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EMISSION REDUCTION PLAN 2

Summary

1. Vector is New Zealand's largest distributor of electricity, supplying more than 624,000 electricity connections between Papakura and Warkworth. Our electricity network across the greater Auckland area spans more than 19,000km in length.
2. Vector also operates a gas distribution network that distributes natural gas across the greater Auckland area to over 120,000 customers via 7000 km of pipes.
3. Vector's vision is to create a new energy future by creating infrastructure to manage the complex demands of the sector that provides choices for customers. Growing demand due to accelerating electrification and the challenges of climate change, particularly on infrastructure resilience, are placing new pressures on established energy systems.
4. We welcome the opportunity to respond to New Zealand's second Emissions Reduction Plan for the budget period 2026-2030 ("**ERP2**"). We acknowledge the Climate Change Minister's comment in the foreword that this is a critical decade for climate change, and that the future success of our country will rely on our ability to sustainably transition to a low emissions economy. We agree that the right cross-sector package of enabling policies is needed to remove barriers to reduce emissions.
5. We note from ERP2 that "the economy will change between now and 2030, and new technologies will emerge. The Government needs to be responsive and innovative." The energy sector is a critical enabler of decarbonisation, and Vector is at the forefront of innovation. We believe there is an opportunity to make the energy transition more efficient by building smarter infrastructure, appropriately managing and planning transitions, and making better use of what we have already built – but we need the right mindset, technology and regulatory structures to make this happen.
6. We would welcome any questions on this submission or the opportunity to work with Government to provide further information to inform this work.

Whole of system thinking

7. Vector's view is that the energy system is going through a generational transition, with the need for more capacity, changing customer needs, and climate change. We have long called for an energy strategy that takes a whole-of-system approach and a strategic lens over energy as a system – not a collection of siloed layers with different regulators and

different “markets” offering no coherence or strategic oversight to linkages and interplay between the elements throughout the value chain.

8. Unfortunately, New Zealand’s energy system currently lacks overall stewardship, with no single entity responsible or seemingly accountable for what is a critical system for both the economy and the lives of everyday New Zealanders. This is particularly evident when considering the current “dry year” risk, when low rainfall sees the hydro lake levels fall below average for an extended period.
9. Vector has consistently advocated for a broader perspective to be taken across the wider energy sector, with consumers at the centre. The current lack of a whole-of-system energy strategy means there is a lack of focus on energy affordability and risk, as decisions are made in silos. The value of investments and costs of decisions need to be assessed across the board in order to optimise the energy system as a whole. Lowering the cost of energy and ensuring reliability and consumer confidence from a whole system perspective should be the lens through which investments and costs are assessed.
10. A whole system approach would also recognise the value of technology or decisions that *avoid cost* for the whole system. Harnessing this approach would drive investment in solutions that deliver value across the whole system for consumers and reduce reliance on traditional and capital-intensive new build infrastructure. Current market and regulatory settings fail to send appropriate signals which incentivise the most efficient investments for consumers, accounting for whole system impact.

EV uptake and charging

11. Electrification of transport is a key element to decarbonising New Zealand’s economy, and Vector supports the uptake of electric vehicles in New Zealand.
12. This additional demand needs to be managed (i.e. smoothed) to avoid significant unnecessary network investments to meet a much higher peak demand that would exacerbate both infrastructure build activity and costs for consumers. If the energy demands of electric vehicles can be managed and spread outside of peak time, electrification can increase while infrastructure, both existing and new, is optimised which will mean savings for electricity customers.
13. Vector strongly supports the urgent amendment of the Energy Efficiency and Conservation Act to enable standards to be set for devices with capability for demand flexibility, including EV smart chargers. There is an urgency to enacting such legislation. Vector analysis indicates that in Auckland alone nearly \$3 billion in consumer cost can be avoided by 2050 if the ability for network load smoothing and utilisation is enabled through optimised EV charging.
14. Setting regulatory standards for demand flexibility, such as smart EV charging, is a critical enabler of this avoided investment capable of lowering customer bills relative to any counterfactual. We would strongly encourage the Government to prioritise and expedite this legislative change and the subsequent work of EECA. Delay to this change will drive unnecessary costs into network design and build, which will impact consumers today. Expediting this change will save consumers significant future electricity costs.
15. We note the Government’s goal of 10,000 public EV chargers is subject to a cost-benefit analysis. We support a comprehensive cost-benefit analysis, as a relatively high uncertainty of the efficacy of investment exists, particularly given the significant advancements in battery range and technology that exist and will continue. We would also highlight the importance of research, both domestically and internationally, that suggests

close to 90 per cent of EV charging will be in the home – underscoring our submission above on the criticality of appropriately managing and optimising home EV charging to efficiently manage the low-voltage network. While there will be a need for public EV charging - for long road-trips and holiday destinations, and for people that do not have off-street parking or the ability to install a charger in their home¹ - the Government needs to consider this public EV charging focus alongside managing home charging in a way that avoids unnecessary network investment.

16. Vector notes that there is an opportunity in building regulations to ensure that apartment buildings and public car parks have EV charging capabilities or have the necessary wiring for chargers. There is a current conflict between fire safety standards, building codes and electric vehicle charging goals that should be addressed.
17. Vector notes that the Government has set up a cross-agency taskforce to coordinate work on EV charging infrastructure. A key cost in rolling out high speed EV infrastructure is the cost of electricity distribution and associated upgrades. Vector would like to be closely consulted in the development of such programmes.
18. One area of significant costs for Vector is traffic management – which is passed on to EV charge point operators when new installations are completed. There is an opportunity for the Government to review traffic management standards to support the uptake of public EV charging through focusing on the costs of traffic management imposed on all infrastructure operators working in the roading corridor.

Solar

19. Vector supports exploration of innovation in tariff systems for rooftop solar and batteries. However, a rooftop solar policy, if designed incorrectly, could have negative impacts on distribution network performance and network stability (as has been experienced in Australia). Vector and other distribution companies should be closely consulted in the design of any solar tariff system.
20. Like smart EV charging regulations, Vector would support amending the Energy Efficiency and Conservation Act to enable standards to be set on solar inverters. The ability to throttle electricity flow into the distribution network to preserve network stability can mitigate some of the negative impacts that are being experienced in Australian networks (such as outages for other customers) while still enabling solar uptake.

Energy efficient building

21. Vector notes that the Government intends to support green building practices in New Zealand. Vector strongly supports energy efficiency and associated building codes that encourage it.
22. A research paper from the University of Otago highlighted that more efficient residential lighting could reduce annual electricity demand by 1TWh and reduce the winter peak by

¹ Data from Auckland Council reveal that, 89% of residential properties have off-street parking. A subset of this population however may not be able to install a charger due to regulatory reasons or the car park not being built with the necessary cabling. The remaining 11% still accounts for around 57,000 homes without off street parking.

500MW. This is the equivalent to avoiding the need for additional generation capacity at the scale of Huntly Power Stations 1-4 plus the Stratford peaker.²

23. Vector recently partnered with Auckland Council to deliver among other things an LED rollout across 500 households that struggle with energy hardship. Our preliminary findings estimate that this one-off \$125,000 initiative would save at least \$255,000 *per year* across all participating households. Expanding “Warmer Kiwi Homes” to include LED lighting for rental properties would be a low-cost high-outcome intervention.

Gas

24. Decarbonisation scenario analysis indicates that gas infrastructure companies, and their connected consumers, are currently exposed to material transition costs, disruption, and gas-asset stranding risk. This risk is largely driven by uncertainty over the future of gas usage, and a lack of clear policy direction to adequately manage this transition. Our chief concern is that the principle of financial capital maintenance, which provides foundational confidence for ongoing and continued regulated infrastructure investment, is at risk of being severely undermined on the basis that fiduciary director duties will challenge the ability for companies to approve ongoing investment. We suggest that ERP2 fails to appreciate the risk of network and customer asset stranding, and recommend the Government proactively mitigates this future risk.
25. We note the Government’s intention to continue the use of gas in New Zealand’s energy system, and the associated discontinuation of the gas transition plan. We acknowledge the Government’s work in seeking to secure upstream gas supply but note that such efforts would become futile if there was no affordable network to transport that gas.
26. Natural gas use in New Zealand is largely used in industrial process, methanol production, and electricity generation. The residential sector accounts for only 5 per cent of all natural gas-related emissions, yet makes up 95 per cent of all natural gas connections (276,500 connections). Meaningful decarbonisation of the gas system is therefore largely an exercise in reducing gas-fired electricity generation and industrial processes.
27. The Auckland region has been experiencing year-on-year declines in gas consumption since 2019 across residential, commercial, and industrial sectors. Many industrial consumers on the Vector network have indicated pursuit of their own 2030 emission reduction plans, independent of Government policy. Recent studies have suggested that it may also now be cheaper for many residential consumers to disconnect from gas and live in an electric-only home.
28. As users disconnect from the gas network the share of largely fixed distribution costs on the remaining customers increases exponentially – which can, in turn, trigger further acceleration in disconnections.
29. The issue stems from regulatory and policy settings designed for growth – that gas infrastructure investments made now are recovered in the future from a larger consumer base. In the current situation the inverse is true. That is, cost recovery for investments needs to be made from the current larger consumer base to protect a smaller future consumer base from the risk of stranded assets and escalating costs. Vector has a

² <https://link.springer.com/article/10.1007/s12053-020-09870-8>

detailed description of this risk in its paper to MBIE 'Managing the Gas Transition' – which was prepared in response to the previous Gas Transition Plan.³

30. The Government has an opportunity to mitigate these risks through action now, by:
- a) Including the economic regulation of gas pipelines in its forthcoming review of the Commerce Act. The existing regime was designed for business as usual and is not fit for purpose, nor provides the investor or consumer confidence needed, to manage the complexity of the current transition.⁴
 - b) Setting clear policy statements that ensure the Commerce Commission continues to implement no-regrets financial mechanisms (such as accelerated depreciation) which mitigate the stranded asset risk.
 - c) Preserving the principle of financial capital maintenance that supports ongoing infrastructure in New Zealand, noting that regulatory failure leading to stranded gas distribution assets could have an effect on the ability and/or cost of electricity distribution businesses accessing debt and equity at least cost to fund electrification.
 - d) Investigating guaranteeing any prospective stranded asset portion of the network through a Government-backed bond or underwrite and charging this to consumers via a securitisation charge. If implemented correctly this could reduce overall consumer cost and mitigate stranded asset risk (for both networks and consumers) with no additional cost to the Government.
 - e) Investigating re-nationalising natural gas infrastructure (as can now be observed in some overseas jurisdictions), or a Government-underwrite to secure gas distribution networks in the future.
31. Vector notes the Government is relying on renewable gases to enable continuation of the gas network. Our analysis highlights that if all food waste and wastewater in the Auckland region would convert to biogas it would supply only 5 per cent of Auckland's gas demand. While this is a great decarbonisation opportunity, it is insufficient to financially secure the gas network.

Transportation

32. Vector supports the Government's commitment to retaining the clean car importer standard.
33. Vector strongly supports the Government's commitments towards heavy vehicle decarbonisation. While light vehicles are already at cost parity, there are significant cost barriers to heavy vehicle electrification.
34. Vector also strongly supports the enablement of heavy vehicle charging and would like to note recent arrangements between Vector and Auckland Transport in flexible network connections for bus charging depots. Vector is able to optimise the buses charging, and in return offer lower connection costs as we were able to defer network reinforcement that would otherwise have been required. The Government's plans to roll out heavy vehicle

³ <https://blob-static.vector.co.nz/blob/vector/media/vector-2024/vector-2023-managing-the-gas-transition.pdf>

⁴ Expanded information on these points can be found in Vector's paper 'Managing the gas transition 2023' <https://blob-static.vector.co.nz/blob/vector/media/vector-2024/vector-2023-managing-the-gas-transition.pdf>

charging infrastructure could also be supported by such collaborations and pursuit of flexible connections where feasible which would save on overall infrastructure costs.

35. We would also like to comment on the connection between public transport and electricity network costs. As electric vehicles contribute to nearly 70 per cent of forecasted network growth in the Auckland region, any mode shift from personal vehicles to public transport could materially reduce the peak demand on the Vector electricity network, and the overall generation required in the market. This could be considered as a positive long-term benefit in Government analysis in achieving the lowest cost transition.

Vegetation management

36. Vector strongly supports MBIE's recent second proposal to amend vegetation management regulations to allow for a risk-based notice power for works owners. Current vegetation management regulations are outdated, and we welcome long over-due reform in this area. Trees cause significant disruption to reliable electricity supply particularly in severe weather events, where they cause up to 70 per cent of outages on our network.

Third emissions budget

37. ERP2 should acknowledge and plan for the third emissions budget. Emission reductions take time and need clear and coordinated policy direction to achieve. Failure to acknowledge the third emissions budget now may result in a 'disorderly decarbonisation transition'⁵ where governments face significant and disruptive transition in the medium-to long-term to meet global targets after taking minimal action in the short term.
38. Currently ERP2 has 40 per cent of emission reductions attained through forestry, and the introduction of policies such as 'Investigate Carbon Capture and Storage'. While Vector acknowledges the importance of Carbon Capture and Storage, it comes at large abatement costs. The IPCC estimates it to be in the range of USD\$100-200/tonneCO₂e while only abating 2.4% of global emissions.⁶ The current ERP2 expects ETS prices to maintain a long-term average of \$50/tCO₂e which is inadequate to enable such high-cost solutions.
39. Further to this, Vector notes that the current plan to meet the second emissions budget has a 2Mt CO₂e surplus with an associated margin of error of 18MtCO₂e. This indicates a reasonable probability that policies will not deliver the required emissions savings, and new policies will need to be introduced later. This approach does not support industry planning towards reaching emissions budgets.
40. Vector also notes the 93Mt gap identified between what the ERP2 will achieve, and New Zealand's Nationally Determined Contributions. ERP2 should detail how New Zealand plans to meet this commitment – or signal the development of the plan.
41. If the Government decides to utilise the ETS as the primary driver of emission reductions, then it should consider the advice of recommendation 4 from the Climate Change Commission that asks for alignment of the ETS by:
- amending the ETS to separate the incentives for gross emissions reductions from those applying to forests

⁵ <https://www.ngfs.net/ngfs-scenarios-portal/>

⁶ https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf

- providing durable incentives for net carbon dioxide removals by forests through to, and beyond, 2050.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Mark Toner', with a stylized, cursive script.

Mark Toner

Chief Public Policy and Regulatory Officer