

Contents

General Introduction	1
1 Introduction	1
2 Project Personnel	7
3 Description of the New Zealand Electricity System	11
Part A Customer Requirements	27
1 Introduction	27
2 Scope of Study	29
3 Customer Perceptions	33
4 Customer Needs and Values	43
5 Customer Installation Design	63
6 Performance Measurement	75
7 Customer/Supplier Interactions and Accountabilities	79
8 Views of Customer Associations	91
9 References	103
10 Summary and Conclusions	105
Supplement 1 Tables of Reliability-Worth Values from Literature	111
Supplement 2 Examples of Customer Installation Designs	123
Supplement 3 Comparison of Reported Reliability Performance Indices	127
Supplement 4 Practices and Market Research Reported by NZ Electricity Suppliers	129
Supplement 5 Technical Specifications for Connected Equipment.....	135
Part B Delivery	139
1 Introduction	139
2 Operating Practices	141
3 Power Supply Interruptions	149
4 Design Features and Reliability Implications	163
5 Maintenance Practices	187
6 Measurement of Reliability	195
7 Electricity Distributor Performance Programme	205
Supplement 1 Transmission Reliability Example	217
Supplement 2 Distribution Reliability Example	223
Part C Generation	233
1 Introduction	233
2 Generation Industry Description	237
3 Fuel and Hydrology	247
4 Availability Comparisons	261
5 Plant Component Failure	269
6 A Model for Generation Planning and the Calculation of Generation Reliability	281
7 Planning for New Generation	289
8 Implications for the Future	311

Supplement 1 Availability Performance Indices and Equations	321
Supplement 2 Forced Outages Data	329
Supplement 3 Spinning Reserve Policy	335
Supplement 4 Condition Monitoring	341
Supplement 5 Electricity Supply Industry Power Stations	345
Supplement 6 Dam Safety	347
Recommendations	349
Appendix 1 Project Personnel — Career Outlines	355
Appendix 2 Definitions	361