Asset Management Plan Update

31 March 2019

Letter from our CEO

This is the Aurora Energy Asset Management Plan (AMP) Update for 2019.

Due to the short time since the publication of our 2018 AMP (in October 2018) we have focussed this AMP on an update of our investment plans and how these have been refined since October. The updated plan maintains the elevated levels of investment we believe are needed to upgrade our ageing networks and to cater for future growth.

In late November we received the final Independent Risk Review report from WSP. This review has been a valuable exercise and we welcomed WSP's findings and the insights we received from them. We have considered their conclusions in detail, reflecting them in our updated 2019 AMP investment plans. We are engaging with the Commerce Commission on our response to the issues raised by the review.

To support our future investment plans and ensure we deliver our work effectively we continue to build our team. We are also repositioning the business to improve the way we run our operations and manage our assets. A key part of this is establishing a new, dedicated team to improve customer service and expand our engagement with stakeholders. This includes a new customer connections process to better meet customer expectations and support contractors to meet connection requirements in a timely manner.

As signalled in our 2018 AMP we will submit a CPP application to the Commerce Commission in May 2020. This will propose a new price-quality path to apply from April 2021. We expect this to lead to increased prices for customers and new reliability standards that better reflect our region and network. In the coming months we will discuss the potential implications of this process with customers and will use a range of channels to engage with communities and understand their concerns and preferences. This engagement will begin soon and last until the end of the year. Our final CPP plan will need to be approved by the Commerce Commission before any price changes can take effect.

As a final note, I'd like to reiterate our commitment to ensuring our network is safe. Safety will continue as our number one priority, across all our activities and is the key driver for our investment plans.

Richard Fletcher
CHIEF EXECUTIVE

CONTENTS

1. INTRODUCTION

This Asset Management Plan (AMP) Update relates to the electricity distribution services supplied by Aurora Energy.[1]

Consistent with Information Disclosure requirements we have provided updated forecast expenditure schedules, reports on the condition of our assets and expected future demand on our network. We have not included an updated Report on Asset Management Maturity as there have been no material changes to asset management practices (since the publication of our 2018 AMP).

The remainder of this chapter sets out brief updates on a number of aspects of our business since we published our 2018 AMP in late October 2018. The relatively short time since this date (AMPs are typically published every 12 months) has meant that a number of areas have not seen material change. An example is our underlying demand forecasts that support our growth and security investments.

Below we provide updates on the WSP Independent Risk Review and our upcoming CPP process.

Chapter 2 sets out an explanation of the main changes to our investment plans.

1.1. WSP INDEPENDENT RISK REVIEW

In March 2018, in conjunction with the Commerce Commission, we initiated an independent review of the state of our electricity network. The key aims of the review were to confirm the state of our network and to determine the resulting risk to customers and the wider public. In May 2018, we appointed WSP[2] to independently undertake the review.

In late November, we published the final independent risk review report.[3] This document brought together WSP's views on a range of issues. The review provided important insights and conclusions, including independent assurance that:

- most of our assets pose a low risk to public safety, reliability or the environment
- we are targeting our proposed investments in areas that need it most and will deliver the greatest safety, reliability and resilience benefits
- highlighted the asset fleets (e.g. protection, poles and cross arms) that have a portion of assets whose condition carry a higher public safety risk.

We considered this report in detail and have reflected its findings in our 2019 AMP investment plans. We are continuing to use the review's findings to inform our efforts to improve the condition and performance of our network, including through the following initiatives:

- further accelerating the replacement of high-risk protection relays
- increasing the volume of proactive crossarm and conductor renewals
- reprioritising our zone substation switchgear replacement programme

1 Consistent with Information Disclosure rules, in certain years an electricity distribution business may choose to submit an AMP Update in lieu of a full AMP.

2 WSP is a leading global, engineering consulting firm.

3 The report is available on our website.

– increased levels of asset maintenance including the use of improved inspection techniques.

The independent review has been a valuable exercise and we welcome its overall findings and the insights we received from the process. It has informed our short-term investment priorities and guided us as we look to develop our CPP investment proposals. The review's findings and our discussions with WSP have been important inputs into the planning and delivery of our investment programmes.

We are engaging with the Commission on our plans to respond to the findings of the WSP review.

1.2. CPP PROGRAMME

We will submit a customised price-quality path (CPP) application to the Commission in May 2020 and transition to this mechanism in April 2021. A CPP is a regulatory mechanism that our sector regulator, the Commerce Commission, can use to establish a price-quality path that better suits a company's individual circumstances. We believe a CPP is necessary if we are to deliver a safe and reliable service to customers over the long term. It will fund the required future investment in the network and address the impact of increased planned outages during the rebuild phase.

In late April we plan to formally commence our CPP application process. This process provides a mechanism for the Commerce Commission and stakeholders to review and have a say on our proposed investments. To facilitate this we plan to undertake a series of detailed consultations with customers and other stakeholders. We expect to use a number of engagement channels, including:

– One-on-one meetings
– Online
– Focus groups
– Consumer surveys

These will seek views on price-quality preferences, proposed service measures, plans for increased resilience, safety compliance and performance, impact of new technology, and the impact on consumer pricing. These views will then be taken into account as we develop our future investment plans.

2. UPDATE ON OUR INVESTMENT PLANS

This chapter provides an update on our investment plans since our 2018 AMP published in October 2018. Consistent with Information Disclosure requirements we have focussed the discussion on significant changes to our expenditure categories.

A sustained higher level of expenditure is necessary to stabilise network performance. We are focussing on investment to replace assets that are no longer performing as required, including those identified by WSP. We expect our investment plans to be further refined in the lead up to our CPP proposal and as we consult with customers and other stakeholders.

The following table sets out our ten-year planned expenditure from our 2017 AMP, our 2018 AMP published in October 2018, and our 2019 AMP Update.

Table 2.1: Ten-year network expenditure (nominal dollars, including customer contributions)

	2017 AMP	2018 AMP	2019 AMP
Capital expenditure	$527.5m	$592.8m	$616.9m
Operating expenditure	$191.1m	$155.6m	$174.0m
Total network expenditure	**$719.4m**	**$748.4m**	**$790.9m**

The remainder of the chapter summarises the key changes since our 2018 AMP.

For further details see schedule 11a in Appendix A.

2.1. ASSET REPLACEMENT AND RENEWAL

Our replacement and renewal Capex is split into seven portfolios, aligned with our internal expenditure categories. These are:

- support structures
- overhead conductors
- cables
- zone substations
- distribution switchgear
- distribution transformers
- secondary systems.

Box 2.1: A note on Schedule 12a

We continue to transition to the use of Asset Health Indices (AHI) to monitor the overall state of our asset fleets. Our approach continues to be refined and is broadly aligned with the asset condition categories to be used in Schedule 12a (see Appendix A). However, this change has led to some misalignments with historical disclosures.

Below we explain the main changes to these forecasts since our 2018 AMP published in October 2018.

2.1.1. Support Structures

The support structures fleet primarily comprises pole and crossarm assets. It also includes a small number of steel lattice towers (for example, across Otago Harbour). These assets support our overhead conductor assets.

The predominant change from the 2018 AMP is an increase in crossarm renewals. This decision has been informed by the findings from the independent risk review undertaken by WSP. This includes a focus on replacing Malaysian hardwood crossarms that are susceptible to early failure. We have found these Malaysian hardwood crossarms to be less durable than the Australian hardwoods that we have primarily used. Further inspection and investigation is required to confirm the quantity and condition of Malaysian crossarms. Proactive replacement of crossarms reduces the likelihood of asset failure and lowers associated safety and reliability risks on the network.

Crossarm failures pose a high public safety risk as they may result in live conductors dropping on the ground. Crossarms typically reach end-of-life as a result of age-related cracking and loss of strength as the wood dries out, or because of rotting on the upper side due to moisture ingress. We predominantly have pin-type insulators on crossarms and these pins can accelerate crossarm deterioration, as such we have assumed a reduced expected life compared to other crossarms.

2.1.2. Overhead Conductors

Overhead conductor is a core component of our network. Conductors and overhead structures together comprise our extensive overhead network, connecting customers to the national transmission system.

Our current investment plan includes just under 30% of our conductor fleet to be renewed. Over time we will gradually increase the annual volume of renewals. We plan to phase the increase to ensure the programme can be efficiently delivered and expect similar levels of renewals to continue beyond the 10 year planning period.

2.1.3. Distribution Switchgear

Distribution switchgear is the collective term for equipment used to provide network isolation, protection and switching functions. The distribution switchgear fleet comprises a large number of diverse asset types. It excludes switchgear contained in zone substations.

Our fleet plan for distribution switchgear is broken down into the following sub-classes:

- Reclosers and sectionalisers
- Ground-mounted switchgear
- Pole-mounted switchgear
- Low voltage enclosures.

In its independent risk review, WSP identified a number of risks in the ground-mounted distribution switchgear fleet. These mainly related to safety risks associated with older oil-filled switchgear. We have refined our planned investments in these assets and also extended our programme of pole-mounted switchgear renewals.

In addition, we have updated our forecast to increase our low voltage enclosure renewals. This aligns with our expectation of uncovering more defects as we implement an improved inspection regime.

2.1.4. Distribution Transformers

A distribution transformer is a device used to transform voltages to suitable levels for customer connections. Transformers come in a variety of sizes, single or three phase and can be either ground or pole mounted. These common assets are sited across our network and can be in close proximity to buildings and the general public.

In its independent risk review, WSP concluded that a number of ground-mounted distribution transformers on our network are at medium to high risk based on their modelling. We have increased our planned investments in these assets over the AMP planning period. As we gain further information on the state of condition of these assets we expect to refine this plan further.

Our 2018 AMP plan for pole-mounted transformers was aligned with WSP and has not been subject to material adjustments.

2.1.5. Zone Substations

Our zone substations are critical assets within our network, and prudent management is essential to ensure safe and reliable operation. This portfolio includes four asset types:

- Power transformers
- Switchgear
- Buildings
- Ancillary equipment.

Our planned investment in zone substations has been refined since our 2018 AMP. This includes reflecting the results of the independent risk review by WSP. A summary of the main refinements are set out below:

- An increased focus on tap changers that have historically had incomplete maintenance routines
- Planned renewal of indoor circuit breakers/switchboards has been reprioritised taking into account WSP risk ratings
- Renewal of Kaikorai Valley and St Kilda switchboards has been included towards the end of the period
- Our power transformers renewal plan has been reduced from AMP18. A number of transformer renewals have been deferred following a detailed review of their condition.

Our forecast has been updated to reflect the above, resulting in an overall expenditure reduction when compared with our 2018 AMP plan.

2.1.6. Secondary Systems

The secondary systems portfolio includes protection relays, remote terminal units (RTUs), DC systems, and revenue metering. Protection relays operate to protect primary equipment and ensure the safety of employees, service providers and the public in the event of electrical faults. Its reliable performance is critical.

The independent risk review by WSP highlighted this portfolio as having a large number of high risk assets that should be prioritised for renewal. Conclusions included that a significant portion of our electromechanical relay fleet have exceeded their expected lives, are obsolete, and performing poorly. A number of DC systems only have a single battery and charger configuration, lacking redundancy. A small proportion of RTUs have exceeded their expected lives.

We have made significant refinements to our plan and increased the levels of planned investment to address these issues. A number of the main changes are set out below.

- Prioritisation of at-risk electromechanical relays in critical sites in the first three years of the AMP period.
- The remainder of the electromechanical relay fleet will be replaced by 2025 and will invest in an increased level of spares to manage obsolescence risk
- We have increased planned RTU replacements over the 10 year period

This results in an overall uplift when compared our 2018 AMP plan.

2.2. GROWTH AND SECURITY

Due to the relatively short period since publishing our 2018 AMP in late October and our focus on addressing the findings of the independent risk review by WSP we have not made material changes to our growth and security investment plans. These are now being reviewed as part of our preparations for our CPP proposal.

2.3. RELIABILITY, SAFETY AND ENVIRONMENT

Reliability, Safety and Environment (RSE) Capex includes investments to improve safety or reliability (including power quality) or to reduce the environmental impact of our assets. We have not made material changes to our RSE investment plans although small reliability improvement projects have been included to enable faster restoration following a fault on the network. These plans will be reviewed as part of our preparations for our CPP proposal.

2.4. CUSTOMER CONNECTION CAPEX

Customer connections Capex is expenditure to facilitate the connection of new customers to our network. It is externally driven with short lead times, which can compromise our ability to accurately forecast medium-term requirements.

New connections often require investment in network infrastructure. New connections range from connecting a single new house through to major subdivisions and a range of businesses and infrastructure. The latter may involve small connections like water pumps or large connections such as factories or supermarkets. The consumer connections portfolio also includes works for customers – typically commercial – who want to change the capacity of their existing electricity supply.

We continue to experience significant growth in the Central Otago region, mainly in the Wanaka and Frankton areas. Most of the new connections are residential with a small proportion relating to light commercial properties. We anticipate this growth to continue in the short term with steady growth in other areas such as Cromwell and Mosgiel in the medium term. As such, we have allowed for an increase of the investments we make to facilitate these connections.

2.5. Asset Relocations

Asset Relocations Capex is associated with moving our assets to enable other parties to undertake projects. Most commonly this relates to roading projects, but works may also be undertaken for other parties such as property developers. Relocations may also occur for aesthetic reasons, such as where a customer requests undergrounding of lines that disrupt their views.

We have updated our asset relocations forecast to take account of the new Dunedin Hospital build. Our existing North City zone substation is within the hospital development area and we will need to relocate to a new site. Our 2019 AMP forecast has been prudently increased to include costs related to this move.

2.6. Non-network Capex

Non-network Capex includes investments in corporate and operational IT systems, facilities, and motor vehicles. We have not made material changes to our planned investments in these assets. These will be reviewed as part of our preparations for our CPP proposal.

2.7. Network Opex

Our Network Opex forecast includes expenditure in the following four portfolios.

- **Routine, Corrective Maintenance and Inspections**: includes our predictive and corrective maintenance categories.
- **Asset Replacement and Renewal**: this category is not used in our day-to-day operations.
- **Service Interruptions and Emergencies**: is the equivalent to our reactive maintenance category.
- **Vegetation management**: relates to expenditure on tree trimming, inspection, and liaison with tree owners.

Below we explain the main changes to these forecasts since our 2018 AMP published in October 2018. Further details see schedule 11b in Appendix A

2.7.1. Routine, Corrective Maintenance, and Inspections

We include preventive and corrective maintenance activities under the RCI category.

Since our 2018 AMP we have increased our planned RCI expenditure significantly. This reflects our updated views on the level of maintenance our network requires. This includes specific refinements to ensure we can provide safe and reliable service to customers and effectively support our asset renewal programme:

- we intend to introduce changes to our maintenance regime to manage risks identified by the independent risk review undertaken by WSP. Material changes include additional preventive maintenance of our support structures, conductor, instrument transformers and certain types of ground mounted switchgear.

- we are introducing additional or enhanced inspection and testing activities to get better asset management data, including for renewals planning. Material changes to our regime apply to underground cables, overhead conductors, link box/service pillars, and pole mounted switchgear assets. Expected benefits from these inspections include the ability to better target and prioritise asset renewals.
- as we improve our understanding of network asset condition, we expect to undertake additional repairs and replacement of minor components.

In addition to helping ensure we can effectively manage the level of risk on our network, these improvements will support the prudent and efficient execution of our asset renewal programme.

We changed our categorisation rule for 2019 AMP update so that RCI includes all corrective work, including those limited work types that were previously categorised under Asset Replacement and Renewal Opex disclosure category. We are working to further embed the maintenance categories first introduced in our 2018 AMP (preventive, corrective and reactive) into our day-to-day activities and assessing how these should be best categorised in future AMPs.

2.7.2. Asset Replacement and Renewal

To reflect internal business practices we are not attributing expenditure to this Information Disclosure category.

2.7.3. System Interruptions and Emergencies

SIE involves interventions in response to network faults and other incidents. There is no advanced scheduling of this work other than ensuring that there are sufficient resources on standby to respond to network faults. This activity is especially prevalent during and after large events such as major storms.

Our 2019 AMP SIE forecast is higher than our 2018 AMP forecast. This uplift reflects our updated view that the expected improvement in network reliability from asset renewals may take longer than previously signalled (resulting in a slower decrease in equipment and vegetation related fault volumes).

Our 2019 AMP forecast also incorporates an uplift for an enhanced fault dispatch service to ensure consistent process and effective response on a 24/7 basis.

2.7.4. Vegetation Management

We have not made material changes to our planned expenditure on vegetation management activities. However, our approach to vegetation management is being re-evaluated and we expect to refine future expenditure as part of our preparations for our CPP proposal.

2.8. NON-NETWORK OPEX

Our Non-network Opex forecast includes our forecast expenditure in the following two portfolios.

- System Operations and Network Support (SONS): is Opex where the primary driver is the management of the network, and includes expenditure relating to system engineering staff, control centre and system operations.

- **Business Support**: includes the costs associated with support functions such as HR and Finance, Regulation, as well as ICT-related Opex.

For further details see schedule 11b in Appendix A.

2.8.1. SONS

We have not made material changes to our planned SONS expenditure since our 2018 AMP published in October 2018. We expect to refine this expenditure as part of our preparations for our CPP proposal.

2.8.2. Business Support

We have not made material changes to our planned expenditure on business support activities since our 2018 AMP published in October 2018. We expect to refine this expenditure as part of our preparations for our CPP proposal.

INFORMATION DISCLOSURES

A. Information Disclosure Schedules

This appendix includes the following Information Disclosure schedules:

- **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
- **Schedule 14a**: commentary on differences between forecast Capex (schedule 11a) and Opex (schedule 11b) in nominal and constant prices

Schedule 11a: report on forecast Capital Expenditure

Company Name	**Aurora Energy Limited**
AMP Planning Period	**1 April 2019 – 31 March 2029**

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													
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 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**	**31 Mar 28**	**31 Mar 29**
9	**11a(i): Expenditure on Assets Forecast**		**$000 (in nominal dollars)**										
10	Consumer connection		14,169	10,008	9,313	9,075	8,175	8,050	7,922	7,790	7,886	7,984	8,084
11	System growth		8,722	10,198	7,118	10,658	11,087	4,645	9,015	4,305	2,078	9,048	1,207
12	Asset replacement and renewal		42,255	51,885	55,616	54,830	51,376	46,921	45,702	39,266	44,230	36,923	32,686
13	Asset relocations		1,176	4,086	2,333	1,466	1,458	1,435	1,674	15,119	1,406	1,423	1,441
14	Reliability, safety and environment:												
15	Quality of supply		528	521	213	653	218	116	117	118	120	121	123
16	Legislative and regulatory		-	-	-	-	-	-	-	-	-	-	-
17	Other reliability, safety and environment		-	-	251	-	-	-	-	-	-	-	-
18	**Total reliability, safety and environment**		528	521	464	653	218	116	117	118	120	121	123
19	**Expenditure on network assets**		66,849	76,697	74,843	76,682	72,313	61,166	64,429	66,599	55,720	55,499	43,542
20	Expenditure on non-network assets		5,233	4,971	4,904	5,928	5,422	6,059	5,982	4,970	4,713	4,763	4,615
21	**Expenditure on assets**		72,082	81,668	79,748	82,610	77,735	67,225	70,411	71,569	60,433	60,262	48,156
22													
23	*plus* Cost of financing		1,420	1,520	1,374	795	146	-	-	-	-	-	-
24	*less* Value of capital contributions		3,507	6,992	5,029	4,397	4,090	4,139	4,452	11,718	4,291	4,343	4,397
25	*plus* Value of vested assets		-	-	-	-	-	-	-	-	-	-	-
26													
27	**Capital expenditure forecast**		69,994	76,195	76,092	79,008	73,791	63,086	65,959	59,851	56,143	55,919	43,759
28													
29	Assets commissioned		71,511	81,175	97,857	87,136	78,238	69,179	70,273	80,796	55,270	66,071	49,064
30			*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*	*CY+6*	*CY+7*	*CY+8*	*CY+9*	*CY+10*
31		for year ended	**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**	**31 Mar 28**	**31 Mar 29**
32			**$000 (in constant prices)**										
33	Consumer connection		14,169	10,010	9,200	8,861	7,887	7,674	7,462	7,250	7,250	7,250	7,250
34	System growth		8,722	10,222	7,068	10,442	10,770	4,426	8,554	4,052	1,941	8,384	1,100
35	Asset replacement and renewal		42,255	51,832	54,978	53,575	49,579	44,638	42,954	36,411	40,587	33,375	29,167
36	Asset relocations		1,176	4,094	2,305	1,432	1,406	1,368	1,580	14,293	1,293	1,293	1,293
37	Reliability, safety and environment:												
38	Quality of supply		528	510	210	610	210	110	110	110	110	110	110
39	Legislative and regulatory		-	-	-	-	-	-	-	-	-	-	-
40	Other reliability, safety and environment		-	-	250	-	-	-	-	-	-	-	-
41	**Total reliability, safety and environment**		528	510	460	610	210	110	110	110	110	110	110
42	**Expenditure on network assets**		66,849	76,668	74,011	74,921	69,852	58,217	60,661	62,117	51,181	50,412	38,920
43	Expenditure on non-network assets		5,233	4,821	4,623	5,446	4,858	5,295	5,099	4,131	3,821	3,766	3,559
44	**Expenditure on assets**		72,082	81,490	78,634	80,367	74,710	63,512	65,760	66,248	55,002	54,179	42,479
45													
46	**Subcomponents of expenditure on assets (where known)**												
47	Energy efficiency and demand side management, reduction of energy losses												
48	Overhead to underground conversion												
49	Research and development												

	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 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	31 Mar 28	31 Mar 29
Difference between nominal and constant price forecasts	$000										
Consumer connection	-	(3)	113	214	288	376	460	540	636	734	834
System growth	-	(24)	50	215	317	218	460	253	137	663	107
Asset replacement and renewal	-	53	637	1,254	1,797	2,283	2,747	2,855	3,643	3,548	3,519
Asset relocations	-	(8)	28	35	51	67	93	826	113	131	149
Reliability, safety and environment:											
Quality of supply	-	10	3	43	8	5	7	8	10	11	13
Legislative and regulatory	-	-	-	-	-	-	-	-	-	-	-
Other reliability, safety and environment	-	-	1	-	-	-	-	-	-	-	-
Total reliability, safety and environment	-	10	4	43	8	5	7	8	10	11	13
Expenditure on network assets	-	28	832	1,762	2,461	2,949	3,768	4,482	4,539	5,087	4,622
Expenditure on non-network assets	-	150	281	482	564	764	884	839	892	997	1,056
Expenditure on assets	-	178	1,113	2,243	3,025	3,714	4,651	5,321	5,431	6,084	5,678

11a(ii): Consumer Connection

	Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
for year ended	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22	31 Mar 23	31 Mar 24
*Consumer types defined by EDB**	$000 (in constant prices)					
All consumers	14,169	10,010	9,200	8,861	7,887	7,674
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
**include additional rows if needed*						
Consumer connection expenditure	14,169	10,010	9,200	8,861	7,887	7,674
less Capital contributions funding consumer connection	3,264	4,252	3,975	3,698	3,351	3,351
Consumer connection less capital contributions	10,905	5,758	5,225	5,163	4,536	4,323

11a(iii): System Growth

	Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
Subtransmission	2,253	177	1,597	88	5,915	-
Zone substations	2,619	4,493	3,474	3,301	2,316	1,746
Distribution and LV lines	193	484	110	1,698	276	276
Distribution and LV cables	2,003	1,913	432	3,814	587	421
Distribution substations and transformers	801	2,041	1,237	1,346	1,249	1,499
Distribution switchgear	73	968	154	173	150	85
Other network assets	780	146	65	22	277	399
System growth expenditure	8,722	10,222	7,068	10,442	10,770	4,426
less Capital contributions funding system growth						
System growth less capital contributions	8,722	10,222	7,068	10,442	10,770	4,426

		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
	for year ended	**31 Mar 19**	**31 Mar 20**	**31 Mar 21**	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**

11a(iv): Asset Replacement and Renewal

	$000 (in constant prices)					
Subtransmission	4,210	8,494	16,278	6,397	6,092	4,792
Zone substations	3,729	7,948	7,188	11,787	8,956	4,978
Distribution and LV lines	30,388	22,068	17,447	20,088	18,138	18,899
Distribution and LV cables	20	2,490	2,814	2,010	2,316	2,455
Distribution substations and transformers	1,093	3,128	3,807	5,318	5,930	5,484
Distribution switchgear	1,596	3,613	4,930	5,771	5,748	5,250
Other network assets	1,219	4,090	2,514	2,204	2,400	2,779
Asset replacement and renewal expenditure	42,255	51,832	54,978	53,575	49,579	44,638
less Capital contributions funding asset replacement and renewal						
Asset replacement and renewal less capital contributions	42,255	51,832	54,978	53,575	49,579	44,638

		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
	for year ended	**31 Mar 19**	**31 Mar 20**	**31 Mar 21**	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**

11a(v): Asset Relocations

*Project or programme**	$000 (in constant prices)					
**include additional rows if needed*						
All other project or programmes - asset relocations	1,176	4,094	2,305	1,432	1,406	1,368
Asset relocations expenditure	1,176	4,094	2,305	1,432	1,406	1,368
less Capital contributions funding asset relocations	243	2,746	996	597	597	597
Asset relocations less capital contributions	932	1,348	1,309	834	809	771

		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
	for year ended	**31 Mar 19**	**31 Mar 20**	**31 Mar 21**	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**

11a(vi): Quality of Supply

*Project or programme**	$000 (in constant prices)					
**include additional rows if needed*						
All other projects or programmes - quality of supply	528	510	210	610	210	110
Quality of supply expenditure	528	510	210	610	210	110
less Capital contributions funding quality of supply						
Quality of supply less capital contributions	528	510	210	610	210	110

11a(vii): Legislative and Regulatory

		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
	for year ended	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22	31 Mar 23	31 Mar 24
*Project or programme**		$000 (in constant prices)					
**include additional rows if needed*							
All other projects or programmes - legislative and regulatory							
Legislative and regulatory expenditure		-	-	-	-	-	-
less Capital contributions funding legislative and regulatory							
Legislative and regulatory less capital contributions		-	-	-	-	-	-

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 19	31 Mar 20	31 Mar 21	31 Mar 22	31 Mar 23	31 Mar 24
*Project or programme**		$000 (in constant prices)					
**include additional rows if needed*							
All other projects or programmes - other reliability, safety and environment		-	-	250	-	-	-
Other reliability, safety and environment expenditure		-	-	250	-	-	-
less Capital contributions funding other reliability, safety and environment							
Other reliability, safety and environment less capital contributions		-	-	250	-	-	-

11a(ix): Non-Network Assets

		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
	for year ended	31 Mar 19	31 Mar 20	31 Mar 21	31 Mar 22	31 Mar 23	31 Mar 24
Routine expenditure							
*Project or programme**		$000 (in constant prices)					
**include additional rows if needed*							
All other projects or programmes - routine expenditure		5,233	4,821	4,623	5,446	4,858	5,295
Routine expenditure		5,233	4,821	4,623	5,446	4,858	5,295
Atypical expenditure							
*Project or programme**							
**include additional rows if needed*							
All other projects or programmes - atypical expenditure							
Atypical expenditure		-	-	-	-	-	-
Expenditure on non-network assets		5,233	4,821	4,623	5,446	4,858	5,295

Schedule 11b: report on forecast Operational Expenditure

		Company Name	Aurora Energy Limited
		AMP Planning Period	1 April 2019 – 31 March 2029

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		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 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	31 Mar 28	31 Mar 29
9	**Operational Expenditure Forecast**	**$000 (in nominal dollars)**										
10	Service interruptions and emergencies	4,044	4,096	4,320	4,412	4,501	4,593	4,686	4,782	4,879	4,978	5,079
11	Vegetation management	5,161	5,671	5,834	5,987	5,915	5,493	5,045	4,692	4,811	4,932	5,057
12	Routine and corrective maintenance and inspection	7,017	9,128	8,992	10,000	10,271	10,531	10,303	10,443	10,417	10,600	10,868
13	Asset replacement and renewal	-	-	-	-	-	-	-	-	-	-	-
14	**Network Opex**	16,222	18,895	19,146	20,399	20,687	20,617	20,034	19,917	20,106	20,510	21,005
15	System operations and network support	13,256	14,516	15,168	15,615	16,483	17,297	17,737	18,173	18,620	19,078	19,547
16	Business support	13,335	12,400	12,436	11,931	11,624	12,024	12,234	12,496	12,766	13,097	13,386
17	**Non-network opex**	26,591	26,916	27,603	27,546	28,107	29,321	29,970	30,669	31,386	32,175	32,934
18	**Operational expenditure**	42,813	45,811	46,749	47,945	48,794	49,938	50,004	50,586	51,492	52,685	53,938

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 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	31 Mar 28	31 Mar 29
21		**$000 (in constant prices)**										
22	Service interruptions and emergencies	4,044	3,973	4,073	4,053	4,033	4,014	3,994	3,975	3,955	3,936	3,917
23	Vegetation management	5,161	5,500	5,500	5,500	5,300	4,800	4,300	3,900	3,900	3,900	3,900
24	Routine and corrective maintenance and inspection	7,017	8,853	8,477	9,187	9,203	9,203	8,781	8,681	8,445	8,381	8,381
25	Asset replacement and renewal	-	-	-	-	-	-	-	-	-	-	-
26	**Network Opex**	16,222	18,326	18,050	18,740	18,536	18,017	17,075	16,556	16,300	16,217	16,198
27	System operations and network support	13,256	14,157	14,409	14,475	14,912	15,273	15,285	15,285	15,285	15,285	15,285
28	Business support	13,335	12,093	11,813	11,060	10,516	10,617	10,543	10,511	10,480	10,494	10,468
29	**Non-network opex**	26,591	26,250	26,223	25,534	25,429	25,890	25,828	25,796	25,765	25,779	25,753
30	**Operational expenditure**	42,813	44,577	44,272	44,275	43,965	43,907	42,904	42,352	42,065	41,996	41,951

31	**Subcomponents of operational expenditure (where known)**											
32–33	Energy efficiency and demand side management, reduction of energy losses											
34	Direct billing*											
35	Research and Development											
36	Insurance											

37 ** Direct billing expenditure by suppliers that direct bill the majority of their consumers*

38

39		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5	CY+6	CY+7	CY+8	CY+9	CY+10
40	for year ended	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	31 Mar 28	31 Mar 29
41	**Difference between nominal and real forecasts**	**$000**										
42	Service interruptions and emergencies	-	123	247	359	468	579	692	807	923	1,042	1,162
43	Vegetation management	-	171	334	487	615	693	745	792	911	1,032	1,157
44	Routine and corrective maintenance and inspection	-	275	515	813	1,068	1,328	1,522	1,762	1,972	2,219	2,487
45	Asset replacement and renewal	-	-	-	-	-	-	-	-	-	-	-
46	**Network Opex**	-	569	1,096	1,658	2,151	2,600	2,959	3,361	3,806	4,293	4,807
47	System operations and network support	-	359	759	1,140	1,570	2,024	2,451	2,888	3,335	3,793	4,262
48	Business support	-	307	622	871	1,108	1,407	1,691	1,986	2,286	2,604	2,919
49	**Non-network opex**	-	666	1,381	2,012	2,678	3,431	4,142	4,873	5,621	6,396	7,181
50	**Operational expenditure**	-	1,234	2,477	3,670	4,829	6,031	7,101	8,234	9,426	10,689	11,987

Schedule 12a: report on asset condition

Company Name **Aurora Energy Limited**
AMP Planning Period **1 April 2019 – 31 March 2029**

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												
7					Asset condition at start of planning period (percentage of units by grade)							
8												% of asset forecast to be replaced in next 5 years
9	Voltage	Asset category	Asset class	Units	H1	H2	H3	H4	H5	Grade unknown	Data accuracy (1–4)	
10	All	Overhead Line	Concrete poles / steel structure	No.	0.47%	0.22%	6.28%	23.90%	69.14%	-	3	0.80%
11	All	Overhead Line	Wood poles	No.	13.36%	7.69%	16.12%	32.70%	30.11%	-	3	20.82%
12	All	Overhead Line	Other pole types	No.						-		
13	HV	Subtransmission Line	Subtransmission OH up to 66kV conductor	km	18.29%	0.44%	5.98%	49.71%	25.59%	-	2	22.14%
14	HV	Subtransmission Line	Subtransmission OH 110kV+ conductor	km	-	-	-	-	-		N/A	
15	HV	Subtransmission Cable	Subtransmission UG up to 66kV (XLPE)	km	-	-	0.72%	28.06%	71.22%	-	3	-
16	HV	Subtransmission Cable	Subtransmission UG up to 66kV (Oil pressurised)	km	-	-	-	100.00%	-	-	3	20.33%
17	HV	Subtransmission Cable	Subtransmission UG up to 66kV (Gas pressurised)	km	-	47.44%	45.11%	7.46%	-	-	3	48.80%
18	HV	Subtransmission Cable	Subtransmission UG up to 66kV (PILC)	km	-	-	100.00%			-	3	64.69%
19	HV	Subtransmission Cable	Subtransmission UG 110kV+ (XLPE)	km							N/A	
20	HV	Subtransmission Cable	Subtransmission UG 110kV+ (Oil pressurised)	km							N/A	
21	HV	Subtransmission Cable	Subtransmission UG 110kV+ (Gas Pressurised)	km							N/A	
22	HV	Subtransmission Cable	Subtransmission UG 110kV+ (PILC)	km							N/A	
23	HV	Subtransmission Cable	Subtransmission submarine cable	km							N/A	
24	HV	Zone substation Buildings	Zone substations up to 66kV	No.	3.33%	-	16.67%	40.00%	40.00%		2	30.74%
25	HV	Zone substation Buildings	Zone substations 110kV+	No.							N/A	
26	HV	Zone substation switchgear	22/33kV CB (Indoor)	No.	-	-	-	100.00%	-	-	2	
27	HV	Zone substation switchgear	22/33kV CB (Outdoor)	No.	26.09%	8.70%	17.39%	17.39%	30.43%	-	2	38.34%
28	HV	Zone substation switchgear	33kV Switch (Ground Mounted)	No.	-	-	-	-	-	-	N/A	
29	HV	Zone substation switchgear	33kV Switch (Pole Mounted)	No.	31.44%	9.09%	15.91%	10.23%	33.33%	-	2	19.81%
30	HV	Zone substation switchgear	33kV RMU	No.							N/A	
31	HV	Zone substation switchgear	50/66/110kV CB (Indoor)	No.							N/A	
32	HV	Zone substation switchgear	50/66/110kV CB (Outdoor)	No.	-	-	-	50.00%	50.00%	-	2	
33	HV	Zone substation switchgear	3.3/6.6/11/22kV CB (ground mounted)	No.	15.95%	17.38%	16.81%	10.83%	39.03%	-	2	38.39%
34	HV	Zone substation switchgear	3.3/6.6/11/22kV CB (pole mounted)	No.	-	-	-	-	-		N/A	
35												

36					Asset condition at start of planning period (percentage of units by grade)								
37													
38	Voltage	Asset category	Asset class	Units	H1	H2	H3	H4	H5	Grade unknown	Data accuracy (1–4)	% of asset forecast to be replaced in next 5 years
39	HV	Zone Substation Transformer	Zone Substation Transformers	No.	31.15%		19.67%	21.31%	27.87%	-	2	8.37%
40	HV	Distribution Line	Distribution OH Open Wire Conductor	km	12.25%	4.36%	10.41%	51.53%	21.45%	-	2	14.57%
41	HV	Distribution Line	Distribution OH Aerial Cable Conductor	km	-	-	-	-	-		N/A	
42	HV	Distribution Line	SWER conductor	km	49.50%	-	6.96%	20.92%	22.62%	-	2	52.50%
43	HV	Distribution Cable	Distribution UG XLPE or PVC	km	0.09%	0.04%	0.84%	13.18%	85.85%	-	2	-
44	HV	Distribution Cable	Distribution UG PILC	km	-	0.04%	10.22%	46.60%	43.14%	-	2	3.91%
45	HV	Distribution Cable	Distribution Submarine Cable	km	-	100.00%	-	-	-	-	2	100.00%
46	HV	Distribution switchgear	3.3/6.6/11/22kV CB (pole mounted) - reclosers and sectionalisers	No.	-	-	6.35%	20.63%	73.02%	-	2	-
47	HV	Distribution switchgear	3.3/6.6/11/22kV CB (Indoor)	No.							N/A	
48	HV	Distribution switchgear	3.3/6.6/11/22kV Switches and fuses (pole mounted)	No.	7.14%	2.55%	9.69%	17.58%	63.03%		2	11.29%
49	HV	Distribution switchgear	3.3/6.6/11/22kV Switch (ground mounted) - except RMU	No.	6.76%	-	1.35%	29.73%	62.16%	-	2	6.76%
50	HV	Distribution switchgear	3.3/6.6/11/22kV RMU	No.	22.42%	10.05%	11.24%	30.92%	25.37%	-	2	30.17%
51	HV	Distribution Transformer	Pole Mounted Transformer	No.	12.69%	4.67%	14.92%	12.87%	54.85%	-	2	11.91%
52	HV	Distribution Transformer	Ground Mounted Transformer	No.	0.17%	0.07%	1.36%	6.11%	92.30%	-	3	1.92%
53	HV	Distribution Transformer	Voltage regulators	No.	-	-	15.38%	53.85%	30.77%	-	2	-
54	HV	Distribution Substations	Ground Mounted Substation Housing	No.	-	-	-	-	-	-	N/A	
55	LV	LV Line	LV OH Conductor	km	7.49%	1.25%	3.89%	9.11%	78.26%	-	2	14.05%
56	LV	LV Cable	LV UG Cable	km	0.85%	0.57%	3.16%	11.59%	83.83%	-	2	1.83%
57	LV	LV Streetlighting	LV OH/UG Streetlight circuit	km	6.83%	3.88%	10.63%	45.39%	33.26%	-	2	6.06%
58	LV	Connections	OH/UG consumer service connections	No.	1.00%	2.00%	11.40%	48.40%	-	37.20%	2	
59	All	Protection	Protection relays (electromechanical, solid state and numeric)	No.	52.17%	0.87%	18.26%	27.61%	1.09%		2	46.09%
60	All	SCADA and communications	SCADA and communications equipment operating as a single system	Lot	35.82%	5.97%	32.84%	25.37%			2	31.34%
61	All	Capacitor Banks	Capacitors including controls	No.					100.00%		2	
62	All	Load Control	Centralised plant	Lot	-	43.48%	56.52%	-			3	
63	All	Load Control	Relays	No.	15.57%	6.63%	38.27%	39.53%			2	
64	All	Civils	Cable Tunnels	km							N/A	

Schedule 12b: report on forecast capacity

		Company Name	Aurora Energy Limited
		AMP Planning Period	1 April 2019 – 31 March 2029

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

sch ref

7 **12b(i): System Growth - Zone Substations**

8	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
9	Alexandra	11	15	N-1	-	73%	15	76%	No constraint within +5 years	
10	Anderson's Bay	15	18	N-1	5	83%	18	85%	No constraint within +5 years	
11	Arrowtown	9	12	N-1	2	77%	12	92%	No constraint within +5 years	
12	Commonage	12	17	N-1	6	71%	17	87%	No constraint within +5 years	
13	Corstorphine	13	23	N-1	6	56%	23	57%	No constraint within +5 years	
14	Cromwell	13	8	N-1	-	167%	24	60%	No constraint within +5 years	The Cromwell transformers will be upgraded to 24MVA in the planning period
15	East Taieri	16	24	N-1	4	67%	24	68%	No constraint within +5 years	
16	Frankton	16	15	N-1	6	105%	15	127%	No constraint within +5 years	We will monitor growth at Frankton and consider an upgrade to the smaller 15MVA transformer at this site but intend to manage growth during the AMP period by transfers to Commonage zone substation.
17	Fernhill	7	10	N-1	4	68%	10	77%	No constraint within +5 years	
18	Green Island	13	18	N-1	6	74%	18	75%	No constraint within +5 years	
19	Halfway Bush	15	24	N-1	6	60%	24	61%	Other	The capacity at Halfway Bush is currently constrained to 18MVA by the 6.6kV switchboard which has a planned replacement in the planning period
20	Kaikorai Val.	10	23	N-1	4	44%	23	46%	No constraint within +5 years	
21	Mosgiel	7	12	N-1	3	58%	12	59%	No constraint within +5 years	
22	Carisbrook	12	24	N-1	6	48%	24	52%	No constraint within +5 years	
23	North City	18	28	N-1	6	65%	28	67%	No constraint within +5 years	The North City forecast excludes the new hospital connection.
24	North East Val.	11	18	N-1	4	60%	18	61%	No constraint within +5 years	
25	Port Chalmers	7	10	N-1	3	65%	10	69%	No constraint within +5 years	
26	Queenstown	14	20	N-1	6	68%	20	69%	No constraint within +5 years	
27	Smith St	14	18	N-1	6	78%	18	83%	No constraint within +5 years	
28	South City	15	18	N-1	6	85%	18	87%	No constraint within +5 years	
29	St Kilda	15	23	N-1	6	64%	23	66%	No constraint within +5 years	
30	Wanaka	21	24	N-1	1	85%	24	92%	No constraint within +5 years	It is proposed to relieve the Wanaka constraint by the installation of transformer capacity at Riverbank in the planning period. Upgrades to the Subtransmision Feeding Wanaka are also planned.
31	Ward St	11	23	N-1	6	47%	23	52%	No constraint within +5 years	
32	Willowbank	13	18	N-1	4	70%	18	71%	No constraint within +5 years	
33	Berwick	1	4	N	4	39%	4	41%	No constraint within +5 years	
34	Cardrona	4	6	N	1	65%	6	83%	Transformer	Load growth subject to Cardrona expansion going ahead. This AMP makes no provision for a Cardrona upgrade at this stage
35	Clyde/Earnscleugh	4	5	N	-	81%	5	75%	No constraint within +5 years	
36	Coronet Peak	6	6	N	2	92%	6	93%	No constraint within +5 years	
37	Dalefield	2	4	N	1	47%	4	65%	No constraint within +5 years	
38	Earnscleugh	-	2	N	-	-	2	-	No constraint within +5 years	Earnscleugh is used as a back up to Clyde Earnscleugh
39	Ettrick	2	4	N	2	61%	4	65%	No constraint within +5 years	
40	Lindis Crossing	7	8	N	4	87%	10	88%	No constraint within +5 years	
41	Camphill	6	7	N	2	86%	7	103%	Transformer	Further irrigation load growth at Camphill is uncertain - at this stage, no upgrade project has been included in the AMP period
42	Omakau	3	3	N	2	83%	3	114%	Transformer	Subject to further irrigation growth, it is proposed to upgrade and shift Omakau substation in the planning period
43	Lauder Flat	1	4	N	1	25%	4	60%	No constraint within +5 years	
44	Outram	3	6	N	2	47%	6	48%	No constraint within +5 years	
45	Queensberry	3	4	N	2	80%	4	85%	No constraint within +5 years	
46	Remarkables	2	4	N	-	61%	4	207%	Transformer	A capacity upgrade at Remarkables is subject to continued supply of the Remarkables ski field and proposed expansion of the Ski Field going ahead - at this stage we have made no allowance for the upgrade
47	Roxburgh	2	6	N	1	38%	6	41%	No constraint within +5 years	

48 [1] *Extend forecast capacity table as necessary to disclose all capacity by each zone substation*

Schedule 12c: report on forecast network demand

Company Name	**Aurora Energy Limited**
AMP Planning Period	**1 April 2019 – 31 March 2029**

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

sch ref							
7	**12c(i): Consumer Connections**						
8	*Number of ICPs connected in year by consumer type*				**Number of connections**		
9		*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
10	for year ended	**31 Mar 19**	**31 Mar 20**	**31 Mar 21**	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**
11	*Consumer types defined by EDB**						
12	Residential	1,171	1,047	963	921	921	921
13	Load Group 0	(6)	4	4	4	4	4
14	Load Group 0A	(3)	10	9	9	9	9
15	Load Group 1A	29	12	11	11	11	11
15a	Load Group 1	8	79	73	70	70	70
15b	Load Group 2	171	90	83	79	79	79
15c	Load Group 3	4	3	3	3	3	3
15d	Load Group 3A	(5)	2	2	2	2	2
15e	Load Group 4	6	2	2	2	2	2
15f	Load Group 5	-	-	-	-	-	-
16	Street Lighting & DUML	-	-	-	-	-	-
17	**Connections total**	1,375	1,249	1,150	1,101	1,101	1,101
18	**include additional rows if needed*						
19	**Distributed generation**						
20	Number of connections	1,065	1,243	1,420	1,597	1,774	1,951
21	Capacity of distributed generation installed in year (MVA)	1	10	1	1	1	1

sch ref							
22	**12c(ii) System Demand**						
23		*Current Year CY*	*CY+1*	*CY+2*	*CY+3*	*CY+4*	*CY+5*
24	**Maximum coincident system demand (MW)** for year ended	**31 Mar 19**	**31 Mar 20**	**31 Mar 21**	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**
25	GXP demand	243	244	248	251	254	258
26	*plus* Distributed generation output at HV and above	56	61	61	62	63	63
27	**Maximum coincident system demand**	299	305	309	313	317	321
28	*less* Net transfers to (from) other EDBs at HV and above	(0)	(0)	(0)	(0)	(0)	(0)
29	**Demand on system for supply to consumers' connection points**	299	305	309	313	317	321
30	**Electricity volumes carried (GWh)**						
31	Electricity supplied from GXPs	1,267	1,277	1,294	1,310	1,327	1,343
32	*less* Electricity exports to GXPs	43	78	79	80	81	82
33	*plus* Electricity supplied from distributed generation	196	231	234	237	240	243
34	*less* Net electricity supplied to (from) other EDBs	(1)	(0)	(0)	(0)	(0)	(0)
35	**Electricity entering system for supply to ICPs**	1,420	1,430	1,448	1,467	1,485	1,503
36	*less* Total energy delivered to ICPs	1,333	1,343	1,360	1,377	1,394	1,412
37	**Losses**	87	87	88	89	91	92
38							
39	**Load factor**	54%	54%	53%	53%	53%	53%
40	**Loss ratio**	6.1%	6.1%	6.1%	6.1%	6.1%	6.1%

Schedule 12d: Report on forecast interruptions and duration

Company Name	**Aurora Energy**
AMP Planning Period	**1 April 2019 – 31 March 2029**
Network / Sub-network Name	**Total Network**

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*
9	for year ended	**31 Mar 19**	**31 Mar 20**	**31 Mar 21**	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**
10	**SAIDI**						
11	Class B (planned interruptions on the network)	73.8	116.0	116.0	110.0	96.0	85.0
12	Class C (unplanned interruptions on the network)	108.1	103.0	100.0	98.0	96.0	93.0
13	**SAIFI**						
14	Class B (planned interruptions on the network)	0.31	0.51	0.50	0.43	0.36	0.31
15	Class C (unplanned interruptions on the network)	1.47	1.90	1.83	1.76	1.70	1.63

Company Name	**Aurora Energy**
AMP Planning Period	**1 April 2019 – 31 March 2029**
Network / Sub-network Name	**Dunedin Sub-network**

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*
9	for year ended	**31 Mar 19**	**31 Mar 20**	**31 Mar 21**	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**
10	**SAIDI**						
11	Class B (planned interruptions on the network)	44.3	69.6	69.6	65.9	57.7	50.9
12	Class C (unplanned interruptions on the network)	39.8	37.8	36.9	36.1	35.2	34.3
13	**SAIFI**						
14	Class B (planned interruptions on the network)	0.19	0.31	0.30	0.26	0.22	0.19
15	Class C (unplanned interruptions on the network)	0.53	0.69	0.66	0.64	0.61	0.59

Company Name	**Aurora Energy**
AMP Planning Period	**1 April 2019 – 31 March 2029**
Network / Sub-network Name	**Central Otago Sub-network**

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*
9	for year ended	**31 Mar 19**	**31 Mar 20**	**31 Mar 21**	**31 Mar 22**	**31 Mar 23**	**31 Mar 24**
10	**SAIDI**						
11	Class B (planned interruptions on the network)	29.5	46.4	46.4	43.9	38.4	33.9
12	Class C (unplanned interruptions on the network)	68.4	65.0	63.5	62.0	60.5	59.1
13	**SAIFI**						
14	Class B (planned interruptions on the network)	0.12	0.21	0.20	0.17	0.14	0.12
15	Class C (unplanned interruptions on the network)	0.94	1.21	1.17	1.13	1.08	1.04

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 current disclosure year and 10 year planning period, as disclosed in Schedule 11a.

Box 1: Commentary on difference between nominal and constant price capital expenditure forecasts
Differences between constant and nominal forecasts are a direct output of out escalation approach. Our expenditure forecasts were determined in constant 2019 dollars and escalated to nominal dollars using forecast price indices. Each expenditure category is escalated separately using price indices specific to that category. Price indices for each expenditure category reflect a combination of labour and materials prices.

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 current disclosure year and 10 year planning period, as disclosed in Schedule 11b.

Box 2: Commentary on difference between nominal and constant price operational expenditure forecasts
Our approach for operational expenditure is equivalent to the approach for capital expenditure, described above.

B. COMPLIANCE CHECKLIST

This compliance matrix provides a look-up reference for each of the relevant Commission's information disclosure requirements that apply to an AMP Update. The reference numbers are consistent with the clause numbers in the Electricity Distribution Information Disclosure Determination (2012) (consolidated April 2018).

<table>
<tr><th colspan="2">REGULATORY REQUIREMENTS</th><th>AMP UPDATE REFERENCE</th></tr>
<tr><td>2.6</td><td>ASSET MANAGEMENT PLANS AND FORECAST INFORMATION</td><td></td></tr>
<tr><td></td><td>Disclosure relating to asset management plans and forecast information</td><td></td></tr>
<tr><td>2.6.3</td><td>Subject to clause 2.6.4, an EDB may elect to complete and publicly disclose an AMP update, as described under clause 2.6.5, before the start of a disclosure year, instead of an AMP, as described under clause 2.6.1(1), unless the start of that disclosure year is-
(1) one year after the start of the DPP regulatory period; or
(2) two years before the start of the next DPP regulatory period.</td><td>The 2019 regulatory year qualifies for an AMP update.</td></tr>
<tr><td>2.6.4</td><td>An EDB must not complete and publicly disclose an AMP update instead of an AMP if it has not previously publicly disclosed an AMP under clause 2.6.1.</td><td>Aurora Energy's most previous disclosure was its 2018 AMP.</td></tr>
<tr><td>2.6.5</td><td>For the purpose of clause 2.6.3, the AMP update must—
(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 under clause 11 of Attachment A or in the last AMP update disclosed under this clause;
(3) Identify any material changes to the lifecycle asset management (maintenance and renewal) plans disclosed in the last AMP pursuant to clause 12 of Attachment A or in the last AMP update disclosed under this section;
(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; and
(6) Contain the information set out in the schedules described in clause 2.6.6.</td><td>(1) See statement in Chapter 1;
(2) Discussed in Section 2.2;
(3) Discussed in Section 2.1;
(4) Set out in Chapter 2;
(5) There have been no material changes to asset management practices (since the publication of our 2018 AMP in October 2018) that would affect our Report on Asset Management Maturity disclosure; and
(6) See appendix A.</td></tr>
</table>

REGULATORY REQUIREMENTS		AMP UPDATE REFERENCE
2.6.6	Every **EDB** must— (1) Before the start of each **disclosure year**, complete and **publicly disclose** each of the following reports by inserting all information relating to the **electricity distribution services** supplied by the **EDB** for the **disclosure years** provided for in the following reports— (a) the Report on Forecast Capital Expenditure in Schedule 11a; (b) the Report on Forecast Operational Expenditure in Schedule 11b; (c) the Report on Asset Condition in Schedule 12a; (d) the Report on Forecast Capacity in Schedule 12b; (e) the Report on Forecast Network Demand in Schedule 12c; (f) the Report on Forecast Interruptions and Duration in Schedule 12d; (2) If the **EDB** has **sub-networks**, complete and **publicly disclose** the Report on Forecast Interruptions and Duration set out in Schedule 12d by inserting all information relating to the **electricity distribution services** supplied by the **EDB** in relation to each **sub-network** for the **disclosure years** provided for in the report.	This information is included in Appendix A.
2.7	**EXPLANATORY NOTES TO DISCLOSED INFORMATION**	
2.7.2	Before the start of each **disclosure year**, every **EDB** must complete and **publicly disclose** the Mandatory Explanatory Notes on Forecast Information in Schedule 14a by inserting all relevant information relating to information disclosed in accordance with clause 2.6.6.	This information is included in Appendix A.
2.9	***CERTIFICATES***	
2.9.1	Subject to clause 2.13.3, where an **EDB** is required to **publicly disclose** any information under clauses 2.4.1, 2.6.1, 2.6.3, 2.6.6 and 2.7.2, the **EDB** must at that time **publicly disclose** a certificate in the form set out in Schedule 17 in respect of that information, duly signed by 2 **directors** of the **EDB**.	A copy of the certificate is included in Appendix C.

C. DIRECTOR CERTIFICATE

Certification for Year-beginning Disclosures

Pursuant to clause 2.9.1 of section 2.9

We, Stephen Richard Thompson and Margaret Patricia Devlin, being directors of Aurora Energy Limited, certify that, having made all reasonable enquiry, to the best of our knowledge:

a) The following attached information of Aurora Energy Limited prepared for the purposes of clauses 2.4.1, 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 Aurora Energy Limited's corporate vision and strategy and are documented in retained records.

______________________	______________________
Director	Director
______________________	______________________
Date	Date