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SUBMISSION ON INVITATION TO PROVIDE EVIDENCE ON THE WACC PERCENTILE

- 1 Orion New Zealand Limited (**Orion**) welcomes the opportunity to provide a submission on the Commerce Commission's (**Commission**) "Process update and invitation to provide evidence on the WACC Percentile" issued on 31 March 2014.¹ Our submission draws largely upon a report prepared by CEG, which is attached as **Appendix A** to this submission.² The Electricity Networks Association (**ENA**) has also provided a submission, which Orion endorses.

Outline of submission

- 2 Our submission is structured in four parts. In the first, we explain why any analysis of the appropriate WACC percentile requires the Commission to consider two separate sources of asymmetry. Specifically, CEG explains that the two principal potential justifications for setting a WACC above the mid-point or median WACC (the 50th percentile), are:³
 - 2.1 asymmetries in the **distributions of cash-flows** around elements of the pricing model which mean that, if median forecasts/estimates are used, even if the mid-point WACC is equal to the "true WACC" a businesses' expected revenues will not equal its expected costs (the best estimate of the expected costs of these risks is termed " α " by CEG); and

¹ Commerce Commission, *Further work on the cost of capital input methodologies, Process update and invitation to provide evidence on the WACC percentile*, 31 March 2014 (hereafter: "Process update paper").

² CEG, *Review of the use of the 75th WACC percentile, A Report for Orion*, May 2014 (hereafter: "CEG Report").

³ CEG Report, section 3.

- 2.2 asymmetries in the **distributions of social costs and benefits** of under-versus over-estimating the WACC – although we have not been able to quantify a loss function in the time available, history shows that the costs of underinvestment are real and potentially substantial (the best estimate of the increment needed to reflect this asymmetry is termed “ β ” by CEG).
- 3 In the second part of our submission, we explain why a period of 21 working days (that spans the Easter and Anzac holidays) is an insufficient timeframe to robustly quantify these sources of asymmetry – particularly those related to “ β ”. We highlight the uncertainty that would be created if the Commission presses ahead with a narrow review in the proposed time, and then recommend that these matters be addressed as part of the broader review of the input methodologies (IMs) by 2018, when all of the relevant interactions can be considered.
- 4 In the third and fourth parts of our submission we provide an overview of the analysis that CEG has managed to undertake on the values of “ α ” and “ β ” in the time available. CEG’s analysis of asymmetric cash-flow risks – some of which is quantitative in nature – suggests that these factors alone more than justify the current 72 basis point (bp) increment to the mid-point WACC estimate. In other words, “ α ” alone appears to be large enough to warrant retention of the 75th percentile – perhaps even a *higher* point estimate.
- 5 By necessity, CEG’s analysis of asymmetries in social costs is largely qualitative. Nonetheless, it suggests that the costs of erroneously setting the WACC “too low” are likely to be higher than the costs of setting it too high by an equivalent increment. We observe that, if “ β ” is indeed positive then, given the likely value of “ α ”, there is good reason to think that the 75th percentile is *not currently providing adequate compensation* to investors. The fact that regulators in Australia, the UK and the US provide much higher risk premiums certainly suggests as much.⁴
- 6 We consequently conclude that there is no evidence to suggest that the WACC point estimate *should* be reduced from the 75th percentile (which is what needs to be demonstrated before such a change is made) while there is a significant body of evidence that suggests that it *should not*. The Commission itself, supported by its experts, has consistently used the 75th percentile and it has presented no evidence that its previous conclusions were wrong.
- 7 We consider that, should any change be contemplated, then a complex, multi-faceted analysis would be needed to determine the precise magnitude of the required increment about the mid-point. However, until that work is done – ideally as part of a full IM review – the 75th percentile should be retained.

⁴ CEG Report, section 5.3. See also: CEG, *International precedent relevant to the 75th percentile, A Report for Wellington Electricity*, May 2014.

Two relevant sources of potential asymmetry

- 8 To determine the appropriate regulatory WACC, the Commission must first estimate the return that investors require in order to be willing to invest in electricity distribution – this is the mid-point WACC. However, as CEG explain, this is not necessarily the socially optimal WACC. Arriving at that value requires two additional components to be added to the mid-point estimate:
- 8.1 the best estimate of the expected cost of asymmetric cash-flow risks not compensated elsewhere in the financial model – which CEG term “ α ”, and which is expressed as a percentage of the regulatory asset base (RAB); plus
 - 8.2 the optimal increment to investor compensation to reflect any asymmetry in the social costs of under versus over compensating investors (i.e., due to errors in the estimation of either the mid-point or “ α ”) – which CEG call “ β ”.
- 9 In its IM determination, the Commission stated that it was adopting the 75th percentile because it considered that the social costs associated with under-estimating the WACC were likely to outweigh the short-term costs of over-estimation.⁵ In other words, the application of the 75th percentile was intended to address only those considerations relevant to the value of “ β ”. The Commission made it clear that it had made no allowance in the WACC for asymmetric cash-flow risks:⁶
- “The IM does not make any adjustments to the cost of capital for Type I asymmetric risk.”*
- 10 In other words, the current 75th percentile increment was intended to compensate for “ β ”, but not “ α ”. However, it did not seek to quantify the extent of any asymmetry in social consequences or cite any empirical evidence in reaching its decision. That absence of quantitative evidence on the value of “ β ” – of the so-called “social loss function” – was criticised by the High Court,⁷ which has prompted the Commission to launch its review of the 75th percentile. Perhaps unsurprisingly, it seems primarily interested in the value of “ β ”.
- 11 In our opinion, that narrow focus on the value of “ β ” (not to mention the narrow focus on the WACC percentile more generally, which we discuss below) is potentially highly problematic. It is a problem because, if the Commission retained that narrow focus and concluded (wrongly in our view) that “ β ” was zero or negative and, on that basis,

⁵ This is expressed most clearly at: Commerce Commission, *Input Methodologies (electricity distribution and gas pipeline services) Reasons paper*, December 2010, p.395.

⁶ This is expressed most clearly at: Commerce Commission, *Input Methodologies (electricity distribution and gas pipeline services) Reasons paper*, December 2010, p.573.

⁷ *Wellington International Airport Ltd & Ors v Commerce Commission* [2013] NZHC, [11 December 2013], paragraphs 1448-1487.

removed the 75th percentile, investors would receive no compensation for either “ β ” or “ α ”. It would, in effect, be assuming that “ α ” was also zero, when it clearly is not.

- 12 Further, in our opinion, there is no doubt whatsoever that “ α ” is a positive number. As the Commission would be well aware, the Canterbury earthquakes led to significant reductions in our revenues. No explicit up-front allowance had been provided for such a contingency in our previous price paths and the Commission did not allow us to claw-back those losses after the fact. The Commission has also made it clear that no ex-ante or ex-post allowance will be provided to businesses to compensate them for such risks in the future.⁸
- 13 In other words, the expected costs of such risks are not currently compensated for anywhere in the Commission’s financial model (and, as CEG explains, they cannot be dealt with through diversification in the manner suggested by the Commission⁹). Moreover, distributors face negative asymmetric cash flow risks from many other factors that are not accounted for, including the risk of asset stranding, the potential costs arising from bankruptcy and the asymmetric impacts on profits from volumes differing from forecast (all of which are explained further below).
- 14 If these factors are not addressed explicitly in the Commission’s pricing model ex ante (and they currently are not), and there is not to be ex post claw back, then the only way to address them is through an increment above the mid-point WACC. The Commission effectively acknowledged this in its final decision on our customised price path application. In declining our application to claw-back our lost revenue, it observed that:¹⁰
- “The practical effect of using the 75th percentile WACC (determined under the IMs) is to provide a buffer against the financial impact of catastrophic events.”*
- 15 In other words, the Commission was prepared to invoke the 75th percentile increment as a justification for Orion bearing asymmetric cash-flow risks of the kind that “ α ” compensates for. In doing so, it acknowledged – quite rightly – that “ α ” has a positive value. However, as we noted above, the 75th percentile was never intended to provide an allowance for asymmetric risks – it was intended to compensate for “ β ” alone.
- 16 Given that the Commission declined our application for lost revenue on the basis that “ α ” is in some way compensated by the 75th percentile the WACC point estimate cannot be assessed without assessing both “ β ” and “ α ”. Even in the highly unlikely

⁸ Commerce Commission, *Setting the customised price-quality path for Orion New Zealand Limited, Final reasons paper*, 29 November 2013, p.136.

⁹ See: CEG Report, section 4.2.2.

¹⁰ Commerce Commission, *Setting the customised price-quality path for Orion New Zealand Limited, Final reasons paper*, 29 November 2013, paragraph C5.2.

scenario in which the Commission concluded that there was no asymmetry in social costs (i.e., that “ β ” was zero), that would not be sufficient cause to reduce the WACC to the mid-point. Given that “ α ” is positive, this would result in the IM WACC being set below the level that is required to adequately compensate investors.

- 17 To avoid that scenario, the Commission must allow more time for both sources of potential asymmetry to be properly investigated. The consultation timeframe that the Commission has proposed provides nowhere near enough time for these analyses to be robustly undertaken, or for the many interactions with other aspects of the IMs to be taken into consideration. A hasty and limited review will not, in our view, allow sufficient time to properly allow for the complexity involved in furnishing the evidence that it has requested.

Why the WACC percentile should not be considered in isolation

- 18 The Commission’s rationale for pressing ahead with its narrow review of the 75th percentile appears to be that, unless the question of the appropriate WACC percentile is resolved in the near term, it will create unacceptable levels of uncertainty.
- 19 It is important to remember that uncertainty surrounds *many aspects* of the cost of capital IM that will be applied when it is reviewed. For example, investors will doubtless have observed that regulators in the United Kingdom and Australia have moved away from setting “on the day” estimates of the cost of debt and towards a long-term moving average. There is consequently significant uncertainty surrounding the design of this aspect of the Commission’s approach when the IMs are next reviewed.
- 20 Similarly, investors will be cognisant of the fact that the Commission’s capital asset pricing model (CAPM) framework *underestimates* the return on low beta stocks, such as electricity networks and implicitly *overstates* the value of distributed franking credits. These matters will doubtless be raised again in any IM review, and there is therefore necessarily some uncertainty surrounding these aspects of the Commission’s approach also.
- 21 Moreover, investors in long-lived assets will know that new, unanticipated information may come to light that may affect the expected level of return. Our previous submission provided the hypothetical example of an expert report from leading economists that showing that, on the basis of compelling new data, the equity beta should be lowered (or raised) by 0.2.¹¹ These proverbial “unknown unknowns” provide yet another source of uncertainty for investors.

¹¹ Orion first submission, p.3.

- 22 It follows that, even if it was possible to adequately address the matter of the appropriate WACC percentile before November (which it is not, for the reasons we set out below), it is unrealistic to think that investors will then know what lies beyond the next IM review. We would therefore invite the Commission to consider again what is likely to create the greatest degree of uncertainty:
- 22.1 noting the High Court's comments and stating that they will be taken into account at the next IM review, when it will thoroughly investigate the values of both " α " and " β " – and the matters described above; or
 - 22.2 undertaking a narrow review of one aspect of the cost of capital IM – and allowing businesses only 21 working days (a period spanning the Easter and Anzac holidays) to provide evidence on " α " and " β ".
- 23 We would submit that the latter is far worse. The best way for a regulator to deal with these sources of uncertainty when they emerge is *not* to launch a narrow review to try and clarify the matter – especially over a heavily truncated timeframe. This would undermine the very certainty that the IMs were intended to create. If the Commission is prepared to re-evaluate the WACC percentile now, then investors will inevitably question the confidence that they can have in all of the parameters around which there is some uncertainty.
- 24 The interdependence between the parameters exacerbates this problem. As CEG observes,¹² the best estimate of both " α " and " β " requires a complex and holistic analysis of almost every aspect of the regulatory framework. This includes aspects that are not currently fully defined. CEG explains that:¹³
- 24.1 the best estimate of " β " depends, in part, on how the Commission will respond to evidence of under/over investment when setting forecast capital expenditure in future regulatory periods;
 - 24.2 the best estimate of " α " depends, in part, on how the Commission will respond to future natural disasters and its willingness to allow accelerated depreciation – including in response to stranding risks.
- 25 Until the Commission has addressed these and other wide ranging regulatory design issues, it cannot possibly arrive at a robust estimation of either source of asymmetry that would justify a change in WACC percentile. Even then, to determine the value of " β " would require an unprecedented empirical analysis of social costs and benefits. CEG has noted that properly carrying out this task would require input from a wide

¹² CEG Report, p.3.

¹³ *Ibid.*

range of experts with differing backgrounds – from actuaries to researchers on alternative energy technologies.¹⁴

- 26 Put simply, 21 working days is an infeasible timeframe over which to prepare such wide-ranging, multi-faceted quantitative analysis. CEG have also expressed reservations about whether this can be done prior to the DPP reset in November. In our opinion, *a full review of the IMs* is the appropriate forum in which to consider these matters. It would allow sufficient time to collect and consider the required information and for critical interactions within the WACC IM to be taken into account, including the relationship between the point estimate and the credit rating.¹⁵
- 27 In the meantime, it would be manifestly inappropriate for the Commission to cite a shortage of quantitative evidence that “ β ” is positive to justify a reduction in the WACC percentile. Aside from ignoring the value of “ α ” (which CEG preliminarily estimates as being strongly positive) and being an impossible threshold to meet in the timeframe, there is the more central point that it would inappropriately flip the onus of proof. CEG notes that the relevant threshold question should be:¹⁶
- 27.1 “Is there any reason why we *should* reduce the WACC point estimate from the 75th percentile?” (i.e., the change *will not* happen unless there is strong evidence furnished to support it); and *not*
- 27.2 “Is there any reason why we *should not* reduce the WACC point estimate from the 75th percentile? (i.e., the change *will* happen unless there is strong evidence provided to oppose it).”
- 28 For the reasons set out above, we would urge the Commission to acknowledge that this evidentiary threshold cannot be met outside a full IM review – and almost certainly not prior to November. Moreover, as we explain below, the evidence that CEG has provided in the time available suggests that there is likely to be strong reason to *retain* the 75th percentile or to increase the WACC even *further* above the mid-point. Indeed, on the strength of CEG’s analysis it is likely to be safe to already conclude that the appropriate point estimate *is not the 50th percentile*.

¹⁴ *Ibid.*

¹⁵ CEG Report, section 2.3.

¹⁶ CEG Report, section 2.2.

Negative cash-flow risks (“ α ”) warrant an above mid-point WACC

- 29 CEG explains that,¹⁷ if there are asymmetries in the distributions of cash-flows around elements of the Commission’s financial model this means that, if median forecasts/estimates are used to set prices, a business’ expected revenues will not equal its expected costs. This would be the case even if there was certainty about the level of the “true WACC” and that return was used to determine the price path. These sources of negative asymmetry include:¹⁸
- 29.1 The prospect of distribution infrastructure being stranded by new technologies before the costs of those investments have been recovered (the Commission’s financial model applies straight-line depreciation over asset lives of 45-years, on average). The potential for this to occur in the next 10 to 20 years is a real concern for investors (let alone the longer run).¹⁹
- 29.2 The prospect for low frequency but high impact events (such as earthquakes, tsunamis, etc.) to occur. Natural disasters of this type are not currently compensated for in businesses’ price paths and, as we noted above, the Commission has made it clear that it will not allow lost revenues to be recovered in a customised price path.²⁰
- 29.3 The cash-flow risks arising from the potential costs of insolvency. The prospect of these costs being incurred by a business is related to and may increase as a result of the other factors described above, e.g., a natural disaster may prompt customers to invest in substitutes for network supplied electricity, increasing the risk of asset stranding and heightening the risk of bankruptcy.²¹
- 29.4 The fact that higher than expected demand can be expected to increase profits by less than lower than expected demand reduces them due to the asymmetric responses of costs to demand. That is, the amount by which costs go up when demand is higher than expected is more than the amount by which they fall when demand is less than forecast.²²
- 30 The consultation timeframe did not allow CEG sufficient time to complete a comprehensive quantitative analysis of all of these factors relevant to the value of “ α ” –

¹⁷ CEG Report, section 3.1.1.

¹⁸ CEG Report, section 3.1.2.

¹⁹ CEG Report, section 4.3.

²⁰ Commerce Commission, *Setting the customised price-quality path for Orion New Zealand Limited, Final reasons paper*, 29 November 2013, paragraph C5.2.

²¹ CEG Report, section 4.4.

²² CEG Report, section 4.1.

most notably, of stranding risks or the impact of natural disasters on all distributors (although, it has noted that it expected that these costs would be material²³). It has, however, undertaken some empirical work in relation to some of these potential sources of negative asymmetry:

30.1 Professor Bruce Grundy has observed that, based on the empirical literature, compensating for the costs of insolvency requires around 70bp to be added to the WACC in perpetuity. This represents more than 97% of the 72bp increment currently provided by the 75th percentile under the DPP.²⁴

30.2 CEG's preliminary modelling suggests that the expected cost of the asymmetric response of costs to divergences from forecast demand is between 6bp and 23bp. This represents between 8%-32% of the 72bp increment currently provided by the 75th percentile.²⁵

30.3 CEG has observed that Orion's own costs in relation to the Christchurch earthquakes justify a 60bp increment to the median WACC in perpetuity. This represents more than 83% of the 72bp increment currently provided by the 75th percentile under the DPP.²⁶

31 In other words, even without quantifying all of the factors that might lead to asymmetry (most notably, the very real prospect of asset stranding), CEG has established that the value of " α " is positive, and significantly so. Indeed, the above factors alone more than justify the existing 72bp increment currently provided by the 75th percentile under the DPP. In fact, they suggest that increment may not be enough to adequately compensate investors. This conclusion is strengthened by the evidence that CEG has collected on the potential value of " β ".

Asymmetric social costs (" β ") may warrant a further up-lift

32 The evidence that CEG has compiled on the value of " β " (i.e., on the nature of the "loss function") is, by necessity, largely qualitative. Nonetheless, it strongly implies that the social costs of setting the WACC too low (by underestimating the mid-point and/or the value of " α ") are likely to outweigh the costs of setting it too high by an equivalent amount. For example, CEG observes that distributors on a DPP or a CPP will have a much more powerful incentive to reduce expenditure if the WACC is set too low than *vice versa*, because:²⁷

²³ CEG Report, sections 4.2 and 4.3.

²⁴ CEG Report, section 4.4.

²⁵ CEG Report, section 4.1.

²⁶ CEG Report, section 4.2.

²⁷ CEG Report, section 5.1.

- 32.1 if the WACC is set too high, before investors overspend relative to forecasts, they must weigh the benefit of an investment that delivers above WACC in the following periods against the cost of foregoing a return on that overspending during the current period, i.e., it is not “all upside”;²⁸ whereas
- 32.2 if the WACC is set too low, there is a clear incentive to underspend relative to forecasts, i.e., investors do not bear the cost of an investment that delivers below WACC in the next period and they receive the upside from being paid “as if” they invested in the current regulatory period.
- 33 In other words, the probability of under-investment occurring if the WACC is too low is likely to be higher than the probability of over-investment occurring if the WACC is too high by an equivalent margin. It follows that, even if the social costs of under- and over-investment were symmetric (which may not be the case, for the reasons set out below), the *expected* social cost of under-investment (i.e., the social cost x the probability of it occurring) would still be higher, i.e., “ β ” would be greater than zero, warranting an increment above the mid-point.
- 34 Furthermore, CEG rightly observe that under-investment can be expected to reduce the quality of service that customers receive.²⁹ It may also take some time before under-investment in the replacement of ageing assets leads to a degradation of the physical infrastructure that translates into poorer reliability, i.e., in deteriorating SAIDI and SAIFI. Moreover, under-investment in redundancy, earthquake proofing, the resilience of the network, and so on, may not have any noticeable impact upon SAIDI and SAIFI most of the time. Indeed, reductions in quality may only become apparent when it is much too late, e.g., when an adverse event occurs and the network cannot be restored within a reasonable time frame, with the economic costs for consumers and society far outweighing the financial and possible regulatory consequences for the supplier.
- 35 The extremely high value that customers place on having a reliable supply of electricity means that the potential costs of these forms of under-investment can be expected to be very high indeed. In New Zealand recent estimates by the Electricity Authority suggest that the value of lost load is around \$20,000 per MWh, and research in other markets suggests it may be much higher still.³⁰ This means that only small reductions in reliability are needed before large social costs are incurred. Under-investment only needs to increase the frequency or duration of outages by a small amount before it is in the interests of customers for the WACC to be set above the mid-point.

²⁸ We estimate that the regulatory WACC would have to be several percentage points too high to precipitate such a response.

²⁹ CEG Report, section 5.1.

³⁰ See: Australian Energy Market Operator, *Value of Customer Reliability Issues Paper*, March 2013.

36 CEG notes that it is very difficult to address these incentives to under-invest by establishing penalties for material quality of service reductions.³¹ It explains that such penalties are very difficult to design and they represent a blunt instrument. CEG also points out that distributors may respond to the WACC being set too low by distorting their mix of labour and capital inputs, i.e., by forsaking investment and adopting a more expensive labour-intensive solution instead.³² This would increase prices and costs, without necessarily reducing quality or attracting penalties.³³

Benchmarking

37 Finally, it is potentially highly relevant to consider how the Commission's WACC compares with those set by its fellow regulators. Indeed, all regulatory agencies must consider the problem of where to set the WACC and whether it should reflect any perceived asymmetry in social consequences (or cash-flows). To that end, in a report for Wellington Electricity, CEG compares:³⁴

37.1 the Commission's allowed premium above the New Zealand Government bond rate for New Zealand distributors; relative to

37.2 the allowed premium above the government bond rate for similar businesses in Australia, the UK and the USA.

38 CEG explains that the premium above the government bond rate allowed in these other countries can be presumed to reflect, at least in part, the relevant jurisdictional regulator's view on the perceived magnitude of cash flow (" α ") and social cost (" β ") asymmetry.³⁵ It is consequently instructive to see how the risk premium (i.e., the margin above the Government bond rate) provided by the Commission – in part through its application of the 75th percentile – compares with the premiums provided by these other overseas regulators.

39 The chart below – reproduced from CEG's report for Wellington Electricity – shows that the premium allowed by the Commission is well below those allowed by other regulators. The premium provided by the Commission relative to 5-year bonds is between 110 and 290bp lower than those provided overseas. If the Commission was to drop the 75th percentile increment and simply adopt the mid-point WACC, this range would increase to between 180 and 360bp, i.e., foreign risk premiums would be between 1.7 to 2.4 times as large as that allowed by the Commission.

³¹ CEG Report, section 5.2.3.

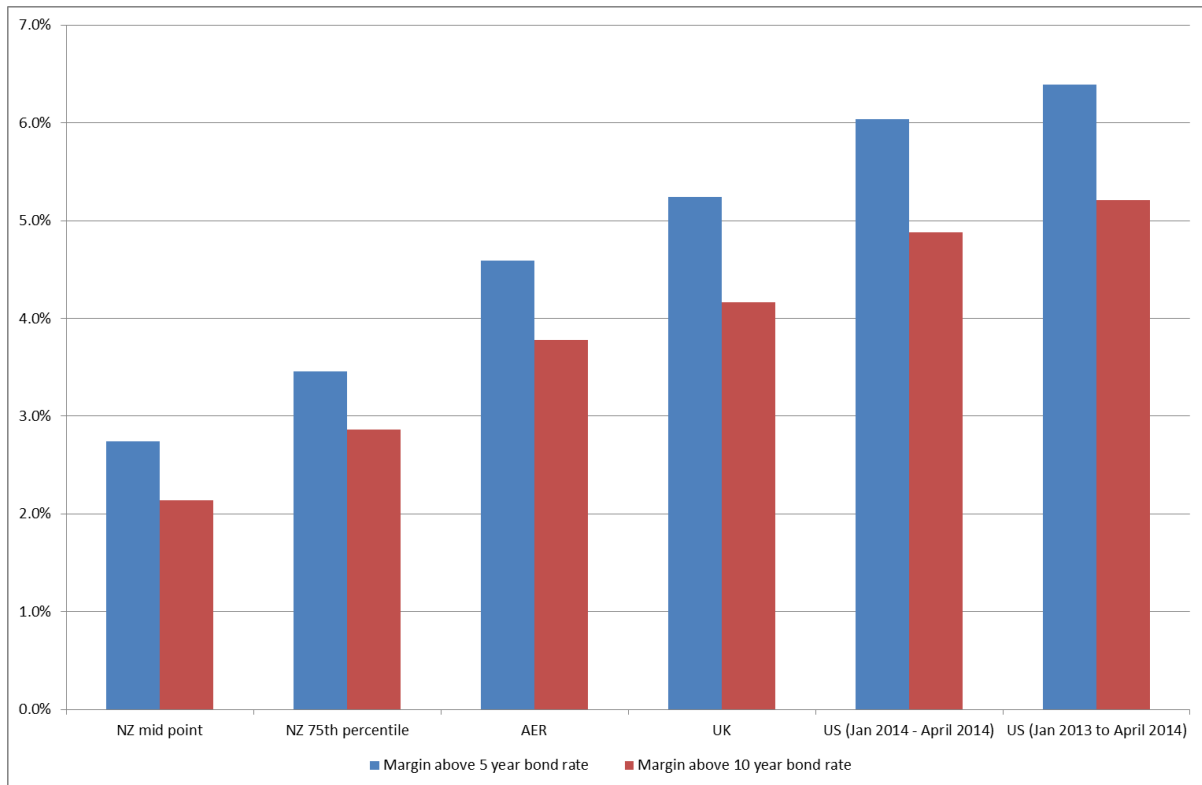
³² *Ibid.*

³³ *Ibid.*

³⁴ CEG, *International precedent relevant to the 75th percentile, A Report for Wellington Electricity*, May 2014.

³⁵ CEG Report, section 5.3.

WACC risk premiums allowed by international regulators



Source: Regulatory decisions, Bloomberg, SNL and CEG analysis. Reproduced from: CEG, *International precedent relevant to the 75th percentile, A Report for Wellington Electricity*, May 2014, Fig 1, p4

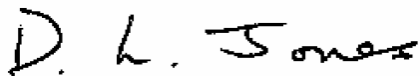
40 CEG concludes that this suggests that regulators in these countries believe that investors require a higher increment above the Government bond rate than the Commission is currently providing – even with the application of the 75th percentile.³⁶ This serves to reinforce the conclusion that the 75th percentile may not be sufficient to compensate for asymmetries in cash flows (“ α ”) and social costs (“ β ”). At the very least, it suggests that the 75th percentile is not too high and the Commission has no basis to reduce it at present.

³⁶ CEG Report, section 5.3.

Concluding remarks

- 41 The analysis undertaken by CEG in the time available has revealed no evidence to suggest that the WACC point estimate *should* be reduced from the 75th percentile (which is what needs to be demonstrated before such a change is made) and a significant body of evidence to suggest that it *should not*. A complex analysis would be needed to determine the precise magnitude of the required increment about the mid-point. There is not enough time to muster the resources that would be needed to undertake such a review before the DPP reset in November.
- 42 Considerable uncertainty would be created if the Commission presses ahead with a narrow review in the proposed time. We strongly recommend that the Commission cease its current review, and undertake to give thorough consideration to the valuation of “ α ” and “ β ” in the lead up to a full IM review in 2018, when all of the relevant interactions can be properly considered. In the meantime, in light of the evidence furnished by CEG – including of international risk premiums – the 75th percentile should clearly be retained.
- 43 Thank you for the opportunity to make this submission. Orion does not consider that any part of this submission is confidential. If you have any questions please contact Dennis Jones (Pricing Manager), DDI 03 363 9526, email dennis.jones@oriongroup.co.nz.

Yours sincerely



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