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Dear Dane,

1. Vector has reviewed the Commerce Commission's (Commission's) Default Price-Quality Path (DPP3) models and companion paper for the upcoming regulatory control period for electricity distribution businesses (EDBs). In this submission we provide our comments on the models and inputs.
2. It is vitally important the Commission has a well-informed view on the inputs for its DPP3 models when making fundamental decisions on the price-quality trade-offs as part of setting the DPP. The DPP sets the bounds within which EDBs must manage their service to meet the expectations of all stakeholders. Therefore, having the bounds ill-defined will contribute significantly to sub-optimal outcomes and derogate from the Part 4 purpose.

DPP Financial Model

3. The Commission's DPP financial model is a fundamental element for setting the revenues for EDBs subject to the DPP. The DPP financial model comprises several inputs – each having a significant impact on the final allowable revenues. Below we provide comments on key issues identified in our review affecting the financial model.

Capex forecasting

4. The Commission has adopted two tests for assessing forecast capex for DPP3. The first test assesses expenditure at the category level using anticipated drivers for the expenditure – for example linking asset replacement and renewal expenditure with depreciation. This is an improvement to the process of assessing the reasonableness of expenditure forecasts.
5. However, the continued use of an overall capex cap significantly obviates the benefit of assessing expenditure at the category level. The overall cap arbitrarily limits capex

forecasts without any significant justification as to why the capex resourcing has been limited. This step also undermines the analysis of the capex approval for the first step given some expenditure apparently initially being deemed as reasonable for the expenditure category are subsequently removed from the application of the total cap. The use of the overall cap is distortionary and arbitrary. Therefore, Vector recommends the Commission apply its assessment of capex at the category level which is more closely associated to the driving need of the investment rather than arbitrarily capping asset management plan (AMP) forecasts with a total cap.

System growth expenditure change

6. Vector notes the Commission has departed from its category approach of forecasting system growth expenditures based on zone-substation (ZSS) capacity. The Commission has acknowledged ZSS is a poor proxy for forecasting future system growth requirements. The Commission is now proposing to forecast system growth expenditures using the same test for connection growth. This is an improvement given the range of legitimate augmentation costs not considered by the ZSS test.
7. However, Vector recommends the Commission ensures it adopts the best forecast method for estimating connection growth. Given the much stronger relationship between household and connection growth, we recommend the Commission use this input to forecast growth for both estimating system growth and connection growth for the DPP. We also believe the impact of household growth statistics not aligning to EDB boundaries is surmountable. For the Vector network region, the difference between territorial authority and network boundary is not material.

Opex model projection forecasting

8. The Commission has settled on a base-step-and-trend model for forecasting opex. This method is inferior to developing opex forecasts based on EDB AMP forecasts of their future opex needs. The AMP forecast has the benefit of being directly associated to the programmes of work for the upcoming regulatory period capturing maintenance priorities and any specific opex programmes of work.
9. For example, Transpower with its programme of work to supply Auckland at 220KV (and decommissioning 110KV lines) has direct implications for Vector opex. Indeed, the Transpower project to decommission its Henderson-Albany line is expected to create \$10M spend for Vector from 2023 to 2025 to decommission our 110KV Albany-Wairau

assets. Such expenditure has not been factored into the base-step-and-trend model by the Commission. Therefore, we continue to recommend the Commission consider the use of AMP forecasts for setting allowable opex for the DPP.

10. We recommend the Commission's opex drivers of connection growth and circuit length use the best available information for forecasting these opex drivers. Therefore, as above, we recommend the Commission use household growth given the better explanatory relationship it has for estimating connection growth than the Commission's chosen forecasting method of estimating connection growth from forecast population growth.
11. The Commission will inflate its opex projections by a combination of the labour cost index (LCI) and producer price index (PPI) to ensure opex costs reflect changes to cost inputs over the DPP. We have concerns about the economy wide indices to reflect the changes to costs especially for an EDB operating in the Auckland region. These indices have not been effective in the current DPP2 period to manage the changes in costs for an Auckland based business.
12. Accordingly, we encourage the Commission to adopt the recommendations of Infometrics to apply an additional 1.1% per annum premium (split across the LCI/PPI blend) to recognise the additional cost changes anticipated for the Auckland region.

WACC and revaluation rate forecasting

13. We are disappointed the Commission did not address or engage on the matters raised in the Competition Economics Group (CEG) paper on the return on equity and instead chose to mechanically update the on-the-day parameters of its Weighted Average Cost of Capital (WACC) formula. The CEG paper also highlighted errors in the method applied by Dr Lally in determining its final equity market risk premium during the 2016 IM review. We consider the issues raised in this paper are just as pertinent for the IMs to set the DPP as the amendments being considered by the Commission.
14. The fixed equity market-risk premium warranted reconsideration given the unprecedented position of bond markets at the time of setting the observed WACC parameters for the DPP. CEG noted the Commission's approach of assuming equity returns are symmetrically linked to changes in the risk-free rate is not supported by empirical evidence. This approach is also contrary to the position of most international regulators which endeavour to provide stability with their return on equity estimate.

15. As discussed in our previous submissions, the Commission's approach to setting the allowed WACC using on-the-day estimates fails to recognise efficient and typical treasury practices for financing. This also magnifies the misalignment of the allowed WACC for DPP3 to EDB financing costs.
16. The Commission's final WACC determination has moved by 50 basis points relative to the Draft Decision released in May – a material change in the allowable return and revenue forecast for DPP3. At the same time, the inflation forecast has remained markedly stable between the Draft Decision and setting of the WACC. The issue of whether forecast inflation inherent in the WACC estimate to the forecast of inflation used to settle revaluation of the regulated asset base (RAB) was considered in depth during the 2016 Input Methodologies Review.
17. During the 2016 Input Methodologies Review the Commission noted:

*“we agree that there is a small risk to suppliers in the event that our forecast of inflation is biased or inconsistent with the inflation inherent in the WACC.”*¹
18. In deciding to maintain its status quo approach for inflation forecasting – the Commission noted there is limited evidence that its inflation forecast, based on the RBNZ forecast and target level, is systematically biased.
19. At the same time, the Commission also acknowledged its approach exposed equity holders to some risk that they would not achieve a real return when inflation outcomes are different to forecast (materially lower), and the supplier has issued debt in fixed nominal terms.² In settling on its current approach, the Commission noted the risks of its current approach were not sufficiently large to justify a change in approach given the likelihood that any forecasting errors will wash out over a number of regulatory periods.³
20. Accordingly, the Commission must consider the systemic errors to inflation forecasting that have occurred over DPP1 and DPP2 – spanning almost a decade. Since Part 4 has come into effect 5-year ahead forecasts for inflation have been systematically biased in one direction. The likelihood of inflation forecasts being realised in DPP3 will be further impacted by the RBNZ official cash rate (OCR) approaching the zero-lower bound meaning any ability to limit deflationary conditions during the regulatory period will be significantly limited.

¹ Commerce Commission, *Input Methodologies Review Decisions Topic Paper One: Form of Control and RAB Indexation* (20 December 2016) at para 256

² Ibid at para 257

³ Ibid at para 257.1

21. The CEG recommendations would have gone some way to reducing the cumulative impact the extended period of inflation forecasting errors for estimating revaluation income have had on equity holders who must bear the brunt of the inflation forecast error risk. Vector recommends the Commission consider for its final forecasts for CPI revaluation a method that accounts for the average historic over-forecasting of inflation for determining revaluation income in its final changes for the IM amendments for the DPP. This will go some way to address the systemic one-way impact biased inflation forecasts have had on EDBs. This is especially relevant given the justification relied upon by the Commission for not changing its approach to RAB indexation in 2016 has not borne out.
22. As a longer-term solution, we continue to believe that the Commission should introduce an option for an EDB to apply for non-indexation of the RAB, similar to what the Commission has previously allowed for Transpower and New Zealand airports.

Other financial issues relevant for the DPP

23. Our review of the Commission's DPP model suggests the period used for estimating forecast pricing CPI is incorrect. Pricing CPI for annual price adjustments are performed on September quarter CPI forecasts (i.e. lagged CPI). However, the Commission's financial model pricing CPI values do not use September forecasts. This input needs to be corrected for the final DPP.
24. On Friday 21 June 2019, the Commission published an updated incremental rolling incentive scheme (IRIS) model as part of its consultation on the DPP Draft Decision. We are disappointed that model was not circulated for this consultation as we have discovered some material errors with the capex IRIS model. Below we specify a few concerns we have with the model published.
25. We note the Commission's IRIS model "retention adjustment" calculation does not correspond to the requirement of the IMs. The IMs specify the retention adjustment should be calculated using the same method as the DPP. The DPP assumes assets are commissioned throughout the year and so discounts the assets based on a mid-year timing. Therefore, we encourage the Commission to adjust its capex IRIS so that it is consistent with the DPP.
26. The capex IRIS IMs also contemplate actual asset lives be used for recalibrating assets commissioned in each year rather than the Commission's approach of adopting a weighted-average life for commissioned assets for each year. We recommend the

Commission not deviate from the IMs and to either update its model to enable actual lives for commissioned assets to be included. Otherwise EDBs need the flexibility to develop their own models to determine their recoverable value subject to independent verification.

27. Given the proposed changes for recognising loss-on-disposals for DPP3 deviates from the method used for DPP1 and DPP2 EDBs will need to forecast their loss-on-disposals for the initial years of the DPP. This will limit the magnitude of any “wash-up” on actual loss-on-disposals we recommend an initial forecast be included as part of the forecast pass-through and recoverable costs. Without an initial forecast for this value, the magnitude of the wash-up will be unnecessarily significant (i.e. with no initial value to reconcile with).

Quality

28. Vector supports the Electricity Price Review (EPR) urgent recommendation for the Commission to develop more consumer-focused quality standards. The EPR noted New Zealand is behind countries such as Australia and the United Kingdom in not having more up to date quality standards including compensation payments that distributors initiate.
29. It is disappointing this issue was not considered by the Commission in the early stages of development of DPP3. This is especially the case given the material presented by Brattle for the ENA and FTI-Compass Lexicon for Vector provided tangible examples of how regulatory design is recognising the need for more customer-centric outputs. The FTI Compass Lexicon *Regulatory Blueprint to Meet Customer Expectations* used both case studies and international precedents on new effective models for designing customer focused regulatory outputs.
30. Vector supports developing tangible consumer quality standards rather than relying purely on average performance indices. We encourage the Commission to give greater regard to the development of this type framework – especially for complementary quality initiatives such as the service quality incentive. This will provide a more direct incentive for EDBs to improve the experience for poorly served customers rather than an additional scheme based on SAIDI. In the below section we provide our comments on the SAIDI incentive scheme and quality standard regulation.

Service quality incentive scheme (SAIDI incentive)

31. As discussed above, we consider the effort put into the service quality incentive scheme – designed specifically for SAIDI for DPP3 would be better served on developing a more

tangible customer focused regulatory tool. A consumer-focused service level scheme would provide more clear incentive properties for EDBs to improve service quality for poorly served customers.

32. For DPP3 the Commission has proposed its service quality incentive to only apply to SAIDI. We question the confinement of the incentive to SAIDI only and why this is not also applied to the Quality Standard. Vector considers both measures are important to have a clear understanding of the outage impact in a period. Indeed, of the two measures, SAIFI is the better measure of the asset management stewardship as it directly measures the customer outage impact.

33. SAIDI measures of the unavailability of the system. This is a product of both the volume of interruptions (i.e. SAIFI) and the duration of the outage. Therefore, SAIDI is impacted by the time and effort to restore customers from an interruption as well as the number of customers being interrupted from supply. The effort and tasks involved with restoration are varied and subject to several factors, many of which cannot be compromised. This includes having the right conditions to affect a restore, such as the:

- right working conditions (for example, having traffic management established before executing work); and
- environmental conditions (for example, only operating at height when wind conditions do not compromise equipment safety).

34. Given the Commission has only provided an incentive on SAIDI it appears to be indicating that managing assets is a lesser focus for the price-quality trade-off than improving SAIDI which can be improved via faster restoration. This appears to be counter intuitive to the price-quality focus on maintaining assets to limit the occurrence of outages for customers.

Use of Value of lost load (VOLL) for the SAIDI quality incentive

35. We have significant concern with the Commission adopting a VOLL based value for the SAIDI service quality incentive scheme. VOLL values are generally based on surveys which are inherently unreliable and tend to overstate customer value for electricity supply disruption. Accordingly, this type of measure is only useful for functions such as supply planning where inherently cautious assumptions are used for assessing supply risk. Applying a VOLL to SAIDI significantly overestimates the impact of the outage experience.

36. For the following reasons we discourage the use of VOLL for quantifying SAIDI for the DPP:

- SAIDI uses installed connection points (ICPs) as the proxy for customers. Therefore, dedicated ICPs for equipment such as water pumps will be captured in SAIDI and SAIFI calculations but underrepresented or not even considered in VOLL studies.
- VOLL does not consider the cause of an outage – therefore socially optimal reasons for causing or prolonging a supply disruption are not considered. For example, where emergency services direct supply to be shutdown to save life or property. As discussed later in this submission – this is in fact an issue for car v pole incidents.
- SAIDI is largely affected by the final restoration of customers the process of repairing a faulted section (i.e. after isolating and switching parts of the network where supply can be restored succinctly and safely). The final restore process is disproportionately indexed towards customers on the extremity of network feeders where supply interruption is inherently more frequent and captures ICPs with a higher conditioning and acceptance of interruption. These ICPs typically include a high volume of baches and holiday homes.
- VOLL will overstate the impact of outages in adverse environmental conditions and industry value for supply is materially impacted by prevailing conditions. For example, the value of supply to industry (such as construction) is materially impacted by weather conditions prevailing – as productive construction output cannot occur in adverse weather conditions. Therefore, using a generic VOLL for interruptions in such conditions will overstate output/value customers have on an outage experienced in such conditions. This is especially important given weather conditions have material bearing on assessed SAIDI and SAIFI performance.

37. Vector is especially concerned about a VOLL based incentive for planned SAIDI. Planned outages are already coordinated to occur to minimise the impact on customers with works occurring at the time-of-day to limit the impact on customers. More importantly, customer productivity is already a key consideration for using stand-by generation to limit the outage impact for customers.

Planned SAIDI service quality incentive

38. The Commission's proposed design of a service quality incentive for planned SAIDI is disconcerting. We are especially concerned about the 10-year Reference Period used to derive the planned SAIDI incentive target. The earlier years of the Reference Period are significantly divorced from the asset work programme for DPP3. The programme of work in RY2009 has very little resemblance to programme of work forecast for RY2021.
39. More disconcertingly, the changes to work practices – including the changes to the Electricity Industry Safety Manual – such as the prohibition against non-visible breaks will not have reflected outages experienced in the earlier years included in the Reference Period. Therefore, we strongly encourage the Commission to reconsider the basis it has set the planned SAIDI incentive.
40. We have a more fundamental objection to the principle of a planned SAIDI incentive. The planned SAIDI incentive creates the perverse incentive for EDBs to limit work on the assets. Whilst some work on assets can occur with the use of stand-by generation there is a significant volume of maintenance, refurbishment and replacement activity that cannot occur without an outage. This is especially important for network modernisation programmes where new types of network architecture and planning requires planned outages to ensure equipment can be installed. The planned SAIDI incentive also encourages EDBs to undertake work with multiple outages for customers to limit exposure to the financial incentive which could have been executed in a single shutdown.
41. Having an incentive on planned outages creates perverse incentives for EDBs to ration work on the assets to limit financial exposure to the planned SAIDI incentive. We believe such an incentive is contrary to the long-term benefit of end users.

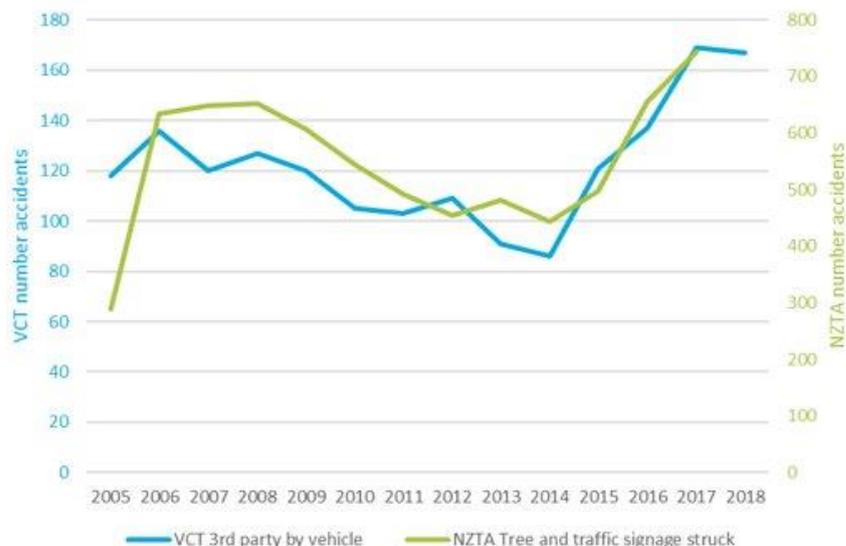
Unplanned SAIDI and SAIFI Quality Standard

42. Vector recommends the Commission remove the inter-period cap on unplanned SAIDI and SAIFI. The inter-period five percent cap must be accompanied by analysis as to how the capped limit can be achieved. Otherwise the cap is an arbitrary limit and divorced from the premise of deriving performance through a Reference Period and threshold of causing no material deterioration.
43. The capped limit requires an explicit change to reliability performance without any detail of the resourcing required to achieve the change. This is especially relevant given the causes of SAIDI and SAIFI are varied and require different asset management strategies

depending on the cause contribution of outage duration or volume growth. Several SAIDI and SAIFI causes are influenced by external operating or natural environment conditions. For example, a rapid increase in car v pole incidents can only be managed through costly asset hardening solutions but this type of analysis has not been factored into the expenditure tests set by the Commission. This contrasts with inherent asset failures which are due to interruptions caused by a network component failing unassisted.

44. Car v pole outages are complicated by the involvement of emergency services which, in many instances, provide the direction for power to be interrupted or significantly lengthen the restoration effort with their control incident site. In such instances, EDBs are only able to make safe the incident site and partially restore power for customers not in the immediate vicinity of the contacted asset. This complication means car v pole restoration efforts can take many hours for the final restore to occur. This has in fact been the most significant cause for SAIDI and SAIFI on the Vector network. The below graph shows the volume of car v assets for Vector and NZTA assets from 2005-2018.

Graph 1: Vector and NZTA assets involved with vehicle incidents



45. The graph shows the environmental challenge car v asset incidents have had in the Auckland region from RY2005-R2018. The volume and impact of car v pole assets in the Vector region has been sustained and significant over the DPP2 period for both NZTA and Vector. This change to the operating environment is under-represented in a capped limit on SAIDI and SAIFI. This cause has been the leading cause for outages in the Vector region over the DPP2 period. It is incumbent on the Commission to demonstrate how such a structural change to a leading cause is to be managed in a capped limit on SAIDI and SAIFI.

46. Therefore, we recommend the Commission seriously consider the consequences of capping the inter-period limit on SAIDI and SAIFI. Any capping of the inter-period limit should be well justified and appropriately considered in the resourcing trade-off. The imposition of the cap creates a double jeopardy for EDBs who have already lowered prices for their customers and may have in fact paid penalties for exceeding the DPP limits. Otherwise such a limit is unnecessarily punitive and contrary to the Part 4 purpose.

Major event day – impact

47. Vector recognises the proposed change to the MED normalisation from using a three-hour window to a 24-hour rolling window is an improvement from the draft decision and an improvement from DPP2 where multiday impacts were not captured by the methodology. However, we strongly encourage the Commission to ensure its measure of SAIDI and SAIFI records the performance of the network in normal operating conditions and not importing the impact of *force-majeure* events.

48. Force-majeure events have significant challenges for supply restoration with limitations on both the equipment being able to be deployed and actions to be undertaken during the force-majeure conditions. Therefore, we recommend the Commission consider for its half hour boundary value population a value more representative of the normal operating conditions of the network as opposed to the 1104th highest half hour value (the proxy for the 2.3 major day event threshold).

Yours sincerely
For and on behalf of Vector Limited



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