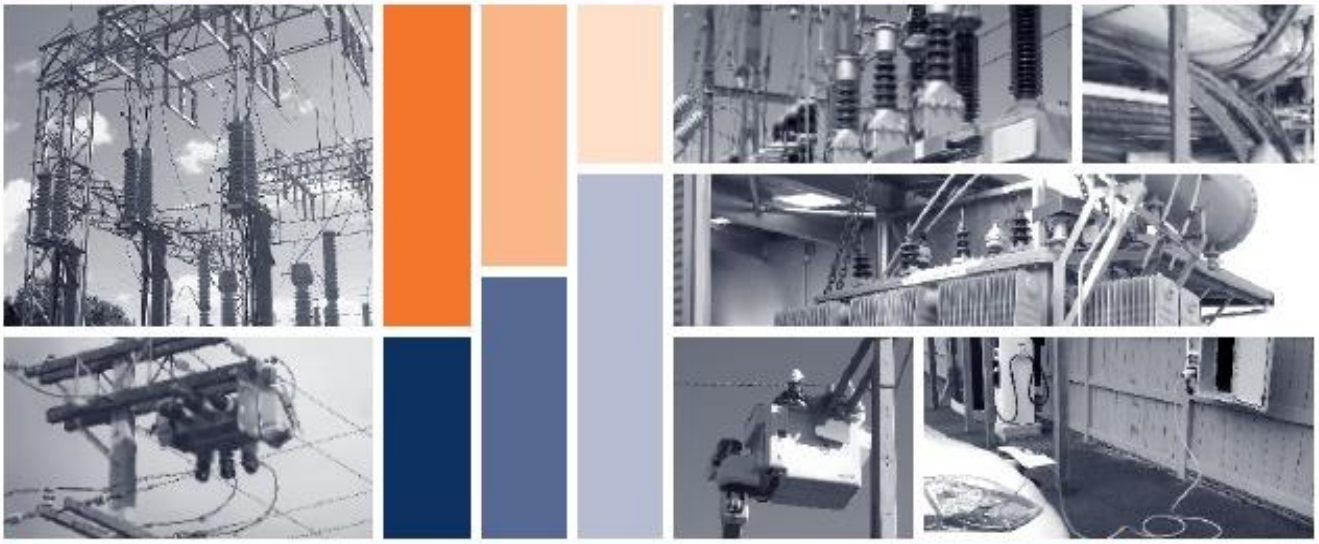
Asset Management Plan Update 2017 – 2027

March 2017



"safe, reliable, hassle free service"

Northpower

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1. Asset Management Plan Update

Northpower publicly disclosed an Asset Management Plan in March 2016 (Asset Management Plan 2016-2026). The 2016 Asset Management Plan is available from Northpower's website at http://northpower.com/about/disclosures/asset-management-plan

In accordance with the Electricity Distribution Information Disclosure Determination 2012 (consolidated in 2015), Northpower is required to complete and publicly disclose before the start of the 2018 disclosure year an Asset Management Plan update for the 10 year period 2017-2027.

The Asset Management plan update must comply with the following requirements:

1. Relate to the electricity distribution services supplied by the EDB
2. Identify any material changes to the network development plans disclosed in the last AMP
3. Identify any material changes to the lifecycle asset management (maintenance and renewal) plans disclosed in the last AMP
4. Provide the reasons for any material changes to the previous disclosures in the Report on Forecast Capital Expenditure set out in Schedule 11a and Report on Forecast Operational Expenditure set out in Schedule 11b
5. Identify any changes to the asset management practices of the EDB that would affect a Schedule 13 Report on Asset Management Maturity disclosure

This Asset Management Plan update details changes to the 2016 Asset Management Plan in accordance with the requirements set out above and therefore needs to be read in conjunction with that document (including the glossary of term).

Stakeholder Feedback

Northpower encourages feedback to enable continued improvement in meeting the needs of consumers and stakeholders.

Feedback should be addressed to:

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2. Network Demand and Performance

2.1 Network Demand

The peak demand on Northpower's network for the year ended 31 March 2016 was 163MW (half-hour average) and 173MW (instantaneous). A total of 1029GWhr of energy was delivered to 56,500 customers.

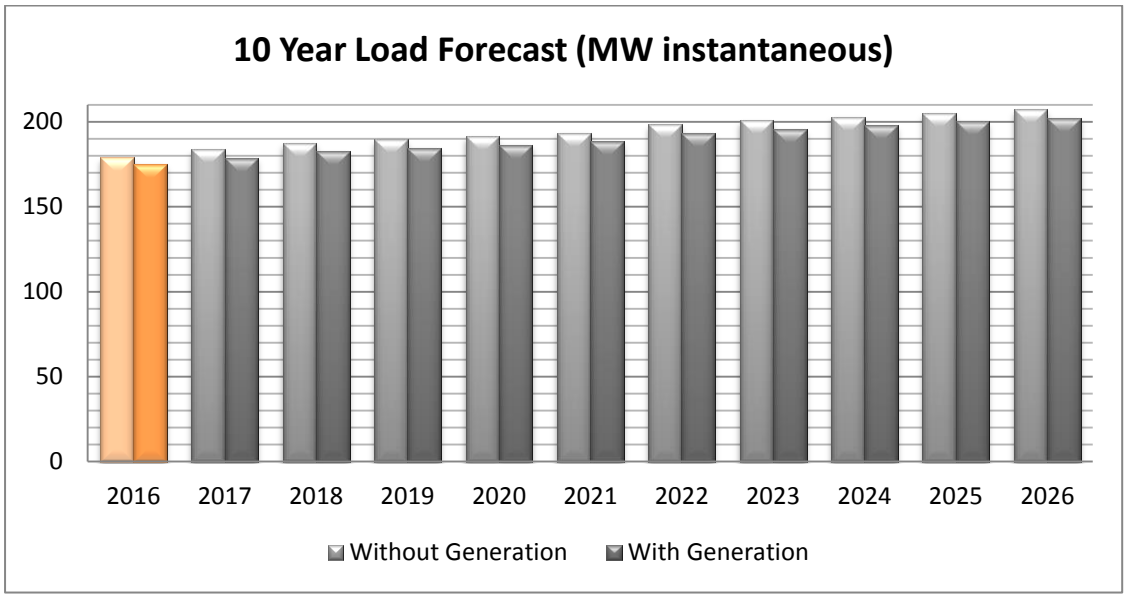
An updated 10 year load forecast (MW instantaneous peak) is shown in the chart below and a more detailed forecast by zone substation and GXP is provided in appendix A.

The 2 significant distributed generation plants (Wairua hydro station and Trustpower diesel peaking station) with a combined output of 15MW have been separated from the GXP stations to which they are connected and grouped together under generation in order to present forecast loadings with no generation and with maximum generation. The reason for this is that generation station output at TOSP (time of system peak) is not predictable and can influence peak demand by as much as 8 per cent.

Growth in maximum demand over the next 10 years is largely dependent on economic activity but developments in the areas of time of use metering for demand side management, electric vehicle battery charging, PV distributed generation and battery storage systems are expected to have an impact on peak demand. As it is difficult to predict the future net effect of these developments no specific allowance has been made in the load forecast at this stage.

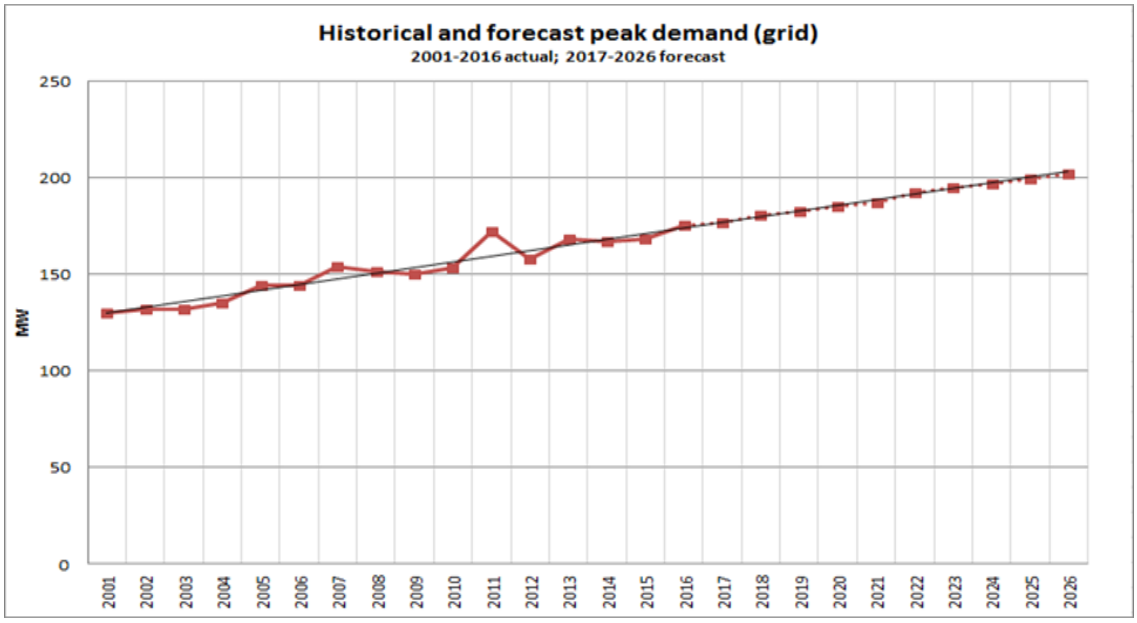
Solar PV system connections

In 2016 Northpower received 236 customer applications for the connection of solar PV systems and 192 connections totalling 638kVA were connected to the network. The total number of solar PV generation systems connected to the network at the end of 2016 was 514 with an installed capacity of 2.1MVA. Less than 2% of these installations are connected to battery storage with the result that the impact of this generation on peak demand is currently negligible as generation does not coincide with early morning and evening peak demand periods.



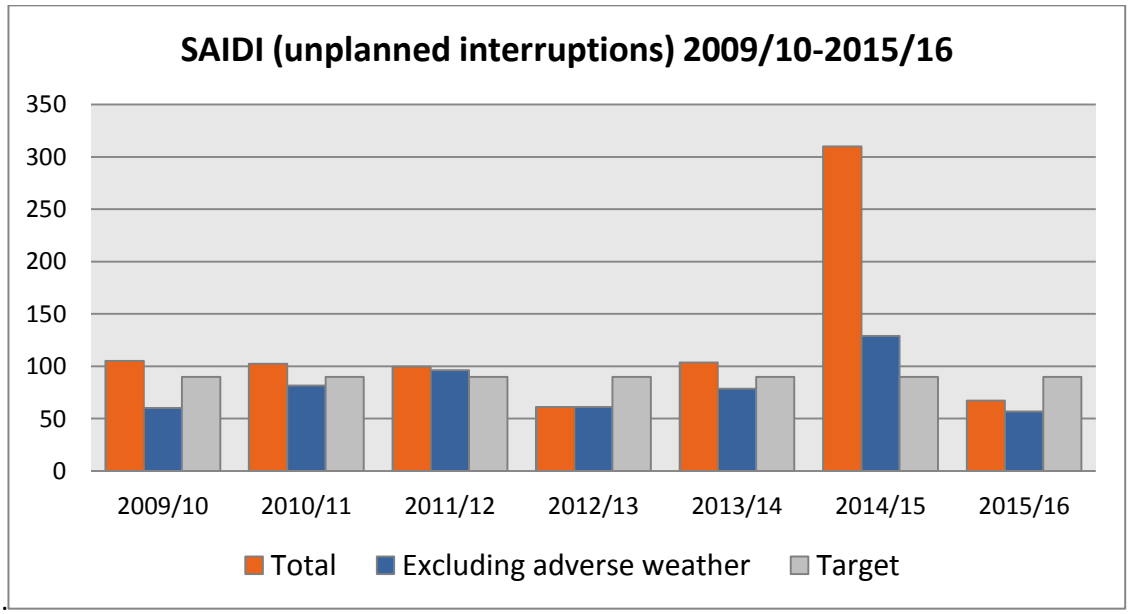
The updated load forecast does not result in the identification of any new capacity constraints for the 10 year period 2017-2026 (refer 2016 AMP section 5.3.6).

The following graph shows Northpower's recorded annual peak demand from 2001 to 2016 as well as the peak demand forecast from 2017 to 2026.

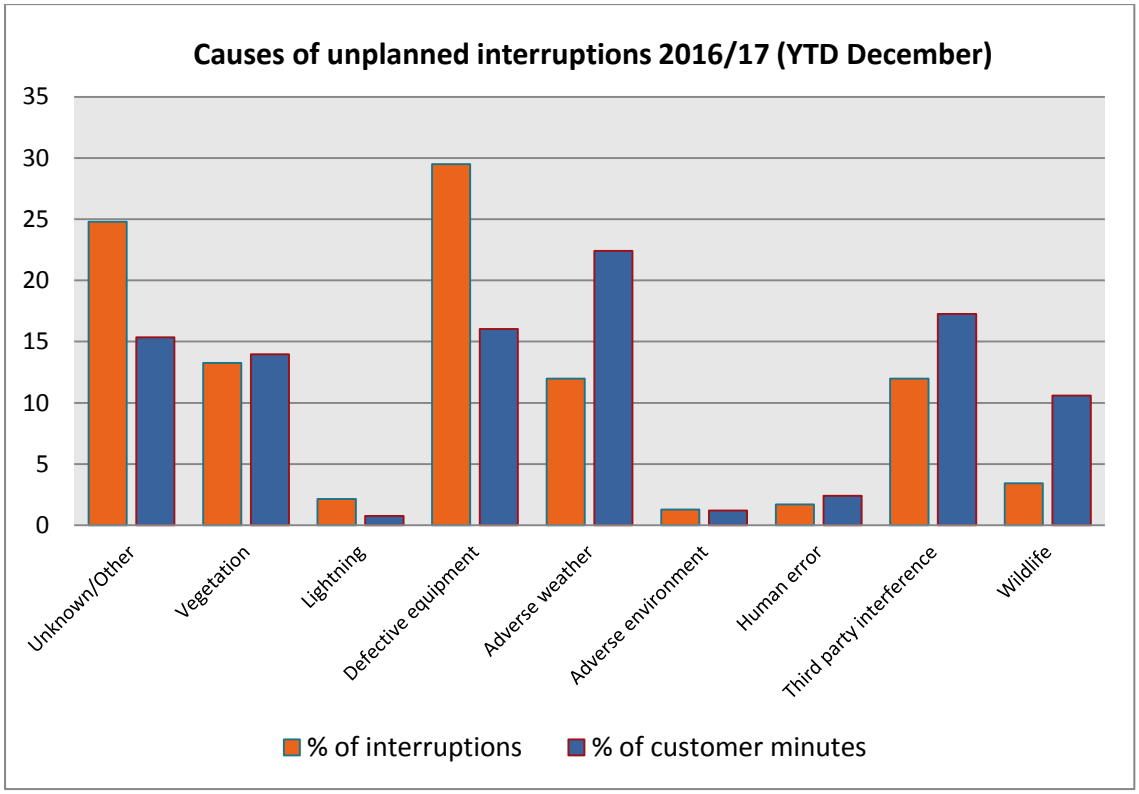


2.2 Network Performance

The graph below shows network performance in terms of SAIDI (unplanned interruptions) for the last 7 years. Apart from the obvious deviation from the general trend in 2014/15 due to extreme weather conditions, performance has been close to target. Performance for 2015/16 was significantly better than target which is a reflection of the results being achieved from continued vegetation management and asset replacement expenditure.



Network performance in terms of causes of unplanned interruptions for the period April through December 2016 is shown in the graph below. Interruptions due to defective equipment continue to rank among the 3 highest causes of faults, accounting for almost 30% of all interruptions during this period. This would indicate that the current level of expenditure on asset replacement needs to be maintained. Note that unknown/other faults are non-permanent faults for which a cause could not be ascertained (likely causes are vegetation, lightning, temporary insulation breakdown or wildlife).



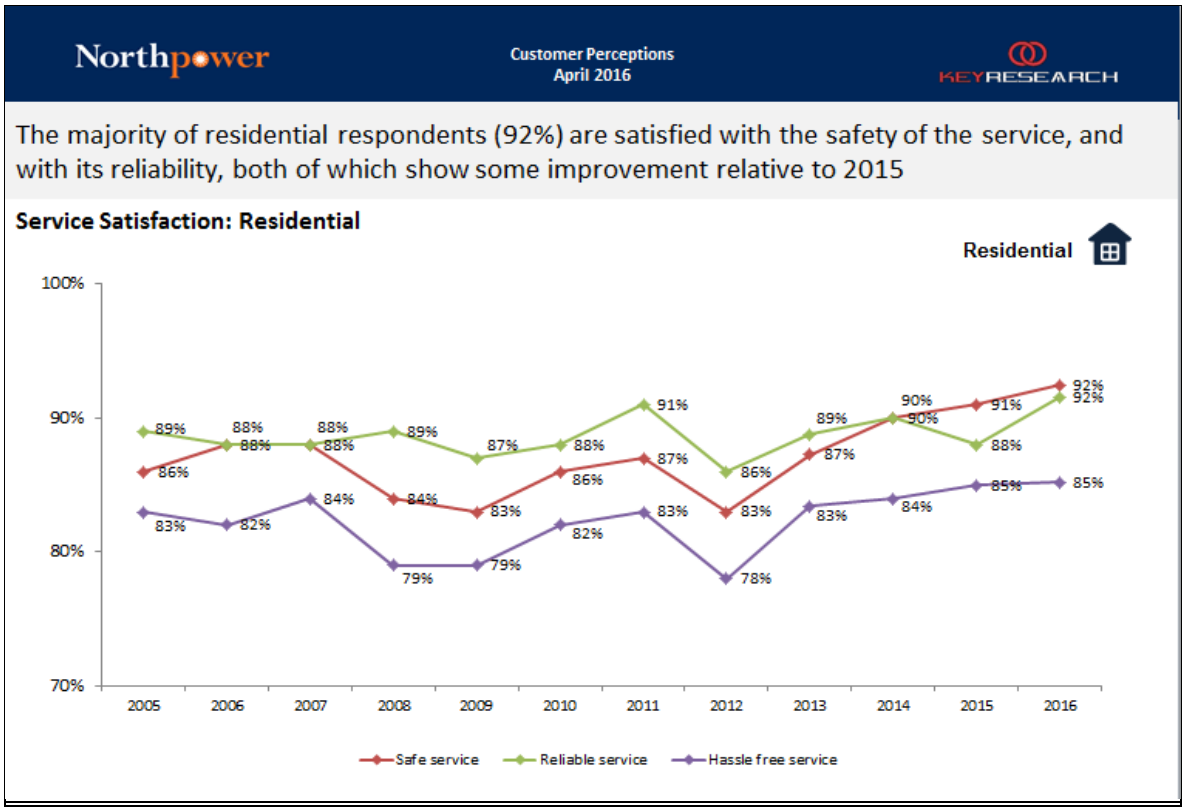
2.3 Customer Satisfaction Survey

Graphs of Northpower customer satisfaction trends (source: 2016 annual customer perceptions survey) from 2005 to 2016 are shown below for residential customers and commercial customers respectively.

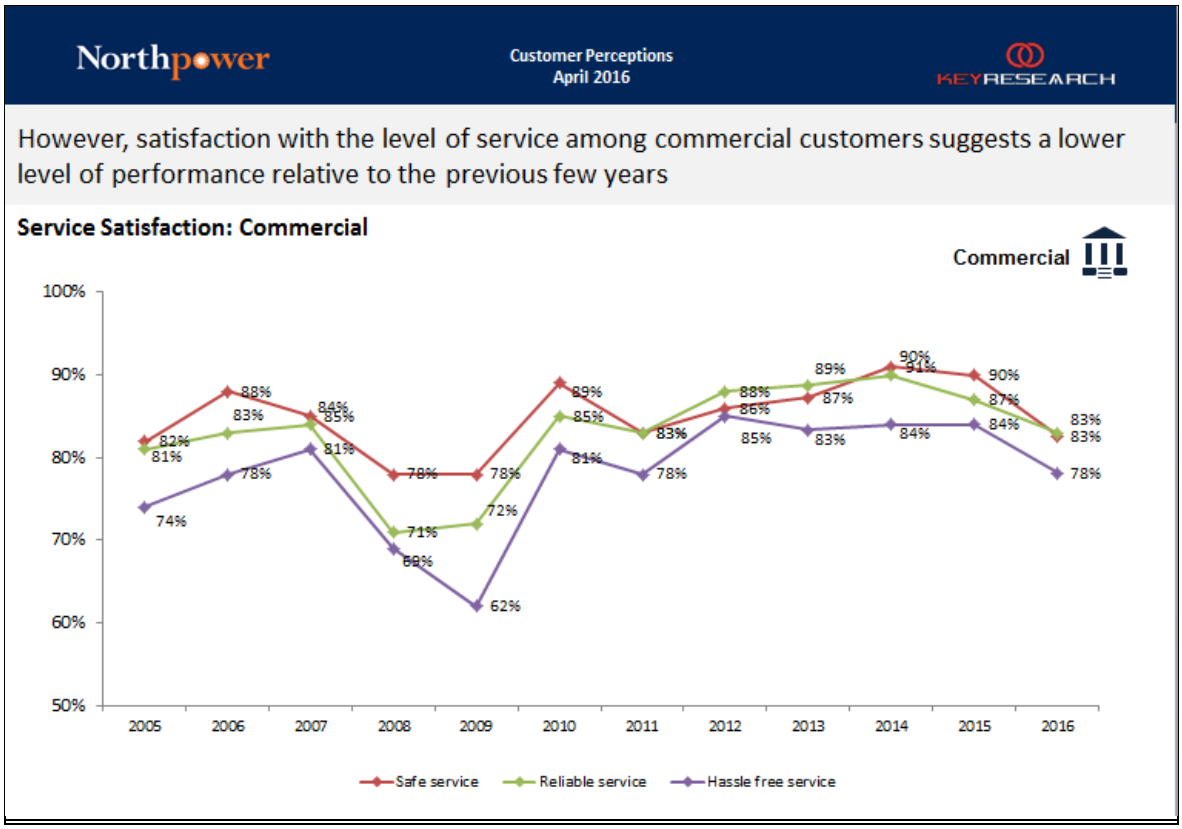
The service reliability trend for residential customers (green curve) appears to indicate an increasing level of satisfaction whereas the level of satisfaction for commercial customers has decreased during the last 2 years.

From a network reliability perspective it is not clear why this should be the case and it is interesting that all 3 aspects show a decreasing level of satisfaction. Further investigation is required to determine the reason for this.

Residential customers:



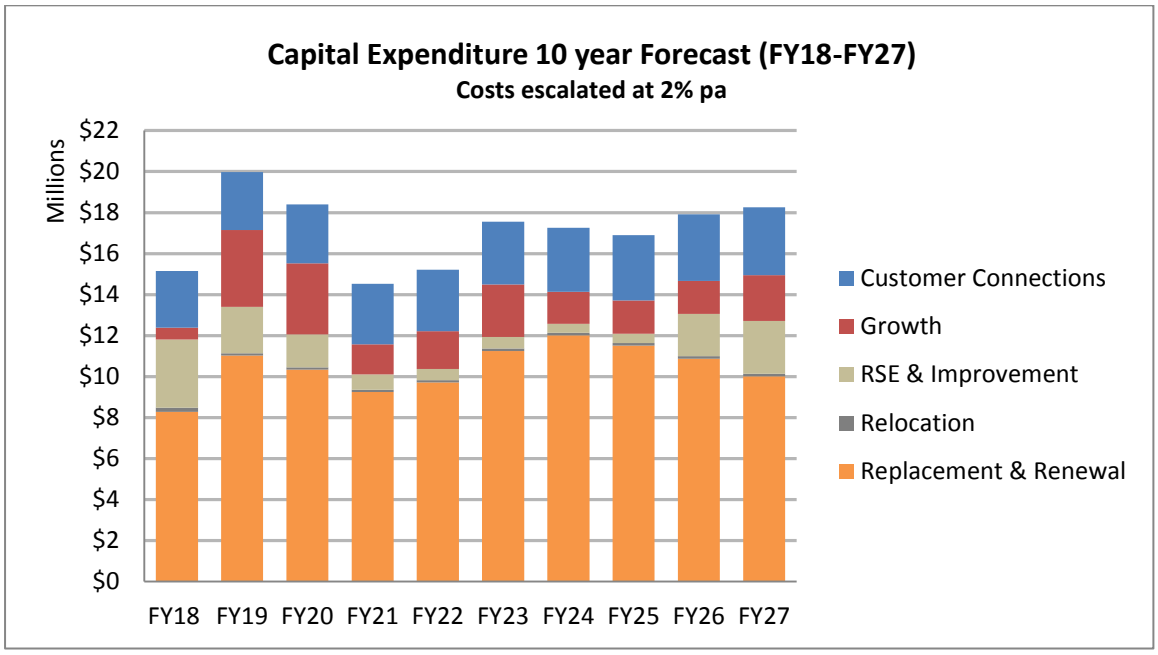
Commercial customers:



3. Changes to the Network Development Plan

3.1 Network Development Plan

An updated 10 year Network Development Plan (CAPEX) is provided in Appendix B.
The following graph shows planned expenditure per disclosure category for the next 10 years.



3.2 Changes to Forecast Capital Expenditure (schedule 11a)

The forecast average annual expenditure for the 10 year period has increased by approximately 20% from that set out in the 2016 AMP. This increase is due mainly to some projects previously deferred, increased subdivision activity and addition of some new projects.

Changes to forecast expenditure are also the result of on-going 10 year plan review of customer connections, network capacity, asset replacement and network performance requirements as well as project re-prioritisation.

3.3 CAPEX Program Progress Summary

The following significant projects have been completed or progressed during the course of 2015-16:

- Western Hills Drive 11kV relocation for road works
- SH1/Kensington Avenue 11kV relocation for road works
- Remote control of 11kV pole mounted switches (multi-year)
- Communications systems upgrades (multi-year)
- 11kV overhead line conductor replacement (multi-year)
- Zone substation security upgrades (multi-year)
- Zone substation RTU and protection relay upgrades (multi-year)

- Maungatapere substation 110/50kV transformers replacements
- 33kV circuit breaker replacements Kamo, Hikurangi, Maungatapere substations
- Waipu feeder voltage regulator
- Kensington substation 33kV VT replacements
- Kioreroa 11kV bus bar arc-flash protection (part)
- Dargaville SCADA link conversion to digital UHF
- Bream Bay-Ruakaka protection upgrade
- Zone substation risk mitigation (multi-year)
- AC/DC panel upgrades (multi-year)
- Power factor transducer installation 11kV feeders (multi-year)
- Maungaturoto 33kV protection upgrade

4. Changes to the Life Cycle Asset Management Plan (Maintenance and Renewal)

4.1 Life Cycle Asset Management Plan

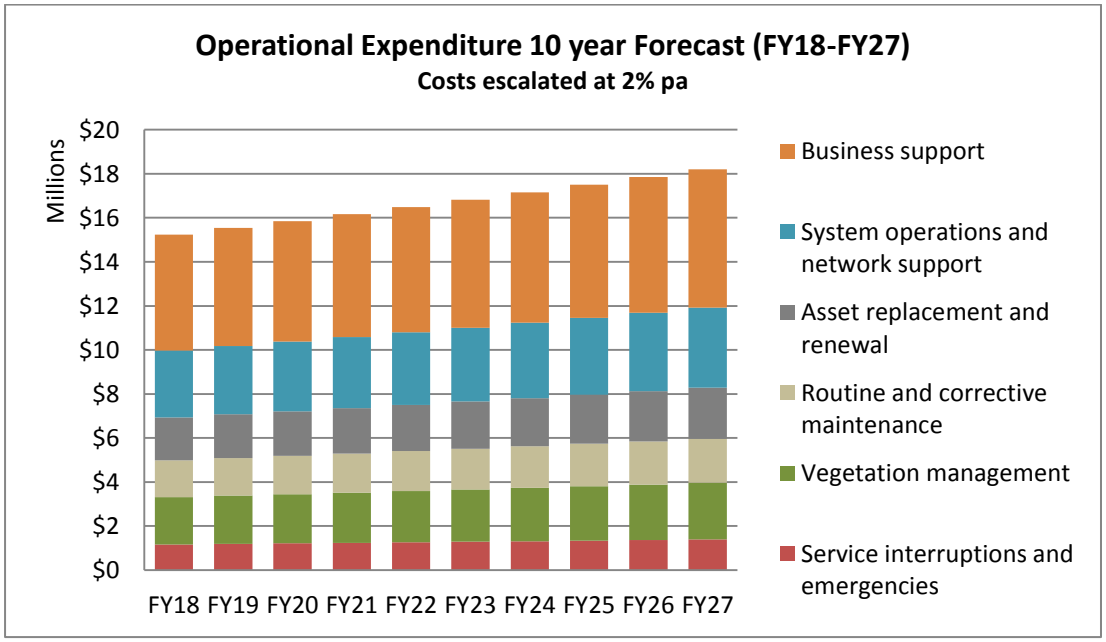
There are no significant changes to Northpower's maintenance and renewal plans with the allocation of resources over the 10 year planning period remaining essentially the same as set out in the 2016 AMP.

Preventative maintenance schedules are reviewed on a continuous basis.

4.2 Operational Expenditure Forecast

The updated 10 year operational expenditure (OPEX) forecast is shown in the graph below.

The proportional allocation of funds to the various activities covering preventative, follow up and remedial maintenance remains essentially the same as in previous years.



4.3 Changes to Forecast Operational Expenditure (schedule 11b)

The forecast average annual expenditure for the 10 year period has increased by approximately 5% from that set out in the 2016 AMP.

The changes to forecast expenditure are the result of on-going asset inspection data analysis, review of progress made with follow up maintenance tasks, preventative maintenance task reviews and future vegetation management requirements

5. Changes to Asset Management Practices

Northpower has not made any fundamental changes to asset management practices subsequent to completing the report on Asset Management Maturity at the beginning of 2013. However, Incremental improvements in existing asset management practice continue to be made, specifically with regard to asset condition monitoring and risk assessment in order to more accurately predict asset end of life.

A major review and updating of network standards is currently being undertaken together with shared access to standards compiled by other electricity distribution businesses.

The following is a list of some other initiatives either in progress or being planned:

- Continued focus on achieving best practice asset management (ISO55000)
- On-going review of the preventative maintenance program to improve efficiency
- In-field electronic data capture and document access
- Migration to a new and improved AMS (asset management system)
- Continued deployment of remote control switches and fault passage indicators
- On-load testing of zone substation battery banks
- Asset inspection by means of UAV (camera equipped drones)
- Asset condition monitoring using ultrasonic and RF detection methods
- Increased power quality measurement and analysis
- Introduction of an OMS (operational management system) to enhance operational management and customer communication concerning network outages

APPENDIX A

NORTHPOWER 10 YEAR LOAD FORECAST	0	1	2	3	4	5	6	7	8	9	10	Notes
STATION (MW instantaneous)	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	
Kensington	**64.3**	**65.6**	**66.6**	**67.1**	**67.9**	**68.9**	**70.0**	**71.1**	**72.2**	**73.3**	**74.4**	
Alexander Street 11kV	14.5	14.6	14.8	14.3	14.4	14.6	14.7	14.9	15.0	15.2	15.3	Load transfer to Maunu
Hikurangi 11kV	5.5	6.0	6.1	6.2	5.8	5.9	6.0	6.2	6.3	6.4	6.5	Load transfer to Helena Bay
Helena Bay 11kV [planned 2020]					1.5	1.5	1.5	1.5	1.6	1.6	1.6	Planned new substation
Kamo 11kV	11.3	11.6	11.9	12.2	12.5	12.8	13.1	13.4	13.8	14.1	14.5	
Ngunguru 11kV	3.4	3.5	3.5	3.6	3.7	3.8	3.8	3.9	4.0	4.1	4.1	
Onerahi 11kV	8.3	8.4	8.5	8.6	8.6	8.7	8.8	8.9	9.0	9.1	9.2	
Parua Bay 11kV	3.3	3.4	3.5	3.5	3.6	3.7	3.7	3.8	3.9	4.0	4.1	
Tikipunga 11kV	15.2	15.4	15.7	15.9	16.1	16.4	16.6	16.9	17.1	17.4	17.6	
Kauri [Industry 1] 33kV	7.6	7.7	7.8	7.8	7.9	8.0	8.1	8.1	8.2	8.3	8.4	
Bream Bay (no generation)	**53.4**	**54.0**	**56.3**	**56.6**	**56.9**	**57.2**	**60.4**	**60.8**	**61.2**	**61.5**	**61.9**	
Bream Bay [industry 2] 33kV	4.6	4.6	4.7	4.7	4.8	4.8	4.9	4.9	5.0	5.0	5.1	
Bream Bay [industry 3] 33kV	39.7	40.0	42.0	42.0	42.0	42.0	45.0	45.0	45.0	45.0	45.0	Expected step load increases
Bream Bay 11kV	4.3	4.4	4.6	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.8	
Ruakaka 11kV	6.3	6.5	6.6	6.8	6.9	7.0	7.2	7.3	4.5	4.6	4.7	Load transfer to Waipu
Waipu 11kV [planned 2023]									3.0	3.1	3.1	Planned new substation
Maungatapere (no generation)	**41.5**	**44.3**	**44.7**	**45.5**	**45.9**	**46.3**	**46.7**	**47.1**	**47.6**	**48.0**	**48.5**	
Maungatapere [industry 4] 33kV	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	
Maungatapere [industry 5] 33kV	15.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4	Expected step load increase
Maungatapere 11kV	7.0	7.0	7.1	5.7	5.8	5.8	5.9	5.9	6.0	6.1	6.1	Load transfer to Maunu
Kioreroa 11kV	10.6	10.8	11.0	11.3	11.5	11.7	11.9	12.2	12.4	12.7	12.9	
Poroti 11kV	3.0	3.0	3.1	3.1	3.1	3.2	3.2	3.2	3.2	3.3	3.3	
Maunu 11kV [planned 2017]				3.0	3.1	3.1	3.2	3.2	3.3	3.4	3.4	Planned new substation
Whangarei South 11kV	12.5	12.6	12.8	11.9	12.0	12.1	12.3	12.4	12.5	12.6	12.8	Load transfer to Maunu
Dargaville	**10.9**	**11.0**	**11.1**	**11.2**	**11.3**	**11.5**	**11.6**	**11.7**	**11.8**	**11.9**	**12.0**	
Dargaville 11kV	10.9	11.1	11.2	11.4	11.6	11.7	11.9	12.1	12.3	12.5	12.6	
Maungaturoto	**17.4**	**17.7**	**18.0**	**18.3**	**18.6**	**18.9**	**19.2**	**19.6**	**19.9**	**20.2**	**20.6**	
Maungaturoto 11kV	3.0	3.0	3.1	3.1	3.1	3.2	3.2	3.2	3.2	3.3	3.3	
Maungaturoto [industry 6] 11kV	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Ruawai 11kV	3.1	3.2	3.2	3.2	3.3	3.3	3.3	3.4	3.4	3.4	3.5	
Kaiwaka 11kV	2.0	2.0	2.1	2.1	2.2	2.2	2.3	2.3	2.3	2.4	2.4	
Mangawhai 11kV	7.6	7.8	8.1	8.3	8.6	8.8	9.1	9.3	9.6	9.9	10.2	
Mareretu 11kV	2.7	2.8	2.8	2.9	2.9	2.9	3.0	3.0	3.1	3.1	3.2	
Network ADMD (no generation)	**178.8**	**183.8**	**187.6**	**189.5**	**191.3**	**193.4**	**198.3**	**200.5**	**202.7**	**205.0**	**207.3**	Average increase: 1.5% pa
Generation (at TOSP)	**-3.6**	**-5.0**	**-5.0**	**-5.0**	**-5.0**	**-5.0**	**-5.0**	**-5.0**	**-5.0**	**-5.0**	**-5.0**	
Wairua PS (Maungatapere GXP) 33kV	-3.6	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0	Assumed station output at TOSP
Trustpower PS (Bream Bay GXP) 11kV	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Assumed station output at TOSP
Network ADMD (with generation)	**175.2**	**178.8**	**182.6**	**184.5**	**186.3**	**188.4**	**193.3**	**195.5**	**197.7**	**200.0**	**202.3**	Average increase: 1.4% pa

APPENDIX B

NORTHPOWER EDB 10 YEAR CAPEX PLAN ($000)												
Costs escalated at 2% p.a.			1	2	3	4	5	6	7	8	9	10
WS	PROJECT TITLE	CATEGORY	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27
6108	Transformer Acquisition Cost	Customer Connections	1,072	1,094	1,115	1,137	1,160	1,183	1,207	1,231	1,256	1,281
6109	Transformer Credits from Upgrades	Customer Connections	-260	-265	-270	-276	-282	-287	-292	-299	-305	-311
6463	Ripple relay purchases	Customer Connections	60	61	62	63	64	66	67	68	69	70
6107	Capital contributions	Customer Connections	1,900	1,938	1,977	2,016	2,056	2,098	2,140	2,183	2,226	2,271
	Total	**Customer Connections**	**2,772**	**2,827**	**2,883**	**2,940**	**2,999**	**3,060**	**3,122**	**3,183**	**3,246**	**3,311**
6198	Power Factor Improvement	Growth	50	100			108				117	
6400	Whangarei City additional 11kV RMU's	Growth		50			52				56	
6401	Minor capital expenditure (growth)	Growth	75	54	56	57	58	59	60	61	62	63
6430	Distribution Transformer & LV Feeder Optimisation	Growth	58	60	61	62	63	64	66	67	68	69
6449	Power Factor Monitoring 11kV Feeders	Growth		78	80							
6461	Maunu Substation Construction	Growth	75	1,310	1,900							
6472	Whangarei South 33kV T - Stage 2	Growth	200	700								
6479	Waipu Zone Substation	Growth						2,437	1,241			
6480	Bream Bay Second 10MVA Transformer	Growth					1,561					
6481	Bream Bay New 11kV Feeder	Growth		330								
6603	Onerahi transformer upgrade (2x10MVA)	Growth	100	665								
6489	Kensington-Kamo Third Circuit	Growth								1,268	1,294	1,846
6492	Helena Bay substation	Growth			1,148	1,171						
6595	Distribution feeder voltage support	Growth		185		190			200			250
6551	Land Purchases (future substations Waipu, Helena Bay)	Growth		204	208					230		
6573	EV Charging Stations	Growth	20									
	Total	**Growth**	**578**	**3,736**	**3,453**	**1,480**	**1,843**	**2,560**	**1,567**	**1,626**	**1,597**	**2,228**
6402	Minor capital expenditure (relocation)	Relocation	54	54	56	57	58	59	60	61	62	63
6539	Dargaville ripple plant relocation	Relocation	50									
6540	Whangarei roading works asset relocations	Relocation	100	51	52	53	54	55	56	57	59	60
	Total	**Relocation**	**204**	**105**	**108**	**110**	**112**	**114**	**116**	**118**	**121**	**123**
6274	RTU Upgrades (Zone substations)	Replacement & Renewal	100	50						200	204	
6596	Remote switch RTU and comms replacements	Replacement & Renewal						60	61	62	64	
6597	Security systems replacements	Replacement & Renewal							75	77	78	80
6598	Ripple injection plant replacements	Replacement & Renewal				100	102	104	106			
6599	Battery bank and battery charger upgrades	Replacement & Renewal		50		52		54		56		58
6600	SCADA system hardware and software replacements	Replacement & Renewal	150	60			300				120	
6601	Microwave radio terminal (Airmux) link replacements	Replacement & Renewal						100				
6393	Power transformer refurbishment	Replacement & Renewal		150	155		160		165		170	
6531	Ahikiwi Voltage regulator upgrade	Replacement & Renewal			250							
6604	Helena Bay voltage regulator upgrade	Replacement & Renewal		250								
6396	Protection Relay Upgrades	Replacement & Renewal	122	125	127	131	134	136	139	142	145	148
6397	33kV CT, VT and protection upgrades	Replacement & Renewal	75		80		85		90		95	
6448	AUFLS Relay Upgrades	Replacement & Renewal	150									
6494	Ngunguru transformer upgrade to 5MVA (ex Hikurangi)	Replacement & Renewal			55							
6483	Parua Bay transformer upgrade to 5MVA (ex Hikurangi)	Replacement & Renewal			55							
6501	Kaiwaka 11kV Switchboard replacement	Replacement & Renewal			1,267							
6502	Ruawai 11kV Switchboard replacement	Replacement & Renewal			1,267							

6503	Hikurangi 11kV Switchboard replacement	Replacement & Renewal	85	1,421								
6504	Whangarei South 11kV Switchboard replacement	Replacement & Renewal	85	1,383								
6505	Ngunguru 11kV Switchboard replacement	Replacement & Renewal					1,045					
6506	Poroti 11kV Switchboard replacement	Replacement & Renewal				1,296						
6507	Tap Changer Controller Upgrades	Replacement & Renewal			57			61			65	
6510	Maungatapere 110/33kV Transformer replacement	Replacement & Renewal								1,944	1,925	
6512	Kensington 110/33kV Transformer replacement	Replacement & Renewal						2,641	2,693			
6522	Abbey System Comms Upgrade	Replacement & Renewal	15	90								
6529	Maungaturoto 11kV Switchboard replacement	Replacement & Renewal								1,209		
6530	Whangarei Hospital 11kV Switchboard replacement	Replacement & Renewal	100	300								
6513	GXP ION meter upgrades	Replacement & Renewal	100									
6532	Chip Mill Transformer Replacement	Replacement & Renewal				450						
6533	Hikurangi Transformer replacements (ex Onerahi)	Replacement & Renewal		100								
6534	Poroti Transformer Replacement	Replacement & Renewal							512			
6535	Ruawai Transformer Replacement	Replacement & Renewal					492					
6605	Ruakaka T2 replacement	Replacement & Renewal										575
6606	Whangarei South transformer replacements	Replacement & Renewal										1,000
6536	Maungaturoto Transformer Replacements	Replacement & Renewal						565	576			
6563	Ruakaka 33kV CB Replacement x2	Replacement & Renewal	100									
6564	Tikipunga 33kV CB Replacements x3	Replacement & Renewal	175									
6571	WASP Replacement	Replacement & Renewal	100	100								
6586	Recloser replacements	Replacement & Renewal				65		70		75		80
6587	Long & Crawford GMS replacement	Replacement & Renewal	145	100	102	104	106	108	110	113	115	117
6588	Recloser controller upgrades	Replacement & Renewal			10			12				14
6589	Kensington-Maungatapere protection comms	Replacement & Renewal	40									
6584	Kensington transformer T2 replacement	Replacement & Renewal	450									
6583	Communications System Upgrades	Replacement & Renewal	75	75			100				100	
	Subtotal (Projects)		**2,067**	**4,254**	**3,425**	**2,198**	**2,524**	**3,911**	**4,527**	**3,878**	**3,081**	**2,072**
9490	Battery banks	Replacement & Renewal	24	25	25	26	26	27	27	28	28	29
9490	Communications	Replacement & Renewal	20	20	21	21	22	22	23	23	23	24
9490	Conductor replacement	Replacement & Renewal	1,400	1,876	1,914	1,952	1,991	2,031	2,072	2,113	2,155	2,198
9490	Distribution earthing	Replacement & Renewal	290	296	302	308	314	321	327	334	340	347
9490	Ground mounted subs	Replacement & Renewal	126	128	131	134	136	139	142	145	147	150
9490	Overhead lines	Replacement & Renewal	1,820	1,856	1,894	1,931	1,970	2,009	2,050	2,091	2,132	2,175
9490	Overhead switches	Replacement & Renewal	66	67	68	70	71	73	74	76	77	79
9490	Pillars	Replacement & Renewal	194	198	201	205	210	214	218	222	227	231
9490	Pole replacement	Replacement & Renewal	813	830	846	863	880	898	916	934	953	972
9490	Ripple plant	Replacement & Renewal	24	25	25	26	26	27	27	28	28	29
9490	Underground cables	Replacement & Renewal	19	20	20	21	21	21	22	22	23	23
9490	Crossarm replacement	Replacement & Renewal	1,414	1,442	1,471	1,500	1,530	1,561	1,592	1,624	1,656	1,689
	Subtotal (Follow up maintenance)		**6,210**	**6,783**	**6,918**	**7,057**	**7,198**	**7,342**	**7,489**	**7,639**	**7,791**	**7,947**
	Total	**Replacement & Renewal**	**8,277**	**11,037**	**10,344**	**9,255**	**9,722**	**11,253**	**12,016**	**11,517**	**10,872**	**10,019**
6348	New Reclosers	RSE & Improvement		45		45			50			55
6403	Maungaturoto TP - Maungaturoto NP fibre	RSE & Improvement	90									
6581	Provision for fibre	RSE & Improvement	100	60	61	62	63	64	66	67	68	69
6608	Maungatapere-Dargaville Fibre (Network share)	RSE & Improvement	1,200									

6370	Zone Substations Risk Mitigation	RSE & Improvement	350	200	200	150						
6374	Zone Substations Security Improvement	RSE & Improvement	62	65			70				75	
6443	Network strategic spare store	RSE & Improvement	25									
6404	Comms for remote control of motorised switches	RSE & Improvement	100	175								
6425	11kV feeder backstopping improvements	RSE & Improvement	75		80			85			90	
6607	Distribution feeder auto-reclosing	RSE & Improvement		25								
6434	DSUB MDI Meters	RSE & Improvement	65	67								
6435	Minor capital expenditure (improvements)	RSE & Improvement	150	100	102	104	106	108	110	112	114	116
6447	AC/DC Panel Upgrades	RSE & Improvement	100	50	50							
6466	Replace VHF Analog with Digital (Mobile Radio)	RSE & Improvement	150									
6497	Whakapara Feeder Express Line to Hikurangi	RSE & Improvement	45	250	250							
6508	Maungatapere 33kV Indoor Switchboard	RSE & Improvement									1,293	2,110
6519	Fault Passage Indicators	RSE & Improvement	250	75								
6525	Operational Management System (Control)	RSE & Improvement		500	500							
6537	Maungaturoto 33kV Circuit Separation	RSE & Improvement		258								
6544	Chipmill RTU and Comms	RSE & Improvement	16									
6609	Mareretu substation 33kV switch upgrades	RSE & Improvement	150									
6546	Research and Development (component testing)	RSE & Improvement	75	75	76	78	80	81	83	85	86	88
6560	Communications Network Security	RSE & Improvement	35				50				60	
6565	Zone Substation Neutral Earthing Resistors	RSE & Improvement		122	125	128		100			105	
6566	KEN-TIK 33kV cables protection upgrade	RSE & Improvement	50									
6567	Busbar Arc Flash Protection	RSE & Improvement	51	52	53							
6569	Aerial Imagery (GIS)	RSE & Improvement					40				50	
6572	Engineering hardware/Software	RSE & Improvement	50			50				55		
6574	UAV Asset Inspection Platform	RSE & Improvement	30	30								
6577	University Project Collaboration	RSE & Improvement	15	16	16	16	16	17	17	17	17	18
6590	Research and Development (new technology)	RSE & Improvement		100	102	104	106	106	110	113	115	117
6591	SCADA comms transfer to dark fibre	RSE & Improvement	40									
6592	Remote station SCADA monitoring	RSE & Improvement	50									
	Total	**RSE & Improvement**	**3,324**	**2,265**	**1,615**	**737**	**531**	**561**	**436**	**449**	**2,073**	**2,573**
	Total EDB		**15,155**	**19,970**	**18,402**	**14,523**	**15,207**	**17,549**	**17,257**	**16,894**	**17,909**	**18,254**

APPENDIX C

Electricity Distribution Services Information Disclosure Determination 2012 as consolidated in 2015

Schedule 17: Certification for Year-beginning Disclosures

(Asset Management Plan and Forecast Information)

Clause 2.9.1

We, NICOLE DAVIES-COLLEY & MARK TRIGG , being directors of Northpower Limited certify that, having made all reasonable enquiry, to the best of our knowledge:

a) The following attached information of Northpower Limited prepared for the purposes of clauses 2.6.1, 2.6.3, 2.6.6 and 2.7.2 of the Electricity Distribution Information Disclosure Determination 2012 in all material respects complies with that determination.

b) The prospective financial or non-financial information included in the attached information has been measured on a basis consistent with regulatory requirements or recognised industry standards.

c) The forecasts in Schedules 11a, 11b, 12a, 12b, 12c and 12d are based on objective and reasonable assumptions which both align with Northpower Limited's corporate vision and strategy and are documented in retained records.

.....

.....

[Signatures of 2 directors]

Date 22/3/17.

APPENDIX D

Electricity Distribution Information Disclosure Determination 2012 – (consolidated in 2015)

Schedule 14a - Mandatory Explanatory Notes on Forecast Information

1. This Schedule requires EDBs to provide explanatory notes to reports prepared in accordance with clause 2.6.6.

2. This Schedule is mandatory—EDBs must provide the explanatory comment specified below, in accordance with clause 2.7.2. This information is not part of the audited disclosure information, and so is not subject to the assurance requirements specified in section 2.8.

Commentary on difference between nominal and constant price capital expenditure forecasts (Schedule 11a)

3. In the box below, comment on the difference between nominal and constant price capital expenditure for the disclosure year and 10 year planning period, as disclosed in Schedule 11a.

Future expenditures have been escalated at a rate of 2% per annum in accordance with published NZ Government CPI forecasts

Commentary on difference between nominal and constant price operational expenditure forecasts (Schedule 11b)

4. In the box below, comment on the difference between nominal and constant price operational expenditure for the disclosure year and 10 year planning period, as disclosed in Schedule 11b.

Future expenditures have been escalated at a rate of 2% per annum in accordance with published NZ Government CPI forecasts

APPENDIX E

Year-beginning Information Disclosure Schedules (1 April 2017 – 31 March 2027)

Schedule 11a: Report on Forecast Capital Expenditure

Schedule 11b: Report on Forecast Operational Expenditure

Schedule 12a: Report on Asset Condition

Schedule 12b: Report on Forecast Capacity

Schedule 12c: Report on Forecast Network Demand

Schedule 12d: Report on Forecast Interruptions and Duration

Company Name	**Northpower Ltd**
AMP Planning Period	**1 April 2017 – 31 March 2027**

SCHEDULE 11a: REPORT ON FORECAST CAPITAL EXPENDITURE

This schedule requires a breakdown of forecast expenditure on assets for the current disclosure year and a 10 year planning period. The forecasts should be consistent with the supporting information set out in the AMP. The forecast is to be expressed in both constant price and nominal dollar terms. Also required is a forecast of the value of commissioned assets (i.e., the value of RAB additions)
EDBs must provide explanatory comment on the difference between constant price and nominal dollar forecasts of expenditure on assets in Schedule 14a (Mandatory Explanatory Notes).
This information is not part of audited disclosure information.

sch ref			*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*	*CY+6*	*CY+7*	*CY+8*	*CY+9*	*CY+10*
		for year ended	**31 Mar 17**	**31 Mar 18**	**31 Mar 19**	**31 Mar 20**	**31 Mar 21**	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**
	11a(i): Expenditure on Assets Forecast		**$000 (in nominal dollars)**										
	Consumer connection		1,852	2,772	2,827	2,883	2,940	2,999	3,060	3,122	3,183	3,246	3,311
	System growth		365	578	3,736	3,453	1,480	1,843	2,560	1,567	1,626	1,597	2,228
	Asset replacement and renewal		7,119	8,277	11,037	10,344	9,255	9,722	11,253	12,016	11,517	10,872	10,019
	Asset relocations		154	204	105	108	110	112	114	116	118	121	123
	Reliability, safety and environment:												
	Quality of supply		302	776	1,328	830	45	-	85	50	-	90	55
	Legislative and regulatory		59	350	200	200	150	-	-	-	-	-	-
	Other reliability, safety and environment		367	2,198	737	585	542	531	476	386	449	1,983	2,518
	Total reliability, safety and environment		728	3,324	2,265	1,615	737	531	561	436	449	2,073	2,573
	Expenditure on network assets		10,218	15,155	19,970	18,402	14,523	15,207	17,549	17,257	16,894	17,909	18,254
	Expenditure on non-network assets		43	44	45	46	47	48	48	49	50	51	52
	Expenditure on assets		10,261	15,199	20,015	18,448	14,570	15,255	17,597	17,306	16,944	17,960	18,306
	plus Cost of financing		210	304	400	369	291	305	352	346	339	359	366
	less Value of capital contributions		1,176	1,900	1,938	1,977	2,016	2,056	2,098	2,140	2,183	2,226	2,271
	plus Value of vested assets		275	281	286	292	298	304	310	316	322	329	335
	Capital expenditure forecast		9,570	13,884	18,763	17,132	13,143	13,808	16,160	15,828	15,422	16,422	16,736
	Assets commissioned												

		Current Year CY	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*	*CY+6*	*CY+7*	*CY+8*	*CY+9*	*CY+10*
	for year ended	**31 Mar 17**	**31 Mar 18**	**31 Mar 19**	**31 Mar 20**	**31 Mar 21**	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**
		$000 (in constant prices)										
	Consumer connection	1,852	2,718	2,717	2,717	2,716	2,716	2,718	2,718	2,717	2,716	2,716
	System growth	365	567	3,591	3,253	1,367	1,669	2,273	1,364	1,388	1,336	1,828
	Asset replacement and renewal	7,119	7,995	10,488	9,628	8,429	8,684	9,992	10,461	9,829	9,097	8,219
	Asset relocations	154	200	101	102	102	102	101	101	101	101	101
	Reliability, safety and environment:											
	Quality of supply	302	761	1,276	782	42	-	75	44	-	75	45
	Legislative and regulatory	59	343	192	188	139	-	-	-	-	-	-
	Other reliability, safety and environment	367	2,155	708	551	501	481	423	336	383	1,659	2,066
	Total reliability, safety and environment	728	3,259	2,177	1,522	681	481	499	379	383	1,735	2,111
	Expenditure on network assets	10,218	14,738	19,074	17,221	13,296	13,652	15,583	15,023	14,419	14,986	14,975
	Expenditure on non-network assets	43	43	43	43	43	43	43	43	43	43	43
	Expenditure on assets	10,261	14,781	19,117	17,264	13,339	13,695	15,626	15,066	14,462	15,029	15,018
	Subcomponents of expenditure on assets (where known)											
	Energy efficiency and demand side management, reduction of energy losses	-	-	-	-	-	-	-	-	-	-	-
	Overhead to underground conversion	-	-	-	-	-	-	-	-	-	-	-
	Research and development	50	75	75	75	75	75	75	75	75	75	75

		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5	CY+6	CY+7	CY+8	CY+9	CY+10
for year ended		31 Mar 17	31 Mar 18	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22	31 Mar 23	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27
Difference between nominal and constant price forecasts		$000										
Consumer connection		-	54	110	166	224	283	343	404	466	530	595
System growth		-	11	145	199	113	174	287	203	238	261	400
Asset replacement and renewal		-	282	549	716	826	1,038	1,261	1,555	1,687	1,775	1,800
Asset relocations		-	4	4	6	8	11	13	15	17	20	22
Reliability, safety and environment:												
Quality of supply		-	15	52	48	3	-	10	6	-	15	10
Legislative and regulatory		-	7	8	12	11	-	-	-	-	-	-
Other reliability, safety and environment		-	43	29	34	41	50	53	50	66	324	452
Total reliability, safety and environment		-	65	88	93	56	50	63	56	66	338	462
Expenditure on network assets		-	417	896	1,181	1,227	1,555	1,966	2,234	2,475	2,924	3,279
Expenditure on non-network assets		-	1	2	3	4	5	5	6	7	8	9
Expenditure on assets		-	418	898	1,184	1,231	1,560	1,971	2,240	2,482	2,932	3,288

		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
for year ended		31 Mar 17	31 Mar 18	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22
11a(ii): Consumer Connection							
*Consumer types defined by EDB**		$000 (in constant prices)					
Mass market		1,852	2,718	2,717	2,717	2,716	2,716
*include additional rows if needed							
Consumer connection expenditure		1,852	2,718	2,717	2,717	2,716	2,716
less Capital contributions funding consumer connection		1,176	1,863	1,863	1,863	1,862	1,862
Consumer connection less capital contributions		676	855	855	854	854	854
11a(iii): System Growth							
Subtransmission		-	-	-	-	-	-
Zone substations		13	417	3,255	3,144	1,082	1,512
Distribution and LV lines		221	74	230	53	228	53
Distribution and LV cables		-	-	-	-	-	-
Distribution substations and transformers		21	57	57	57	57	57
Distribution switchgear		-	-	48	-	-	47
Other network assets		110	20	-	-	-	-
System growth expenditure		365	567	3,591	3,253	1,367	1,669
less Capital contributions funding system growth		-	-	-	-	-	-
System growth less capital contributions		365	567	3,591	3,253	1,367	1,669

		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
for year ended		31 Mar 17	31 Mar 18	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22
11a(iv): Asset Replacement and Renewal		$000 (in constant prices)					
Subtransmission		36	441	-	-	-	-
Zone substations		201	900	3,079	2,815	1,801	1,754
Distribution and LV lines		6,126	5,340	6,011	6,006	5,771	5,771
Distribution and LV cables		210	209	209	209	209	209
Distribution substations and transformers		440	408	408	408	408	408
Distribution switchgear		31	305	449	170	221	161
Other network assets		75	392	332	20	20	382
Asset replacement and renewal expenditure		7,119	7,995	10,488	9,628	8,429	8,684
less Capital contributions funding asset replacement and renewal		-	-	-	-	-	-
Asset replacement and renewal less capital contributions		7,119	7,995	10,488	9,628	8,429	8,684

11a(v):Asset Relocations

	Project or programme*	Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
for year ended		31 Mar 17	31 Mar 18	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22
		$000 (in constant prices)					
	Dargaville ripple plant relocation	17	49	-	-	-	-
	SCADA equipment relocation	5	-	-	-	-	-
	SH1/Kensington Avenue o/h line relocation	89	98	49	49	49	49
	Minor relocation projects	43	53	52	53	53	53
	*include additional rows if needed						
	All other project or programmes - asset relocations	-	-	-	-	-	-
	Asset relocations expenditure	154	200	101	102	102	102
less	Capital contributions funding asset relocations	-	-	-	-	-	-
	Asset relocations less capital contributions	154	200	101	102	102	102

11a(vi):Quality of Supply

	Project or programme*	Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
for year ended		31 Mar 17	31 Mar 18	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22
		$000 (in constant prices)					
	Comms for remote control motorised switches	73	98	168	-	-	-
	Dsub MDI Meters	33	-	-	-	-	-
	Minor capital expenditure (Imp)	11	-	-	-	-	-
	New reclosers	-	-	43	-	42	-
	Maungaturoto TP-NP fibre	-	88	-	-	-	-
	Distribution feeder auto-reclosing	-	-	24	-	-	-
	Maungaturoto 33kV circuit separation	-	-	248	-	-	-
	Mareretu substation 33kV switch upgrades	-	147	-	-	-	-
	Whakapara feeder express line to Hikurangi	-	44	240	236	-	-
	Fault passage indicators	94	245	72	-	-	-
	11kV feeder backstopping improvements	20	74	-	75	-	-
	KEN-TIK 33kV cables protection	15	49	-	-	-	-
	MTOTP-MTONP Protection Upgrade	20	-	-	-	-	-
	Operational management system	33	-	481	471	-	-
	Chipmill RTU and Comms	3	16	-	-	-	-
	*include additional rows if needed						
	All other projects or programmes - quality of supply	-	-	-	-	-	-
	Quality of supply expenditure	302	761	1,276	782	42	-
less	Capital contributions funding quality of supply						
	Quality of supply less capital contributions	302	761	1,276	782	42	-

11a(vii): Legislative and Regulatory

	Project or programme*	Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
for year ended		31 Mar 17	31 Mar 18	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22
		$000 (in constant prices)					
	Zone substation risk mitigation	59	343	192	188	139	-
	*include additional rows if needed						
	All other projects or programmes - legislative and regulatory	-	-	-	-	-	-
	Legislative and regulatory expenditure	59	343	192	188	139	-
less	Capital contributions funding legislative and regulatory	-	-	-	-	-	-
	Legislative and regulatory less capital contributions	59	343	192	188	139	-

11a(viii): Other Reliability, Safety and Environment

	Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
for year ended	31 Mar 17	31 Mar 18	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22
*Project or programme**	$000 (in constant prices)					
Zone Substation Security Improvement	82	61	62	-	-	63
Network strategic spare store	13	25	-	-	-	-
24V dc polarity correction Maungatapere	3	-	-	-	-	-
AC/DC panel upgrades	-	98	48	47	-	-
Maungatapere-Dargaville fibre (Network share)	-	1,176	-	-	-	-
Zone substation neutral earthing resistors	-	-	117	118	118	-
Engineering software	7	49	-	-	46	-
UAV asset inspection	4	29	29	-	-	-
SF6 Gas Servicing Cart	17	-	-	-	-	-
Replace VHF analog links with digital (MR)	25	147	-	-	-	-
Abbey system comms upgrade	17	-	-	-	-	-
VHF coverage improvement	7	-	-	-	-	-
Digital UHF to Dargaville	16	-	-	-	-	-
Communications network security	17	34	-	-	-	45
SCADA Comms Transfer to Dark Fibre	7	39	-	-	-	-
Remote Station SCADA Monitoring	8	49	-	-	-	-
Aerial imagery	5	-	-	-	-	36
University project collaboration	3	15	15	15	15	14
Dsub MDI Meters	12	64	64	-	-	-
FTCE Wilde Unit Replacements x 2	10	-	-	-	-	-
Minor capital expenditure (Imp)	27	147	96	96	96	96
Research and Development (new technology)	19	-	96	96	96	96
33kV ABS Replacements x 2	3	-	-	-	-	-
Busbar arc flash protection	52	50	50	50	-	-
Depot Security Improvements	2	-	-	-	-	-
SCADA server hardware/software	1	-	-	-	-	-
SCADA switch and GPS time sync	5	-	-	-	-	-
Research and development (component testing)	5	74	72	72	72	72
Provision for fibre	-	98	57	57	57	57
All other projects or programmes - other reliability, safety and environment	-	-	-	-	-	-
Other reliability, safety and environment expenditure	367	2,155	708	551	501	481
less Capital contributions funding other reliability, safety and environment	-	-	-	-	-	-
Other reliability, safety and environment less capital contributions	367	2,155	708	551	501	481

11a(ix): Non-Network Assets

	Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
for year ended	31 Mar 17	31 Mar 18	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22
Routine expenditure						
*Project or programme**	$000 (in constant prices)					
Vehicles	43	43	43	43	43	43
include additional rows if needed						
All other projects or programmes - routine expenditure	-	-	-	-	-	-
Routine expenditure	43	43	43	43	43	43
Atypical expenditure						
*Project or programme**						
[Description of material project or programme]	-	-	-	-	-	-
include additional rows if needed						
All other projects or programmes - atypical expenditure	-	-	-	-	-	-
Atypical expenditure	-	-	-	-	-	-
Expenditure on non-network assets	43	43	43	43	43	43

Company Name	**Northpower Ltd**
AMP Planning Period	**1 April 2017 – 31 March 2027**

SCHEDULE 11b: REPORT ON FORECAST OPERATIONAL EXPENDITURE

This schedule requires a breakdown of forecast operational expenditure for the disclosure year and a 10 year planning period. The forecasts should be consistent with the supporting information set out in the AMP. The forecast is to be expressed in both constant price and nominal dollar terms.
EDBs must provide explanatory comment on the difference between constant price and nominal dollar operational expenditure forecasts in Schedule 14a (Mandatory Explanatory Notes).
This information is not part of audited disclosure information.

sch ref												
7		*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*	*CY+6*	*CY+7*	*CY+8*	*CY+9*	*CY+10*
8	for year ended	**31 Mar 17**	**31 Mar 18**	**31 Mar 19**	**31 Mar 20**	**31 Mar 21**	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**
9	**Operational Expenditure Forecast**	**$000 (in nominal dollars)**										
10	Service interruptions and emergencies	1,296	1,169	1,192	1,216	1,241	1,265	1,291	1,316	1,343	1,370	1,397
11	Vegetation management	1,978	2,150	2,193	2,237	2,282	2,327	2,374	2,421	2,470	2,519	2,569
12	Routine and corrective maintenance and inspection	1,469	1,675	1,709	1,743	1,778	1,813	1,849	1,886	1,924	1,963	2,002
13	Asset replacement and renewal	1,479	1,943	1,982	2,021	2,062	2,103	2,145	2,188	2,232	2,277	2,322
14	**Network Opex**	6,222	6,937	7,076	7,217	7,362	7,509	7,659	7,812	7,968	8,128	8,290
15	System operations and network support	2,970	3,036	3,097	3,159	3,222	3,286	3,352	3,419	3,487	3,557	3,628
16	Business support	5,829	5,263	5,368	5,476	5,585	5,697	5,811	5,927	6,046	6,166	6,290
17	**Non-network opex**	8,799	8,299	8,465	8,634	8,807	8,983	9,163	9,346	9,533	9,724	9,918
18	**Operational expenditure**	15,021	15,236	15,541	15,852	16,169	16,492	16,822	17,158	17,501	17,851	18,208

19		*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*	*CY+6*	*CY+7*	*CY+8*	*CY+9*	*CY+10*
20	for year ended	**31 Mar 17**	**31 Mar 18**	**31 Mar 19**	**31 Mar 20**	**31 Mar 21**	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**
21		**$000 (in constant prices)**										
22	Service interruptions and emergencies	1,296	1,296	1,296	1,296	1,296	1,296	1,296	1,296	1,296	1,296	1,296
23	Vegetation management	1,978	1,978	1,978	1,978	1,978	1,978	1,978	1,978	1,978	1,978	1,978
24	Routine and corrective maintenance and inspection	1,469	1,469	1,469	1,469	1,469	1,469	1,469	1,469	1,469	1,469	1,469
25	Asset replacement and renewal	1,479	1,479	1,479	1,479	1,479	1,479	1,479	1,479	1,479	1,479	1,479
26	**Network Opex**	6,222	6,222	6,222	6,222	6,222	6,222	6,222	6,222	6,222	6,222	6,222
27	System operations and network support	2,970	2,970	2,970	2,970	2,970	2,970	2,970	2,970	2,970	2,970	2,970
28	Business support	5,829	5,829	5,829	5,829	5,829	5,829	5,829	5,829	5,829	5,829	5,829
29	**Non-network opex**	8,799	8,799	8,799	8,799	8,799	8,799	8,799	8,799	8,799	8,799	8,799
30	**Operational expenditure**	15,021	15,021	15,021	15,021	15,021	15,021	15,021	15,021	15,021	15,021	15,021
31	**Subcomponents of operational expenditure (where known)**											
32	Energy efficiency and demand side management, reduction of energy losses	-	-	-	-	-	-	-	-	-	-	-
33	Direct billing*	-			-	-	-	-	-	-	-	
34	Research and Development	50	50	50	50	50	50	50	50	50	50	50
35	Insurance	100	100	100	100	100	100	100	100	100	100	100
36	** Direct billing expenditure by suppliers that direct bill the majority of their consumers*											
37												
38		*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*	*CY+6*	*CY+7*	*CY+8*	*CY+9*	*CY+10*
39	for year ended	**31 Mar 17**	**31 Mar 18**	**31 Mar 19**	**31 Mar 20**	**31 Mar 21**	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**	**31 Mar 25**	**31 Mar 26**	**31 Mar 27**
40	**Difference between nominal and real forecasts**	**$000**										
41	Service interruptions and emergencies	-	(127)	(104)	(80)	(55)	(31)	(5)	20	47	74	101
42	Vegetation management	-	172	215	259	304	349	396	443	492	541	591
43	Routine and corrective maintenance and inspection	-	206	240	274	309	344	380	417	455	494	533
44	Asset replacement and renewal	-	464	503	542	583	624	666	709	753	798	843
45	**Network Opex**	-	715	854	995	1,140	1,287	1,437	1,590	1,746	1,906	2,068
46	System operations and network support	-	66	127	189	252	316	382	449	517	587	658
47	Business support	-	(566)	(461)	(353)	(244)	(132)	(18)	98	217	337	461
48	**Non-network opex**	-	(500)	(334)	(165)	8	184	364	547	734	925	1,119
49	**Operational expenditure**	-	215	520	831	1,148	1,471	1,801	2,137	2,480	2,830	3,187
50												

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SCHEDULE 12a: REPORT ON ASSET CONDITION

This schedule requires a breakdown of asset condition by asset class as at the start of the forecast year. The data accuracy assessment relates to the percentage values disclosed in the asset condition columns. Also required is a forecast of the percentage of units to be replaced in the next 5 years. All information should be consistent with the information provided in the AMP and the expenditure on assets forecast in Schedule 11a. All units relating to cable and line assets, that are expressed in km, refer to circuit lengths.

sch ref						**Asset condition at start of planning period (percentage of units by grade)**						
	Voltage	**Asset category**	```		**Units**	**Grade 1**	**Grade 2**	**Grade 3**	**Grade 4**	**Grade unknown**	**Data accuracy (1–4)**	**% of asset forecast to be replaced in next 5 years**
10	All	Overhead Line	Concrete poles / steel structure	52,860	No.	5%	43%	21%	26%	5%	3	5.00%
11	All	Overhead Line	Wood poles	1,483	No.	20%	24%	27%	25%	4%	2	10.00%
12	All	Overhead Line	Other pole types	2	No.	50%	0%	50%	0%	0%	4	50.00%
13	HV	Subtransmission Line	Subtransmission OH up to 66kV conductor	293	km	0%	78%	21%	1%	0%	4	-
14	HV	Subtransmission Line	Subtransmission OH 110kV+ conductor	28	km	0%	100%	0%	0%	0%	4	-
15	HV	Subtransmission Cable	Subtransmission UG up to 66kV (XLPE)	10	km	0%	4%	36%	59%	1%	4	-
16	HV	Subtransmission Cable	Subtransmission UG up to 66kV (Oil pressurised)	8	km	0%	99%	1%	0%	0%	4	-
17	HV	Subtransmission Cable	Subtransmission UG up to 66kV (Gas pressurised)	0	km	-	-	-	-	-	N/A	-
18	HV	Subtransmission Cable	Subtransmission UG up to 66kV (PILC)	3	km	0%	95%	5%	0%	0%	4	-
19	HV	Subtransmission Cable	Subtransmission UG 110kV+ (XLPE)	0.1	km	0%	0%	0%	100%	0%	4	-
20	HV	Subtransmission Cable	Subtransmission UG 110kV+ (Oil pressurised)	0	km	-	-	-	-	-	N/A	-
21	HV	Subtransmission Cable	Subtransmission UG 110kV+ (Gas Pressurised)	0	km	-	-	-	-	-	N/A	-
22	HV	Subtransmission Cable	Subtransmission UG 110kV+ (PILC)	0	km	-	-	-	-	-	N/A	-
23	HV	Subtransmission Cable	Subtransmission submarine cable	1	km	0%	100%	0%	0%	0%	1	-
24	HV	Zone substation Buildings	Zone substations up to 66kV	19	No.	16%	68%	5%	11%	0%	4	15.00%
25	HV	Zone substation Buildings	Zone substations 110kV+	1	No.	0%	100%	0%	0%	0%	4	-
26	HV	Zone substation switchgear	22/33kV CB (Indoor)	30	No.	0%	47%	23%	30%	0%	4	-
27	HV	Zone substation switchgear	22/33kV CB (Outdoor)	59	No.	8%	17%	51%	24%	0%	4	8.00%
28	HV	Zone substation switchgear	33kV Switch (Ground Mounted)	10	No.	0%	0%	0%	32%	68%	3	-
29	HV	Zone substation switchgear	33kV Switch (Pole Mounted)	157	No.	0%	0%	1%	31%	68%	2	-
30	HV	Zone substation switchgear	33kV RMU	0	No.	-	-	-	-	-	N/A	-
31	HV	Zone substation switchgear	50/66/110kV CB (Indoor)	0	No.	-	-	-	-	-	N/A	-
32	HV	Zone substation switchgear	50/66/110kV CB (Outdoor)	6	No.	0%	0%	100%	0%	0%	4	-
33	HV	Zone substation switchgear	3.3/6.6/11/22kV CB (ground mounted)	146	No.	26%	18%	7%	49%	0%	4	27.00%
34	HV	Zone substation switchgear	3.3/6.6/11/22kV CB (pole mounted)	0	No.	-	-	-	-	-	N/A	-

	Voltage	Asset category	Asset class		Units	Asset condition at start of planning period (percentage of units by grade) Grade 1	Grade 2	Grade 3	Grade 4	Grade unknown	Data accuracy (1–4)	% of asset forecast to be replaced in next 5 years
39	HV	Zone Substation Transformer	Zone Substation Transformers	42	No.	5%	26%	12%	57%	0%	4	7.00%
40	HV	Distribution Line	Distribution OH Open Wire Conductor	3,498	km	6%	52%	19%	19%	4%	3	10.00%
41	HV	Distribution Line	Distribution OH Aerial Cable Conductor	0	km	-	-	-	-	-	N/A	-
42	HV	Distribution Line	SWER conductor	0	km	-	-	-	-	-	N/A	-
43	HV	Distribution Cable	Distribution UG XLPE or PVC	223	km	0%	3%	19%	73%	5%	4	-
44	HV	Distribution Cable	Distribution UG PILC	39	km	0%	42%	30%	1%	27%	3	5.00%
45	HV	Distribution Cable	Distribution Submarine Cable	2	km	0%	0%	0%	0%	100%	1	-
46	HV	Distribution switchgear	3.3/6.6/11/22kV CB (pole mounted) - reclosers and sectionalisers	29	No.	0%	0%	34%	66%	0%	4	-
47	HV	Distribution switchgear	3.3/6.6/11/22kV CB (Indoor)	0	No.	-	-	-	-	-	N/A	-
48	HV	Distribution switchgear	3.3/6.6/11/22kV Switches and fuses (pole mounted)	6,923	No.	11%	18%	20%	45%	6%	3	15.00%
49	HV	Distribution switchgear	3.3/6.6/11/22kV Switch (ground mounted) - except RMU	30	No.	40%	20%	37%	0%	3%	4	30.00%
50	HV	Distribution switchgear	3.3/6.6/11/22kV RMU	193	No.	0%	6%	43%	51%	0%	4	3.00%
51	HV	Distribution Transformer	Pole Mounted Transformer	5,833	No.	26%	17%	31%	26%	0%	4	25.00%
52	HV	Distribution Transformer	Ground Mounted Transformer	1,366	No.	22%	21%	29%	28%	0%	4	15.00%
53	HV	Distribution Transformer	Voltage regulators	10	No.	0%	20%	20%	60%	0%	4	20.00%
54	HV	Distribution Substations	Ground Mounted Substation Housing	118	No.	26%	43%	19%	11%	0%	4	20.00%
55	LV	LV Line	LV OH Conductor	1,193	km	4%	44%	21%	21%	10%	2	5.00%
56	LV	LV Cable	LV UG Cable	673	km	0%	16%	17%	58%	9%	3	-
57	LV	LV Streetlighting	LV OH/UG Streetlight circuit	397	km	5%	1%	9%	1%	84%	2	5.00%
58	LV	Connections	OH/UG consumer service connections	56,853	No.	0%	35%	44%	16%	5%	4	5.00%
59	All	Protection	Protection relays (electromechanical, solid state and numeric)	356	No.	0%	25%	29%	40%	6%	3	15.00%
60	All	SCADA and communications	SCADA and communications equipment operating as a single system	1	Lot	0%	0%	100%	0%	0%	4	10.00%
61	All	Capacitor Banks	Capacitors including controls	29	No.	0%	0%	31%	69%	0%	4	-
62	All	Load Control	Centralised plant	6	Lot	33%	17%	50%	0%	0%	4	33.00%
63	All	Load Control	Relays	34,212	No.	32%	40%	13%	12%	3%	4	20.00%
64	All	Civils	Cable Tunnels	0	km	-	-	-	-	-	N/A	-

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SCHEDULE 12b: REPORT ON FORECAST CAPACITY

This schedule requires a breakdown of current and forecast capacity and utilisation for each zone substation and current distribution transformer capacity. The data provided should be consistent with the information provided in the AMP. Information provided in this table should relate to the operation of the network in its normal steady state configuration.

sch ref

12b(i): System Growth - Zone Substations

Existing Zone Substations	Current Peak Load (MVA)	Installed Firm Capacity (MVA)	Security of Supply Classification (type)	Transfer Capacity (MVA)	Utilisation of Installed Firm Capacity %	Installed Firm Capacity +5 years (MVA)	Utilisation of Installed Firm Capacity + 5yrs %	Installed Firm Capacity Constraint +5 years (cause)	Explanation
Alexander Street	15	15	N-1	5	97%	15	97%	No constraint within +5 years	
Bream Bay	4	-	N	2	-	10	50%	No constraint within +5 years	
Dargaville	11	15	N-1	3	73%	15	78%	No constraint within +5 years	
Hikurangi	6	5	N-1	2	110%	8	79%	No constraint within +5 years	
Kaiwaka	2	-	N	2	-	-	-	Other	Single transformer substation - backfeed via distribution network
Kamo	11	15	N-1	3	75%	15	85%	No constraint within +5 years	
Kioreroa	11	20	N-1	2	53%	20	59%	No constraint within +5 years	
Mangawhai	8	5	N-1	2	152%	5	176%	Transformer	Backfeed + mobile generation (holiday load)
Marereturu	3	-	N	2	-	-	-	Other	Single transformer substation - backfeed via distribution network
Maungatapere	7	5	N-1	3	140%	5	116%	Transformer	Transfer load
Maungaturoto	6	8	N-1	2	83%	8	85%	No constraint within +5 years	
Ngunguru	3	-	N	2	-	-	-	Other	Single transformer substation - backfeed via distribution network
Onerahi	8	8	N-1	2	111%	8	87%	No constraint within +5 years	
Parua Bay	3	-	N	2	-	-	-	Other	Single transformer substation - backfeed via distribution network
Poroti	3	-	N	2	-	-	-	Other	Single transformer substation - backfeed via distribution network
Ruakaka	6	10	N-1	2	63%	10	70%	No constraint within +5 years	
Ruawai	3	-	N	2	-	-	-	Other	Single transformer substation - backfeed via distribution network
Tikipunga	15	20	N-1	4	76%	20	82%	No constraint within +5 years	
Whangarei South	13	10	N-1	4	125%	10	121%	Transformer	Transfer load
					-				

[1] *Extend forecast capacity table as necessary to disclose all capacity by each zone substation*

Company Name	**Northpower Ltd**
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SCHEDULE 12C: REPORT ON FORECAST NETWORK DEMAND

This schedule requires a forecast of new connections (by consumer type), peak demand and energy volumes for the disclosure year and a 5 year planning period. The forecasts should be consistent with the supporting information set out in the AMP as well as the assumptions used in developing the expenditure forecasts in Schedule 11a and Schedule 11b and the capacity and utilisation forecasts in Schedule 12b.

sch ref

12c(i): Consumer Connections

Number of ICPs connected in year by consumer type

			Number of connections						
			Current Year CY	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*	
		for year ended	**31 Mar 17**	**31 Mar 18**	**31 Mar 19**	**31 Mar 20**	**31 Mar 21**	**31 Mar 22**	
	*Consumer types defined by EDB**								
	Very large industrial		-	-	-	-	-		
	Commercial and Industrial (demand based ND9)		1	1	1	1	1	1	
	Mass market		950	969	988	1,008	1,028	1,049	
	[EDB consumer type]								
	[EDB consumer type]								
	Connections total		951	970	989	1,009	1,029	1,050	
	**include additional rows if needed*								
	Distributed generation								
	Number of connections		190	255	340	450	600	800	
	Capacity of distributed generation installed in year (MVA)		1	1	1	2	2	3	

12c(ii) System Demand

			Current Year CY	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*	
	Maximum coincident system demand (MW)	for year ended	**31 Mar 17**	**31 Mar 18**	**31 Mar 19**	**31 Mar 20**	**31 Mar 21**	**31 Mar 22**	
	GXP demand		165	168	172	173	175	177	
plus	Distributed generation output at HV and above		4	5	5	5	5	5	
	Maximum coincident system demand		169	173	177	178	180	182	
less	Net transfers to (from) other EDBs at HV and above		-	-	-	-	-	-	
	Demand on system for supply to consumers' connection points		169	173	177	178	180	182	
	Electricity volumes carried (GWh)								
	Electricity supplied from GXPs		1,072	1,095	1,117	1,141	1,165	1,189	
less	Electricity exports to GXPs		-	-	-	-	-	-	
plus	Electricity supplied from distributed generation		22	22	22	22	22	22	
less	Net electricity supplied to (from) other EDBs		-	-	-	-	-	-	
	Electricity entering system for supply to ICPs		1,094	1,117	1,139	1,163	1,187	1,211	
less	Total energy delivered to ICPs		1,050	1,071	1,092	1,114	1,137	1,159	
	Losses		44	46	47	49	50	52	
	Load factor		74%	74%	74%	74%	75%	76%	
	Loss ratio		4.0%	4.1%	4.1%	4.2%	4.2%	4.3%	

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Network / Sub-network Name	

SCHEDULE 12d: REPORT FORECAST INTERRUPTIONS AND DURATION

This schedule requires a forecast of SAIFI and SAIDI for disclosure and a 5 year planning period. The forecasts should be consistent with the supporting information set out in the AMP as well as the assumed impact of planned and unplanned SAIFI and SAIDI on the expenditures forecast provided in Schedule 11a and Schedule 11b.

sch ref		*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
8							
9	for year ended	**31 Mar 17**	**31 Mar 18**	**31 Mar 19**	**31 Mar 20**	**31 Mar 21**	**31 Mar 22**
10	**SAIDI**						
11	Class B (planned interruptions on the network)	85.0	85.0	85.0	85.0	85.0	85.0
12	Class C (unplanned interruptions on the network)	90.0	90.0	90.0	90.0	90.0	90.0
13	**SAIFI**						
14	Class B (planned interruptions on the network)	0.24	0.24	0.24	0.24	0.24	0.24
15	Class C (unplanned interruptions on the network)	2.00	2.00	2.00	2.00	2.00	2.00