a realistic alternative to coal will require sufficient forests to be planted and to be mature (which will take decades) and for companies to have access to the capital required to alter or replace their existing coal boilers.
    - Government's role in facilitating bioenergy markets should focus on:
        - ensuring all bioenergy options are considered; and
        - ensuring that certification and fuel obligations are put in place to stimulate markets and to provide credibility for this source of energy.

Geothermal

29. The views expressed here were primarily from the Geothermal Association. Key points include:

    - More needs to be done to facilitate deployment of geothermal in process / stationary energy, and in the large-user and industrial-heating space.
    - There is sufficient geothermal energy in existing fields to materially expand industrial scale applications.
    - If existing businesses are to transition to geothermal energy, the energy intensive part of the business will need to relocate. A business will not normally look to relocate unless a properly structured business case can be presented. Small to medium businesses could be supported to do this through free support for relocation business cases.
    - There is synergy between geothermal energy and the timber industry, as wood residue is available for manufacturing into pellets using geothermal heat.
    - SCION's Industrial Symbiosis work should be refreshed.
    - The need for studies to help identify what the next steps might be to release additional potential from NZ's geothermal resources over the medium term.
    - It was suggested government could establish a consortium including for example. Contact Energy, Mercury, Tuaropaki, Ngati Tuwharetoa Geothermal Assets and Baseload Power NZ, to develop, jointly resource and implement geothermal carbon emissions reduction initiatives.

Section 3: Innovating and building capacity

Option 3.1 – Expanding EECA's grant for technology diffusion and capability-building

30. The majority of submitters supported expanding EECA's grants for technology diffusion and capability-building. Additional points raised in submissions were:

    - Implementing new technologies or processes inherently carries risk. Early adopters should be incentivized by providing some protection from this risk.
    - EECA's grant should be paired with co-funding of feasibility studies (as in section 1).
    - EECA should focus on "mass market" opportunities. For emissions intensive highly-integrated (EIHI) plant, specific expertise is required and it will not be efficient for EECA duplicate work in this area. EIHI stakeholders agreed with this point.
    - If Government intends to single out particular fossil-fuel use for phasing down (while not doing the same for other fossil fuels), then those users should be assisted to do so.

31. Some individual submitters argued there is no need for additional options to create investment in these technologies. There are already mature, simple, low risk, certain, immediate, market supported, and scalable solutions. Some academics indicated support for de-risking alternative technologies, but considered that the EECA programme should be more closely partnered with research and development.

Option 3.2 – Collaborate with EIHI industries to foster knowledge sharing and develop low carbon roadmaps

32. The majority of submitters who responded to this section supported this option. The major differences between submitters related to the level of government involvement and potential financial support. EIHI businesses and other large energy users agreed that stronger collaboration between government and EIHI industries could help to further address barriers preventing the removal of fossil fuels. They believed an industry-led process based on a common template will both facilitate the process and provide a base from which to summarise the outcomes.

33. Many EIHI businesses are part of a multi-national organisation or have significant foreign investment and or ownership. They are well connected into global industry groups leading the way on low carbon technology and processing. Government could support EIHI businesses to bring international experts to New Zealand. This should be done in close consultation with industry and could be facilitated through an industry group.

34. Some large energy users and industry associations raised that there was a lack of detail on 'Industry Transformation Plans' in the discussion document and consider that a "just transitions approach" is ambiguous and needs a comprehensive definition.

35. Some individual submitters, academics and consultants argued that it would be a wasteful use of resource for Government to focus on developing these roadmaps as they have a history of not leading to subsequent action.

Section 4: Phasing out fossil fuels in process heat

Summary of key points

36. The majority of submissions from environmental groups, biomass and geothermal sectors, the electricity sector, consultants/financial services, and individual submitters support the proposal to introduce a ban on new coal fired boilers for low and medium temperature requirements. These submitters also tended to support the phase out of existing coal-fired process heat equipment supplying end-use temperature requirements below 100°C.

37. A major issue identified by submitters (predominantly large energy users and SMEs) is the availability of alternative fuel, in particular biomass and electricity (proximity to transmission grid and upgrade costs) and the elevated costs of these alternatives compared to coal or gas.

38. Some submitters noted option 4.2 (phase out of low temperature coal) risks creating emissions leakage if cost effective alternatives to coal are not available.

39. Many large energy users and some other submitters raised that central and local governments should take the lead by phasing out their coal or gas heat plant.

40. Some industry associations and NGOs indicated that the proposals in this section may disproportionately affect regions of New Zealand where employment opportunities are already limited, with knock on effects on the local communities. For example, hothouse horticulture could be adversely affected as there are co-benefits from coal use – with CO2 pumped into greenhouses to speed plant growth.

41. It appeared many submitters conflated the details of option 4.1 and 4.2. Option 4.1 would introduce a ban on all new coal boilers for low and medium grade heat (end use requirements up to 300°C) while option 4.2 would require existing coal boilers to be phased out by 2030 for low grade heat (end use requirements below 100°C).

42. Many submitters who argued against the phase out of coal boilers made arguments that did not reflect the details of this proposal. For example, it was raised in multiple submissions that there are no economically viable alternatives to fossil fuels to supply process heat. Details on fuel type and end use requirements were not included. MBIE notes the economics of emission reduction opportunities is highly dependent on the end use temperature requirement. For example, cost effective alternatives to coal to supply low temperature heat already exist, while cost effective medium temperature applications are limited.

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

43. Most large energy users, industry groups, the fossil fuel sector, and some individual submitters strongly opposed this option:

    - Submitters expressed concern about an alternative energy supply for some sites, particularly those unable to access gas or sufficient/economical biomass fuel supplies. The West Coast of the South Island is a good example of where this ban may impede the development or expansion of manufacturing activities.
    - Some considered this option could deter the expansion of manufacturing in New Zealand. However, several submitters (including large energy users from the dairy and meat processing sectors) noted that there is already a significant overcapacity of processing plant, so expansion in these sectors is unlikely.
    - Some submitters noted a 'legislated' ban on specific coal applications undermines the efficacy and incentives provided by the NZ-ETS and increases business uncertainty with respect to the NZ-ETS as a whole. Under the NZ-ETS revised settings, it is likely that new boilers would only be built and used by businesses that have no alternatives and the emissions from that boiler would be accounted for through the NZ-ETS by the purchase of units.
    - It was noted that bans may have significant unintended consequences which cannot be easily unwound, and even if such consequences are identified, it is very difficult to unwind in a manner that restores investor confidence.

44. Some large energy users however, notably those who have already made public commitments to phase out coal, strongly supported the ban on new coal boilers.

45. The majority of submissions from environmental groups, biomass and geothermal sectors, the electricity sector, consultants/financial services, and individual submitters support the proposal to introduce a ban on new coal fired boilers for low and medium temperature requirements. The main reasons for supporting this proposal were to avoid locking in new emissions intensive heat plant for the coming decades and because of the strong signal this option would send to the market.

46. Environmental groups, many individual submitters, and some academics argue that this proposal should be extended to include all temperature requirements and all fossil fuels. This will provide strong policy certainty towards achieving our 2030 Paris agreement target and the net zero 2050 goal. Many submitters who agreed with this proposal noted that such action should be combined with support for renewable energy alternatives in order to mitigate the risk of unintended consequences.

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

47. Most large energy users, industry groups, the fossil fuel sector, and some individual submitters did not support this option. Some key points included:

- This option could impose significant upfront and ongoing costs on businesses that do not have alternatives to coal. Such costs are either borne by consumers (where it can be passed through) or the firm (with lower profits, which are due to either reduced quantity demanded or, in the case of exports, having to absorb costs).
- This option could leave some companies with stranded assets and many may have limited means to invest in alternative technology, therefore impacting their future viability.
- Phasing out fossil fuels may not be the option that provides for lowest emissions in the long term as early conversion to an unsuitable technology could preclude later integration of sustainable solutions such as biogas or hydrogen.

48. Some large energy users did support this option. However they noted that the technical definition of supplying end use temperature requirements will need to be carefully defined. They considered this option should be designed in consultation with industry to avoid unintended consequences, such as prohibiting the use of waste heat recovery technologies.

49. Environmental groups, biomass and geothermal sectors, the electricity sector, consultants/financial services, and individual submitters supported the option – many stating its phase out should be a priority if New Zealand is to achieve its climate change goals.

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

50. The majority of submitters agreed that complementary measures to the NZ-ETS should be considered to accelerate the uptake of cost-effective clean energy projects. Most submitters indicated that both regulatory measures and financial incentives should be considered.

51. Some large energy users and industry groups submitted that:

- The Government has only recently announced significant changes to the NZ ETS. It is important to measure the impact of these changes before complementary measures are considered.
- The underlying analysis in the marginal abatement cost curves developed by the Ministry for the Environment (MfE) is flawed and has not had the benefit of dialogue with the relevant industries. The evidence for "under investment" in emission reductions is therefore weak and the case for intervention is uncertain. Future investment is being impeded by continued policy uncertainty which has increased investment risk.
- For EITE firms the stability and predictability of NZ ETS industrial allocation settings is fundamental. This includes maintaining a clear carbon price signal and the avoidance of retrospective adjustments to allocative baselines and unpredictable changes to the level of assistance. Retrospective and unpredictable changes can undermine expected investment returns on emissions abatement projects and discourage broader operational improvements.
- Closer work with business is required to identify barriers and accelerate uptake of energy efficiency. Appropriate research and modelling must be undertaken to ensure any additional measures proposed will both enhance New Zealand's emission reduction pathway and strengthen New Zealand's economic position.
- Remaining cost competitive is important for many of New Zealand's exporters. The transition to a low emissions economy presents a significant challenge to many exporters' business models.

52. Additional points raised by various stakeholders were:

- Current investment across many energy intensive businesses is limited to maintenance spend while policy settings are determined and the case for manufacturing locally (versus importing) can be assessed.
- Cheaper delivered electricity from an efficient and competitive market will also assist with the transition.
- If financial incentives are considered, they should be provided to community-owned initiatives or small start-ups that conserve and reduce energy and resource use while increasing the recovery, reuse and recycling of resources.

Regulatory approaches

53. Environmental groups and many individual submitters proposed that mandatory clean energy expenditure or clean energy targets should be considered for New Zealand's largest emitters. Some submitters indicated that Government should undertake further work to identify opportunities to mandate and incentivise investment in energy efficiency and renewable energy, with a focus on large energy users, and with requirements for a 'just transition', including training and redeployment options for any affected workforces.

Financial support

54. Some large energy users highlighted that energy efficiency and renewable energy technologies require a planned approach to future investment. It is important that site specific research and measurement work is undertaken initially to identify opportunities for investment that are affordable and feasible over a long lifecycle (10 to 20 years). If offered, financial support should be flexible to a broad range of opportunities and different circumstances.

55. A challenge for many businesses in New Zealand may be the difficulty in raising finance for renewable energy or energy efficiency projects that are by many standards in the finance market, considered small. For many institutional financiers they will consider larger projects first. There may be a role for the government in assisting industry under these circumstances as the costs of finance may be prohibitive.

56. Several large energy users from the wood processing, dairy and meat sectors and some industry associations communicated that financial support across government should be utilised to target the 'lowest hanging fruit' for emissions reduction, rather than supporting infrastructure or the establishment costs of a new greenfield site.

Section 6: Cost Recovery Mechanisms

57. This section sought views on introducing a levy on consumers of coal to partially recover the cost of implementing any new policies related to renewable energy and process heat.

Option 6.1 - a levy on coal to fund process heat activities

58. The majority of submitters in favour of a coal levy were environmental and community groups. Some key points included:

    - Coal emits a large amount of greenhouse gas emissions, and a reduction in its use should be a priority.
    - The funds raised from a coal levy could be used to accelerate the transition towards renewable energy.
    - This levy would put coal on par with other energy sources which also face a levy, such as petroleum and engine fuel, electricity and natural gas.

59. Submitters in opposition to the levy noted that there is already a levy in the form of the NZ ETS, meaning coal users would effectively be paying twice. Submitters also noted that opencast coal mines are already taxed in New Zealand through the Energy Resources Levy.

60. Some submitters raised equity issues between larger and small business – since any funds gathered would be used to accelerate renewables, this could disproportionately support larger businesses that are more likely to receive this support than small businesses. For example, a submission from a small business stated the levy "would be taking money off small locally owned businesses to subsidise large corporates".

61. There also are a number of barriers to small businesses transitioning away from coal use – particularly a lack of access to cost effective alternatives. Paying a coal levy without the opportunity to shift to alternatives could therefore significantly affect the viability of some businesses.

62. Some submitters also stated that the revenue from a new levy would not be worth the effort of establishment, given the administrative costs to set it up, and the likelihood that coal use will decline over time in any case.

63. There were differing views on where a levy, if introduced, should be placed in the supply chain (i.e. on coal producers rather than users). Some submitters noted a levy could make heating unaffordable for some low income households that use coal as their main heating source. This is more likely, for example, in the West Coast where residents are exempt from paying a coal tax to their local council. Most other councils require residents to pay a tax on personal/household coal use.

Submission Analysis - Part B: Accelerating renewable electricity generation and infrastructure

Section 7: Enabling development of renewable energy under the Resource Management Act (RMA)

Summary of key points

64. New Zealand will require a large amount of new generation (plus transmission and distribution links) to meet our renewable energy goal. Most projects will require some form of approval under the RMA. There is widespread concern from industry submitters that RMA approvals may hinder this goal, for example:

    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. …[this is] unlikely to happen fast enough with current policy settings. 3-7 years to consent and enable property access for a major project is simply too long if we are to meet electricity targets (Transpower).

65. The majority of submitters agreed that existing RMA national direction for renewable energy – the National Policy Statement for Renewable Electricity Generation (NPS-REG) – was relatively weak in comparison to other national direction instruments, and not aligned with the importance of the renewable energy and climate change challenge.

66. Many submitters, however, also highlighted that this issue is much wider than renewable energy. It is about the statutory construction of the RMA, and also the whole system for RMA national direction. National policy statements for freshwater and biodiversity are likely to have as great an impact as specific national direction on renewable energy.

67. Another challenge with implementation of national direction is that it does not remove hard decisions at a local level – renewable projects require complex weighting of local impacts against national scale benefits that often do not benefit the affected parties directly. For example, the effects of hydro generation on waterways are borne mostly by South Island catchments, with the majority of the electricity generated benefiting North Island users. If interactions between national direction instruments are left unclear, it is harder for councils to resolve the issues when making decisions at a local level.

68. In general, submitters favoured prioritising work on updates to the National Policy Statement for Renewable Energy Generation (NPS-REG), and alignment with other national direction instruments. There was more mixed or qualified support for other options. Some submitters noted the potential for National Environmental Standards (NES) to help development of renewable energy, but these would need to be designed carefully to account for the wide variety of renewable energy activities and effects. Spatial planning would be better considered as part of the RMA legislative review, and there was little appetite for any new statutory allocation processes for energy resources.

Option 7.1 Amend the National Policy Statement for Renewable Energy Generation

69. We received highly detailed submissions on questions around the NPS-REG, which have been summarised as a block. We will use this information to inform next steps for the work – with the major points and themes listed below.

Weighing renewable energy against other national priorities

70. Many submitters noted that RMA case law (i.e. the Supreme Court's decision in the King Salmon case) means the specific wording of each national instrument is crucial, rather than the previous broader weighting of considerations. This means that national policy instruments with 'stronger' wording, for example the new NPS for Freshwater Management (NPS-FM), have a proportionately stronger weighting in decision making (especially when the current NPS-REG does not include water allocation).

71. Renewable energy will also be affected directly by other national policy instruments with strong protective policies. For example:

    - the NPS-FM may affect flow regimes for waterways, or water levels in wetlands, which could in turn affect hydro storage levels.
    - 'high classification' significant natural areas in the proposed NPS for Indigenous Biodiversity could preclude development or continued operation of renewable energy activities.

72. Many local government submissions highlighted the need for better alignment or integration between national policy directions under the RMA, including reconciling competing values and making clear which values have higher importance. For example,

    …do plan provisions enabling activities that provide for renewable energy outweigh plan provisions protecting indigenous biodiversity, outstanding and high natural character and landscape features, amenity values, heritage values, tangata whenua values or other? Are all renewable energy activities considered equal or is there a hierarchy depending on scale of expected return, longevity of the facility, and the type of facility? (Taranaki Regional Council).

Weighing national benefits against local impacts

73. Many submissions noted the challenges in reconciling many national and lower order plan and policy directions with the tangible local environmental impacts of projects on people and the environment. This can be a particular challenge for large renewable energy projects with significant local impacts, with national benefits less apparent to the directly affected parties.

74. Genesis Energy suggested a different approach to this issue:

    … the focus should be on climate change effects, rather than a comparison (and therefore associated balance) of potential local environmental effects and national benefits. Addressing climate change effects requires a collective effort across all sectors, industry, government and local authorities. The development of renewable electricity generation remains subject to an appropriate environmental assessment framework dictated under the RMA, and the same consideration to avoid, remedy or

mitigate (without an effects management hierarchy) adverse effects on the environment.

75. Mercury Energy raised whether a distinction could be made between 'bottom line' environmental values and where discretion can be applied to help achieve the national benefits of renewable energy.

The importance of existing generation

76. Many industry submitters highlighted the importance of protecting and enabling the improvement of existing generation capacity, as well as enabling new capacity. New Zealand's two largest hydro schemes (Waitaki and Manapouri) will need new resource consents in the next 10-13 years, and many existing wind farms will need repowering in the same timeframe.

77. Given that many of the environmental impacts of current schemes have already taken place, and in many cases are irreversible, some industry submitters felt the key issue for RMA approvals should be how the operations of these schemes should continue (rather than reconsidering whether they should be there at all).

78. Submitters with hydro generation activities also felt strongly that water allocation (currently outside the scope of the NPS-REG) needs to be included in a revised NPS, given the importance to operation of existing hydro schemes (and thus New Zealand's baseload generation and storage capacity). This contrasts with other submitters – for example Environment Canterbury stated that any national direction on renewable energy should not undermine, override or compete with freshwater priorities or processes under the NPS-FM.

What types of renewable energy should be in scope?

79. Some submitters supported widening the scope of the NPS-REG to cover a wider range of energy activities and demand-side options – some examples listed included marine energy, hydrogen, waste-to-energy and biofuels.

80. Some submitters also raised the counterpoint that mixing too many issues/matters together risks losing the focus of the NPS-REG. For example, different types of renewable energy have very different environmental impact and scales, making it harder to design a 'one size fits all' policy.

Small and community-scale renewables

81. Some submitters questioned the value of adding further definitions or thresholds for small and community-scale renewable electricity generation activities. Some noted that including a further definition or threshold could lead to unintended consequences or restrictions on the use of new technologies and innovation, and scale alone is not considered to be an appropriate approach to determining how such activities should be provided for.

82. On the other hand, some submitters considered that a clear definition of small scale renewable projects (in combination with directive policies for enabling such projects) would assist their development.

The importance of transmission and distribution links

83. Transpower noted the importance of transmission links for new generation, and also noted that new technologies in the future, solar or large scale battery storage for example, – can be deployed much faster than they can be connected to the grid. This risks grid connections becoming a bottleneck if transmission approvals cannot keep pace (noting this is also an issue beyond the RMA – for example landowner negotiations and the Public Works Act).

84. Some submitters also noted the importance of distribution connections – for example the NPS-REG does not apply to high voltage local lines that are a crucial part of electricity networks, but can sometimes face challenges in RMA planning and consenting.

The importance of wider RMA reform

85. Many submitters highlighted the importance of the RMA itself - noting there is only so much that national direction can do within the framework of the primary legislation. For example, some submitters raised the lower relative importance of renewable energy in Part 2 of the RMA, and felt climate change and renewable energy generation should be promoted into section 6 of the RMA (equivalent with freshwater and biodiversity).

Option 7.2 National Environmental / Planning Standards

86. Some submitters recognised the potential for NES to assist with development of renewable energy proposals. For example, an NES could set the activity status of renewable energy activities in plans to give greater investment certainty for reconsenting or consent variations.

87. The challenge with national standards is that they would need careful design to account for the wide variety of renewable energy activities and effects. One size does not fit all, so there is a risk that an overly prescriptive NES could create unnecessary barriers to developing renewable electricity. For example Meridian Energy noted that:

    Standardisation of processes could risk making consenting and reconsenting processes more difficult in situations where developers have worked hard with local authorities to provide an appropriate enabling planning environment for specific activities.

Other options

Resource consents for renewable activities

88. There was a wide range of comments and suggested changes around resource consent decision making. The majority of these comments came from industry submitters, reflecting their wishes for greater investment certainty. For instance:

    - Some industry submitters wished for the NPS-REG to be considered directly in resource consent decisions – not just in policy statements and plans.
    - The default lapsing period of 5 years for resource consents was considered too short, given the potential for commercial conditions and technology to change after granting of a consent.

- Many industry submitters commented on the rigidity of consent conditions – meaning that even minor variations in project design can require a relatively long consent variation process.
- Transpower submitted that 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 are seen to have resulted in extremely resource intensive condensed processes, rather than any streamlining. Transpower supported a bespoke new process for nationally significant infrastructure.
- Many industry submitters supported modifications to the process for replacement consents – for example, national direction setting a default controlled activity status, reconsenting considering only the effects of changes to a consent, or hydro generation infrastructure being subject to RMA section 128 reviews rather than reconsenting per se.

89. The effects management hierarchy of ‘avoid, remedy or mitigate’, can be hard to reconcile with the functional needs of generation. For example, many effects are hard to avoid or mitigate when there are few alternatives for the location of major infrastructure. Some options raised included:
    - The scope for more environmental offsetting and compensation – recognising some effects cannot be avoided or remedied, but a developer may be able to create positive environmental outcomes on a different site.
    - A different effects management hierarchy for renewable electricity generation activities – recognising that renewable electricity generation activities must exist in certain locations and focusing on appropriate mitigation measures rather than requiring adverse effects to be avoided, which in many cases is impossible.

Spatial planning and pre-approvals

90. There was mixed support for spatial planning approaches. Many submitters saw value in identifying areas suitable (and not suitable) for renewable activities. Submitters, however, had different ideas on what spatial planning was and how it could work, making it hard to summarise the general pros and cons. Both local government and industry submitters noted challenges for councils without current capability or capacity to identify potential sites for generation and distribution networks.

91. For example, some submitters saw value in using existing RMA instruments such as district and regional plans to identify areas suitable for renewable energy generation. A good example is the current planning framework for geothermal activities in the Bay of Plenty. Some industry submitters were less enthusiastic, stating the location and design of projects needs to be carefully tailored on a case by case basis, which is not suitable for more general zoning approaches.

92. Some caution was noted around the inclusion of ‘no-go’ areas in spatial planning:

    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…. 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 (Transpower).

Pre-approvals

93. This option was generally not supported in submissions. A common theme, as with spatial planning, was that market participants investing capital will have better specialist capability than central or local government when it comes to identifying potential renewable development sites.

    The suitability of generation sites is a complex multi-criteria equation factoring in matters such as quality of the renewable resource, proximity of transmission and load, understanding of the existing technology options, nodal electricity prices, land access, geotechnical suitability for development, and access and transport options – to name a few (Meridian Energy)

94. There also was little appetite for another layer of statutory approvals on top of the RMA. An additional risk is that pre-approval could be abused by a developer to 'land bank' potential development sites to constrain the market.

National direction for transmission

95. In addition to the points made above in relation to transmission issues, Transpower supported amendments to the Resource Management (National Environmental Standards for Electricity Transmission Activities) Regulations 2009.

Other options

96. Some further options raised in submissions and not mentioned above include:

    - Enabling requiring authority status for renewable electricity developers (which would enable them to use the RMA designations process).
    - An oversight function from central government – auditing across plans to ensure consistent and effective implementation of national policy instruments
    - Improving the process for decisions on nationally significant infrastructure, for example, through streamlining the current call-in / direct referral processes, or setting up a new bespoke statutory approval process for nationally significant proposals.
    - An expert panel to guide a consistent approach to consents for smaller scale proposals, rather than each applicant and council needing to start the process from scratch.

Section 8: Supporting renewable electricity generation investment

Summary of key points

97. Most submitters believed that the wholesale electricity market is functioning well. Over the past decade or so, and more recently in response to market signals, there has been substantial electricity generation investment in New Zealand. The majority of this investment has been in renewable generation options, for example:

- Meridian submitted that since 1996 the sector has invested in over 20 terawatt-hours of new generation at a cost of more than $9 billion. Further, since 2012, over 1 gigawatt of thermal capacity has retired.
- In 2019, different investors announced their intention to spend over $1 billion in new wind and geothermal projects, according to MBIE's own estimates, and more than half of this has reached financial close.
- Several new, large-scale projects are already under construction, including the Waipipi wind farm in South Taranaki and the Turitea wind farm near Palmerston North.

98. There was recognition from some submitters that some entities, including independent, community or small-scale developers, face investment challenges. Submitters highlighted challenges with regards to resource consenting or connecting to the grid, which can have an outsized impact on small or new players. These entities also face investment challenges in gaining access to affordable project and debt finance or managing their financial risk.

99. There was also strong support from submitters for enabling electrification and greater demand-side participation, in lieu of supply-side interventions. It was argued that new innovative business models and further renewable electricity generation investment would emerge if the government focused on demand-side policies, including industrial electrification and the uptake of distributed energy resources, for example:

> *the more appropriate role for the government is to create demand for electrification through demand-side policies, such as stimulating the electric vehicle market, starting first with the low-hanging fruit of converting the government fleet to electric vehicles* (Mercury Energy).

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

100. Generator-retailers that submitted on the discussion document largely did not see a role for government in facilitating or underwriting power purchase agreements (PPAs). With regards to underwriting PPAs, some of the submitters that opposed this policy option highlighted the financial risk to government and/or the risk of crowding out private investment. Many of these submitters provided evidence and examples of existing offtake agreements effectively being negotiated under current market settings without the need for government intervention.

101. The Major Electricity Users Group (MEUG) did not support this option. On the other hand, large energy-user Fonterra, which has significant potential to electrify its processes, supported this option, preferring a state sector led (sub-option B) variant rather than government guarantees/underwriting PPAs (sub-option C).

102. A number of other submitters preferred wholesale market reforms ahead of, or complementary to, PPAs. For instance, the New Zealand Wind Energy Association supported reform of the wholesale market as the key initiative to enable retailers and independent generators to purchase/sell contracts, and also supported government supporting new renewable development by offering PPAs for its electricity demand.

103. Energy Link, an energy consultancy firm, has direct experience with running a procurement platform and noted:

Starting in 2013, we developed a fully-automated internet-based procurement platform for large electricity users which literally allowed an uninformed commercial, NGO or government entity, with an electricity bill of $100k per annum or more, to complete an RFP or reverse auction process to renew their electricity contract… We successfully ran some of New Zealand's largest electricity procurements through our Energy Exchange, but we are not using it today because we found that clients preferred us to run procurements for them. This occurred for several reasons, but key amongst them was the desire to have their procurement process directly supported by us. It was also expensive to market the Energy Exchange to the target group of non-residential electricity users because electricity procurement is a pressing need for them only for a narrow window of time around contract-expiry, and they have many more higher priority tasks to deal with at any particular point in time.

104. It may be that a platform, such as Energy Link's Energy Exchange, could be repurposed and supported by government to run reverse auctions for PPAs if a significant and diverse volume of new electrified loads are due to appear on the grid in coming years. In its submission, emhTrade also stated that it would likely participate in a tender process to run a PPA platform on behalf of government, but felt that commercial platforms and brokering activity would emerge as carbon prices rise, so government need not step into to this role itself.

105. However, Energy Link recommends ensuring the current electricity market supports procurement rather than seeking to strike contracts on behalf of buyers and sellers. It highlights the barriers for small generators and retailers:

    …these include the settlement cycle, prudential requirements, the lack of suitable hedge market instruments, and the cost of complying with the myriad of electricity Code requirements. In our experience, there are more than enough potential and existing independent retailers that would relish the challenge of working with consumers to electrify their process heat, but they are held back by these barriers.

106. Energy Link also suggests that more direct government involvement could alternatively come from funding demonstration projects, or working with banks and green investment funds to make project finance available for conversions away from fossil fuels.

107. The Independent Electricity Generators Association (IEGA) shares some of the same views as Energy Link - highlighting the cost and complexity of hedging with ASX products. IEGA listed the benefits of independent and small-scale electricity generators, including electricity network resilience and back-up, enhancing competition, reducing regional electricity prices and diverting grid investment in its submission.

108. IEGA nevertheless supports increasing competition and the market share of independent generators by enabling them to access PPAs. The IEGA Chair recommended that government ensures the design of a PPA platform is accessible to independent generators. About half of the IEGA members supported sub-option C that would see government underwrite PPAs for independent generators and new electrified loads.

109. Government might also consider direct financial support that *"allows a contribution towards construction cost"* or *"financial assistance as a proportion of the levelised-*

cost-of-energy" according to the IEGA Chair. The IEGA Chair gives the example of a $20 subsidy per megawatt-hour of energy generated.

110. There was support for providing more information resources to support the PPA market for renewables in New Zealand. For example, Trustpower supported:

    …opportunities for providing more information resources and exploring simple, low-cost enhanced facilitation arrangement to further assist parties to self-match [demand and supply via a long-term power purchase contract].

111. Lastly, a number of submitters, including emhTrade, highlighted that the major barrier to more PPA uptake between suppliers and users remains the *"*lack of price overlap." That is the contract price acceptable to a seller is higher than that which is acceptable to the buyer. Therefore, providing more information resources would be low-cost, but would have limited impact.

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

112. Submitters broadly support the development of a demand response market in New Zealand. There is a consensus that flexible and distributed energy resources, like batteries or smart EV charging, can help with the integration of variable renewables, manage peak demand, reduce the need for fossil fuel-fired peaking generation capacity and avoid costly transmission and distribution investment. A large number of submitters considered this a priority policy area. Submitters noted existing work underway in this area, encouraged government agencies, regulators and industry to collaborate, and provided some suggestions about how to proceed.

113. A number of submitters highlighted their support for Transpower's existing demand response pilot programme and the Electricity Authority's ongoing work to remove barriers to demand response. There is an expectation amongst submitters that demand response markets will emerge in time as more distributed energy resources are deployed around New Zealand, but government support to accelerate this development and/or ensure it proceeds in an orderly fashion is likely to be necessary. Trustpower makes the recommendation to establish *"a multi-agency work programme, led by the Electricity Authority, to explore the opportunities for encouraging greater demand side participation and demand response."*

114. Transpower provided significant analysis and discussion of this policy option in its submission. According to Transpower's analysis, enabling demand response markets to emerge requires policy development to ensure strong peak price signals are communicated across the transmission grid and local networks; the adoption of technology standards (e.g. for solar invertors, batteries, EV chargers) and; software platforms to allow distributed energy resource owners to interface with markets, local networks and the transmission system. Transpower recommended the adoption of international demand response communication standards – this was echoed by other submitters such as Meridian Energy.

115. Transpower's submission makes suggestions for different models for running a central, decentralised or hybrid demand response market platform in New Zealand. The platform would provide the following market-enabling services:

- *Registration* so that consumers or 'prosumers' can offer their distributed energy resource (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).

116. Electricity distribution businesses were generally opposed to government setting up a Distribution System Operator (DSO). Submitters showed concern that this entity might duplicate distribution firms' functions or introduce inefficiencies. Yet, amongst these submitters and others there also was confusion about what a DSO might look like and what functions it would perform. Potentially, the model could look similar to what Transpower has suggested with regards to an enabling demand response market platform, rather than an additional layer of complex regulatory requirements for distribution firms.

117. emhTrade highlighted what it considers to be a major regulatory barrier – that electricity distribution businesses are not currently incentivised to consider flexibility or demand response as alternatives to traditional network assets under the current regulations. emhTrade stated that:

    our view is that flexibility will provide the most value to the distribution sector and while there are low incentives for them to try to capture this value, any market platform - including our own – is likely to be significantly under-utilised, which in turn will lead to under-investment in flexible resources.

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

118. Retailers, distributors and most other submitters did not support this option. There was a sentiment that this option created an unfair burden on retailers and distributors. Submitters suggested that retailers and distributors were not well-placed to make decisions on behalf of consumers to improve the energy efficiency of their homes. Many submitters preferred existing mechanisms to promote energy efficiency.

119. Submitters felt that EECA was better placed to deploy energy efficiency solutions to consumers across New Zealand. Many submitters supported EECA's work and recommended increasing funding and expanding its existing programmes in order to accelerate energy efficiency gains across the economy.

Option 8.4 - Develop offshore wind assets

120. Many submitters felt it was premature to develop an offshore wind market in New Zealand whilst significant low cost onshore wind resource remains undeveloped. Submitters noted that if, and when, a material market for offshore wind emerges in

Australasia, we might reconsider this policy option so that New Zealand might benefit from the skills and manufacturing capability of neighbouring countries.

121. For example, the New Zealand Wind Energy Association stated that it:

> *does not consider offshore wind a priority given the large potential onshore resource, cost premium and lack of infrastructure to develop offshore wind projects in New Zealand waters.*

Option 8.5 - Introduce renewable electricity certification and portfolio standards

122. There was limited support for this option. Overall, the majority of submitters agreed with MBIE's assessment that the costs and risks associated with introducing renewable electricity certification (REC) were considered to be much larger than the potential benefits.

123. Submitters noted that there was limited justification for introducing portfolio standards on large energy users and/or retailers when the proportion of renewables in the New Zealand electricity mix is already high compared to international standards. Submitters also noted that a REC scheme may interfere with emission price signals already present under the Emissions Trading Scheme.

124. Meridian Energy noted that schemes already exist providing New Zealand businesses with a means to certify their electricity as renewable or carbon neutral. A mandatory Government scheme would duplicate those efforts and result in the foreclosure of existing certification businesses. Meridian comments:

> *New Zealand has delivered certification schemes through NZECS or carboNZero. The Government need not develop a mandatory scheme from scratch. All it needs to do (if anything) is endorse the existing REC scheme or purchase and operate it. If instead the Government tried to develop an Australian-style mandatory REC scheme in New Zealand the business of the existing schemes would be foreclosed. There would also be significant set up costs, as well as on-going administrative and compliance costs for the Government with little, if any resulting benefit. Renewables are already the least cost option and the Government can adjust the ETS settings if it wants to increase the pace of change. The likelihood of negative interactions between any mandatory, Australian-style REC scheme and the ETS is high, with the potential to drive higher cost emissions abatement at the expense of consumers or taxpayers.*

Option 8.6 - Phase down thermal baseload and place in strategic reserve

125. There was little support amongst submitters for a mandated, accelerated phase-out of thermal baseload generation, since these assets are already expected to retire in coming years. This conclusion is in line with MBIE's initial position, as indicated in the discussion document, that this policy option was not preferred.

126. As a point of contrast, environmental NGOs were eager to accelerate the phase-out of thermal energy use in New Zealand, particularly coal. However, most of these submitters focused on the use of coal in the industrial and process heat sectors (part A of the discussion document), which dwarfs coal use for electricity generation in New Zealand.

127. There was significant engagement with the concept of a strategic reserve mechanism, though few submitters felt the mechanism described in the discussion document was the best or most appropriate means to ensure affordable and reliable energy supply.

128. Nevertheless, submitters were glad to have the opportunity to discuss how we might manage security of supply in the future as more variable renewables are integrated into the system and thermal assets that can operate flexibly retire. Transpower, which is responsible for operating the electricity system and managing security of supply, notes that whilst it *"does not see an immediate need for change to ensure security of supply… having this discussion now ensures the industry can be well-prepared."*

129. Transpower recommended that if a strategic reserve mechanism were introduced, assets for the reserve should be selected by a competitive market-based mechanism that is technology agnostic, rather than placing thermal assets identified by the government into the reserve. It also examined Australia's Retailer Reliability Obligations scheme as an alternative that gives the market the opportunity to remedy potential security of supply concerns up to five years ahead. Transpower suggested that New Zealand's existing Customer Compensation Scheme could also be adjusted to achieve similar outcomes.

130. Genesis Energy offered several alternative ideas in its submission. This included a capacity mechanism that pays thermal generation to remain available. It suggests that this mechanism could be paid for by ring-fencing the Crown dividends from Genesis. Another potential option was for the Crown to take part or full ownership of existing thermal assets. Genesis would still manage and operate the assets, but only supply the market when required. The Market Operator (Transpower) could determine this using a trigger such as the existing hydro/electricity risk curves. Genesis also mooted a scarcity pricing mechanism as an alternative option.

131. Contact Energy also offered an alternative to the strategic reserve mechanism, through establishment of a Crown entity "ReserveCo" that would be responsible for managing New Zealand's dry year risk. This entity would purchase Huntly power station from Genesis and manage coal supplies. Like Genesis, Contact saw a role for the Market Operator (Transpower) in determining when the thermal assets should be operated based on dry hydrological conditions.

132. Submitters noted that uncertainty regarding the retirement of large baseload assets was currently a challenge for investors and market participants, and suggested that the government could play a role in creating certainty around timelines for asset retirement. For example, energy consultancy firm Energy Link suggested that "*some sort of negotiated phase-out would… be the best approach,"* but recommended limiting the phase-out to Huntly power station.

133. Trustpower recommended that Government introduces *"a new regulatory requirement for advanced provision of information on thermal generators' retirement plans"* to provide market participants with clearer expectations of future generation capacity and allow them to factor this information into their own investment, operational and retirement decisions.

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

Summary of key points

134. There was strong support among iwi/Māori and local/community groups for growth of New Zealand's community energy scene. Proponents tended to have a strong focus on community, innovation and disruption of the system. Larger energy companies had more qualified support, noting a niche for community energy, but preferring more incremental change, and a focus on the efficiencies of grid-scale generation.

135. Submitters in favour of community energy challenged the perceived downsides and risks of distributed community general. For example, many noted community energy can attract investment from new funding sources, drive innovation at the grid edge, enable a more efficient and resilient grid, and defer the need for investment in distribution infrastructure.

136. There are strong overlaps with other parts of the discussion paper – in particular general issues with distributed generation and network pricing.

137. The major identified barriers to uptake of community energy were:

- Distribution and pricing barriers (e.g. compliance costs of connecting to distribution networks, and unfavourable financial returns on generation).
- A lack of support and enthusiasm from incumbents and regulators – who may prefer incremental changes to the status quo as opposed to innovation and decentralisation.
- Accessing finance capital.
- Land access and RMA barriers – e.g. securing suitable sites and gaining consents when required.

138. There was strong support for a clear government strategy on community energy. There was also wide support for community energy pilots, though many submitters noted the importance of picking projects that are a wise use of public money.

Benefits and costs of community energy projects

139. The majority of submitters to this section supported growth of the community energy sector. Many submitters touched on the importance of community energy in the broader context of distributed energy generation, and New Zealand's energy transformation. For example, community energy can engage a wider range of people to drive the energy transition, and helps unlock innovation that incumbents are less likely to pursue.

140. The Greenpeace submission stated:

Significant funding and support should be provided for iwi, hapū, communities and low-income people to generate their own clean energy from the sun and wind. This means access to grants, loans and information as well as lowered barriers to entry.
A community energy strategy should be developed and funded. There should be a requirement for new energy developers to offer shared-ownership to iwi, hapū and local communities. This is important both in terms of ensuring that the benefits of clean

energy are shared fairly and justly, but also to generate community buy-in that will help speed the clean energy transition in line with the climate science.

141. There was more qualified support from larger energy companies – who noted the potential benefits but also felt that over-investment in community energy would be an expensive alternative to larger grid-scale projects.

142. Many submitters focused on the role of community energy in the wider energy transition (e.g. the social and sharing economy, energy education, innovation and resilience at the grid edge and for energy solutions, energy literacy, growing social cohesion, peer to peer energy "markets or solutions", and better access to demand side management tools).

143. Some submitters felt that incumbent actors in the energy sector had no strong incentives to innovate the energy supply chain – and encouraging community energy would help accelerate this innovation.

144. Many submitters thought some of the perceived risks around community energy can be addressed if there is well-coordinated investment at scale. For example, individual investments are more economic when energy and resources can be shared between projects in a wider community. There also are benefits to the wider generation system from diversity of generation and flexible demand capacity. For example, some submitters noted how distributed generation can enhance grid resilience and defer the need for infrastructure investment if there are smart methods to distribute energy, manage demand and store energy.

145. One submitter reframed this question as:

    The key question is not should government encourage community energy but, recognising a massive wave of behind the meter DER investment is likely (as consumers look at retail prices), what sort of market, network pricing/ access and commercial structures allows our community to most efficiently locate and use that consumer led investment?

146. There was strong support for community energy from iwi/Māori submitters. One iwi submitter noted their aspirations for sustainable energy production and to be fully off the grid within the next 20 years:

    As kaitiaki, we also think it is incredibly important we play our role in reducing emissions and addressing the climate crisis.

147. There also was a focus on community resilience – e.g. storage and demand flexibility that provides local resilience to natural hazards, or enables greater use of EVs to reduce reliance on fuel imports.

148. One submitter has an interesting counterpoint to arguments about the inefficiency of investment in community energy:

    Community energy investment is economically efficient as it will often be funded by private spending that generally will not otherwise have been invested in a productive asset or, by enabling community sharing, allow more efficient use of the renewables and reduce other avoidable behind the meter investment.

149. Another potential benefit of community and shared solutions is the potential for the energy-poor to access cheap, green electricity (if they can adapt power use to times of

high wind and/ or solar), something the current industry has not offered at scale. The flipside of this position is the equity risk that wealthier communities take the lead in developing community energy projects, with others needing to pay a proportionately higher share of the fixed network costs.

150. Many submitters noted the significant economic and technical challenges for community energy projects – e.g. securing long term income to attract investment funding, or technical issues around monitoring and managing power flows.

Community energy projects most relevant in the New Zealand

151. Submissions had a strong focus on community self-determination – anchoring solutions in community aspirations and needs. For example:

In our takiwā, it is likely the best renewable energy opportunities lie in onshore wind energy production and in solar energy, as well as the potential for offshore wind and tidal power. However, we are aware that this will look different for other 'apū and iwi and are conscious that some iwi have had long-running and successful renewable energy projects, such as with geothermal energy.

152. The use of solar and wind as generation, demand management technology and battery storage were the most-referenced types of technology. Small-scale hydro generation is also of interest in rural communities.

153. Some submitters also identified opportunities to anchor community energy projects around government-owned property – for example Genesis Energy's School-Gen programme.

Barriers to community energy

154. The barriers raised by submitters tended to be framed by their previous experiences. For example, submitters with interest in wind energy were concerned at the high costs and uncertainty of RMA consent procedures. One submitter noted an estimated cost of $200,000 for a small scale wind resource consent application and raised the difficulties in accessing potential sites on Crown-owned land – questioning why the Public Works Act was not applicable to energy generation projects.

155. Submitters focused on solar and peer to peer networks were more concerned with electricity distribution issues – for example the critical role for network pricing, varying degrees of enthusiasm for network operators to engage with community energy resources, and the role of networks as incumbent owners of the assets connecting communities. For example:

… access arrangements at the distribution level (especially access for consumer owned DERs) will need to evolve radically for DERs to maximise the long-term benefit of consumers. Changes will be needed to terms of network access, approaches to procuring network inputs, and to the availability of network and market information (IPAG).

In most cases community energy is about the grid edge, the transactive grid/two way power flow etc. Both the design of the power system and the regulatory system have been designed for one-way power flow; from the centre to the edge. Community energy is therefore a significant paradigmatic shift. (Solarcity)

156. A general challenge raised by many submitters was project economics and access to finance – noting that many overseas jurisdictions with community energy developments have been kick-started by mechanisms such as government loans, or feed-in tariffs for distributed generation.

157. Some submitters acknowledged the current initiatives underway at the Electricity Authority, but felt progress on distributed generation was not commensurate with the urgent speed and scale of transition required.

158. Another submitter considered there is a significant gap in the knowledge and systems within utilities, most retailers, other large sector stakeholders, and in many cases local government in how to genuinely engage with communities, and that the Electricity Authority work programme does not appear to include any work to meaningfully address this.

159. Submitter also noted the Electricity Authority has limited influence on some actors and that regulatory incentives and powers are split with the Commerce Commission, which sets the overall incentives on, and rewards for, electricity networks to act. For example:

    Relatively small R&D allowances (in an industry where the regulatory revenue model means super-returns are unlikely to be realised from innovation), no strong incentives to encourage action on 54Q of the Commerce Act and regulatory settings focused on ensuring long term on-going investment are all likely to influence the response rate, direction and magnitude of the regulated sector

Options 9.1 and 9.3 – a government policy on community energy and support for pilot projects

160. There was wide support for a clear policy on community energy. Some submitters noted the importance of policy and strategy to help signal direction to all key players in the electricity system (e.g. not just central government, but also local government, the Commerce Commission, the Electricity Authority, EECA, policy and regulatory actors in adjacent sectors (i.e. building, planning, transport) and the electricity sector itself).

161. Iwi/Māori submitters expressed their aspirations for partnership between the Crown and tangata whenua, and the importance of engaging at the very beginning, rather than as an afterthought. Ngāti Ruanui noted their positive experience with EECA, which supported them to install insulation in their homes, wharenui and buildings, with strong on-the-ground relationships, as a good example of Crown engagement.

162. One submitter supported development of a Māori Renewable Energy and Energy Efficiency Strategy, including support for creation of new incentives and funding pathways to encourage investment in clean energy projects like solar and wind for papakāinga.

163. Some submitters also drew the connection between energy and adjacent sectors – for example the need to coordinate policy with urban planning and building regulations (i.e. community housing and tiny homes will often address energy and other community solutions) or policies on EVs (i.e. how and where you can dynamically charge – or not charge – to optimise renewables and community energy).

164. There was support for government funding of pilot projects – which would help establish the legal, financial, credit and market management frameworks needed to accelerate other projects. The process for selecting pilots and engaging with communities would need to be carefully designed. Iwi and community groups want to have a partnership with the government, and be empowered for their own growth – rather than having "technocratic" solutions dictated to them.

165. There also could be the opportunity to use government-owned assets and facilities to further government and community energy goals/ accelerate pilots – for example commissioning or upgrading public infrastructure such as schools and hospitals.

166. Some submitters did note the risks of a poorly targeted funding programme – for example how to pick projects that will help drive a coherent system transition (rather than tactically just funding a set of good ideas that do not add up to a greater whole). The challenging economics of community energy projects also means there is always the risk of public funds being sunk into an unsuccessful project.

Other options

167. Some other options suggested in submissions included:

- Development of a community energy sector/hub/network – to share best practice and help overcome the small and fragmented nature of the sector at present.
- Development of community energy infrastructure or initiatives should be actively considered during government procurement exercises.
- The potential for 'sector coupling' – e.g. linking energy policy initiatives to:
    - urban planning and building regulations (i.e. community housing and tiny homes will often address energy and other community solutions) whilst building standards or rental home upgrades may dictate energy use options, and
    - policy on electric vehicles, including how, where and when you can dynamically charge to optimise renewables and community energy.
- A requirement for new energy developers to offer shared-ownership to local communities and, in particular, Māori.
- Using government-backed PPAs to encourage development of specific technologies and ownership models.

Section 10: Connecting to the national grid

Summary of key messages

168. There is support for some means to enable transmission investments that drive decarbonisation, but it would need to be carefully designed and implemented to avoid unnecessary cost. While option 10.1 (including climate change mitigation benefits in Commerce Commission funding approvals) may not go far enough to address any first mover disadvantage, it was seen as a relatively lost-cost option that could have wider benefits.

169. Submitters generally agreed that government could play a greater role in providing information and facilitating information sharing, but would need to do so in a way that preserves commercial confidentiality and market incentives, and doesn't divert resources from other important work. Options 10.5 (greater information in MBIE's Electricity demand and generation scenarios (EDGS) and 10.6 (a users' guide to grid connections) stood out as potential "quick wins".

170. Two submitters suggested that Transpower should be using a lower discount rate (e.g. 3% instead of default rate of 7%) in its applications for major capital expenditure (projects expected to cost over $20m)..

First mover disadvantage

171. Not all submitters agreed that there is a "first-mover disadvantage" issue in practice, although there was wider recognition of issues for demand-side grid connections. Others noted that while this may have not been a significant problem in the past, it may become more important in future, particularly if there is a step change in the level of renewable generation capacity and in the number of industrials grid-connecting.

172. Two submitters suggested an additional option of Transpower using a lower discount rate (e.g. 3% instead of default rate of 7%) in its applications for major capital expenditure (projects expected to cost over $20m). This would then also apply to the value of the economic benefits of avoided emissions (or the "social benefit") included if option 10.1 is progressed. For example, Transpower submitted

    [Using a commercial discount rate] "...undervalues the welfare of future generations by substantially underestimating the present cost of future climate change impacts".

Option 10.1 - Including the economic benefits of climate change mitigation in applications for Commerce Commission approval of projects

173. This option attracted the most support, with 19 out of 28 submitters offering some level of support. There were varying views about the impacts of this option– ranging from marginal (if any) benefits through to views that it would both speed up the uptake of renewables and disincentivise new thermal plant.

174. Some submitters noted this option is unlikely to solve the first mover disadvantage issue, but has the larger benefit of enabling key interconnection investments that drive decarbonisation. For example, Genesis Energy submitted:

    [this option] ...has merit and would be a relatively low-cost way of helping Transpower to structure its network optimally for the development of renewable resources and the electrification of industrial processes.

175. Some submissions also noted this option could make non-transmission solutions more economically valuable than traditional transmission infrastructure investment, but would then need contractual and compensation arrangements in place with Transpower.

176. Some disadvantages or risks for this option were identified:

    - Concern that this change could also become a consideration in the benefit-based charging regime proposed under the Electricity Authority's revised Transmission Pricing Methodology.

- Calculating avoided emissions costs would be challenging, as is determining the "right" level of government input.
- This option may be a difficult test for the Commerce Commission to apply, and needs careful design to limit the imposition of complex modelling requirements on Transpower.
- This option would be counterproductive if it resulted in higher transmission costs for users (e.g. due to under-recovery from Transpower) – and would need detailed analysis before pursuing.

Option 10.2 - Additional mechanisms to support or encourage alternative forms of cost sharing

177. Around half of submitters supported this option. Key comments included that this option could provide much needed facilitation between counterparties to multi-party connection contracts (that will only work if each has similar leverage and is operating to similar timeframes), and that the need for these types of contracts is likely to increase.

178. There was support for a new requirement for customers who subsequently connect to a contracted asset to contribute to the funding of that asset, for example, through a new levy, with a rebate paid to the first mover. It was noted that subsequent customers may not get the same quality/security requirements as the initial party, so any subsequent cost sharing arrangements should take that into account.

179. Some disadvantages or risks identified were:

- This option would require cooperation between commercial entities, and experience is that competitive behaviour can stifle discussions and make consensus hard.
- Potential complications to transmission pricing.

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

180. Eleven submitters responded to this question, which relates to option 10.2. The only specific perverse incentive identified was if it created a disincentive for subsequent uptake. Other comments were that it could create extra (unwelcome) costs, and that care would be required in the design of any new requirement or charge to avoid unintended consequences.

181. Further work on this option was welcomed, and Genesis Energy noted that it sees merit in the Government working with Transpower, generators and major users to discuss how a scheme like this could work.

Option 10.3 - Shift some of the cost and risk allocation for new and upgraded connections from the first mover through mechanisms within the Commerce Commission's regulatory scope, with the Crown accepting some of the financial risk.

182. There was mixed support for this option. Arguments against included that the government is not the best party to take on risk (the market is), and that risk and cost should not be shifted if the private sector is set to benefit significantly.

183. Some submitters also thought the Commerce Commission's regime strikes an effective balance, and cost sharing arrangements may compromise that balance, and encourage political interference. For example, Transpower noted the option seemed unnecessary as it would typically be in electricity consumer interests for a single asset to be built, even when there are multiple potential users.

Sub-option 10.3.1 - Optimise asset valuations under the Commerce Commission's regime in circumstances where demand is lower than originally anticipated because expected (subsequent) customers do not eventuate.

184. Five submitters specifically supported this option. One risk identified was a possible shift of cost to taxpayers or consumers if investments are written off when developers get 'cold feet' or other connecting customers aren't attracted.

Sub-option 10.3.2 - Provide for Transpower to build larger capacity connection asset or a configuration that allows for growth, but only recover full costs once asset is fully utilised, with the Crown covering risk of revenue shortfall.

185. Ten submitters specifically supported this option. Some disadvantages or risks identified were:

- A possible shift of cost to tax payers, or consumers paying for overcapacity if new schemes are never built.
- Transpower could be encouraged to over-build new lines across private land, so would need to address property right concerns (i.e. improved compensation for affected landowners hosting new lines, poles and towers on their farms).

Additional options suggested

186. Additional options suggested for addressing first mover disadvantage were:

- Refine option 10.1 by having a standardised protocol for calculating the social cost of carbon emissions.
- Apply the principle that "who benefits from new and existing infrastructure should contribute to the cost of building and maintaining that infrastructure".
- Consider nuclear power.
- Promote geographic dispersion through transmission investment favouring wind in the upper North Island.

- Transpower could engage on a good practice (GXP) basis with large users to develop long term plans.
- Operate a pro-rated transfer from subsequent customers to the initiating customers (first mover pays the full share of capital costs and then, if a subsequent customer joins, a calculation is done to reallocate costs (to the extent that future capital costs have been pre-funded). This would not preclude (and would encourage) multiple customers to jointly develop an efficient solution in situations where this can be done.
- The Grid Reliability Standard in the Code does not reflect either decarbonisation or resilience issues – it is prescriptive and tends to favour short term solutions. It could be changed to allow additional economic benefits to be included.
- Measures that would ensure transmission infrastructure and capacity is available to connect renewable electricity generation to the system, and enable large users to electrify. Other markets, including Texas, provide for transmission investments to be approved or built in advance of new generation or load, providing comfort to investors.
- 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 in practice.
- Transpower's preferred option, was for spare capacity of a connection asset to be passed through to all electricity consumers via the TPM (reducing as each new party purchases some of it), noting that would need two features:
    - approval by the Commerce Commission as a safeguard (to ensure that they provide net benefits to electricity consumers).
    - changes to the TPM to allow for the spare capacity on the connection asset to have the same treatment as interconnection assets, which are recovered from a broader base of consumers.

Option 10.4 - Provide independent geospatial data on potential generation and electrification sites (e.g. wind speeds for sites, information on relative economics and feasibility of investment locations given available transmission capacity).

187. Sixteen submitters commented on this option. While there was high support for the provision of more information by government, there were divergent views on the kinds of information that should be provided.

188. There was general agreement that the government should provide more independent public data, with 13 out of 15 submitters indicating a level of support. Reasons for supporting this option included that it:

- levels the playing field and provides a common basis for planning and investment
- can be used for due diligence and therefore encourages investment

- can be produced and disseminated at lower cost than many parties creating their own information.

189. Genesis Energy noted:

The Government could play a useful role in disseminating this information, where it would not impinge on the competitive advantage of those participants that have collected information to support investment decisions or to on-sell to potential developers. An allowance for Transpower to undertake some independent data collection could be built in to its regulated revenue, subject to caveats similar to those above

190. Submitter views diverged on the kinds and level of data that should be provided. There was some support for the provision of geospatial data, for example:

- Physical data should be provided (not economic data as it requires numerous assumptions that change constantly) to enable investors to evaluate on the economics of potential investments, according to their own circumstances.
- Providing more information regarding national grid connection options and network capacity.

191. Many submitters did not support government provision of data, stating:

- There is a substantial amount of information already available and commercial incentives already drive an understanding of potential sites for new generation.
- Industry participants will undertake their own analysis and view new generation locations as a source of competitive advantage.
- It should be left to market participants as this is where investment risks reside.

192. Meridian Energy submitted:

As a renewable generation developer, we consider there to be sufficient information available to inform our investments. There is also a lot of publicly disclosed information on consented options and options under investigation. Transpower can just as easily access this information and speak to generation developers (through public consultation or informally) if further input into transmission investment decisions would be beneficial.

Option 10.5 – Extending MBIE's electricity demand and generation scenarios (EDGS)

193. Of the 17 submitters that commented on this option, the majority supported it at least in part. Submitters outlined the different roles electricity demand and generation scenarios (EDGS) play, from providing Transpower with "crucial information", to complementing industry participants' own analysis.

194. Transpower noted it is critical EDGS cases align to the (legislated) net zero carbon target to allow for approval decisions that consider input assumptions aligned with that target. The Major Electricity Users Group (MEUG) – did not support the options as presented, submitting:

[It is] "…More important to have regular updates of energy supply/demand of all forms of energy (rather than only electricity) over the economy."

Frequency of EDGS reporting

195. A majority of submitters supported increasing the frequency of EDGS reports, although there was less agreement about how often. Only eight provided a specific view – four supported 6-monthly, two (including Transpower) annually, and two every two years. One reason to increase the frequency of reporting was that updating EDGS assumptions annually would be useful given the uncertainty about future uptake of distributed generation.

196. On the other hand, reasons to not increase the frequency of reporting were:

- Triennial reporting appears sufficient for a capital intensive industry, which moves slowly.
- Forecasting is getting more challenging due to electricity sector changing at increasing pace.

197. Another option would be not to do full updates (e.g. of the national scenarios) annually – and instead take a more flexible approach that assesses what material needs to be updated when.

More granular reporting in the EDGS

198. There was less comment on and support for providing more granular information in the EDGS (e.g. regional information). Reasons for supporting more granular information included:

- It would help identify trends in, and opportunities for local energy use.
- It would have significant public benefits, including for potential new entrants.
- It could be an appropriate way to facilitate information sharing on transmission capacity, demand and generation (at least at the level of upper and lower North Island, and upper and lower South Island).

199. For example, Todd Energy submitted:

> *Understanding regional transmission constraints alongside new generation, demand and transmission capacity developments will be useful for decision making processes and engagement with regulators and lines businesses with respect to future plans and opportunities.*

200. Reasons for not supporting more granular information included:

- It would still be a long way from having the scope and detail required, or require too much resource to produce.
- The status quo already provided enough information to complement industry participants' analysis.

201. For example, Transpower submitted

> *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.*

Recovering costs of the EDGS from Transpower

202. The majority of submitters on this point supported it in principle, though noted the need for further work to understand the costs of the option.

Option 10.6 – A users' guide for grid upgrades/connections

203. There was a high level of support for this option. A number of submitters noted that while it would not be useful for them, they supported it because it would be useful for new entrants, especially for community energy. However, three submitters did not support it, noting:

    - The information should already be available.
    - Entities are likely to have sufficient resources to not need such a guide.
    - Resources may be better allocated to ensuring legislation and policy are clear, fit for purpose and easily understood by all parties.

204. Infratec noted some existing resources that could be built on, and recommend that EECA or Sustainable Electricity Association of New Zealand (SEANZ) undertake exercises to improve their investment advice and carbon saving calculations in line with international expertise.

205. Submitters suggested inclusion of the following information:

    - Up-to-date factual information on local/regional/national energy options.
    - Suppliers using renewable energy in the area.
    - Step-by-step instructions in plain English and case studies of various connection projects.
    - Estimated costs and timeframes.

Option 10.7 – develop a database of potential renewable generation and demand sources

206. Of the 12 submitters on this option, nine thought there was a case for such as database. The support was caveated in some cases (e.g. provided that confidential information is retained). Those that did not support this option considered the problem was overstated, and that significant energy users "*will already be in discussion with Transpower etc regarding future plans and impacts on grid and demand."*

Feedback on a potential database (and/or map) of potential renewable generation and new demand, including location and potential size

207. Thirteen of the 21 submitters that responded to this question thought that there was value in some information. Transpower and electricity distribution businesses were identified by Fonterra as best placed to develop and maintain a database. Others submitters suggested that the EA could extend its existing database.

208. Only three submitters commented on funding, suggesting either Crown or levy funding. Those that did not support it were wary of increased disclosure requirements, thought there was enough information available already, and cautioned against giving the impression that suitable sites will gain consent and meet with approval from iwi.

Option 10.8 – coordination of wind farm placement

209. There was limited support for this option. Those opposed noted:

- Developers are best placed to understand wind resources and identify the most economic sites.
- Owners of generation plant have much stronger incentives and greater capability to co-ordinate generation, and nodal spot prices compensate for diversity.
- Central coordination may result in reduced competition and higher prices for consumers.
- This issue is already covered by section 30 of the RMA – Regional Policy Statements are to provide for the strategic integration of infrastructure with land use, which covers the consenting of wind turbines through district plans.

210. However, Genesis Energy suggested that facilitation of information sharing and data publishing regarding wind farm placement would help investment planning and decision-making, particularly for transmission. It noted that it would remain appropriate that sites be developed according to their merits.

Other options that could help address investment coordination issues

211. Four submitters suggested other options as follows:

- Additional information on line capacity and planning resource maps for wind could help facilitate improved and faster consenting of wind assets. This should encourage investment by reducing development costs and risks – whilst also encouraging wind in favourable areas.
- Commissioning a tool to allow industry actors and interested parties to assess different means of decarbonisation. As well as providing a valuable resource for industry, development of such a tool would also encourage relationships to stimulate low carbon investment ideas.
- Availability of funding options and/or EECA-provided contestable funds for renewable energy projects.
- An online information centre, database, and library.

Section 11: Local network connections and trading arrangements

Summary of key points

212. Submitters had divergent views on whether there are significant barriers to connecting to local networks. Generally, Electricity Distribution Businesses (EDBs) did not believe there are barriers, however other submitters had a different view – for example technical issues, or difficulties with negotiating and policy uncertainty. A key area of disagreement is how and where the benefits and costs of projects should fall, for example, there was comment that the price paid for exported distributed generation (DG) is often “too low”, and that commercial DG does not pay its “fair share” of network costs.

213. Submitters supported the production of a users' guide to the process for getting an upgraded or new distribution line, but it was noted that it would be difficult to produce, and may only be truly effective if connection arrangements are first standardised across all EDBs.

214. Most submitters agreed that the current work programme in this area is comprehensive, but many had suggestions for prioritising or speeding up work – mainly in relation to the work of the Electricity Authority's Innovation and Participation Advisory Group (IPAG) and the Electricity Network Association's (ENA) Transformation Roadmap. While some considered this was a matter of resourcing, others submitted that more fundamental changes were needed to the policy settings to enable progress.

215. About half of submissions on this section suggested changes to the current arrangements that would ensure distribution networks are fit for purpose into the future. These ranged from a reset of the policy settings (e.g. establishment of a Ministry of Energy), through to resourcing regulators and specific initiatives such as piloting development of a new network area that is built for a low emissions future, rather than based on the status quo.

Barriers to connecting to local networks

216. Of the 23 submitters that responded to this question, nearly half indicated there were no barriers. Those that had experienced/were aware of barriers identified them as:

- The impact of the 'first mover advantage' on subsequent parties that want to connect to local networks / connection costs uncertainty.
- Difficulty in being taken seriously / co-ordinating the many players / unwillingness of EDBs to share information, allow connections, and negotiate charges.
- Policy uncertainty regarding regulated terms for DG has had an adverse impact on the smaller DG owners and could impact on larger investors (who need certainty for investment in long life assets).
- The buy-back price is often too low or there is a charge for solar export / there is uncertainty about sharing of benefits.
- There are barriers to connecting DER in a way that unlocks the full benefits that it brings to the overall electricity system.
- Technical issues such as delays in issuing a suitable meter, and different requirements and processes between EDBs.

217. One EDB (we*) noted that:

There is a misconception that capacity will always be available and the only cost is connecting to the network. A step change in investment is typically required at significant cost and requires co-ordination with councils etc.

218. The Electricity Networks Authority noted that:

…more significant connections (longer circuit lengths, greater capacity/higher voltage, land acquisitions/easements required) naturally take longer to plan, design and deploy, and are more costly. This is not a barrier imposed by the EDB, it is simply the nature of designing and constructing larger and more complex network assets. Those needing

these more significant network connections should always engage with their local EDB as early as possible once they know it will be required.

Users' guide to network connections / other information options

219. The majority of submitters supported a users' guide to connections. For example, Todd Energy submitted:

…if for no other reason it is worth documenting the processes involved and that will help identify potential 'choke points' in terms of establishing new DERs, an area which we expect to be subject to tension between distributors and connecting parties in the future.

220. However, a number of submitters noted that producing such a guide may be difficult, with IPAG noting that it will only be truly effective if connection arrangements are first standardised across all EDBs, for household and larger community or commercial connections.

Adequacy of current work programmes around network connections

221. Eighteen submitters responded to this question. A minority of submitters felt current work programmes did not cover all the issues, citing:
    - Implementation of the EA's cost reflective pricing and TPM proposal to remove peak charges will create issues as both will make DG financially less cost effective.
    - The impact of aspects of ownership and governance structures for 29 EDBs on the market as the scope for increased DG and DER expands (for example, smaller EDBs may lack the scale and resources to be able to assess non-distribution alternatives).
    - The work programme seems to favour sustainability and affordability over maintaining reliability (which could impact on security of supply).

222. In terms of what could be prioritised or sped up (with different policy settings and/or more resourcing), submitters noted:
    - Work by MBIE to update standards (that are impeding adoption of the latest technologies and practices) in the electricity safety regulations has been slow, and will not solve the problem of standards becoming outdated again.
    - The ENA Network Transformation Roadmap task to build and adapt network capability should be prioritised.
    - Activity to progress development of the ability to monetise flexibility services is the linchpin of a successful transition to a DER-led future, and must be sped up.
    - Investigation of a peer-to-peer market model, to enable distributed and micro-generators to trade with particular consumers should be prioritised.
    - Prioritise implementation of the Electricity Price Review recommendation to clarify the Electricity Authority's role in regulating electricity distribution.
    - The ENA Network Transformation Roadmap is crucial, and there should be a policy focus on how its implementation can be encouraged without delay.

- A number of important proposals in IPAG's work on Equal Access could be advanced sooner with the right policy settings.

223. For example, Our Energy submitted:

> *IPAG's work on Equal Access also contains a number of important proposals that could be advanced sooner rather than later with the right policy settings. There are market participants and innovators willing and able to participate in trials that are ultimately critical for accelerating renewable energy and energy efficiency, which also carry wider benefits for NZ Inc in terms of enhancing productivity and innovation.*

What changes, if any, to the current arrangements would ensure distribution networks are fit for purpose into the future?

224. Seventeen submitters suggested changes to the current arrangements in three categories:

Policy settings

- Policy and regulatory work akin to the work that took place for the development of the wholesale market 30 years ago, but focused at the distribution level.
- Take the approach to regulatory arrangements outlined in “ReShaping Regulation, Powering from the Future” which describes regulatory principles to shape a new energy system from a blank sheet of paper.
- Establish a Ministry of Energy to strengthen coordination between investors, distributors, consumers and other interested parties to connect new generation, electrify and/or participate in the electricity market.
- Issue a distribution pricing Government Policy Statement as it is a complex matter in the context of developing DER that requires higher level policy guidance (TPM review is an example of the risk of leaving this matter up to regulatory decision-making).
- Repeal or substantially reform low fixed charge regulation to help EDB tariff reform.

Crown entity regulatory settings and resourcing

- Support the Commerce Commission to prioritise initiatives that drive distributor innovation.
- Support the Electricity Authority to prioritise coordination of trials critical for accelerating renewable energy and energy efficiency / directly fund or co-fund trials of new technologies.
- Move large distributors to individualised price-quality paths to provide needed flexibility / move away from attempting to ring-fence network spending into ‘traditional’ solutions.

- Improve the way EDBs comply with the regulatory requirement to analyse alternatives to investment in distribution assets, or put in place stronger regulation.
- More initiatives like the IPAG Equal Access project.

Specific initiatives and policies

- Monitor EDB readiness for the introduction of new DER and related technologies (to help provide a clear focus for the path ahead).
- Address the 'first mover advantage' and risk of social inequality by ensuring that commercial DG pays its fair share of network costs.
- Mandate time of use charges for residential and commercial customers.
- Regulate access to smart meter data so EDBs can cost effectively gain good visibility of their low voltage networks to ensure that they can manage the impacts and maximise the opportunities provided by new technologies.
- Technical standards for smart meters and changes that would allow distributors to share export capacity across contributing customers.
- Amalgamate EDB operations to achieve both economies of scale and capacity to respond to new complex demands on network.
- Pilot development of a new network area that is built for a low emissions future, rather than based on the status quo.

225. IPAG submitted across many of these points:

…the first steps are well understood but are languishing for lack of resources. The first barrier to effective use of DERs connecting to and trading on local networks is the lack of mechanisms to be financially compensated for the benefits they bring to the network. We are no longer convinced that a solely industry-led approach will deliver the change required.