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# Input Methodologies review – Topic paper 4 cost of capital issues

Submission to the Commerce Commission

**Final**

From the Electricity Networks Association

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# 1. Introduction

1. The Electricity Networks Association (ENA) appreciates the opportunity to make a submission to the Commerce Commission (Commission) on the consultation paper **Input Methodologies review draft decisions – Topic paper 4: Cost of Capital issues, 16 June 2016 (Cost of capital paper) and the paper by Dr Martin Lally, Review of further WACC issues, 22 May 2016 (Lally paper)**.
2. The ENA represents all of New Zealand's 26 electricity distribution businesses (EDBs) or lines companies, who provide critical infrastructure to NZ residential and business customers. Apart from a small number of major industrial users connected directly to the national grid and embedded networks (which are themselves connected to an EDB network) electricity consumers are connected to a distribution network operated by an ENA member, distributing power to consumers through regional networks of overhead wires and underground cables. Together, EDB networks total 150,000 km of lines. Some of the largest distribution network companies are at least partially publicly listed or privately owned, or owned by local government, but most are owned by consumer or community trusts.

## 2. Submission summary

3. This submission is prepared in response to the Commission's draft review of the weighted average cost of capital input methodology (WACC IM). It provides ENA views on the proposed changes in the cost of capital paper referenced above. Attached are two reports from ENA advisor CEG concerning debt statistics from the confidential survey of EDBs that was undertaken this year. That report includes analysis of data such as debt tenor, swap costs and issuance costs. The second CEG report concerns the Commission's proposed term credit spread (TCSD) estimation methodology. This submission draws on the CEG reports, on ENA's own analysis as well as on material from the various ENA WACC submissions from February 2016.
4. The ENA firm view is that a trailing average methodology should be used for the estimation of the cost of debt because it is a more accurate representation of real world best practice debt strategy and it provides consumers and network businesses with better long term outcomes. Under the Commission prevailing rate approach, mismatches between regulatory allowances and, actual debt costs and the tax adjusted market risk premium (TAMRP), can occur in both directions over time but that does not necessarily mean that they are symmetric and cancel out as the Commission maintains. In fact, it is quite possible, that:
  - The prevailing debt risk premium (DRP) is higher than the very long run historical average (implying risk premiums above historical average generally and that TAMRP is above 7%); but
  - The prevailing DRPs is below the historical average DRP over the period of debt issuance for a business (5-10 years).

Importantly, this is currently the case. DRPs are elevated relative to their long run historical average but are depressed relative to their 5-10 year average and EDBs are undercompensated on both.

5. If the Commission remains reluctant to adopt a trailing average methodology for estimating debt compensation then the problems with the TCSD methodology that is proposed in the IM review paper must be corrected or another methodology selected. The Commission's approach of:

- rejecting a trailing average for the 5 year DRP in favour of prevailing rate; and
- adopting what is in effect a trailing average for the term premium in DRP, and
- pooling data across issuers and across time,

involves mismatches that in current market circumstances, are expected to further undercompensate EDBs for their debt risk premium (DRP) costs on both previously issued long term debt and newly issued long term debt.

6. The Commission approach to estimating DRP and DRP term premium provide debt cost estimates that are at least half of the estimate from a corrected approach. The range of best estimates for the prevailing DRP term premium is described in detail in this submission and set out in the table below.

Estimation approach	Best estimate DRP (basis points per annum)
Commission cost of capital IM paper	5.6
Corrected Commission approach	9.4 – 12.1
BBB+ issuers only (with minimum criteria)	11.29
All issuers (with minimum criteria)	9.90
Commission NSS parameters	13.0
CEG NSS best estimate	Midpoint of range 10 – 16 = <b>13</b>

7. ENA members consider that the Commission should, consistent with CEG's advice, adopt a single benchmark of a large business of sufficient scale to operate in domestic and international bonds markets. The Commission should determine the efficient debt issuance practices of such a business, which on the evidence in this submission would have a term of around 10 years, and compensate all businesses (irrespective of their actual debt term) accordingly.

8. Consistent with updated evidence presented in this submission compensation for debt issuance costs should be set at 25bp, while compensation for swap costs should be set at 7bp.

9. Consistent with the views expressed in the February 2016 submission, ENA members consider that the Commission's decision to not change the methodology for estimating TAMRP is undercompensating EDBs. The ENA urges the Commission to adopt a combination of estimation methodologies that reflect market conditions rather than have a weighting towards historical averages.

10. ENA members support a number of the changes to the WACC IM that the Commission proposes, namely that;

- The Commission consider that greater accuracy can be achieved from more appropriate methodologies for particular WACC components as well as from better estimating the values of individual parameters in the calculations. Our submission has a focus on this point.
- Extending the data window of prevailing rates for the risk free rate from one month to three months is a positive change.
- In the absence of any relevant and up-to-date evidence to the contrary, the asset beta for EDBs be maintained at 0.34 using the methodology consistent with the original 2010 approach to the WACC IM.
- leverage estimate for EDBs be maintained at 44% consistent with Commission approach to other very small changes to parameter estimates.

### 3. Overview of IM consultation paper

11. In the draft decision, the Commission proposes to make only minor changes to the current WACC IM because it believes the current IM remains largely fit for purpose and that there has been insufficient evidence presented in submissions to date that would warrant material change. The Commission has received expert advice which supports its views. This submission provides evidence that change is needed.
12. The cost of capital paper proposes the following changes to the current WACC IM:
  - Continue to use the prevailing rate approach for the risk-free rate and debt premium but use three months of data rather than one month.
  - Remove the government ownership limitation on relevant bonds.
  - Reduce debt issuance cost allowance from 0.35% to 0.20% pa.
  - Remove the swap cost allowance from the term credit spread differential (TCSD) and account for it in the 0.20% debt issuance costs.
  - Reduce the leverage estimate for EDBs from 44% to 41%.
  - Retain asset beta for EDBs at 0.34.
  - Use a fixed linear relationship to determine the term credit spread differential (TCSD) allowance.
  - Have regard to the NSS curve when estimating the debt premium.
  - Other minor adjustments including changes to airports WACC.
13. Within these changes proposed by the Commission, there are matters that ENA members are in support of, as well as several important and material matters that they do not support.
14. The ENA approach to preparing this submission has not been to reiterate argument from its February submissions to the Commission on WACC issues, but rather provide evidence and expert assessment of matters in the cost of capital paper that can be improved upon and deliver a more accurate WACC estimate. We specifically note where the Commission has made errors with debt compensation analysis that are material and need correcting.

## 4. Framework for the WACC IM review

15. ENA members strongly support the Commission's approach to make its estimate of WACC as accurate as it can, but only provided that the estimation methodology for WACC components are each fit for purpose and that the WACC outcome is therefore both accurate and fit for purpose. As we set out in this submission, the ENA has concerns that several components are neither accurate nor fit for purpose.
16. The ENA supports the Commission's approach to retain the basic service-specific methodology from its original WACC estimation approach from 2010. While this approach promotes an amount of certainty, it is only appropriate for EDBs if the methodologies for estimating WACC components reflect the approach taken by a benchmark efficient electricity distributor when raising capital for investment purposes in the real world.
17. The ENA submits that it is preferable to have an estimation approach that more accurately reflect real world investment conditions, rather than an approach which provides certainty from being largely unchanged over time but does not reflect the evolving markets, business models and conditions that EDBs currently face.
18. We have concerns that a number of the changes the Commission proposes to the WACC IM, and indeed a number of aspects that remain unchanged, do not reflect the environment in which EDB's operate. In 2010 when the Commission developed the IMs there was a range of *knowns* concerning WACC components and parameters, as well as a series of *unknowns* for which the Commission used its judgement in place of evidence.
19. Since that time, additional evidence has become available from developments within the distribution sector to enable the Commission to better estimate WACC parameters using evidence rather than judgement. There have been two confidential surveys of debt arrangements by distribution businesses which provide a rich data set of real world debt strategies. There are also considerable learnings from changes to international economic regulation of WACC, especially in Australia where the AER has implemented a major revamp of its approach to WACC estimation.
20. ENA members have considerable concern with debt compensation in the current WACC IM and with the changes that the Commission proposes. Sections 5 and 6 of this submission cover these points, while section 7 describes ENA concerns with other aspects of the Commission's proposal. These sections bring together analysis and advice from ENA advisor CEG as well as ENA's own analysis. The CEG reports on industry debt statistics and the proposed TCSD methodologies are attached.

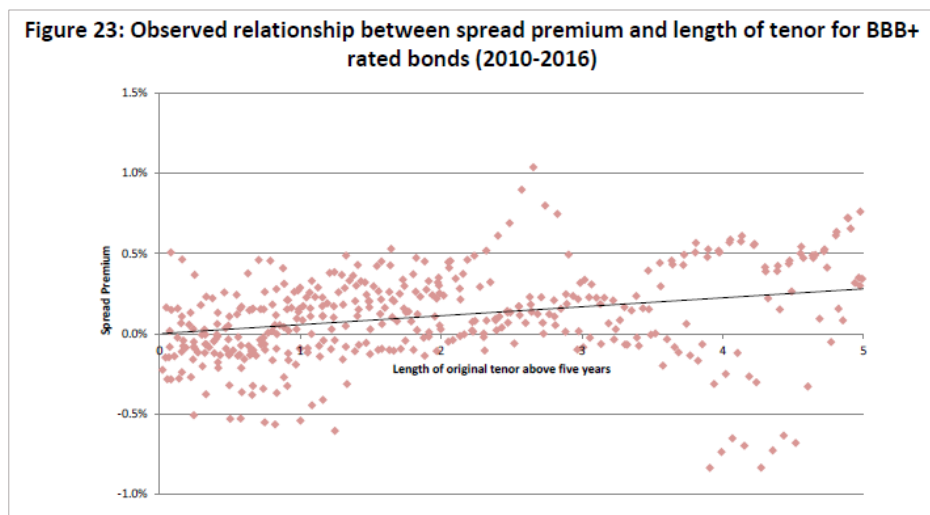
## 5. TCSD methodology

21. The Commission's overall debt premium methodology retains the TCSD but with important modifications which estimate an historical average slope of the DRP curve and apply that slope to longer term debt that is greater than 5 years. This is, in theory, a reasonable way to compensate EDBs for the higher costs of debt above the 5 year benchmark that is used in the WACC IM.
22. These modifications, if properly implemented, will tend to give more appropriate compensation to the EDBs, as opposed to adopting a benchmark debt tenor of greater than 5 years based on industry average debt terms.
23. The 'if properly implemented' caveat here is important because the slope of the DRP curve must be properly estimated and be a reasonable reflection of the historical average slope of the curve. If this is the case, debt greater than 5 years tenor will attract a positive DRP, while debt below 5 years will not.

### 5.1. Econometric errors

24. The ENA submits that changes to the TCSD methodology as proposed by the Commission do not satisfy this caveat. The estimate of the slope of the curve above 5 years is not reasonable at 6 basis points per annum (bppa). Based on ENA analysis of the data behind the Commission estimate (Figure 1 below illustrates the data) it appears that both the methodology and the regression analysis of the data are incorrect.

Figure 1: Cost of capital paper – Commission figure 23



Source: Cost of capital paper.

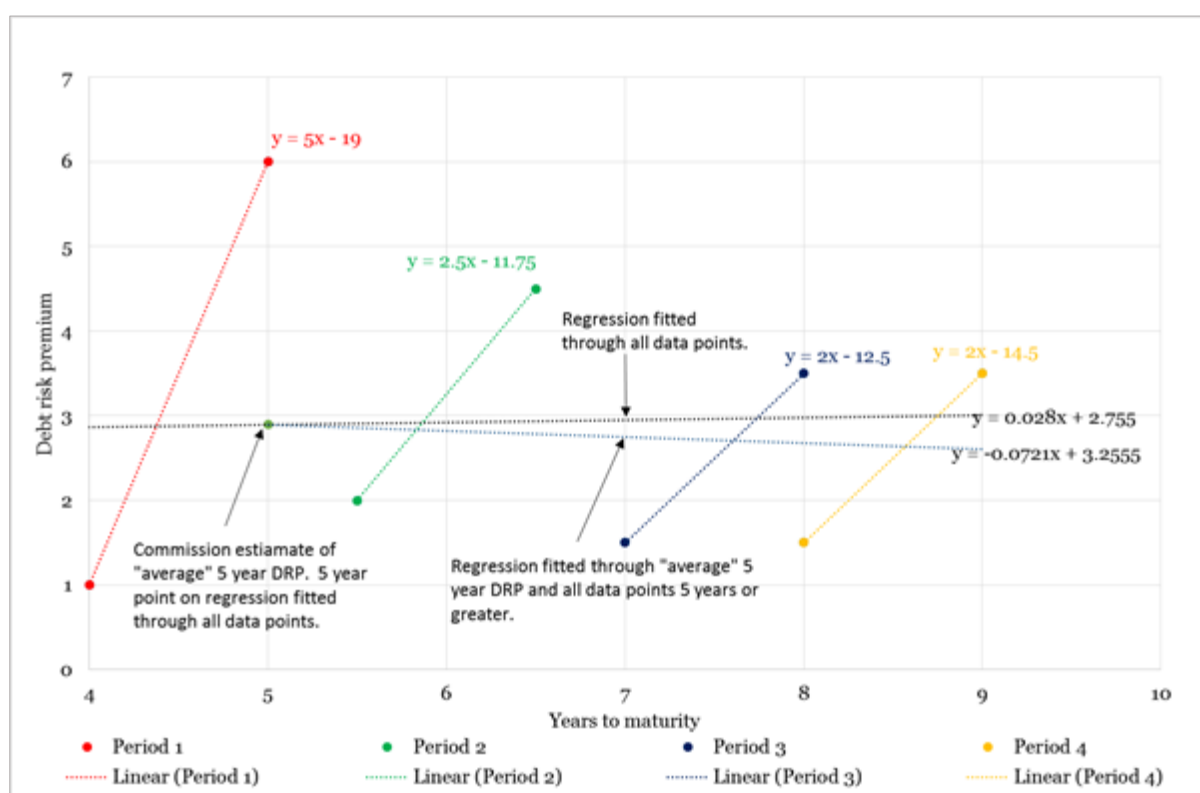
25. Using the Commission's data, ENA asked CEG to undertake analysis of individual monthly debt data to illustrate the problems with the Commission's methodology. It appears from this analysis that the Commission pooled the BBB+ bond data across all months and quarters of the last 5



years and estimated a slope within the pooled dataset. CEG considers that the Commission approach can be improved by instead applying the identical methodology to each month of data individually rather than to all months of data

26. The CEG approach to correcting this problem is detailed in the attached report. However it is worth presenting figure 2 to demonstrate the bias that results from the Commission’s approach. It can deliver a false result – the slope of the regression is materially positive in all months (4 periods are used to demonstrate the statistical problems) but when pooled gives rise to a negative slope.

Figure 2: Illustration of problems with data pooling over time



Source: CEG

27. In each different month (designated by different colour coding) there is a strong upward slope for the DRP with tenor of bond. However, when all of the data is pooled the slope estimated in a single regression is much lower than the true slope observed in each month (but still positive). This is the regression line shown as “ $Y=0.028X + 2.755$ ”. Using this slope from the regression would clearly be an error because it underestimates the true average slope observed in each month (which is strongly positive).
28. However, the Commission’s methodology does not directly use this pooled slope. Rather, the Commission uses this regression to estimate the 5 year “average” DRP as the point on this regression line at 5 years. The Commission then implements another regression which is constrained to pass through this point and which provides the best fit to the (pooled) observations for bonds with DRPs of at least 5 years. In this illustrative example, the result is a second

regression line that has an even lower (negative) slope than the first regression line. The second regression compounds the estimation errors associated with the first regression.

29. Rather than pooling the data first, the attached CEG report describes its approach to correcting this bias, but in brief its methodology includes:
- estimating slopes in individual months; and
  - averaging these across months,
  - establishing a minimum number of bonds per month;
  - excluding 100% government owned bond issuers;
  - including less than 100% government owned issuers.
30. Results from the CEG analysis shows a simple average monthly DRP slope of between 9.4 and 12.1 basis points per annum, as follows;

**Table 1: Average monthly DRP slope (bppa increase per year of tenor)**

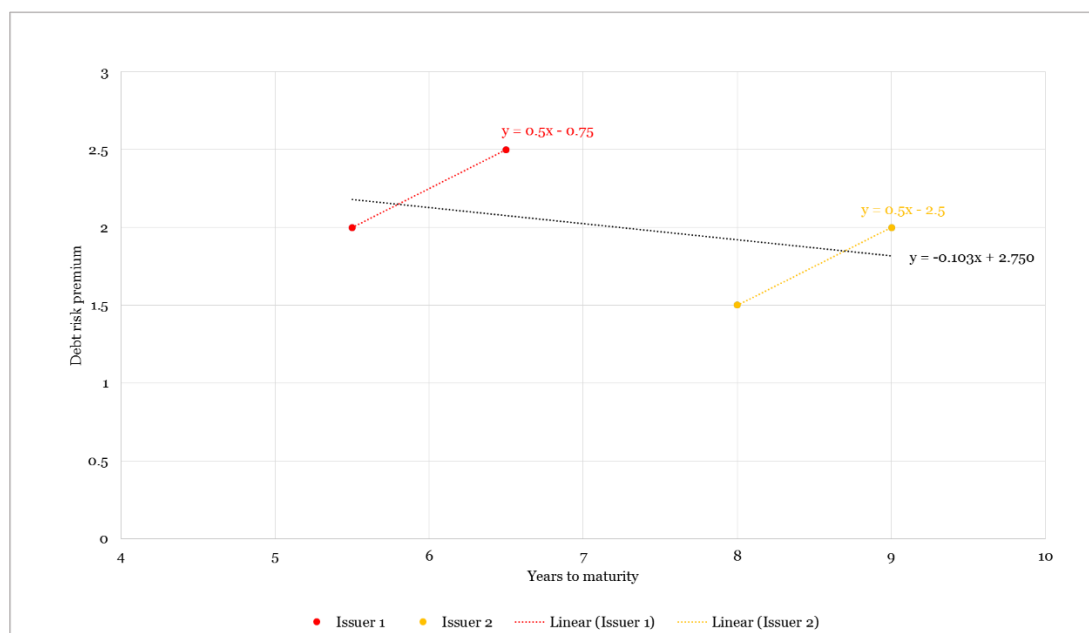
	<b>Simple</b>	<b>Weighted</b>
<b>5 year DRP estimated with only BBB+ bonds</b>		
BBB+ only bonds	10.9	10.4
<b>5 year DRP estimated with BBB to A- bonds and credit rating dummy variables</b>		
A-	9.4	12.1
BBB+	11.8	11.2
BBB	NA	NA

31. CEG’s estimate of the average DRP slope is double that estimated by the Commission. This result was cross checked for consistency by calculating the DRP for A- and BBB bonds using the same methodology, but only including data where there were at least 3 bonds of greater than 5 years tenor.

## 5.2. Per Issuer analysis

32. The second potential problem with data pooling involves the inclusion of data from issuers with the same credit rating but with different DRPs, when controlling for tenor. This potential bias can be illustrated as follows. Imagine that one low DRP BBB+ issuer has more long term debt and one high DRP BBB+ issuer has more short term debt. If we include these issuers in the same regression we might incorrectly conclude that the DRP slope is negative even though it is positive within each issuer. Figure 3 below illustrates this point.

Figure 3: Illustration of problems with data pooling of bond issuers



Source: CEG

33. In this illustration there are two issuers and the DRP slope for each is positive at 50 bppa but when they are pooled the estimated DRP slope is -10 bppa. The restriction of data to specific credit ratings (or the use of credit rating dummy variables) can be expected to limit the amount of such potential bias but not necessarily to acceptable levels.
34. In order to test for and eliminate this bias, CEG undertook analysis to estimate the average DRP slope per issuer. The results in table 2 are broadly similar to the average monthly data across all issuers previously estimated, and to issuers with different credit ratings.
- 35.

Table 2: Best estimates DRP slope and correlation of DRP slope with short term DRP for BBB+ issuers

Issuer	Average slope (basis points)	Correlation
Genesis	10.45	-0.3538
Mighty River Power	10.90	-0.4360
Wellington	12.51	-0.9399
<b>BBB+</b>	<b>11.29</b>	<b>-0.5765</b>

Source: Bloomberg data; CEG analysis. Monthly regressions were run on BBB+ bonds that had a minimum term to maturity of 3.5 years.

36. The 'correlation' column describe the relationship between the short term DRP in each month and the estimated slope in that month for a specific issuer. The CEG report describes the methodology and results across all bond issuers in detail but the important take outs are that:
- The average slope of the DRP per issuer was consistent with the average previously estimated, and

- There is a strong negative correlation between the level of the DRP on short term debt and the slope above that short term maturity. This is important because it informs the objective of the TCSD.

### 5.3. Period mismatches

37. The apparent objective behind the Commission's calculation for the TCSD is also problematic. It appears that the Commission's objective is to estimate the average DRP term premium over the last 5.25 years. However this is inconsistent with the Commission's adoption of the 'on the day' approach to setting the 5 year DRP rather than a trailing average.
38. If the Commission's intent is to compensate now for the fact that businesses issued debt in the past and the DRP cannot be hedged, then the correct approach is to estimate the actual DRP over the complete last 5 years. This goes for the base 5 year DRP as well as the TCSD premium. According to the Commission's estimate this was 1.85% (average of actual decisions (para 106)) - which is at least *39bp higher* than its estimate of the prevailing DRP of 1.46% (Tables 32 and 33 of the cost of capital paper).
39. The Commission has however rejected this reasoning and argued against adopting a trailing average on the basis that incentives are best supported by using a prevailing rate. If this logic is accepted, it applies equally to the TCSD premium as to the 5 year DRP. In which case, the primary purpose of the TCSD is therefore to provide adequate compensation for the prospective costs of issuing long term debt over the forthcoming averaging period. In that case, the best estimate of the 5 year DRP should focus on the most recent period.<sup>1</sup>

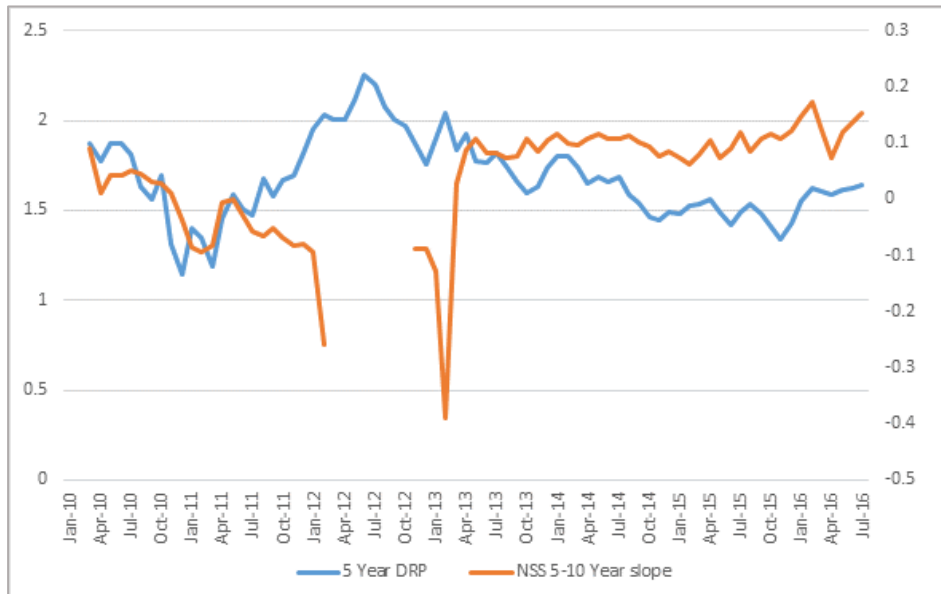
### 5.4. DRP term premium

40. Consistent with this, finance theory and empirical evidence (CEG analysis as above) suggests that the short term DRP and the slope of the TCSD premium are inversely related such that larger premiums are evident when the level of the DRP is low. A historical average estimate of the term premium does not capture this and makes it more likely that there will be a mismatch between the conditions under which the 5 year DRP and the TCSD term premium are estimated.

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<sup>1</sup> Therefore, there is no need to make the 39bp adjustment that was noted in para 38 which means that the Commission's TCSD methodology can be reconciled to an objective to provide adequate compensation for prospective (as opposed to retrospective) debt issues.

Figure 4: NSS DRP estimates



Source: CEG

41. Figure 4 illustrates the existence of the inverse relationship between NSS estimated term premium and the level of the DRP – with much higher average term premiums over the last 3 years versus the previous 2.
42. The gap in the DRP slope in figure 4 exists because in the relevant months there were less than 3 bonds with maturity in excess of 5 years. From 2014 onwards estimated 5 year DRPs have been relatively stable and the number and quality of observations has been highest. The DRP slopes in the above figure from 2014 are summarised in figure 5.

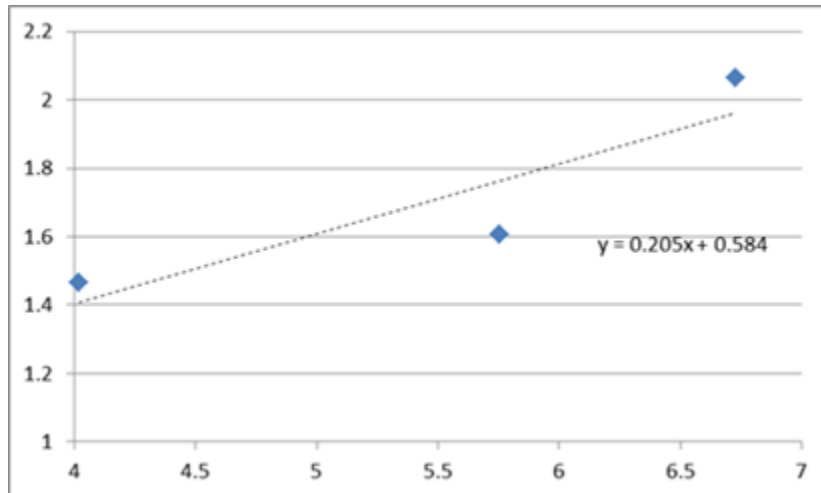
Figure 5: Estimates of slope since 2014

Period	Estimate
Calendar 2014	9.8 bppa
Calendar 2015	10.1 bppa
January to 19 July 2016	14.9 bppa

## 5.5. Mismatches between issuers

43. A further potential estimation problem is that not all issuers have the same DRP even if they have the same credit rating and term of issue. To be able to deal with this difficulty CEG examined the DRP term premiums for individual bond issuers – estimating a linear slope from the DRPs on all bonds with greater than 3.5 years maturity by that issuer in a specific month. The following chart shows an example for Genesis in the month of June 2016.

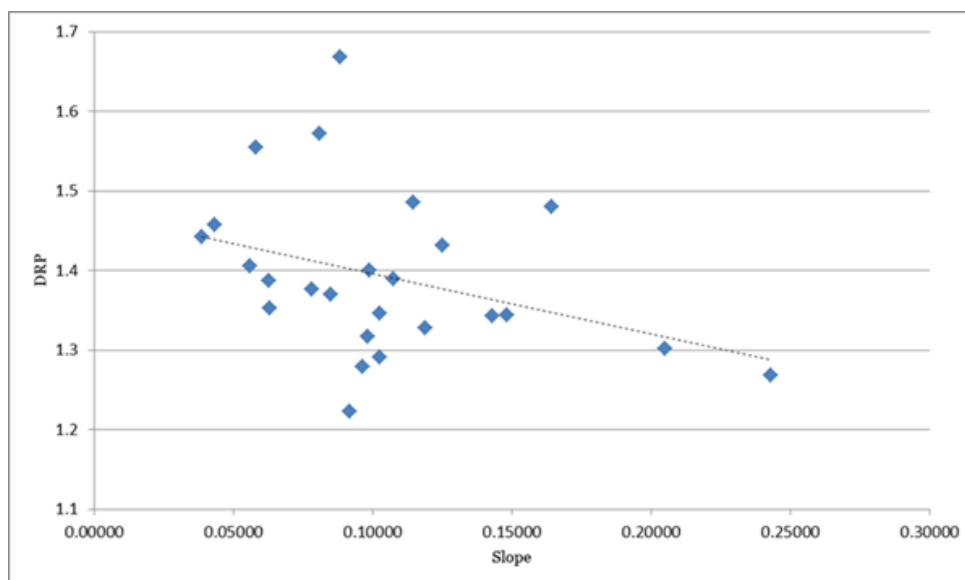
Figure 6: Genesis estimated DRP slope in June 2016



Source: CEG

44. CEG also examined the relationship between the estimated slope and the level of the estimated DRP at 3.5 years. The following chart shows the DRP premium over different months since January 2010, for bonds issued by the same issuer.

Figure 7: Inverse relationship between DRP and slope



DRP (vertical axis) and DRP premium (horizontal axis)

Source: CEG

45. A negative slope means that higher DRP levels (vertical axis) implies lower DRP premium (horizontal axis). CEG found negative slopes for all issuers. This confirms the results of the analysis using the (modified) Commission methodology that a negative correlation exists between short term DRP and DRP slope.
46. These findings support the conclusion that the Commission's approach of:

- Rejecting a trailing average for the 5 year DRP in favour of prevailing rate; and
- Adopting what is in effect a trailing average for the term premium in DRP, and
- Pooling data across issuers and across time,

involves mismatches that in current market circumstances, are expected to undercompensate businesses for their DRP costs on both previously issued long term debt and newly issued long term debt.

47. In light of the analysis and conclusions, CEG was asked to provide best estimates of the DRP premium for both the prevailing and historical DRPs.

## 5.6. Best estimate of prevailing DRP premium

48. The best estimate of the DRP slope to add to the prevailing DRP is the most recent estimate. CEG most recent estimate of the DRP slope is from 10 bppa to 16bppa, in table 3 below. This is consistent with the Commission’s own estimates of the NSS slope over the period from January to March 2016. The Commission reports NSS parameters in Table 34 of Paper 4 for this period. The average slope between 5 and 10 years based on the table 34 parameters is 13 bppa.

Table 3: Best estimates of DRP premium

Estimation approach	Best estimate DRP bppa
Commission cost of capital IM paper	5.6
Corrected Commission approach	9.4 – 12.1
BBB+ issuers only	11.29
All issuers	9.90
CEG using Commission NSS parameters	13.0
CEG NSS best estimate January 2015/2016	10 - 16

Source Commission paper 4, CEG

49. The ENA recommends that the Commission adopt an estimate of the DRP premium of 13bppa which is the midpoint of the CEG range.

## 6. Term of issued debt (tenor)

50. The Commission proposes to retain the average term of debt (bonds) in the calculation of WACC at 5 years and add a DRP to compensate for debt greater than 5 years. The Commission has argued that it is appropriate to restrict analysis of debt raising costs to bonds with similar characteristics as the benchmark bond it assumes is issued. To quote the Commission:<sup>2</sup>

*Our current approach to estimating the debt premium involves a degree of judgement. When estimating the debt premium, we consider yields to maturity for a pool of corporate bonds issued by companies that have similar characteristics to a notional benchmark supplier that we specify. This approach often results in upper and lower bounds, within which judgement is required to determine a point estimate of the debt premium.*

51. Following the same logic, analysis of the tenor of debt issues should also be restricted to these bonds, or, at least, to companies that use the bond market.

52. ENA and CEG have undertaken a survey of debt issuance by ENA members, the results of which are shown in Figures 8 to 10 below. CEG's analytical report is attached. Results are reported for both ENA members and for those distribution businesses that issue bonds. The table also captures the currency that debt is denominated in as well as the real cost of both debt issuance and interest rate swaps.

53. Average tenor of debt issues for all:

- ENA issuers, and for all instruments, is 8.3 years. This is provided for completeness but the benchmark tenor should not be informed by small entities that do not issue any bonds;
- Bond issues only is 10.4 years;
- Debt instruments issued by entities that issue bonds is 9.3 years.

Figure 8: Debt survey results 1

Parameter	Commission's estimate	Sample weighted average		
		All ENA members	Bond-issuing firms	Bonds only
Term of debt (yrs)	5	8.3	9.3	10.4
Credit rating	BBB+	76% BBB+, 24% BBB	-	-
Currency	NZD only	61% NZD, 26% USD, 13% others	55% NZD, 31% USD, 14% others	45% NZD, 38% USD, 17% others
Transaction cost of debt issuance (constant payments method)	6-7 bp	27 bp	27 bp	25 bp
Transaction cost of interest rate swaps	4 bp	-	7.10 bp	7.13 bp

*Source: Bloomberg, ENA, RBA, RBNZ, CEG analysis; \*Spread to swap estimates from the sample contain debt issued by government-owned firms, and are thus likely to underestimate the benchmark rate.*

<sup>2</sup> Commerce Commission, Input methodologies review draft decisions Topic paper 4: Cost of capital issues, June 2016, p. 42 at [160].



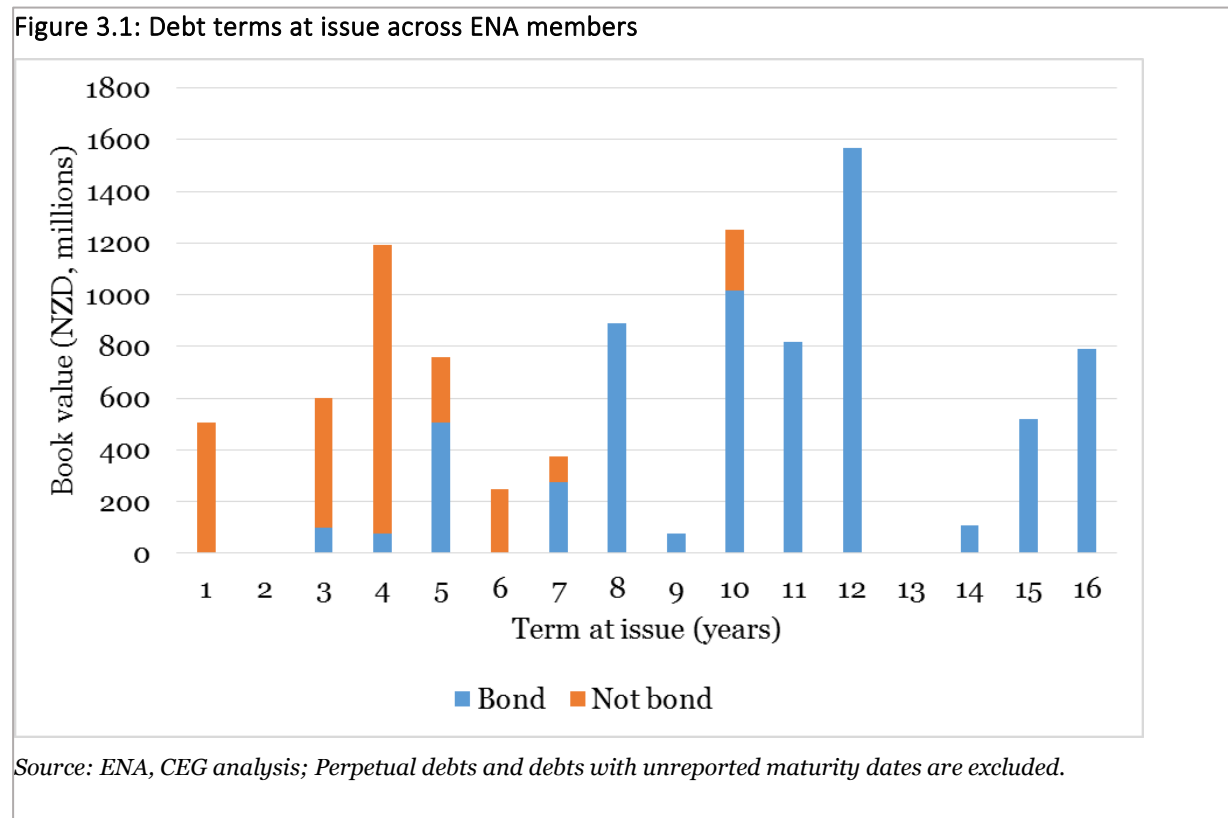
54. We note that bonds dominate the value of debt, but not the volume. Nearly half of all debt is bonds of longer than 10 year tenor, as follows.

Figure 9: Debt survey results 2

	<b>Bonds</b>	<b>Other</b>
Number of instruments	50	166*
Amount (NZD)	7.0b	3.0b

*Source: ENA, CEG analysis \*This count treats rollovers and additions on bank loans as separate debts. In cases where whole debts were replaced or restructured by newer debts after 30 June 2015, all subsequent analysis only includes the new debt instruments in order to avoid double counting. Our analysis also excludes seven instruments identified as interest rate swaps, since such instruments do not raise any finance.*

Figure 10: Debt survey results 3



55. As shown in Figure 10, the average tenor of bonds issued by EDBs is clearly greater than 5 years. ENA members consider that the Commission’s proposal to leave the term of debt used for the DRP at 5 years and add a TCSD is under-compensating members for the risks and costs that they face in the real world. Our concerns and proposed solutions to the problems we identify in the Commission proposal are set out in section 5 above.
56. In particular, ENA members who are too small to be able to efficiently access long term debt do not, in reality, have lower overall risk than their larger counterparts who do have such scale. This

should be obvious given that those firms with scale do choose to issue long term debt. It is therefore nonsensical to provide lower compensation to smaller firms which, if anything, have higher total financing costs.

57. The ENA considers that the Commission should, consistent with CEG's advice, adopt a single benchmark of a large business of sufficient scale to operate in domestic and international bond markets. The Commission should determine the efficient debt issuance practices of such a business, which on the evidence would have a term of around 10 years, and compensate all businesses (irrespective of their actual debt term) accordingly. This would follow not only the advice of CEG, but also of Commission advisor Martin Lally, as well as the Commission's own practice for Chorus.
58. The ENA notes that the Commission's draft decision does not disclose its estimate of what the industry average tenor of debt in its 2016 debt survey. This is in contrast to its 2010 decision in which it relied on a finding that the average tenor was around 7 years (something that Martin Lally has continued to rely on in his most recent advice to the Commission). The Commission is able to do this only because it has not followed its practice in the Chorus decision to adopt a benchmark tenor in its WACC calculation (ironically, Chorus was assigned a 7 year benchmark based on the energy sector's 2010 debt survey). Instead, the Commission has retained a benchmark of 5 years with a TCSD adjustment for the EDBs.

## 6.1. Debt, equity and swap costs

59. The Commission proposes to reduce the allowance within WACC for the costs of debt issuance from 0.35% to 0.20%. There is no allowance for the costs of raising additional equity for investment purposes.
60. The Commission references the High Court as its main reason to cut the debt issuance allowance and traverse evidence in the draft WACC IM. The Commission admits that it cannot identify costs with any degree of certainty and in the end makes a judgement call that:

*'we do not consider we should be too precise in trying to replicate costs using a bottom-up approach. Instead we consider, on the basis of the available evidence, that the allowance for debt issuance costs should be no higher than 20 bps p.a. for debt with a five-year term'*
61. CEG takes a different view. Its evidence from the 2016 confidential debt survey suggests that actual costs are four times the draft IM allowance. For ENA members this evidence is sufficient to support a submission not to reduce the allowance for swap costs or debt issuance.
62. CEG calculates debt issuance costs at 25 – 31bp, 20bp higher than the Commission. The CEG calculation of swap costs (including cross currency swaps where these are reported) results in 7bp/13bp including/excluding the AA- Transpower. Results excluding Transpower are reported by CEG because a banks cost of entering into a swap transaction with a counterparty is a function of the credit rating of the counterparty.
63. This is more than three times the Commission's estimate of 2 bp which appears to be based primarily on Transpower's reported costs for interest rate swaps only. Even when CEG removes cross currency swap costs where these are separately reported, a practice CEG does not recommend, the average swap costs are 4.7/6.1 bp including/excluding Transpower. This is still more than double the Commission's estimate.

64. Moreover, we note that CEG's estimates, based on industry data, is consistent with recent estimates by UBS<sup>3</sup> of the cost of making these transactions in the more liquid AUD markets of:
- interest rate swaps for a BBB counterparty of 3.5-8.5 bp; and
  - Cross currency swaps of 18 bp.
65. On the basis of now having evidence as to actual debt and swap costs, ENA members submit that these transaction costs sum to at least 31bp (6bp interest rate swap costs +25 bp debt issuance costs) and up to 40bp (13bp interest rate and cross currency swap costs plus 27 bp debt issuance costs).

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<sup>3</sup> UBS, Estimating the Return on Debt – Economic Regulation Authority Discussion Paper, 4 March 2015, p.2

## 7. Other matters

66. ENA members provide the following comment on other matters in the proposed IM.

### 7.1. Overall WACC approach

67. ENA members are supportive of the Commission decision not to apply a split WACC in the draft IM, or to further consider Black's Discount Rule. These approaches would add considerable complexity and cost to the regulatory framework, which we do not consider would benefit consumers. We also consider that a split WACC would create concerns among investors that split costs of capital may be applied more generally.

### 7.2. Risk free rate

68. The draft decision proposes using three months rather than one month of data to assess the prevailing interest rates but this does not address the problems identified with the cost of debt estimates. The ENA remains of the view that a trailing average methodology is appropriate for estimating debt compensation – we set out our views in section 7.5 below.

### 7.3. Asset beta

#### CEG February 2016 analysis

69. In February 2016, the ENA presented to the Commission the work of advisors CEG to:

- update analysis of daily/weekly/monthly beta data over the last 10 years, and
- identify whether there were statistically valid differences in the asset beta between firms regulated under price control, and those under revenue control.

70. That work was very recent and remains relevant to this submission. Table 7 from the February 2016 CEG report, reproduced below in Figure 11, shows the CEG estimates for the monthly, weekly and daily asset betas using data from the most recent 10 year period (ending on May 31). All results assume a zero debt beta irrespective of the level of leverage.

Figure 11: CEG asset beta survey

<b>Asset beta (average of all definitions)</b>	<b>Previous 5 year beta (2010)</b>	<b>Last 5 year beta (2015)</b>	<b>Last 10 year beta (2015)</b>
Monthly	0.35	0.30	0.34
Weekly	0.38	0.36	0.38
Daily	0.40	0.41	0.40
<b>Average</b>	<b>0.38</b>	<b>0.36</b>	<b>0.38</b>

*Bloomberg data, CEG analysis*

71. CEG noted that the current IM asset beta estimate of 0.34 was the same as, or lower than, all the beta estimates in table 10 with the exception of monthly betas over the most recent 5 years.
72. The CEG monthly beta estimates were averages across 21 different definitions of a month (e.g. from the 2nd of one month to the 2nd of the next, and so on). Monthly and weekly betas were found to be sensitive to the definition of a month/week, even when averaged across the sample. While the average of these monthly estimates for 2015 is only 0.30, the range of results extends from 0.20 to 0.43, indicating beta is highly sensitive to the count forward/backward days.
73. In light of this, CEG stated that the use of a single ‘monthly’ asset beta estimate will be very unstable and reliance on such an estimate is likely to lead to error. Material variability also exists between weekly betas based on different definitions of a ‘week’, though the variability is smaller than for monthly betas. This reflects, in part, the larger number of observations when using weekly betas (260 weekly observations in a 5 year period versus 60 monthly observations).
74. Based on the results, CEG concluded that there is contradictory evidence relating to the movement in asset betas since 2010 and the level of asset beta estimates relative to the, then, current IM value of 0.34. Average weekly and daily asset betas remain above 0.34 (as do all 5 year beta estimates to 2010). Average 5 year monthly betas have fallen to below 0.34. Moreover, beta estimates derived from pooling the last 10 years of data are all at or above 0.34 – including monthly beta estimates. The CEG view was that the weight of this evidence suggests that the best estimate of beta over the last 10 years is above 0.34.
75. Regarding the impact of the form of regulation on beta, CEG concluded that:

*“these results indicate that there is not sufficient evidence that ‘price cap’ regulation (or incentive regulation) attracts higher risk, as measured by higher asset beta, than ‘revenue cap’ regulation (or non-incentive regulation) in our sample”.*<sup>4</sup>

## ENA view

76. ENA members strongly support the Commission’s decision to retain the basic methodology from 2010 for estimating asset beta, and to update the calculation methodology to include weekly and 4 weekly beta data rather than the end of month ‘on the day’ approach from 2010. ENA has concluded that the end of the month approach has far too much estimation risk.
77. ENA members are supportive of the Commission’s proposal to retain asset beta of 0.34 for EDBs. They agree with the Commission that there is a lack of evidence to support a change at this time. A decision to maintain beta at 0.34 is reflective of the empirical work that the ENA previously submitted to the Commission and is summarised in figure 11. That empirical work was conducted by advisors CEG, which also suggested that more recent evidence did not provide any strong evidence for a change in beta estimates (although there was weak evidence on beta slightly higher than 0.34).
78. The ENA also supports the proposed decision not to change the beta in response to a proposed change in the form of control. There is further comment on this in the ENA submission on the proposed change to the form of control.

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<sup>4</sup> Reference CEG report to ENA ‘Asset Beta’ February 2016.

## 7.4. Tax-adjusted market risk premium

79. The ENA considers that the TAMRP should be set in a way that is commensurate with market conditions. Again, the work that CEG undertook in February 2016 remains relevant and continues to reflect the views of ENA members which are consistent with CEG advice:
- Use the Ibbotson, DGM (CEG's method) and Siegel version 2; but
  - Don't use Surveys and Siegel version 1 as they are not fit for purpose, or
  - maintain 7% regardless.

## 7.5. Trailing average debt estimation

80. The Commission proposes to retain its use of prevailing rate debt data but to open the time window for data from 1 month to 3 months. ENA members have previously submitted that the Commission should change from prevailing rate to use a trailing average because this, amongst other things, better reflects the approach to prudent and efficient debt portfolio management in the real world.
81. The Commission recognises that there are arguments on both sides of this matter and proposes that no change be made to the term of debt other than the 3 month data window for estimating the prevailing 5 year bond rate. ENA members cannot agree with this proposed decision because it is far removed from the costs that members face when they issue bonds. We evidence these costs in this submission.
82. The ENA remains firmly of the view that a trailing average is a more appropriate approach to estimating the cost of debt for EDBs. The ENA submitted strongly on this matter in February 2016 following expert advice from CEG. That submission (along with several others submitters who argued in favour of trailing average debt estimation) was reviewed by Commission expert Martin Lally who determined that the benefits from using a trailing average were inconsequential and that, regardless, it should be applied only to the debt premium (DRP) component.
83. ENA views on this matter have not altered. For the sake of focus they will not be repeated here however we do note the in principle arguments that make moving to a trailing average cost of debt compelling.
84. We agree with the Commission that there are benefits associated with the trailing average approach. It's important to recognise that the benefits noted by the Commission are, at the same time, disadvantages of the prevailing rate approach. Under the prevailing rate approach:
- Suppliers are forced to enter into swap agreements if they seek to best align their cost of debt to the regulatory allowance, thereby incurring costs that could be avoided by adopting the trailing average approach.
  - There is no way for suppliers, even with the use of interest rate swaps, to align their actual debt premium to the debt premium allowed by the Commission. Whilst in some periods this mismatch may be modest, at other times the mismatch can be large. The

prevailing rate approach exposes suppliers and consumers unnecessarily to the vagaries of debt markets.

- The cost of debt allowance and, therefore prices, will be more volatile than under the trailing average approach.

85. Mismatches can occur in both directions over time. But that does not necessarily mean that they are symmetric. If large mismatches in any one direction occur, without similarly large offsetting mismatches in the other direction, consumers or suppliers may have to bear the consequences for a long period of time.

86. The Commission is of the view that mismatches (errors) between actual DRP and regulatory DRP would be offset by mismatches between actual MRP and the regulatory TAMRP. No empirical evidence of the magnitude of these errors is provided, so there is uncertainty about the extent to which these two errors can be relied upon to offset each another. It is however quite concerning that the Commission proposes to deliberately accept an approach to debt premium which produces errors that help offset mistakes created by its preferred approach to the TAMRP.

87. ENA's recommended approach is not to maintain two errors in the hope that they might cancel each other out, but to fix both errors by:

- determining the cost of debt using the trailing average approach to match the efficient cost; and
- rather than employing an approach that is likely to continue producing TAMRP estimates of 7.0%, irrespective of market conditions, set the TAMRP in a way that is commensurate with the prevailing market conditions.<sup>5</sup>

88. If, however, the Commission decides to maintain its proposed approach, it should:

- Clearly communicate that the cost of debt allowance and cost of equity allowance are inconsistent with efficient financing costs, and that it considers the resulting two errors to offset each other; and
- Quantify the magnitude of each error to demonstrate they do, in fact, offset.

89. Further to para 85 there is a potentially important conceptual point that needs to be made. The Commission is seeming to say that its TAMRP is heavily influenced by long run historical averages (which it is). Therefore, if risk premiums are unusually high/low **relative to long run historical average**, they will show up in high/low DRPs but not TAMRP. Therefore, when

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<sup>5</sup> This is as opposed to accepting that average long term historical TAMRP is the best indicator of near term future TAMRP that will be used in the regulatory reset. There is some agreement among experts (including the Commission advisor) that actual TAMRP has varied over time in contrast to the Commission maintaining a constant 7.0% in the WACC IM. What experts cannot agree on is the weighting that is given to historical estimates vs forward looking estimates that are based on current market conditions. The network businesses have firm views about this point. CEG as advisor to the ENA is strongly of the view that forward estimates (DGM) should dominate given the prevailing conditions in debt and equity markets. Frontier Economics as advisor to Transpower holds the same view but suggests weightings that are somewhat different. Where historical and prevailing market conditions measurably vary, estimates will be somewhat different and the weighting of each estimation method becomes critical. The other factor that has a material impact on the TAMRP is the Commission decision to continue to round the TAMRP up/down by 0.5%. Taken together these two factors will likely have a material impact on the TAMRP decision.

prevailing DRPs are high/low **relative to long run historical average** there will be under/over compensation for the TAMRP.

90. The Commission maintains that, if EDBs have a trailing average DRP but get paid a prevailing DRP, they will be over/under compensated when prevailing DRPs are high/low – because their trailing average DRPs will be lower/higher than the prevailing DRP.
91. This argument might have some logical basis if the two periods in question were the same – but they are not. The historical average TAMRP is estimated over up to 100 years. The relevant **trailing average DRP is measured over 5-10 years**.
92. In fact, it is quite possible that:
  - The prevailing DRP is higher than the very long run historical average (implying risk premiums above historical average generally and that TAMRP is above 7%); but
  - The prevailing DRP is below the historical average DRP over the period of debt issuance for a business (5-10 years).

If this is the case, then businesses are undercompensated on both. Importantly, this is currently the case. DRPs are elevated relative to their long run historical average but are depressed relative to their 5-10 year average.

93. The ENA cannot agree with the Commission that swap agreements can be used to mitigate inter period volatility in the cost of debt. It is true that, at some cost, suppliers can use interest rate swaps to align the base rate of their cost of debt to the risk-free rate allowance. We fail to see how these instruments can possibly be used to dampen volatility in prices across regulatory periods. Price shocks at each new regulatory period (arising from use of the prevailing rate approach) would not be reduced in any way by the employment of swaps. Swaps simply lock in the spot rate at the beginning of each regulatory period. The issue is that spot rates vary considerably over time. The Commission seems to have confused volatility of the spot rate over time with the EDBs ability to lock in those spot rates.
94. In addition, the Commission does not explain what “regulatory pricing mechanisms” it uses to mitigate period-to-period price volatility. ENA members are of the view that ad hoc interventions by the Commission to dampen price volatility should be avoided. Such interventions would involve too much regulatory discretion, may not be reflective of efficient costs, and would likely increase regulatory uncertainty. A better approach would be for the Commission would be to adopt a predictable methodology, such as the trailing average approach to debt, which minimises mismatches between regulatory compensation and efficient costs, and also has the desirable natural property of smoothing returns and prices.

## 7.6. Leverage assumption

95. The proposed change to the leverage assumption (44% dropping to 41%) follows the same estimation methodology as 2010, however the ENA considers that the Commission should leave the estimate at 44% because:
  - the gearing is not very different to 44% and therefore leaving it at 44% is consistent with the Commission’s own approach to estimating beta.



- the use of average gearing across a sample is only appropriate if debt beta is zero which, in the Commission's sample, is unlikely to be true.
96. Taking account of the fact that debt betas increase with higher levels of gearing, adopting average gearing of the sample will result in a biased result. This bias could be partially offset by adopting a slightly higher gearing than the sample average.<sup>6</sup>

## 7.7. DRP standard error

97. The Commission's continued use of a standard error of 0.0015 for DRP does not make sense to ENA members. ENA suggests that the Commission derive a standard error from the NSS regressions. If needed, CEG could supply some further details on how the Commission could do this.

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<sup>6</sup> For discussion see CEG, for Chorus, Response to the further draft determination, section 3.1

## 8. Appendix

The Electricity Networks Association makes this submission along with the explicit support of its members, listed below.

1. Alpine Energy
2. Aurora Energy
3. Buller Electricity
4. Counties Power
5. Eastland Network
6. Electra
7. EA Networks
8. Horizon Energy Distribution
9. Mainpower NZ
10. Marlborough Lines
11. Nelson Electricity
12. Network Tasman
13. Network Waitaki
14. Northpower
15. Orion New Zealand
16. Powerco
17. PowerNet
18. Scanpower
19. The Lines Company
20. Top Energy
21. Unison Networks
22. Vector
23. Waipa Networks
24. WEL Networks
25. Wellington Electricity Lines
26. Westpower