

vector

## 1. executive summary

We welcome the opportunity to respond to the Climate Change Commission's (the Commission's) draft advice for New Zealand's second Emissions Reduction Plan for the budget period 2026-2030 (ERP2). We appreciate that this advice is high level and directional – however, we respond to the proposed recommendations by setting out more specific policy and regulatory steps that can help achieve or improve these proposed recommendations.

We support the Commission's focus on enabling system transformation - with this emissions reduction plan serving as a foundation for further emissions reductions across subsequent emissions budgets. In particular, we support the recognition of innovation as an enabler of this system transformation. Just as ERP2 is foundational to enable further emissions reductions across future budget periods, our energy system is foundational to enable further emissions reductions across other sectors. Integrating and leveraging innovation will be critical to ensure that our energy system is able to deliver the emissions reductions required by our decarbonisation pathway.

This in turn requires a number of policy, regulatory and market enablers. For example, we recommend a whole-systems approach is pursued through our National Energy Strategy, Electricity Market Measures (EMM) workstream, as well as through our resource management and planning system. This can ensure that investments and decisions made across our electricity system reflect impacts across the whole supply chain – because this is what will flow through into consumers' electricity bills. This can also unlock the true value of non-traditional solutions which cut across traditional market silos to deliver new consumer value. This is – at a high level – about shifting from consumption to optimisation.

This goal – of shifting from 'more' to 'better' can also be enabled by energy efficiency and demand-side measures. We consequently support the Commission's recommendation to prioritise the efficiency and health of homes. We recommend that the Commission and the Government widen their view of what is possible through demand-side levers, by also considering the role of smart homes technology. In addition to consumer technologies, a critical enabler of demand response services will be future flexibility markets. We consequently recommend that the work of the FlexFourm – which is comprised of cross-industry participants and which works closely with the Electricity Authority – is supported to continue iterating market and technology settings that can unlock the most consumer value from competitive flexibility markets, while ensuring that our system remains secure and reliable in the context of new complexity and demand. An example of an enabling setting will be regulation to ensure that EV chargers which are installed have 'smart capability' - that is, that they can be efficiently managed by EDBs both in a way that can avoid unnecessary capacity build but also ensure electricity system stability - which in turn can then allow for wider market benefits to be realised - for example, by aggregators. The role of networks is evolving and EDBs have a role in managing and optimising network capacity to both avoid unnecessary capex and to ensure overall system security. Our electricity regulation must too evolve.

In addition to market regulation, the price quality regulation administered by the Commerce Commission is a key determinant of the investments that regulated electricity networks can, and are incentivised to, make. The Input Methodologies review is underway and will be a key input to next years' Default Price Pathway (DPP4). This will effectively lock-in the allowable revenue for regulated electricity networks for the entirety of ERP2. Given the step change in investment that is needed to enable the integration of EVs, the electrification of industry process, and to ensure continued resilience in the context of the physical effects of climate change, this process will be critical. In particular, the extent to which it takes into consideration climate change will be critical. We consequently recommend a change to the purpose of the Commerce Commission in regulating regulated goods and services in Part 4 of the Commerce Act – to directly refer to climate change. This would reflect steps taken by the UK and Australia.

## 1. executive summary (cont)

However there remains a bigger picture question around the alignment between our siloed, legacy, regulation and our climate change response. This misalignment is already manifesting in challenges to integrate public EV charging infrastructure. We therefore recommend that the Electricity Market Measures workstream – and National Energy Strategy – be used as pathways to urgently and boldly achieve this alignment. We also recommend that a Ministry for Energy is created to improve this policy alignment in the future – and, once again, to ensure a whole-systems NZ Inc. approach is taken through decisions for our energy system.

A further workstream which requires a strategic approach which accounts for our regulatory system, is our transition away from fossil gas. As the Commission recognises there are a number of policy and regulatory levers which can provide this strategic direction. This includes the Gas Transition Plan, the Commerce Commission's regulation of Gas Distribution Businesses, and the National Energy Strategy. We recommend that this strategic direction is provided by way of a prioritised Gas Transition Plan before policy decisions are made. The Commission recognises that its proposal to end new gas connections in ERP2 will have the likely effect of concentrating cost inequitably. We set out some potential pathways for our transition from fossil gas – showing clearly the value of pursuing an 'orderly transition'. Such a transition is best enabled by leading with the Gas Transition Plan – and following with specific recommendations – and not vice versa. We believe that a Gas Transition Plan should deliver efficient emissions reductions; equity; and should maintain the regulatory compact.

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## 3. summary of vector recommendations

Summary of Vector's key recommendations as they appear chronologically:

### Part 1: Fundamentals for success

1. Progress the review of vegetation management regulations set out in the Electricity (Hazards from Trees) Regulations 2003 as a matter of urgency to help manage the risk of avoidable outages in the context of the physical effects of climate change and an increase in our reliance on electricity. This will be critical to ensure that a rapid increase in forestry planting under the Emissions Trading Scheme (ETS) doesn't have the unintended consequence of avoidable outages being caused by vegetation falling into electricity lines.

## Part 2: Creating low emissions options – improving the energy efficiency of homes and buildings

2. Advance steps to improve the health and energy efficiency of homes – and expand these steps to leverage smart homes technologies to further enable our transition to a low emissions energy system by using demand response.

### Part 3: Enabling system transformation

3. Integrate a whole-systems approach to the way that investments are made, and our electricity system is regulated, through the National Energy Strategy. This can drive the integration of solutions which unlock value across our whole electricity supply chain – such as digital and data-based solutions. A whole systems approach is a key enabler of the Climate Change Commission's goal to leverage innovation for system transformation.

#### Chapter 8 – Our Built Environment

4. Advance the Gas Transition Plan with urgency to set out the strategic pathway for our transition away from fossil gas. This Plan should precede any policy recommendations – such as the proposed recommendation to end new gas connections, made by the Climate Change Commission.

### Chapter 9 – Energy and Industry

- 5. Advance the Renewable Energy Zone pilot to enable the efficient development of electricity generation by sharing the capital cost of infrastructure which is needed to unlock renewable generation in the regions, and by driving local renewable generation which is closer to where it is consumed.
- 6. Regulate for smart EV charging. We recommend that this is progressed by way of an expansion of EECA's role to enable the implementation of a widened Minimum Energy performance (MEPs) regime to include a regulated standard for EV chargers. Executing this does require legislative change, and we are looking forward to this being progressed as a key step to enable the affordable and reliable integration of EVs.
- 7. Continue to prioritise the safe and secure integration of flexibility resources into the electricity system to ensure efficient investment, continued network security and reliability, and new consumer value, through new demand response and flexibility procurement. This will require the Electricity Authority to implement code changes to formalise and standardise the new relationship requirement between flexibility providers and their host network operators.
- 8. Advance a form of national direction for electricity distribution in our resource management and planning framework – including more permissive Rules for electricity distribution by way of a National Environmental Standard (NES). This would logically fall from a National Policy Statement (NPS) providing the scaffolding for such provisions.

## 3. summary of vector recommendations (cont)

9. Supplement the statutory objective of the Commerce Commission under Part 4 of the Commerce Act to require climate change to be taken into account in the way that the Commerce Commission regulates regulated goods and services. As we further suggest in our Recommendation 11 below, there may be an opportunity to execute this change through the Electricity Market Measures (EMM) workstream.

### Chapter 10 – Transport

- 10. Develop an EV Charging Infrastructure Plan led by a public-private mechanism. This is to determine how the National EV Charging Infrastructure Strategy is implemented. We recommend that such a plan and mechanism focus on tactical challenges to the integration of EV chargers.
- 11. Consider the extent to which our regulatory settings are aligned with the goal of the rapid electrification, taking into account the potential for the EMM workstream to achieve greater alignment between policy goals (such as the rapid provision of EV charging) and our regulatory regime.
- 12. Recognise that there is a fundamental question at the heart of the integration of EV charging. This question is: who pays for this infrastructure the electricity bill payer, the tax payer, or a third party connecting to the network?
- 13. Create a Ministry for Energy to support coordination and aligned decision making across the above challenges and opportunities.

## Part 1. Fundamental for success – Emissions Trading Scheme:

We support the Commission's recommendation that the Government distinguish between the outcomes of reducing gross emissions and removing carbon dioxide – noting the risk that the ETS over stimulate the supply side of the carbon market (incentivising a rapid increase in forestry planting) without stimulating the intended demand side response (reducing carbon emissions). We agree that over stimulus of forestry planting in the short term will not necessarily lead to sustainable emissions reductions over time. We support a position of targeting sustainable planting practices – including the right tree being planted in the right place. This can avoid the perverse outcome of forestry planting causing avoidable outages by trees blowing into electricity lines as extreme weather events increase. Should the avoidable risk of vegetation related outages not be mitigated this would reduce reliability at the very time we are asking consumers to rely on electricity more to achieve our emissions reduction pathway. We recommend that the review of vegetation management regulation set out in the Electricity (Hazards from Trees) Regulations 2003 be advanced as a matter of priority to mitigate this risk as the ETS drives rapid change to the way that land is used.

## Part 2. Creating low emissions options – improving the energy efficiency of homes and buildings

We support the recommendation to incentivise comprehensive retrofits to deliver healthy, resilient, low emissions buildings. As we have said through successive climate change related submissions, we believe that there is an exciting opportunity to reduce emissions and to support affordability through demand-side levers in energy. That is, reducing and optimising consumption (i.e., shifting demand off-peak) can save all electricity consumers money. Energy efficiency interventions, smart homes technology and dynamic demand response managed on behalf of consumers through an aggregator can achieve these outcomes without requiring a behavioural change. We support funding for insulation and energy efficiency technologies – but recommend that policy makers widen their view of what is possible through a wider range of non-traditional technologies. For example, we recommend that the role of smart homes technology also be considered by policy makers as an opportunity to further optimise the demand side of our energy system in favour of lower emissions and household bills.

## Part 3. Enabling system transformation

We support the focus of the Commission on enhancing the research, science, innovation, and technology system as an enabler of system transformation. We agree that "investment in innovation and infrastructure can help create and deploy new solutions to unlock and bring down the costs of future emissions reductions". This is certainly true of our electricity system. Delivering a low emissions energy system affordably is effectively about transforming our system from 'more' to 'better' and this requires us to incentivise optimisation rather than consumption. Taking a whole-systems – rather than a siloed approach – to our electricity market design can help deliver this change.

## 4. response to framework (cont)

## Unlock new value for affordable decarbonisation through a whole systems approach

A whole systems approach would drive investments in cross-cutting solutions, instead of siloed industry value capture. These "cross-cutting solutions" are technologies which blur the boundaries between traditional segments of the market, delivering value for more than one part of the supply chain.

Such solutions (or 'blended assets') can defeat the peak and deliver triple duty outcomes as part of the whole-systems approach.

As described by Laura Sandys CBE, Chair of the UK Energy Digitalisation Taskforce, 'blended assets' which perform more than one role for the supply chain, have a crucial role supporting the transformation of our electricity system from a commodity based to a service-based model.<sup>1</sup>

Digitalisation is a key enabler of such solutions – enabling our system to leverage distributed energy resources for both system security and affordability. However, our current market was not designed for digitalisation just as it did not envision decarbonisation. Traditional market regulation sought to replicate competitive pressures as they were understood in the 1990s and was based on the premise that whole system optimisation would be achieved by optimising value in each of our system's component parts separately. However, in the context of digitalisation – which cuts across traditional market segments¬ – this risks having the distortionary effect of inhibiting the competitive and disruptive potential offered by digital transformation.

The objectives of affordable electrification and reaching 100% renewable generation requires us to rapidly unlock new value from across, and between, segments of our electricity supply chain – and in doing so to transform it from a commodity based supply chain, to a service based model, which values delivering more with less and which supports that strategic objective of coordinating supply and demand.

Doing so requires us to assess the impact of investments by their impact on the whole system – starting with the customer. It also requires aligned electricity market regulation – which treats the system as a system, rather than perpetuating silos.

#### Key enabler: Aligned Commerce Commission economic regulation

Another key enabler of system transformation is our regulatory framework – and in particular our energy regulatory framework. As we mention above there is a need for market regulation to focus on the goal of unlocking whole system value to accelerate the integration of new technologies and markets. This would engage the challenges and opportunities of the future, rather than the past.

As we discuss further there is also an urgent need for our economic regulation – administered by the Commerce Commission – to address the challenges and opportunities of the future. This regulatory regime – our price quality framework – effectively funds regulated networks in New Zealand. Specifically, the review of the Input Methodologies review (IMs review) currently underway, will inform the default price pathway (DPP4) and will determine the funding and financing of regulated electricity networks for the entire ERP2. This framework determines the allowable revenue that a regulated network can make over a five-year period, using past expenditure as the basis of future cost and penalising spending which is higher than the allowable revenue. We believe this "BAU" regime is incompatible with the step change in investment that is now required of the distribution sector to respond to climate change.

1. ReCosting Energy: Powering for the Future. Laura Sandys CBE and Thomas Pownall. https://blob-static.vector.co.nz/blob/vector/media/vector-regulatory-disclosures/annex-1-recosting-energy.pdf;

## 4. response to framework (cont)

An optimal ETS is identified by the Commission as a 'fundamental for success' because of its role in directing investment away from emissions and towards carbon dioxide removals. The regulatory regime of our energy system similarly has a role in directing investment towards the right carbon reducing infrastructure and technologies. This infrastructure in turn will enable our transport and industrial sectors to decarbonise. We therefore urge the Climate Change Commission to identify our energy regulation as an area that the government must urgently address to execute the second emissions reduction plan. Whilst we recommend a change in the statutory purpose of the Commerce Commission (reflecting steps taken by other jurisdictions) decisions which are being made by the Commerce Commission right now will have an impact on the delivery of our second emissions reduction budget.

In setting the strategic direction of the Government's second emissions reduction plan it is critical that our energy regulation is identified as a key system enabler. By determining the type and level of investments that regulated networks can make, both economic and market regulation will be critical to affordable and reliable electrification – and in turn the success of ERP2.

### 5.1 Chapter 8 – Built environment

**Proposed recommendation 11:** We propose that the emissions reduction plan for the second budget period must Incentivise comprehensive retrofits to deliver healthy, resilient, low emissions buildings

We support this recommendation – and virtually any step to improve the health and efficiency of buildings. We support policies to expand the provision of insulation and energy efficiency technologies for households – but recommend that the Climate Change Commission and the government expand its view of what's possible by way of household demand-side levers – specifically to include smart home technologies which can manage household consumption further than energy efficiency technologies.

**Proposed recommendation 12:** Prohibit the new installation of fossil gas in buildings where there are affordable and technically viable low emissions alternatives in order to safeguard consumers from the costs of locking in new fossil gas infrastructure.

The restriction on gas connections is intended to include:

- New buildings, whether in new subdivisions or in existing centres where gas is piped
- Network piped gas and delivered LPG bottles It is not intended to include:
- Connecting new gas appliances, even where they have reached end of life and need to be replaced
- Industrial connections
- · LPG barbeques
- · Camping gas canisters

There is a need to exercise pragmatic judgment here; commercial cooking does not have a good alternative at the moment, or isolated properties or marae may need bottled gas for heating and cooking. Electric and induction technologies should be encouraged and incentivised pragmatically and ambitiously.

We agree with the Commission's statement that "households are not best placed to manage the risk of economic stranding of gas pipeline business". However, as the Commission also points out "A substantial decline in fossil gas use could mean that those left on the gas network could bear increasing costs as a high proportion of gas pipeline costs are fixed and must be recovered from the remaining user base".

Prohibiting new gas connections protects customers that are not yet connected to the network from asset stranding risk and the cost associated with this (the cost of replacing an appliance before its end of life). However, for those customers who remain on the gas network – for example those who can't make the capital investment required to switch sooner – the reduction in the total number of customers driven by a ban on new connections, would increase the cost passed on to them.

We agree with the Commission that "a Gas Transition Plan, the National Energy Strategy, and, the Commerce Commission's regulated investment framework, should provide clear strategic direction on the future of fossil gas and options for regulated cost recovery models for gas pipeline businesses which are equitable, give consumers time to transition, and support hard-to-abate industries". We recommend that policy decisions – such as that which is proposed by the Commission to prohibit new gas connections – is preceded by such a clear strategic direction, and not vice versa.

This direction could currently be stronger. The Commerce Commission's regulated investment framework provides the terms of the timing of asset recovery – being a key lever to operationalise our transition from fossil gas. The Commerce Commission has agreed to accelerated depreciation of gas assets till 2056 – however this decision is under appeal. The current accelerated depreciation model also assumes a linear decline in gas use, however it will likely not be linear as highlighted in Figure 1 below. Additional capital recovery models, such as asset securitisation may have a role. The Gas Transition Plan also has a key role in setting out the strategic pathway for this transition.

We support the Gas Infrastructure Working Group – and we look forward to continuing to contribute to this process to work towards a holistic and strategic pathway that can reduce emissions as efficiently as possible; support affordability and equity; and maintain the regulatory compact. However, the timing and directional alignment of this Strategy is still unclear.

We provide some scenarios below which we hope can inform the Climate Change Commission's thinking on proposed Recommendation 12 – and why we recommend the pursuit of an orderly gas transition led by a Gas Transition Plan.

### 1. Figure 1 highlights three future scenarios of the gas network:

- 1.1 The upper-most figure highlights the current business-as-usual state. Even if a gas prohibition is enacted, as the less capital constrained customer base begins to disconnect from the gas network, the remaining costs are passed on to the customers that remain. This results in those who remain bearing the increasing costs of network capital recovery. This scenario results in a stranded-asset risk (yellow area under the curve) that would break the regulatory compact which underpins regulated infrastructure investment in New Zealand.
- 1.2 The central figure is the best case scenario. Where a range of capital recovery mechanisms transfers the future stranded costs to the present. This allows costs to be shared amongst the current larger customer base, and minimises overall impact as there is sufficient time for cost recovery. It is important to note that if renewable gases materialise at a sufficient scale, the network can still be repurposed and distribute renewable gases at lower tariffs as the capital investment may have already been recovered through these additional charges on fossil gas.
- 1.3 The bottom figure highlights a further disorderly transition, where delayed action in deploying capital recovery mechanisms increases the overall cost burden on customers. There are two prongs to this cost increase. Firstly there is less time remaining to recover the costs, and secondly, there is a smaller customer base remaining on the network to absorb these costs. This has energy inequity concerns as those that are still remaining on the gas network are likely those that cannot afford the transition to electricity.



#### Maintaining the regulatory compact – options and analysis

- 2. Capital recovery methods are being considered internationally. For example the Environmental Defense Fund in the USA prepared a comprehensive report on 'Managing the Transition: Proactive Solutions for Stranded Gas Asset Risk in California'<sup>2</sup>.
- 3. There are a range of capital recovery mechanisms that could be run in parallel. These could include a combination of:
  - 3.1 Accelerated Depreciation: Minimises investor and customer risk, and large tariff shocks in the future by paying off an asset and removing it from the asset base in advance of its intended end of life. The Commerce Commission has so far enforced accelerated depreciation to 2056. However this commitment is not guaranteed as it is currently being tested with the Courts<sup>3</sup>.
  - 3.2 Securitisation: The issuance of customer backed bonds to recover stranded asset costs. This should be designed so that the customers save money, when compared to traditional recovery models via customer rates. When the bond is issued, the asset owner (such as Vector) no longer earns a rate of return on the securitised asset, and the primary customer savings come from the difference between the authorised cost of capital and the interest rate attached to the bond. This requires legislative action to authorise gas network companies to charge this securitisation fee.
  - 3.3 End of life decommissioning fund: Required to safely manage the decommissioning of the gas network. Examples of activities include disconnections of above ground equipment, meters, removal of gas regulation stations, purging of pipelines, and the potential removal of pipelines that may pose geotechnical risks.
- 4. Including these capital recovery mechanisms would impact existing customers by increasing the current price of gas.
- 5. This links closely with the Commission's Recommendation 14, whereby an increase in process heat decarbonisation would also increase the stranding asset risk.

We also agree with the Commission's commentary in this chapter that simplifying consenting for low emissions infrastructure will be necessary to achieve our 2050 emissions reduction target and that "the need for a more efficient consenting system is well understood. But its link to the importance of electrification, low emissions transport, and low emissions process heat for meeting our emissions reduction goals should not be under emphasised".

We therefore make recommendations under *Chapter 9 – Energy and Industry* to achieve a more efficient resource management and planning framework.

In response to the proposed recommendations 11 and 12 made in Chapter 8, we recommend:

- Prioritise steps to improve the energy efficiency of homes including but not limited to insulation and energy efficiency technologies. We recommend that the Commission and government expand the scope of such initiatives to also include the acceleration of smart homes technologies.
- Progress the Gas Transition Plan with urgency and strategic intention. This is to support alignment of key regulatory enablers (such as accelerated depreciation), and to set out a strategic framework to drive intentional consumer outcomes – which consider both emissions reduction and equity. We believe that this strategic direction should precede policy decisions – not vice versa.

<sup>2.</sup> https://www.edf.org/sites/default/files/documents/Managing\_the\_Transition\_new.pdf

<sup>3.</sup> See the Appeal before the High Court by the Major Cas Users Group to the Commerce Commission 2022 Input Methodology determinations (The Gas Transmission Services Input Methodologies Amendment Determination (No.2) 2022, and Gas Distribution Services Input Methodologies Amendment Determination (No.2) 2022, and Gas Distribution

### 5.2 Chapter 9 – Energy and Industry

We agree with the Commission that there is a need to expand renewable generation build to meet the emissions reduction target – recognising that ample supply of low emissions electricity is a key enabler of emissions reductions in other sectors. However, the expansion of our electricity system does not just require greater development of generation – but also an expansion of the transmission and distribution infrastructure needed to connect consumers to this power. As found by the Boston Consulting Group (BCG) report, \$22 billion of investment will be needed in the distribution sector in NZ in the next eight years. This is more than any other part of our electricity system. Yet – distribution is also the only part of our system with no form of national direction to ensure that the development of infrastructure is enabled, and the consenting burden is proportionate. Whilst each local authority has its own unitary plan – setting out varying levels of consenting requirements – the consenting burden in Auckland is high. Around 70% of Vector's consent applications are approved without change. This signals that the process does not add much value. It does however create cost which flows through into consumer's electricity bills.

There is consequently a need to ensure that our resource management and planning settings take a whole systems approach in enabling our wider electricity infrastructure to deliver accelerated electrification.

We have engaged extensively with Te Waihanga to help ensure that the new National Planning Framework delivers this goal. In parallel we are seeking the alignment of levers under our existing resource management and planning framework to deliver the enabling environment which is needed for our whole electricity system. We made recommendations on the proposal to strengthen government direction for consenting renewable electricity infrastructure to widen provisions proposed to enable and protect grid and high voltage electricity infrastructure to include a greater part of the electricity network – recognising that much of the change and development needed for electrification will happen on the low voltage and sub-transmission network (including in some cases the connection of smaller scale distributed renewable generation). We have also proposed the implementation of a National Environmental Standard for electricity distribution under the current RMA regime, setting out Rules which achieve more permissive activity statuses for distribution. The benefit of this approach is that such a mechanism can exist within the context of our existing RMA regime, but could also provide the contents of such provisions in a National Planning Framework under a reformed resource management and planning framework. This NES would logically fall from a higher level National Policy Statement (NPS) for distribution providing the scaffolding for such provisions.

We also agree with the Commission that "energy efficiency and demand side management can be better leveraged to reduce network costs and support system flexibility. Reducing peak demand defers the need to build a bigger network and improves utilisation of existing assets. This can extend the life of network infrastructure, reduce the need for upgrades, and reduce the costs to be recovered from consumers".

Our modelling estimates that new demand could increase the peak demand experienced on the network by around 150% if this new demand isn't managed. When demand management – such as smart EV charging – is utilised – this peak demand increase could be reduced by two thirds. With a higher peak demand comes a need to invest in more network capacity. Inefficient capital investment increases electricity bills for every electricity consumer.

This is true for inefficient investment across our electricity system – all of which flows through into a consumer's electricity bill. Smart demand management however can increase utilisation of infrastructure, reducing avoidable cost.



The above graph shows the difference in network capacity required to meet demand when demand management (such as smart EV charging) is utilised, vs when it is not. This shows that the peak experienced by the network more than doubles by 2050, in the absence of smart EV charging. This is shown in the y axis by the increase from 2000 MVA today to well over 4500 MVA by 2052. With this higher peak demand comes a need to invest in more network capacity – and much more. Inefficient capital investment increases electricity bills for every electricity consumer.

This increase in peak demand however is reduced significantly by demand management (such as smart EV charging) – the impact of which is represented by the difference between the blue and green lines. This brings the peak demand on the network down from ~4500 to 3000 MVA by 2050 – a significant reduction in the increase in peak demand growth forecast under the counterfactual. This graph and further analysis related to the challenges and opportunities associated with our transition to net zero is also reported in Vector's Taskforce on Climate-related Financial Disclosures (TCFD)<sup>4</sup>.

Unlocking value from demand management is about having the right market and technology settings to enable flexibility markets to flourish. It also requires the right bare minimum requirements to ensure that technologies remain within network limits and can support whole system security as our system becomes more complex and volatile – and as consumers rely on electricity more.

We therefore agree with recommendation 13 to "Prioritise and accelerate renewable electricity generation build to ensure electricity distribution networks can support growth and variability of demand and supply".

We also agree with the Commission's assessment that:

"Expenditure forecasting approaches and allowable revenues for lines companies need to be able to support the accelerated pace of investment in generation and electrification that is required. Physical grid capacity must keep pace with generation build. Control and operation of the grid also needs to evolve as generation becomes more distributed and digitisation increases"

On regulatory frameworks, the Commission says:

"Uncertainty about future requirements and potential solutions has increased. The existing regulated investment framework for transmission and distribution infrastructure needs to be future proof by looking to meet outcomes related to emissions reduction, system security and reliability, and affordability."

4. https://www.vector.co.nz/investors/reports;

We agree. We consequently recommend that the Commerce Commission's price quality settings and Input Methodologies (IMs) are adjusted to enable the right investments at the right time. Currently regulated networks recover the cost of long- life assets incrementally through prices, earning low returns on their regulated asset base (RAB). This means that the cashflow generated by large capital investments is slow. This is exacerbated by the indexation of EDBs' RABs to inflation – which backends cashflow. Under the current regulatory regime large investments do not immediately generate cash flows to service that investment. Backended cashflows risk not supporting investment grade credit metrics in early years of operation. Unindexing the RAB would improve cashflow and therefore support investment – but would still result in the same total recovery over time (NPV neutral).

In addition to this, in setting future allowable revenue, the Commerce Commission determines future expenditure based on past cost. EDBs who spend more than the allowable revenue, are penalised. This approach is designed to drive marginal efficiency gains over time – however it is directionally misaligned with the step change in investment that is required by electrification to enable decarbonisation. There is an urgent need for the IMs review which is currently underway – and the subsequent Default Price Pathway (DPP4) - to take account of the emissions reduction pathway that is in front of us (in addition to the investment that is needed to ensure resilience in the context of the physical effects of climate change). Once this price pathway is set early next year, the investment that is available to regulated networks will be effectively locked in for the duration of New Zealand's second emissions reduction budget.

As will be discussed in our response to *Chapter 10 – Transport* the funding and finance settings that are achieved through this process, have an impact on the cost allocation approaches taken by networks to enable the integration of EV charging. As we discussed under our response to Chapter 8 – Built Environment, the price quality regime administered by the Commerce Commission also has a significant impact on our gas transition AND the reduction in fugitive emissions.

#### Case study:

#### Commerce Commission funding to reduce fugitive emissions denied

We agree with the Climate Change Commission's note to reduce more fugitive emissions from fossil fuels. Vector has is one of the leading gas networks globally when it comes to fugitive gas emission measurement and reduction.

Measurement of gas fugitive emissions are not trivial. Error margins in gas meters, especially residential gas meters, are so large there is sometimes more gas leaving the network than entering (i.e. a negative fugitive emission). As a result, distribution fugitive emissions cannot be computed by taking meter measurements. The standard across the industry for measuring gas fugitive emissions comes from a set of experimental studies conducted by the American Petroleaum Institute (API) in 1995 whereby the fugitive emission is a function of gas pipeline length, and number of joints. While this is adequate as an approximation, it provides no capability to make meaningful action on gas fugitive reduction, and largely over-estimates the fugitive emissions as it takes a conservative approach using older, and hence more leaky pipes.

In 2021 Vector adopted work by the MarcoGaz working group, and developed a fluid dynamic model of the gas network to more accurately quantify fugitive gas emissions. This allowed Vector to not only accurately quantify emissions, but take meaningful actions to reduce them. One of the most notable improvements to fugitive gas emission reductions is the increase in frequency of surveys of gas pipelines so that small leaks, when they occur, can be found faster. This of course results in an increase in operational expenditure, but comes at a marginal carbon abatement cost of \$57/tCO2e which is reasonable.

Unfortunately for Vector, the Commerce Commission still does not have decarbonisation as part of their statutory objective. As a result, expenditure was disallowed in Vector's recent default-price-path reset for gas that will continue until 2027. This particular example blocked the equivalent of 9,300tCO2e of potential abatement per year.

Given the impact of our regulatory regime on our decarbonisation pathway, we recommend that the Commerce Commission's statutory purpose recognise climate change particularly given the importance of regulated network investment to net carbon zero goals.

We note that s 5NZ of the Climate Change Response (Zero Carbon) Amendment Act 2019 (Zero Carbon Act) allows regulators to take into account decarbonisation in the way that they regulate by providing that a body exercising or performing a public function, power or duty conferred by or under law may:

if they think fit ... take into account -

- (a) the 2050 target; or
- (b) an emissions budget; or
- (c) an emissions reduction plan.

Whilst the Commerce Commission has acknowledged this provision allows them to take into account the 2050 target, they state their ability to consider this is 'limited' – due to its interaction with provisions in the Commerce Act 1986 – which do not reference decarbonisation.

As such we recommend that the purpose contained in Part 4 of the Commerce Act 1986 (section 52A) – which is concerned with the scope of the Commerce Commission's role in regulating for regulated goods and services, be amended to specifically include decarbonisation.

This is consistent with the step taken by the UK Government to amend the Energy Bill – giving the UK electricity and gas regulatory Ofgem, a statutory net zero duty. This will restate Ofgem's principal objective to protect the interests of existing and future gas and electricity consumers.

"Ofgem welcomes this mandate which brings us in line with the UK Government's legal obligations and, for the first time, directly links consumers' interests to specific net zero targets". - Jonathan Brearley, Ofgem CEO

We believe that a parallel change to New Zealand's Commerce Act would also align the purpose of the Commerce Commission with the Government's wider legal obligations under the Zero Carbon Act, and also recognise – as the Ofgem CEO has – that "consumers are best protected by a low-carbon, low-cost energy system".

This change will add a specific duty to support the Government to meet its legal obligation to get to net zero by 2050, as required by the Climate Change Act 2008. This will require Ofgem to apply and document this in decision making and will come into force two months after the Energy Bill gets Royal Assent.

The Australian regulators have similar changes progressing. On 19 May 2023, Energy Ministers agreed to amendments to the national energy laws to incorporate an emissions reduction objective into the National Electricity Objective, National Gas Objective and National Energy Retail Objective (the national energy objectives) respectively. It will integrate emissions reduction and energy policy in the national energy laws and provide greater clarity to Australia's energy market bodies — the Australian Energy Market Commission (AEMC), the Australian Energy Market Operator (AEMO) and the Australian Energy Regulator (AER) and Western Australia's Economic Regulation Authority (ERA) — to consider emissions reduction in how they undertake their respective powers and functions<sup>6</sup>.

Both the Australian and UK Governments have implemented these changes now, because they recognise that decisions – including regulatory decisions – which enable our climate change response are required right now. We consequently recommend that such a change is progressed with urgency in New Zealand – rather than after a period of 'wait and see'. There may be an opportunity to implement such changes through the EMM workstream which is set to be consulted on shortly after this consultation closes.

5. https://comcom.govt.nz/regulated-industries/gas-pipelines/gas-pipelines-price-quality-paths/gas-pipelines-default-price-quality-path/2022-2027-gas-default-price-quality-path?target=documents&root=260725

**Recommendation 13:** Prioritise and accelerate renewable electricity generation build and ensure electricity distribution networks can support growth and variability of demand and supply

We support this recommendation strongly and have some policy proposals around how this can be enabled:

- Advance the Renewable Energy Zone pilot to enable the efficient development of electricity generation by sharing the capital cost of infrastructure which is needed to unlock renewable generation in the regions, and by driving local renewable generation which is closer to where it is consumed.
- Regulate for smart EV charging. We recommend that this is progressed by way of an expansion of EECA's role to enable the implementation of a widened Minimum Energy performance (MEPs) regime – to include a regulated standard for EV chargers. Executing this does require legislative change, and we are looking forward to this being progressed with urgency as a key step to enable the affordable and reliable integration of EVs.
- Continue to iterate the development of flexibility markets and pragmatic integration with networks through the FlexForum to ensure continued network security and reliability, and new consumer value, through new demand response and flexibility markets. The role of networks is evolving and EDBs have a role in managing and optimising network capacity to both avoid unnecessary capex and to ensure overall system security. Our electricity regulation must too evolve to enable this.
- Advance a form of national direction for electricity distribution in our resource management and planning framework – including more permissive Rules for electricity distribution by way of a National Environmental Standard (NES). This would logically fall from a National Policy Statement (NPS) providing the scaffolding for such provisions.
- Change the statutory objective of the Commerce Commission under Part 4 of the Commerce Act to require climate change to be taken into account in the way that the Commerce Commission regulates regulated goods and services.

6. https://www.energy.gov.au/government-priorities/energy-and-climate-change-ministerial-council/working-groups/national-energy-transformation-partnership/incorporating-emissions-reduction-objective-national-energy-objectives

### 5.3 Chapter 10 – Transport

As demonstrated by Figure 2.2 in the Commission's advice, the electrification of transport will occur rapidly in fast approaching emissions budgets. This is reflected in the step change in emissions reductions required in Energy and Industry in the second and third emissions budgets.

This step change represents the rapid convergence of two traditionally separate sectors – transport and electricity. Achieving this convergence affordably requires the right technology settings and institutional framework.

Issues and barriers must be identified and systematically resolved to enable the roll-out of private and public charging infrastructure, including: the interaction between the electricity sector and charging infrastructure and services; funding; future consumer needs and preferences; and, EV technology choices. To ensure success, private infrastructure and EV charging service providers need to be involved in developing the EV strategy and implementing it, alongside local and central government.

This is particularly given that the provision of EV charging infrastructure requires us to leverage both the competitive market for EV chargers themselves – as well as our existing regulated network infrastructure that will power them.

To address these cross-cutting issues we recommend that the Government commit to a private- public mechanism to deliver EV charging infrastructure – and that this is supported by the right long term institutional arranagements within Government to lead and oversee this.

The collective proposal of Vector, the Sustainable Business Council (SBC) and Drive Electric as part of the Clean Car Sector Leadership Group to co-develop an implementation plan for the National EV Charging Strategy and our recommendation to establish a focused public-private mechanism to advance this, is acknowledged in the discussion document *Charging Our Future*. This proposal, our recommendation to establish a public-private mechanism to support this, and our collective commitment to work with government to drive the provision of EV charging infrastructure, remains.

However, the provision of EV charging infrastructure – and the coordination needed to deliver this – exists in the context of electrification more widely. As such wider change is needed to ensure a coordinated approach in meeting this challenge.

We recommend a Ministry for Energy to oversee the National Energy Strategy, the National EV Charging Infrastructure Strategy and a subsequent plan for implementation, as well as a range of supportive workstreams that are underway to enable both. These workstreams include:

- Work overseen by MBIE to review the Minimum Energy Performance Standards (MEPS) and their scope to ensure that EV chargers are smart.
- The work of the Electricity Authority and MBIE on market settings (in collaboration with industry workstreams such as the FlexForum) to ensure our electricity system can deliver for consumers in 2023 and beyond;
- The work of the Commerce Commission which funds our electricity distribution infrastructure – including the review of the Input Methodologies (IMs review) and the Default Price Pathway (DPP) which sets networks allowable revenue over the next five years. Proactive alignment of both the EA's market regulatory settings and the Commerce Commission's price quality regulation is needed to enable the uptake of EVs in a way that is equitable and affordable. This is about enabling the right type of investments at the right time to avoid long term cost.

The Climate Change Commission mentions that: "A major constraint for the public charging network and for vehicle charging depots for private companies is the capacity of electricity distribution lines. This can create a first-mover disadvantage as the first to fund installation of vehicle charging infrastructure may also need to fund the upgrade of distribution lines".

The issue of FMD is not a live issue on all networks across New Zealand – with the allocation of cost being determined by a networks' own pricing methodologies. In Vector's case, the system growth charge – or 'development charge' – which covers upstream network impacts which would not have been incurred 'but for' a new connection, is charged on a per kVA basis – that is, a connecting party pays for the capacity that they need – not the whole upgrade – whether or not they were the party which has catalysed the upgrade. This policy – which has been in place for two years – is designed to avoid the risk of first mover disadvantage. The only time when a connecting party would pay the whole cost of a network investment is when it is for a sole-use assets such as a dedicated transformer.

Networks must set these methodologies in the context of our existing regulatory regime. This includes the price quality regulation administered by the Commerce Commission – which effectively funds network businesses, determining the timing of available cashflow – and the market and pricing regulation administered by the Electricity Authority.

Electricity distribution networks support the imperative to rapidly electrify transport – including the provision of EV charging infrastructure. This integration is also occurring in the context of a wider electrification effort. We encourage decision makers to consider this holistically – and to ensure that the long-term interests of all electricity consumers remain front of mind in decisions that are made which may impact the timing of new connections as well as the allocation of cost.

Significant investment is needed in our electricity infrastructure to meet our emissions reduction goals, and, as stated in the Interim Climate Change Commission's Report Accelerated Electrification "accelerated electrification will not happen if electricity is too expensive". If the cost of an EV charging connection is not passed through to a connecting party then it is socialised across all electricity consumers – including those in energy hardship and those who don't own an EV. Whilst different networks have different capital contributions policies, networks consequently pass through a high share of the cost of a new connection through to the connecting party. This reflects the principle of cost reflective pricing – which stipulates that price should reflect cost. This is designed specifically to avoid cross-subsidisation, or the sharing of costs driven by a third party across all electricity consumers.

Overall, pricing is complicated, and varied across networks. In fact, because connection costs are driven by real costs, even applying the same pricing policy on a different part of the same network can result in different project costs overall.

**Proposed Recommendation 17:** Rapidly resolve the barriers to scaling up vehicle charging infrastructure

We support this recommendation, and, propose the following to achieve it:

- Develop an EV Charging Infrastructure Plan led by a public-private mechanism. This is to determine how the National EV Charging Infrastructure Strategy is implemented. We recommend that such a plan and mechanism focus on tactical challenges to the integration of EV chargers.
- Consider the extent to which our regulatory settings are aligned with the goal of the rapid electrification, taking into account the potential for the EMM workstream to achieve greater alignment between policy goals (such as the rapid provision of EV charging) and our regulatory regime.
- Recognise that there is a fundamental question at the heart of the integration of EV charging. This question is: who pays for this infrastructure the electricity bill payer, the tax payer, or a third party connecting to the network?
- Create a Ministry for Energy to support coordination and aligned decision making across the above challenges and opportunities.

