



COMMERCE COMMISSION

Cost of Capital Straw Person Example – Electricity distribution industry

Purpose

The current document outlines the Commerce Commission's (Commission's) proposed approach for estimating regulated companies' cost of capital, by providing a worked straw person example based on the electricity distribution industry.

Please note that the Commission has not yet made any final decision in regard to either the overall approach or individual parameter estimates regarding regulated firms' cost of capital. The purpose of this straw person example is merely to facilitate consideration of the Commission's proposed approach in this regard.

Introduction

1. In estimating the expected Weighted Average Cost of Capital (WACC), it is necessary to estimate the expected cost of equity capital and the expected cost of debt capital. The expected cost of debt capital is calculated as the risk-free rate plus the debt premium.
2. The expected cost of equity capital cannot be directly observed and therefore must be estimated by some means. A number of models for estimating the expected cost of equity capital exist. However each model has its limitations. These models are discussed in paragraphs 79 – 101 of the Revised Draft Guidelines – The Commerce Commission's Approach to Estimating the Cost of Capital, 19 June 2009 (Revised Draft Guidelines).
3. The Commission's preliminary view is to use the simplified version of the Brennan-Lally Capital Asset Pricing Model (CAPM)¹, as this is a New Zealand specific model that appears to be commonly used by practitioners in this country.
4. The theory upon which CAPM is based has a number of strong assumptions associated with it. In practice, many of the parameters used in the model and their

¹ This specification of the Brennan-Lally CAPM assumes that dividends are fully imputed and the investor receives full benefits from dividend imputation tax credits, incurs no tax on capital gains and the New Zealand capital markets are completely segregated from overseas capital markets.

$$r_e = r_f(1-t_i) + B_e TAMRP$$

where

r_f is the risk free rate
 t_i is the investor tax rate
 B_e is the equity beta

$TAMRP$ is the expected (tax adjusted) market risk premium

values cannot be directly observed and therefore proxies must be used, with the associated measurement uncertainties.

5. In addition, New Zealand (and the situation is little better overseas) has few utility service providers that are listed, credit rated, have publicly traded bonds and operate stand alone or “pure play” businesses. Therefore, it is necessary to use the publicly available information, recognising its limitations and adopt caution in drawing definitive conclusions from this information.
6. The WACC can take several forms. For example, it can be expressed in nominal or real terms². Also, a WACC can be “vanilla”, pre-tax, or post-tax. The difference between these WACC lies in the treatment of corporate tax. For further details please refer to section 4.6 of the Commission’s Revised Draft Guidelines.³
7. In this paper, the Commission has estimated a nominal post-tax WACC.
8. The purpose of this paper is to set out an example of the Commission’s proposed approach to estimating a plausible value, or value range, for each of the parameters in the WACC formula and the simplified version of the Brennan-Lally CAPM.
9. The Commission notes that this straw person example assumes a regulatory period that commenced on 1 September 2009. The underlying data therefore reflects some of the effects of the recent global financial crisis, in particular when calculating the cost of debt.
10. There are six parameters that will need to be assigned values when estimating the WACC:
 - The risk-free rate (r_f) which is typically based on the government bond rate;
 - The debt premium (DP), which measures the risk of an entity defaulting on its debt payments;
 - The equity beta (β_e) which is a measure of the systematic risks associated with equity capital for the firm or sector;
 - The tax-adjusted market risk premium ($TAMRP$);
 - The investor tax rate (t_i); and
 - The level of leverage (L).
11. This document uses the electricity distribution (EDB) industry as an example. The process followed would be similar for other industries, using industry relevant

² The difference between a nominal and real WACC is the treatment of inflation in the risk-free rate of return. For calculation of the WACC the observed nominal risk-free rate must be converted to a real risk free rate.

³ The following is the “vanilla” WACC formula:

$$WACC = r_e(1-L) + r_dL$$

The following is the post-tax formula:

$$WACC = r_e(1-L) + r_d(1-t_c)L$$

where

- | | |
|-------|--|
| r_e | is the expected cost of equity capital |
| L | is the proportion of debt capital (D) and equity capital (E), at market value, represented by net interest bearing debt financing i.e. $D/(D+E)$ |
| r_d | is the (pre-tax) expected cost of debt capital (i.e. net interest bearing debt financing), calculated as the risk free rate plus the debt premium |
| t_c | is the corporate tax rate. |

publicly available information. Appendix 1 contains a draft list of stock exchange listed entities operating airports, some of which might be suitable as comparators for each of the New Zealand based airport operators.

12. The Commission is seeking practical, implementable suggestions on how it could improve its proposed approach to parameter value estimation for the WACC formula and the simplified version of the Brennan-Lally CAPM, using publicly available information.

PARAMETERS ASSOCIATED WITH WACC

Risk-free Rate (r_f)

13. For a discussion regarding the risk-free rate, please refer to paragraphs 111 – 148 of the Revised Draft Guidelines 19 June 2009.
14. The Commission's preliminary view, as expressed in the Revised Draft Guidelines, is to match the term of the risk-free rate to the length of the regulatory period. The Commission proposes to estimate the risk-free rate as follows:
 - Obtain the current wholesale market interpolated mid yield to maturity, for a residual period to maturity equal to the regulatory period, for New Zealand government New Zealand Dollar (NZ\$) denominated nominal bonds as reported by Bloomberg each business day⁴ for the calendar month before the commencement of the regulatory period;
 - For each business day, calculate the annualised interpolated bid yield to maturity; and
 - Calculate the unweighted arithmetic average of the daily annualised interpolated bid yields to maturity.
15. Assuming a regulatory period of five years that commenced on 1 September 2009, the estimated risk-free rate would have been 5.36%.
16. A number of submitters argued that the Commission should use a term for the risk-free rate longer than the regulatory period, for example ten years, and also account for hedging costs. Adopting a regulatory period of ten years that commenced on 1 September 2009, the estimated risk-free rate would have been 6.24%.

(Tax Adjusted) Market Risk Premium (TAMRP)

17. For a discussion of the (tax adjusted) market risk premium, please refer to paragraphs 149 – 164 of the Revised Draft Guidelines 19 June 2009.
18. The Commission proposes to estimate the expected (tax adjusted) market risk premium based on the long run actual historical total returns on equity markets relative to the risk-free rate, calculated in a manner consistent with the

⁴ Bloomberg generate a constant maturity fair value curve each business day from benchmark New Zealand government NZ\$ denominated nominal bonds. The benchmark nominal bonds currently traded have the following maturity dates: 15 Nov 2011, 15 Apr 2013, 15 Apr 2015, 15 Dec 2017, 15 May 2021.

specification of the (tax adjusted) market risk premium in the simplified version of the Brennan-Lally CAPM.⁵

19. This approach produced an estimated expected (tax adjusted) market risk premium of 7%. The Expert Panel considered this estimate reasonable (for the simplified version of the Brennan-Lally CAPM).⁶
20. If we assume that a regulatory period of five years commenced on 1 September 2009, then the estimated expected (tax adjusted) market risk premium would have been 7%.
21. The Commission notes that a number of submitters have argued that the TAMRP should be higher than 7%, for example 7.5%. For the cost of capital workshops (12 and 13 of November 2009), the Commission invites parties to provide data and other evidence in support of this proposal.

Tax Rates (Investor tax rate (t_i), Corporate tax rate (t_c))

22. For a discussion of tax rates, please refer to paragraphs 225 – 232 of the Revised Draft Guidelines 19 June 2009.
23. The New Zealand statutory corporate tax is current 30%. The Commission assumes that the investor tax rate equals the corporate tax rate. On this basis, the Commission proposes to use a rate of 30% as the average personal tax rate across all investors in the economy.
24. The key issue in practice is how the Commission accounts for corporate tax in determining the appropriate regulated price and revenue. The Commission's choice of this tax approach (i.e. "tax expense" or "tax payable" approach) will influence the choice of whether the Commission uses a pre-tax or post-tax cost of capital. The Commission will assess the appropriate approach on taxation as part of its analysis of the regulatory framework that applies on a case-by-case basis.

Debt Beta (B_d)

25. For a discussion of debt betas, please refer to paragraphs 187 – 195 of the Revised Draft Guidelines 19 June 2009.
26. The Commission's preliminary view is that at the present time, based on the existing empirical research, the lack of appropriate data, and the lack of a reliable and accepted methodology, it may not be practical to reliably estimate the debt beta.
27. If we assume that a regulatory period of five years commenced on 1 September 2009, then the estimated debt beta would have been zero.

⁵ Lally M, Marsden A, 2004, Tax-adjusted market risk premiums in New Zealand: 1931-2002, Pacific-Basin Finance Journal 12 291-310.

⁶ Frank, J., Lally, M., and Myers, S. 2008. *Recommendations to the New Zealand Commerce Commission on an Appropriate Cost of Capital Methodology*.

Leverage

28. For a discussion of leverage ratios, please refer to paragraphs 196 – 208 of the Revised Draft Guidelines 19 June 2009.
29. One submission on the Revised Draft Guidelines has questioned whether the WACC should be affected by leverage. One result of the simplified Brennan-Lally model (assuming a debt beta of zero) is that the WACC increases if leverage increases. There are grounds for questioning whether this relationship is reasonable, and the Commission will be interested to hear views on this important issue at the workshop. The discussion on leverage which follows should be read as subject to the results of the discussion on the above issue.
30. The Commission's preliminary view is that the choice of leverage ratio, for the purposes of setting allowed rates of return, will depend on the nature of the industry. In some industries (e.g. electricity transmission) only one firm exists. In such industries, it would be natural to use the firm's actual leverage ratio, provided the capital structure is consistent with a reasonable investment grade long term credit rating.
31. On the other hand, some industries may comprise several firms, and the capital structures of these businesses can vary considerably for business specific reasons that are difficult to identify precisely. For such industries, a pragmatic approach would be to apply a 'notional' leverage to all firms involved.
32. The Commission considers that, due to the number of firms in the electricity distribution industry, it would be appropriate to use an industry wide notional leverage that is consistent with a reasonable investment grade long term credit rating, for example S&P BBB+/A-⁷.
33. The Commission proposes to consider the following steps when estimating the industry wide leverage:
 - Identify investment grade credit rated entities, listed or unlisted, which operate electricity distribution businesses in New Zealand and for each entity calculate the unweighted arithmetic average of the ratio of net interest bearing debt (using book value⁸) to net interest bearing debt (using book value) plus equity (using market value for listed entities / book value for unlisted entities) over the last five financial year ends;
 - Identify investment grade credit rated entities, listed or unlisted, which operate electricity businesses (electricity generators, retailers, and transmission) in New Zealand and for each entity calculate the unweighted arithmetic average of the ratio of net interest bearing debt (using book value) to net interest bearing debt (using book value) plus equity (using market value for listed entities / book value for unlisted entities) over the last five financial year ends;⁹ and

⁷ The Commission notes that there are a number of credit rating agencies, each with their respective credit ratings scales. For the sake of brevity in the example set out in this paper, this paper only refers to S&P long term credit ratings.

⁸ Calculating the market value of debt is difficult as most corporate debt is rarely traded. However, in most cases, the book value of debt is a reasonable proxy for the market value of debt.

⁹ It might be expected that the sustainable leverage for a regulated electricity distribution business in New Zealand is higher than the sustainable leverage for an electricity generator / retailer in New Zealand.

- Identify investment grade credit rated entities listed in Australia, the UK and the US which operate electricity distribution businesses¹⁰ and for each entity calculate the unweighted arithmetic average of the ratio of net interest bearing debt (using book value) to net interest bearing debt (using book value) plus equity (using market value) over the last five financial year ends.

34. The average leverage over the last five financial year ends and S&P long term credit rating for the entities identified are set out in Table 1 below.

Table 1: Leverages and Credit Ratings			
Name	Average Leverage last five financial year ends derived using market value of equity	Average Leverage last five financial year ends derived using book value of equity	S&P Long Term Credit Rating
NZ EDB			
Powerco	63% ¹¹	71%	BBB
Vector	56% ¹²	60%	BBB+
NZ Electricity Transmission			
Transpower		55%	AA-
Other NZ Electricity			
Contact Energy	16%		BBB
Mighty River Power		22%	BBB+
Australia EDB			
DUET	73%		BBB-
Spark Infrastructure	49%		A-
SP AusNet	46%		A-
UK Electricity Transmission			
National Grid	48%		A-
US Electric Integrated			
40 entities	average 41% median 41% high 69% low 15%		BBB- 9 BBB 15 BBB+ 9 A- 4 A 2 A+ 1 Total 40

35. The Commission is aware that the Australian Energy Regulator has recently looked at the average leverage of electricity distribution businesses in Australia and the table of results included in their report is reproduced below.¹³

¹⁰ Based upon Bloomberg classification (for example, Australia – “Electric – Distribution”, US – “Electric – Integrated”) and using financial statements data recorded by Bloomberg.

¹¹ Estimated based upon the price paid by QIC in February 2009 for a 58% equity stake in Powerco.

¹² Vector has been listed for four years.

¹³ AER, May 2009, Electricity transmission and distribution network service providers – Review of the weighted average cost of capital (WACC) parameters page 124.

Table 2: Average gearing levels

Year	Bloomberg (market)	Bloomberg (ACG)	Standard & Poor's	Average
2002	66.3	67.4	61.6	65.1
2003	63.9	63.7	66.7	64.8
2004	62.2	58.2	64.7	61.7
2005	62.8	63.3	67.8	64.6
2006	60.3	62.1	66.4	63.0
2007	58.7	57.8	65.1	60.5
Average	62.4	62.1	65.4	63.3

36. If we assume that a regulatory period of five years commenced on 1 September 2009, then the estimated industry wide leverage range for the electricity distribution industry in New Zealand would have been between 40% and 60%.
37. The Commission therefore proposes to use an industry wide leverage of between 40% and 60%.

Beta (Equity Beta (B_e), Asset Beta (B_a))

38. For a discussion of asset and equity betas, please refer to paragraphs 165 – 186 of the Revised Draft Guidelines 19 June 2009.
39. As outlined in its Revised Draft Guidelines on the Cost of Capital, the Commission proposes to use comparable company analysis as its primary approach to estimating the industry wide equity beta.
40. The Commission proposes to estimate the industry wide equity beta as follows:
- Qualitatively assess the level of systematic risk for the electricity distribution industry in New Zealand arising from the general economy;
 - Qualitatively assess the level of systematic risk for the electricity distribution industry in New Zealand arising from how the regulatory environment is actually imposed (including the allocation of risk between shareholders and customers, and the ongoing clarity and certainty of the allocation of risk) and from how the approach to the imposition of regulation may change in future;
 - Identify listed entities which operate electricity distribution businesses in New Zealand and for each entity obtain the unadjusted equity beta estimate¹⁴, the standard error of the estimate and the average leverage reported by Bloomberg¹⁵ and calculate the unadjusted asset beta estimate¹⁶;
 - As a sense cross check, identify listed entities which operate electricity businesses (electricity generators and retailers) in New Zealand and for each entity obtain the unadjusted equity beta estimate, the standard error of the

¹⁴ The term “unadjusted equity beat” refers to the absence of a Blume or Vasieck adjustment.

¹⁵ Unadjusted equity beta estimates derived from five years of monthly observations. Average leverage calculated as the unweighted arithmetic average of leverage at each financial year end for the same period as the observations used for the equity beta estimate (using book value of net interest bearing debt and market value of equity).

¹⁶ Calculated using the formula $B_a = B_e(1-L) + B_dL$.

estimate and the average leverage reported by Bloomberg and calculate the unadjusted asset beta estimate¹⁷;

- Also as a sense cross check, identify listed entities in Australia, the UK and the US which operate electricity distribution businesses¹⁸ and for each entity obtain the unadjusted equity beta estimate, the standard error of the estimate and the average leverage reported by Bloomberg and calculate the unadjusted asset beta estimate;
- Assess the plausible range of the unadjusted asset beta estimate for the electricity distribution industry in New Zealand; and
- Re-lever the plausible range of the unadjusted asset beta estimate, using the estimated leverage range, to obtain the plausible range of the unadjusted equity beta estimate.¹⁹

41. The unadjusted equity beta estimates, standard error of the estimates, average leverage and unadjusted asset beta estimates for the entities identified are set out in Table 3 below.

Table 3: Betas				
Name	Unadjusted Equity Beta ²⁰	Standard Error	Average Leverage	Unadjusted Asset Beta ²¹
NZ EDB				
Horizon Energy	0.23	0.15	23%	0.18
Vector ²²	0.66	0.20	56%	0.29
Other NZ Electricity				
Contact Energy	0.97	0.15	16%	0.82
Trustpower	0.77	0.14	18%	0.63
Australia EDB				
DUET	0.72	0.22	73%	0.20
Spark Infrastructure	0.35	0.16	49%	0.18
SP AusNet	0.19	0.18	46%	0.10
UK Electricity Transmission				
National Grid	0.44	0.14	48%	0.23
US Electric Integrated				
48 entities ²³				
average	0.61	0.15	42%	0.35
median	0.59	0.14	41%	0.34
high	1.14	0.28	69%	0.74
low	0.24	0.09	15%	0.13

¹⁷ It might be expected that the unadjusted asset beta for a regulated electricity distribution business in New Zealand is lower than the unadjusted asset beta for an electricity generator / retailer in New Zealand.

¹⁸ Based upon Bloomberg classification (for example, Australia – “Electric – Distribution”, US – “Electric – Integrated”) and using financial statements data recorded by Bloomberg.

¹⁹ Calculated using the formula $B_e = B_a + (B_a - B_d)L/(1-L)$.

²⁰ The Commission did not undertake any Vasicek or Blume adjustments.

²¹ Again, the Commission did not undertake any Vasicek or Blume adjustments.

²² Vector has been listed for four years. The unadjusted equity beta estimates derived from four years of weekly observations (0.57, standard error 0.10) and daily observations (0.60, standard error 0.05) respectively have also been obtained from Bloomberg.

42. Assuming a regulatory period of five years that commenced on 1 September 2009, then the industry wide unadjusted asset beta estimate range for the electricity distribution industry in New Zealand would have been between 0.30 and 0.40. Applying the industry wide leverage range of between 40% and 60% (as estimated in the previous section of this paper) implies an industry wide unadjusted equity beta estimate range for the electricity distribution industry in New Zealand of between 0.50 and 1.00.²⁴

Debt Premium (DP, Cost of debt capital (r_d))

43. For a discussion of the debt premium, please refer to paragraphs 217 – 224 of the Revised Draft Guidelines 19 June 2009.

44. The Commission proposes to estimate the industry wide expected cost of debt capital by adding the estimated industry wide debt premium to the risk-free rate. The Commission's proposed approach to estimating the risk-free rate is outlined in the section above on the risk-free rate. The Commission proposes to use comparable company analysis as its primary approach to estimating the industry wide debt premium. This process is set out as "Debt Premium Method 1" below.

45. The information from Bloomberg's A long term credit rated fair value curve is set out as "Debt Premium Method 2" below.

Debt Premium Method 1

46. The Commission proposes to estimate the industry wide debt premium as follows:

- Identify investment grade credit rated entities, listed or unlisted, with publicly traded vanilla²⁵ NZ\$ denominated bonds, which operate electricity distribution businesses in New Zealand;
- As a sense cross check, identify investment grade credit rated entities, listed or unlisted, with publicly traded vanilla NZ\$ denominated bonds, which operate electricity businesses (electricity generators, retailers, and transmission) in New Zealand;
- Also as a sense cross check, identify investment grade credit rated entities, listed or unlisted, with publicly traded vanilla NZ\$ denominated bonds, which operate infrastructure businesses in New Zealand;
- For each of the above entities, obtain the wholesale market mid yield to maturity²⁶ of their publicly traded vanilla NZ\$ denominated nominal bonds

²³ These entities are listed in Appendix 2.

²⁴ The Commission previously applied an approach where it adjusted estimated asset betas by 0.2 to reflect differences in regulatory regimes between the US and other countries. The Commission will consider proposals for adjustments that outline how and why such adjustments should be made in the future, supported by data and other evidence.

²⁵ Senior unsecured nominal fixed coupon debt obligations denominated in NZ\$ without callable, puttable, conversion, profit participation, credit enhanced or collateral features.

²⁶ The market yield to maturity observed is the promised return on debt. Particularly during market stress events, a component of the increase in the observed market yield to maturity may reflect an increased assessed probability of debt default, rather than an increase in the expected return on debt. Therefore, in this situation, when using market yield to maturity data it is important to consider the

and the contemporaneous interpolated mid to mid spread over benchmark New Zealand government NZ\$ denominated nominal bonds as reported by ANZ on the last day of the month before the commencement of the regulatory period;

- For each of the above entities, estimate the annualised interpolated bid spread over benchmark New Zealand government NZ\$ denominated nominal bonds for a residual period to maturity equal to the regulatory period; and
- Estimate the debt premium range for the electricity distribution industry in New Zealand for a residual period to maturity equal to the regulatory period, consistent with a reasonable investment grade long term credit rating, for example S&P BBB+/A-.

47. The estimated annualised interpolated bid spread over benchmark New Zealand government NZ\$ denominated nominal bonds for a regulatory period of five years and the S&P long term credit rating for the entities identified are set out in Table 4 below.²⁷

Table 4: Debt Premia and Credit Ratings		
Name	Debt Premium assuming the five year regulatory period starts 01/09/09	S&P Long Term Credit Rating
NZ EDB		
Powerco	3.97%	BBB
Vector	2.13% ²⁸	BBB+
NZ Electricity Transmission		
Transpower	1.39%	AA-
Other NZ Electricity		
Contact Energy	2.10% ²⁹	BBB
Genesis Energy	1.87%	BBB+
Other NZ		
Auckland International Airport	2.00%	A-

48. The Commission notes that Powerco's debt premium is significantly higher than that of the other entities identified, due to the circumstances of Powerco being different from the other entities identified in the table above.

49. If we assume that a regulatory period of five years commenced on 1 September 2009, then the estimated industry wide debt premium range for the electricity distribution industry in New Zealand, consistent with a reasonable investment grade long term credit rating, for example S&P BBB+ / A-, would have been 1.87% to 2.13%.

50. Unfortunately, none of the entities identified in the table above has publicly traded vanilla NZ\$ denominated bonds maturing more than eight years in the future. The Bloomberg A long term credit rated fair value curve, for a ten year maturity, implies a debt premium of 2.13% which is 16 basis points higher than the

source of the increase in the observed market yield to maturity, as the focus needs to be only on the expected return on debt.

²⁷ The underlying publicly traded vanilla NZ\$ denominated bonds for the entities identified, together with the respective debt premium for each maturity, are set out in Appendix 3.

²⁸ Vector has only one publicly traded vanilla NZ\$ denominated bond maturing 15 Oct 2014.

²⁹ Contact Energy has only one publicly traded vanilla NZ\$ denominated bond maturing 15 May 2014.

Bloomberg A long term credit rated fair value curve five year debt premium of 1.97%.

51. If the Commission were to use a ten year horizon for the debt premium (i.e. independent of the length of the regulatory period) for a regulatory period commencing on 1 September 2009, then the estimated debt premium range would have been at least 16 basis point higher equal to 2.03% to 2.29%.
52. Presently, the Commission does not explicitly account for debt issuance costs / debt facility fees in determining the cost of debt. The Commission's preliminary view is that it is more appropriate to allow for these costs as a cash flow item, rather than through a margin on the cost of capital. Therefore, these costs have not been included in the above debt premium range.

Debt Premium Method 2

53. The Bloomberg A long term credit rated fair value curve for publicly traded vanilla NZ\$ denominated nominal bonds³⁰ implies a debt premium of 1.97% for a five year maturity and a debt premium of 2.13% for a ten year maturity.

³⁰ The Bloomberg A long term credit rated fair value curve considers wholesale market yield to maturity data for publicly traded vanilla NZ\$ denominated bonds of the following entities: Auckland Healthcare, Auckland International Airport, Fonterra, Kiwibank, Tauranga District Council, Telecom.

Appendix 1: Stock Exchange Listed Airport Operators

Table A1: Stock Exchange Listed Airport Operators				
Name	Location	Equity Ticker	Unadjusted Equity Beta	Unadjusted Asset Beta
Aéroports de Paris	France	ADP	0.94	0.70
Airports of Thailand	Thailand	AOT	1.15	0.76
Auckland International Airport	New Zealand	AIA	0.92	0.69
Fraport	Germany	FRA	0.97	0.84
Flughafen Wien	Austria	FLU	0.84	0.67
Flughafen Zuerich	Switzerland	UZAN	1.25	0.72
Grupo Aeroportuario del Centro Norte	Mexico	OMAB	1.00	1.00
Grupo Aeroportuario del Pacifico	Mexico	GAPB	0.59	0.59
Grupo Aeroportuario del Sureste	Mexico	ASURB	0.79	0.79
Macquarie Airports	Australia	MAP	1.18	0.66

Appendix 2: US Electric Integrated

Table A2: US Electric Integrated
Allegheny Energy
Allete
Alliant Energy
Ameren
American Electric Power
Black Hills
Central Vermont Public Service
CH Energy
Cleco
CMS Energy
Consolidated Edison
Constellation Energy
Dominion Resources
DPL
DTE Energy
Duke Energy
Edison International
El Paso Electric
Empire District Electric
Entergy
Exelon
FirstEnergy
FPL
Great Plains Energy
Hawaiian Electric
Idacorp
Integrus Energy
MGE Energy
Northeast Utilities
NSTAR
NV Energy
OGE Energy
Pepco
PG&E
Pinnacle West
PNM Resources
PPL
Progress Energy
Public Service Enterprise
Scana
Southern
Teco Energy
UIL Holdings
Unisource Energy
Unitil
Westar Energy
Wisconsin Energy
Xcel Energy

Appendix 3: New Zealand Entities – Debt Premium

Table 3: New Zealand Entities – Debt Premium			
Name	Maturity Date	Debt Premium	S&P Long Term Credit Rating
NZ EDB			
Powerco	29/03/2011	3.89%	BBB
	28/09/2012	3.99%	
	29/03/2013	3.88%	
	29/06/2015	4.01%	
	28/09/2017	4.03%	
Vector	15/10/2014	2.13%	BBB+
NZ Electricity Transmission			
Transpower	15/12/2010	1.29%	AA-
	12/11/2019	1.52%	
	10/06/2020	1.52%	
Other NZ Electricity			
Contact Energy	15/05/2014	2.10%	BBB
Genesis Energy	15/03/2014	1.84%	BBB+
	15/03/2016	1.97%	
Mighty River Power	15/05/2013	1.75%	BBB+
Other NZ			
Auckland International Airport	29/07/2011	1.74%	A-
	07/11/2012	1.87%	
	28/02/2014	1.99%	
	07/11/2015	2.03%	
	15/11/2016	2.08%	
Wellington International Airport	15/11/2013	2.48%	BBB+