

DEVELOPMENT PLAN



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1. INTRODUCTION

This chapter introduces Aurora Energy's Development Plan.

1.1. Purpose

We are undertaking a number of business improvement initiatives as part of our programme to deliver on our CPP commitments. These improvements are directed towards aspects of our systems, processes and culture where improvements will bring genuine benefits to customers.

Of these initiatives, the following areas have been identified by the Commerce Commission in the *Electricity Distribution Information Disclosure Determination 2012* (Determination, available <u>here</u>) published by the Commerce Commission on 9 December 2021, as needing to be included in a *"Development Plan"*:

- low voltage network practices
- engagement with consumers on our customer charter and consumer compensation scheme
- planning, management and communication of planned interruptions to consumers
- asset data collection and asset data quality practices
- asset management practices and processes
- practices for estimating the costs of capital expenditure and operational expenditure
- quality assurance processes

This document meets that improvement initiative requirement by setting out our how we plan to improve in each of those areas throughout the period 1 April 2021 to 31 March 2026 (CPP Period). A reference of how this document meets regulatory requirements is included in Appendix A.

We will track our delivery of the initiatives included in this Development Plan over the CPP Period and will report on our progress against each of the chapters in our Annual Delivery Reports.

As part of our Annual Delivery Report, we will prepare reporting metrics to track the progress of each initiative in this Development Plan. We envisage these metrics to be mostly qualitative but will consider quantitative metrics where possible. It is envisaged that our reporting will summarise:

- whether the implementation of each initiative is on track
- alternative initiatives or changes to initiatives and an explanation of any variance
- whether the expected benefits have been achieved this is likely to initially include mainly leading indicators



1.2. FURTHER ENGAGEMENT

To ensure this Development Plan, and the initiatives included within it, are effectively communicated to customers and other stakeholders, we will hold a series of regional engagement information sessions, summarising the main aspects of the plan.

1.3. CERTIFICATION

This Development Plan was prepared and certified in accordance with clause 11.3 of the Determination on 30 March 2022. A copy of the Director's Certificate can be found in Appendix B.



2. Asset management maturity

2.1. CONTEXT

As an electricity distribution business, the scope of our asset management system is broad, and many of the business unit activities we undertake are directly related to asset management. Chapter 9 of our 2022 Asset Management Plan (AMP) outlines our Asset Management Development Plan (AMDP). In our AMP, we have been tracking our asset management improvement via the Asset Management Maturity Assessment Tool (AMMAT). Our recent AMMAT self-evaluation returned a score of 2.29 (up from 2.13 in 2020). A summary of our scores per category is set out in Table 1 below.

| AMMAT CATEGORY | AMP 2018 | AMP 2019 | AMP2020 |
|---|----------|----------|---------|
| Asset Strategy and Delivery | 2.00 | 2.14 | 2.14 |
| Communication and Participation | 2.50 | 2.75 | 3.00 |
| Competency and Training | 1.60 | 1.60 | 2.00 |
| Documentation, Controls and Review | 1.86 | 2.29 | 2.29 |
| Structure, Capability and Authority | 2.50 | 2.75 | 2.75 |
| Systems, Integration and Information Management | 1.25 | 1.25 | 1.75 |

Table 1: Summary of Aurora Energy's recent AMMAT scores

The chapters in this Development Plan contribute to our broader AMDP initiatives outlined in our AMP. In writing Chapter 7 of this Development Plan (Asset Management Practices) we have chosen to focus on the priority areas, including the development initiatives requested by the Commerce Commission in the Determination. Our broader AMDP contained in our AMP will develop and evolve as we build our capability and new requirements, and as new information becomes apparent. We will continue to publish our AMMAT assessment in our AMP.

2.2. ENHANCING OUR ASSET MANAGEMENT CAPABILITY AND MATURITY

A number of the improvement initiatives outlined in this Development Plan contribute to enhanced asset management capability and maturity.

To help summarise and quantify those improvement initiatives, we have mapped them into categories of the AMMAT framework, as set out in Table 2 below, and provided a forecast improvement score, shown in Figure 1 below.



| DEVELOPMENT AREA | Asset Management function(s) / AMMAT <u>reference</u> |
|---|---|
| Voltage quality | Asset Management Strategy Performance and condition monitoring Investigation of asset related failures, incidents, and nonconformities |
| Customer charter and compensation arrangement | Communication, participation, and consultation |
| Management of Planned Interruptions | Communication, participation, and consultation |
| Asset Data Collection and Asset Data Quality | Information management |
| Asset Management Practices | Asset management strategy Risk management process(es) Use and maintenance of asset risk information Corrective and preventative action |
| Cost Estimation Practices | Information management |
| Quality Assurance | Legal and other requirements |

Table 2: Relationship of Development Plan content to AMMAT framework

We have used the AMMAT framework to assess how certain initiatives outlined in this Development Plan and in our Asset Management Development Plan would contribute to our overall asset management maturity journey. Undertaking this exercise enables us to demonstrate where each of our specific improvement initiatives will add value in terms of our overall asset management maturity and improvement planning.

We acknowledge that using AMMAT in a predictive manner is not typical, and that some of the focused improvement initiatives do not warrant a step stage in scores at an individual AMMAT question level. In order to capture the value of an initiative in contributing to our asset management maturity journey, in cases where we are in part moving to the next maturity level on the AMMAT framework we simply fractionalised the improvement quantum to demonstrate the overall collective enhancement of asset management at Aurora Energy. For example, a particular initiative might contribute to a move towards Maturity Level 3 on several AMMAT questions, and so we quantified that by enhancing the scores by question, where relative, by 0.2 or 0.5. The scores were then aggregated by asset management function as per the AMMAT definition.

The outcome is shown in Figure 1 below against Aurora's 2022 AMMAT score, the industry standard and Aurora's current internal target, which is informed by priority business objectives.







3. VOLTAGE QUALITY

This chapter sets out Aurora Energy's plan for developing and improving our low voltage network practices. Reflecting our internal terminology, we describe our approach using the term Power Quality (PQ).

3.1. BACKGROUND AND CONTEXT

Aurora Energy recognises that the quality of power received by our customers is important. While different customers will have different requirements, we need to ensure that all customers receive a consistent and predictable supply.

To ensure that we effectively meet this need, we plan to improve the way we monitor and manage power quality on our network during the CPP Period.

3.1.1. How we define Power Quality at Aurora Energy

All electricity networks experience power disturbances. Here at Aurora Energy, we work to improve our network to reduce these disturbances as much as we can, but it is impossible to guarantee a power supply free from voltage sags, spikes, and surges due to the types of things that can cause them.

PQ disturbances occur for various reasons – it could be from the distribution network end, the transmission network end, the customer end, or simply a result of the weather. While it is not possible to eliminate power quality disturbances completely, we have put in place a PQ Roadmap, to help ensure that power quality issues do not become too frequent or too large.

Aurora Energy seeks to maintain power quality within limits specified by the Electricity Safety Regulations, the Electricity Engineers' Association Power Quality guidelines and network standards. However, changes in load and generation invariably cause power quality excursions. These excursions have the potential to be exacerbated as distributed energy resources (DER) introduce reverse power flows and alter load characteristics.

At Aurora Energy, we define good power quality as a steady supply that stays within the normal operating voltage range. Sometimes, things happen which can cause the voltage to operate under, or over, the normal range which can lead to equipment malfunction or damage. If it is under the normal voltage range, it can cause partial outages (known as dips, or brownouts). If it is over the normal voltage range, customers may experience the shutdown of invertors for solar generation. The types of voltage interruptions are determined by the duration, as shown in Figure 2 below.





All PQ enquiries are important to us and we try to resolve each one of them as soon as possible. Reflecting that they have different consequences, PQ enquiries are prioritised in accordance with their severity and potential impact on customers.

3.2. DISCLOSURE REQUIREMENT

Aurora Energy is required to describe how we plan to develop and improve our low voltage practices for:

- monitoring voltage quality on the low voltage parts of our network
- achieving compliance with applicable voltage requirements of the Electricity (Safety) Regulations
 2010 on the low voltage parts of our network
- responding to low voltage quality issues when they are identified
- communicating to affected consumers the work on voltage quality that we are doing on our low voltage network¹

3.3. Key initiatives / Planned improvements

During the past year we have put in place several initiatives to improve the level of power quality experienced by customers on our network.

We have improved our PQ complaints procedures and invested in PQ monitoring resources to reduce the response times. We have improved data capture as part of the PQ assessment process which has enabled

¹ Commerce Commission (2021). Determination, clause 2.5.4(a).



us to analyse our PQ performance trends. This also provides real-time access to our customer services team to improve customer experience.

Many historical voltage issues on our low voltage network are related to the performance of our 6.6/11 kV network. Reflecting this we have progressed initiatives that target improvements in the voltage profile and performance of our 6.6/11 kV feeders. This included reviewing and overhauling our internal Voltage Control and Management Standard. The required actions include changes to voltage relay and distribution tap settings, and low voltage design changes. The proposed changes to meet this new standard will be put in place during the CPP Period.

Our network planning processes are also being enhanced. We have finished the development of a GIS extract to populate our DIgSILENT power-flow model, which we have begun to use to identify areas of voltage constraint on the 6.6/11 kV network.

While it is not possible to eliminate power quality disturbances completely, we have put in place a PQ Improvement Roadmap. Over time as we implement the phased initiatives, we will reduce the likelihood of frequent or material PQ issues. The roadmap (see Figure 3) sets out how we will progress through four maturity stages, defined in our power quality maturity model.

To aid our improvement journey we have defined four broad maturity stages:

- 1. **Reacting**: our ability to model and predict PQ problems is still developing and issues are often resolved following receipt of enquiries from customer.
- 2. Monitoring: we can observe PQ problems by using monitoring devices such as distribution transformer monitors and/or by analysing smart meter data. Network modelling together with improved monitoring will allow us to resolve PQ issues before they materially impact customers, improving the level of service they receive.
- **3. Anticipating**: PQ problems are anticipated to avoid material issues on the network. Actions may include network upgrades, installation of capacitor banks or harmonic filters to avoid PQ problems before they start to affect network performance. Active monitoring will help us to better anticipate the upcoming PQ concerns.
- 4. **Predicting**: PQ problems can be predicted over the longer-term, helping to avoid potential issues from increased DER on our network. Network policies, strategies, standards, and processes will be updated to avoid PQ problems before they start to appear in the network. Future scenarios will be tested in high voltage and low voltage models to forecast the PQ concerns.

An important part of our new reporting approach is to track our response and action times through each phase of the process. Through this reporting we are able to take corrective action if customer response times become excessive and/or customer communication is not maintained. More generally, the work we are doing to improve power quality is communicated through this improvement plan and associated customer engagement forums, and in our Annual Delivery Reports. In addition, we will ensure that our response to individual power quality enquiries includes communication with affected stakeholders on the corrective actions we are taking to their specific enquiry.

We will take a more proactive approach to compliance, anticipating areas of constraint and taking action to prevent non-compliance. Compliance will likely rely more and more on customer participation through appropriate protection and voltage settings in DERs.



As outlined above, we have a strategic plan in place to meet our regulatory obligations and improve our customer experience. The roadmap has been developed which includes 12 steps to move from a Reacting to *Predicting* stage. This roadmap will be reviewed every two years. We have already completed the first four steps and are currently working on the Phase Two initiatives.



3.3.1. Phase One: from Reacting to Monitoring

This phase has been completed and has enabled us to improve our ability to effectively respond to PQ issues and customer concerns. These initiatives provide a foundation for further improvements as we shift towards more proactive interventions.

- Streamline enquiries process: we have successfully aligned our power-quality enquiries process with the EEA guide.² This included implementing improved monitoring, and updating our PQ register and processes. Implementing this initiative has enabled us to follow consistent approaches for responding to customer enquiries, actioning the support of our field contractors to install monitoring/logging equipment and follow up actions to implement solutions when required.
- Trend analysis: we improved PQ analysis using business intelligence dashboards. These are being
 used to identify location and type of distribution transformers with PQ issues, and to identify and
 monitor network areas with PQ issues.
- Voltage control standard: has been overhauled to ensure required changes to voltage relay and distribution tap settings are implemented during the CPP Period.

² Electricity Engineers Association. (2013). Power quality guide (update and amendment).



 Network analysis: building on improvements in our DIgSILENT modelling capability and using expanded network information, we can begin to identify constraints on the network that may experience PQ issues.

3.3.2. Phase Two: from Monitoring to Anticipating

This phase will see us build on our monitoring capability to begin anticipating PQ issues and customer concerns. These initiatives will provide additional benefits as we further improve our capabilities.

- DTM Programme and field work: we will roll out *Distribution Transformer Monitoring* (DTM) capability in strategically selected locations to provide a baseline capture of performance and trend analysis.³ We will also complete field work across the network to implement our new Voltage Control Standard.
- Hosting capacity study: we will develop a congestion policy based on a hosting capacity study. This
 will allow us to better manage DER uptake and limit related PQ concerns.
- Network scenarios: we will create a set of network scenarios to reflect the potential impacts of possible load growth scenarios. A key focus will be the impact of decarbonisation through electrification.
- Hotspot modelling: using our improved analytical capabilities we will begin to model near-term, future PQ hotspots on the network using validated HV and LV models populated with smart-meter data.

3.3.3. Phase Three: from Anticipating to Predicting

Leveraging the analytical and data improvements from Phase Two, we will further develop our modelling capabilities to begin predicting longer-term PQ trends. This will facilitate efficient solutions to address future PQ issues.

- Refine scenarios: we will refine our short-term scenarios and begin to develop longer-term versions that include the scenarios for the uptake of PV, EVs, battery storage and other emerging technologies
- Predictive modelling: using the refined future scenarios we will build predictive models to anticipate long-term PQ concerns on the network
- Standards and strategies: to ensure we effectively embed improved processes and tools we will
 update our related asset management strategies and relevant technical documents such as
 approved list of materials, distributed generation standards, and load connection protocols
- Preventive solutions: based on our improved long-term view of the network's PQ performance we will develop a suite of preventive solutions. By targeting future PQ issues, these solutions (e.g. harmonic filters, VAR allocations, and network upgrades) will be more efficient to deploy

³ Our preference is to use smart meter data to inform our PQ analysis, however, we currently do not have sufficient access to this information. In the interim we will use data collected through the DTM rollout. As smart meter data becomes available we will utilise annual snapshots (initially) before moving on to use real-time meter data.



3.4. EXPECTED BENEFITS

The above initiatives will realise a number of benefits for Aurora Energy and our customers, for example:

- We are better placed to quickly address power quality problems observed by consumers and can
 actively try to resolve these PQ problems.
- PQ problems can be observed using monitoring devices such as DTM and smart meter data. These
 will allow us to resolve PQ issues before they impact customers, improving the level of service they
 receive.
- Improved analysis and reporting will provide better information to our customer services team allowing us to improve customer experience.
- Developing our ability to predict PQ issues on the network will allow us to deploy proactive, more
 efficient solutions (e.g. harmonic filters, VAR allocations, and network upgrades).
- Improve our ability to consistently supply customers within regulated voltage range (+-6% of 230 V).

3.5. MILESTONES

We expect the majority of this programme to be completed by the end of RY24. Beyond this some ongoing programmes (e.g. implementation of the new Voltage Control Standard) will continue through to the end of the CPP Period.

| Phase / Initiatives | TIMEFRAME | Сомментя |
|------------------------------|-----------|---|
| Reacting to Monitoring | RY22 | This phase has now been completed |
| Monitoring to Anticipating | | |
| DTM Programme and Field Work | RY26 | This includes both the rollout of DTM and field work to implement the new Voltage Control Standard |
| Hosting capacity study | RY23 | Including both DG and EV hosting capacity analysis |
| Network scenarios | RY23 | We have included initial growth scenarios in our 2022 AMP and we will refine these in RY23 |
| Hotspot modelling | RY24 | We will utilise the RY23 hosting capacity studies to inform areas requiring further hotspot modelling in RY24 |
| Anticipating to Predicting | | |
| Refine scenarios | RY24 | Further tracking and revision of our growth scenarios will be undertaken |
| Predictive modelling | RY24 | We will incorporate our growth scenarios into our hotspot and hosting capacity analysis to predict areas of future constraint |
| Standards and strategies | RY25 | We anticipate that a review of our standards and strategies for managing the LV network will need to be reviewed to best capture our field experience, modelling and forecast learnings |
| Preventive solutions | RY26 | By RY26 we will be implementing a range of preventive solutions to forecast areas of constraint |

Table 3: Voltage Quality Development Plan milestones



4. CUSTOMER CHARTER AND COMPENSATION ARRANGEMENT

This chapter sets out Aurora Energy's plan for developing and improving our customer charter and consumer compensation arrangement.

4.1. BACKGROUND AND CONTEXT

Aurora Energy published its current customer charter and compensation arrangement in 2017 and remains the only electricity distributor in New Zealand with a customer charter in place and publicly available. The customer charter was designed to hold out a series of customer commitments and to ensure that customers were fairly compensated for service failures.

While the customer charter was a significant improvement in Aurora Energy's goal to become more customer-centric, components of this charter have not been fully operationalised and awareness about the existence of the charter is low.

Following public feedback during the CPP consultation, in particular relating to customer experience, Aurora Energy is committed to reviewing the existing customer charter and compensation arrangement, seeking public feedback on any changes, and better promoting and communicating our customer commitments. Additionally, we are committed to enhancing our customer experience reporting and ensuring we continue to build an internal culture at Aurora Energy that puts our customers first.

The initiatives and improvements that we set out here in Section 3 are the key activities within the CPP period that we believe will enable us to build on work completed to date, enhance awareness of our customer charter and compensation arrangement, and build a customer-centric Aurora Energy culture.

4.2. DISCLOSURE REQUIREMENT

We are required to describe how we plan to develop and improve engagement with consumers in our customer charter and consumer compensation arrangement⁴.

4.3. Key initiatives / Planned improvements

As part of this development area, we expect to progress the following main initiatives so that we have a contemporary customer charter and compensation arrangement that is fit for purpose and understood by our customers and staff:

- Review and consultation: Review the customer charter and compensation arrangement to ensure it remains fit for purpose and is well understood.
- Increase knowledge and commitment: Increase knowledge of, and commitment to, our customer charter and compensation arrangement.

⁴ Commerce Commission. (2021). Determination, clause 2.5.4(1)(b)



 Promotion and celebration: Promote and celebrate Aurora Energy's commitment to customer experience by ensuring the customer charter is available at all Aurora Energy events and public consultations and executing an annual promotional campaign.

4.3.1. Review and consultation

Our initial focus will be on ensuring that our customer charter and consumer compensation arrangement is contemporary and well understood by both external stakeholders and by our internal staff. We aim to achieve this by:

- reviewing our existing customer charter and compensation arrangement
- designing and delivering an internal consultation programme to ensure our service commitments are measurable and fit for purpose
- designing and delivering a public consultation programme to seek feedback on a revised customer charter
- launching a new version of our customer charter to our customers and stakeholders

We will measure awareness of the customer charter as part of an annual customer survey and report on results.

In RY26 we will follow a similar process to review the customer charter and compensation arrangement to ensure it remains fit for purpose and is well understood by staff, customers and stakeholders. It will involve an internal review with our staff, followed by public consultation on any changes, with the results being published on our website.

4.3.2. Increase knowledge of our customer charter

Once we have initially introduced a revised version of the customer charter and compensation arrangement, we plan to increase knowledge of, and our internal commitment to, our customer charter and compensation arrangement. We will do this by:

- ensuring the customer charter is accessible and available to all customers
- developing a promotional clip outlining our customer charter
- producing a visual annual KPI report of our service commitments for customers
- designing and delivering an internal customer charter campaign for staff
- measuring awareness and understanding of our customer charter and consumer compensation arrangement through our annual customer survey



4.3.3. Promotion of our commitment to our customer experience

With an embedded revised customer charter, we will promote and celebrate our commitment to the experience of our customers by:

- ensuring our customer charter is available at all Aurora Energy events and public consultation forums
- executing an annual promotional campaign to continue to enhance knowledge and awareness of the customer charter and compensation scheme
- promoting our performance against our customer charter and consumer compensation arrangement to our customers

4.4. EXPECTED BENEFITS

The above initiatives will realise a number of benefits for Aurora Energy and our customers, including:

- the publication of a contemporary customer charter and compensation arrangement that is based on customer feedback
- building a customer-centric culture at Aurora Energy
- aiding widespread understanding of the customer charter and compensation arrangement, both internally and by customers and external stakeholders
- enhancing accountability through public reporting on an annual basis
- ensuring that the customer charter and compensation arrangement remains relevant and fit for purpose

4.5. MILESTONES

We expect this programme to be completed by the end of RY26.

Table 4: Consumer Engagement Development Plan milestones

| Key Activities / Milestones | TIMEFRAME | Сомментя |
|---|-----------|---|
| Initial review, consultation and launch of a revised customer charter and compensation arrangement | RY23 | We will carry out both internal and external consultation |
| Increase knowledge of, and commitment to, our customer charter and compensation arrangement | RY24 | |
| Promote and celebrate Aurora Energy's commitment to customer experience | RY25 | |
| Conduct a further review of the customer charter and compensation arrangement to ensure it remains fit for purpose and is well understood | RY26 | |



5. MANAGEMENT OF PLANNED INTERRUPTIONS

This chapter sets out Aurora Energy's plan for developing and improving our planning, management, and communication of planned interruptions.

5.1. BACKGROUND AND CONTEXT

Aurora Energy's planned network investment during the CPP period requires more planned outages to carry out renewal and maintenance work safely. This means more interruptions to customers' power supply than has historically been the norm.

Before, and during, the development of our CPP application, we asked customers for their feedback on planned outages through consultation and research. Similarly, the Commerce Commission received feedback from customers during its own consultation during the developing of our CPP.

From both our own consultation and research, and the Commission's consultation, we have heard from customers that:

- they prefer planned outages over unexpected ones, but only if they are told in advance
- they value overall communication because they want to be able to plan around power outages
- they value real time updates for planned outages
- they would like direct notification of planned outages to affected customers
- the season in which an outage occurs can make a big impact on how it affects them
- time of day matters to customers, but there is no time that is good for everyone
- planned outages need to be better planned and notified by Aurora Energy
- some are frustrated by the number of planned outages and the timing of those outages

The research findings and stakeholder feedback support our existing customer service initiatives around outages such as the advance notification of planned outages, our ongoing focus on outage planning and coordination (including community engagement) and providing updates on outages via social media and our website. Our planned system improvements will enable improved communication of real-time information about planned outages to customers.

As we have been increasing the amount of network renewal and maintenance work we do, we have also been making ongoing improvements to the planning, management and communication of planned outages. Already we have:

- completed the transition to a new service provider for after-hours contact handling, following review
- improved the website user experience making it easier for customers to find out information about outages (the main communications channel that customers prefer)



- developed a stage gate process framework, which we will now look to implement and within which we will manage the scheduling and preparation of planned outages and improve process quality
- started trials of bundled work, where we combine multiple jobs in one outage to reduce customer disruption
- in addition to the required notification to a customer's retailer, implemented processes to communicate all planned outages on our website, and via social media where possible

5.2. DISCLOSURE REQUIREMENT

We are required to describe how we plan to develop and improve our planning, management, and communication of planned interruptions to customers⁵.

5.3. Key initiatives / Planned improvements

While it is not possible to avoid interruptions on our network, there are initiatives we can implement, and improvements we can make, as a business to minimise the impact of the interruptions that we plan. As part of this development area, we expect to progress the following main initiatives:

- **Bundled works**: reduce the overall impact of planned interruptions on customers by bundling multiple works and optimising maintenance programmes
- Improving how planned outages are scheduled and managed: including improving the delivery of planned interruptions as notified to customers, with fewer cancellations and notification errors
- Mitigating the impact of planned interruptions: ensuring a consistent and considered approach is taken to mitigating the impact of planned outages
- Improving the outage information available to customers: implement an outage management system (OMS) to provide real time information on active outages to customer channels

5.3.1. Bundled works

In order to improve the delivery of planned outages as notified to customers, and to reduce the overall impact of planned interruptions, we will:

- increase, where possible, the use of bundled works, where multiple jobs are carried out during a single planned outage, to minimise customer disruption
- develop reliability zones to enable us to identify all assets that require maintenance or replacement in a given section of the network. The focus will initially be on implementing reliability zones for our high voltage network, and then once embedded, the use will be extended to the low voltage network.

The reliability zones will be developed as layers in our GIS system that group assets through network connectivity modelling into zones that are related electrically and collectively isolated when switching devices are operated, to facilitate access to the network for maintenance activities. Those zones will be

⁵ Commerce Commission. (2021). Determination, clause 2.5.4(1)(c)



used in our works scheduling and outage planning processes to identify and combine work packages of multiple asset classes into single outages.

5.3.2. Improving how planned outages are scheduled and managed

Stage gate process

Implementing a stage gate process to schedule and notify planned interruptions will improve the number of planned outages that are delivered with at least 10 working days' notice to impacted parties, providing them time to act as appropriate. This process change will also enable us to identify the potential customer impact of planned outages earlier in the scheduling process so that we can plan and mitigate impacts more effectively.

As part of the stage gate improvement plan, we intend to:

- bring the customer impact review earlier in the scheduling process where we have greater ability to improve customer outcomes
- establish and adhere to business rules designed to improve workflow quality
- develop process progress reporting for greater visibility on what stage each planned outage is at so that things do not get missed
- clarify accountabilities and handovers at each stage of the process to avoid mistakes
- seek external advice on our planned stage gate improvements and their implementation

Outage variations

In addition, we plan to develop more robust outage variation monitoring, analysis and reporting practices to enable us to identify any corrective actions and improvement opportunities when a planned interruption runs significantly over or under the scheduled time, is cancelled or deferred following customer notification, or if the notification list was identified as inaccurate.

To this end, we plan to:

- adopt a cancellation and deferral approval process
- develop an outage variation reporting framework
- implement an outage variation corrective action process

5.3.3. Mitigating the impact of planned interruptions

To mitigate the impact of planned interruptions on customers, we plan to review our outage planning guidelines to ensure that customer impact is consistently considered. The purpose of the guidelines is to identify the important customer factors Aurora Energy considers when setting the date and time for a planned outage and how the customer impact is mitigated. Relevant factors include:

- when an interruption is scheduled (does the outage date coincide with an event, a time of day, time
 of year that would cause extra disruption?)
- whether an interruption affects vulnerable customers or the supply to an essential service
- whether specific measures have been agreed with the community for future planned interruptions



 whether an interruption would affect the same group of customers repeatedly in a short period of time or result in customers being without power for consecutive days

5.3.4. Improving the outage information available to customers

We are in the process of implementing an outage management system (OMS) within our advanced distribution management system (ADMS). The implementation of the OMS will result in us being able to access real-time updates on planned interruptions as they occur and will provide a single data source to update customer channels (i.e. the website and contact centre) on the status of active interruptions in real time.

Once the OMS is implemented, the functionality to provide real-time planned interruption status via the website will be introduced, followed by functionality to provide real-time planned interruption status by subscriber SMS.

5.4. EXPECTED BENEFITS

The above initiatives will realise a number of benefits for Aurora Energy and our customers, for example:

- greater consistency in identifying and mitigating the customer impact of planned interruptions
- a reduction in the number of planned interruptions that a customer would otherwise experience to perform the same work
- the provision of real-time updates on planned outages as they occur through our website and contact centre

5.5. MILESTONES

We expect this programme to be completed by the end of RY26.

| Key Activities / Milestones | TIMEFRAME | Сомментя |
|--|-----------|---|
| Bundled works | | |
| Increased use of bundled works | RY23-RY24 | As we evolve our works management practices in conjunction with the implementation of our Asset Management Software System over RY23-RY24 we will incorporate improvements that increase the use of cross asset class works bundling |
| Develop reliability zones | RY22 | The reliability zone design algorithms have been developed and the layers are available in our GIS system |
| Use reliability zones in outage planning | RY23-RY24 | In RY23 we will expand the reliability zone layers into our online GIS platform where they can be accessed by our service providers Service providers will also commence using reliability zones in high voltage outage planning and in RY24 we will use them in both high and low |
| | | voltage planning. |

Table 5: Management of Planned Interruptions Development Plan milestones



| | TIMEFRAME | Сомментя |
|--|-----------|--|
| Stage gate process | | |
| Develop stage gate process | RY22 | The stage gate approach for network access requests has been developed, tested against industry best practice and is ready for implementation in RY23 |
| Implement stage gate process | RY23 | |
| Outage variations | | |
| Adopt cancellation and deferral process | RY22 | An outage cancellation and deferral process has been developed and implemented |
| Develop outage variation reporting framework | RY22 | A reporting framework for outage variation has been developed and is being discussed with service providers in regular contract review meetings |
| Implement outage variation corrective action process | RY23 | |
| Mitigating impact of planned interruptions | | |
| Review current outage planning practices | RY22 | Current outage planning practices have been reviewed amongst internal stakeholder groups and requirements identified |
| Develop and implement outage planning guidelines | RY23 | |
| Improving the outage information to customers | | |
| Implement new outage management system | RY23 | |
| Provide real-time planned interruption status via the website | RY24 | |
| Provide real-time planned interruption status via subscriber SMS | RY25 | |



6. Asset data collection and asset data quality

This chapter set out Aurora Energy's plan for developing and improving our asset data collection and asset data quality practices.

6.1. BACKGROUND AND CONTEXT

Accurate and reliable asset data is a prerequisite for effective asset management underpinned by strong analytical capability. If we are to successfully optimise future investments and manage network risk there will be an increasing need for reliable information and expanded capability, and improved systems and data.

It was identified within our CPP application that we needed to develop asset data systems and processes that align with good industry practice.

In terms of asset data, we know we need to focus on improving both how we collect data on the assets we own, and the practices that we employ to ensure that the quality of our data is such that we can make meaningful and informed decisions about our assets.

Since making our application we have developed our business-wide data strategy, which is the foundation of our asset data improvement journey. This is because asset information is treated no differently by Aurora Energy than any other enterprise data.







The underlying premise of our data strategy is for data to be "born digital", meaning that data is captured electronically at the source and shared consistently across the organisation. We are in the process of enhancing our asset management system, comprising people, process and technology. This will see us aligning our asset data practices with the ISO 55000 asset management framework, for which we plan to seek accreditation as business priorities allow.

While the data and information on which an asset management system is based does not need to be entirely digital, our strategy is to drive improvements in our asset data collection and quality practices by using technology, in particular by automating the collection of asset data in digital form so that it is easier to control, and by introducing the ability to report and analyse the information contained within the asset management system.

With good quality data being made available to the business, we will be able to continue improving our risk framework, budgeting and forecasting activities.

Section 2 describes the asset management maturity journey that Aurora is planning to take during the next regulatory period; we are targeting AMMAT asset management maturity across all dimensions of "system integration and information management". This chapter (6) explains the key initiatives we will undertake to achieve that.

6.2. DISCLOSURE REQUIREMENT

Aurora Energy is required to describe how we plan to develop and improve our asset data collection and asset data quality practices, to:

- systematise our processes for collecting and collating network asset data
- improve our knowledge of network asset condition so that assets are replaced in a timely manner
- ensure we have an appropriate platform for sharing network asset data with internal and external stakeholders
- evaluate whether we are achieving our asset management policies and objectives
- ensure there is a clear line of sight between our network asset condition data and our expenditure forecasts and financial reporting⁶

6.3. Key initiatives / Planned improvements

We have identified the following improvement initiatives that will enable us to develop and improve our asset data collection and asset data quality practices:

- define and document key requirements for asset data to support decision making, including master data and condition data
- implement the systems and processes to facilitate the digital collection of asset data in a timely manner
- implement the systems required to ensure robust storage and integration of our asset data
- improve our internal data management practices by clarifying the roles of data owners and stewards

⁶ Commerce Commission. (2021). Determination, clause 2.5.4(d)



- implement reporting tools and enhance our reporting practices

Each of these key initiatives not only enables us as a business to improve our asset data collection and asset data quality practices, but also fits within, and supports the delivery of, our broader business-wide data strategy set out in section 6.1 above.

Improved asset data and intelligence will enable more accurate and targeted asset condition reporting benefiting both internal and external stakeholders – for example costs, outcomes and forecasting and risk criticality reporting and management. Our geospatial information system (GIS) is the platform by which we share network asset data with our external contractors, and **beforeUdig** is used to share network asset data with the public. The quality of the data reported by us in these systems, together with that shared in our annual information disclosures, will be improved through the implementation of the initiatives set out in this chapter.

6.3.1. Asset data requirements

Before we can start collecting the data for consumption within the business, we need to be clear on exactly what data and business rules we require to support our decision-making.

We will define and document the key asset and network-related data that we require. This will focus on:

- static (or master) data (for example installation date, manufacture date and material type)
- dynamic data (for example asset condition)

As a part of our project to implement our asset management software solution (discussed at section 6.3.3 below), we are identifying and documenting some of that data.

Together, data of this nature will enable us to evaluate asset performance in terms of risk, and in turn determine what types of assets we install, when and where.

6.3.2. Asset data collection

With defined asset data requirements, we will be in a better position to ensure that our asset-data lifecycle is optimised. This includes the collection of the data.

We contract the delivery of our works programme to our field service providers. While we need to be clear with those field service providers to what data we need them to collect, we also need to be able to provide them with the appropriate tools to enable them to capture, and provide to us, that data in a uniform, streamlined way.

To improve the way in which our data is collected so that the need for manual intervention is minimised, we will develop and implement an integration platform for our field service providers to use. This platform will be context-specific, which means that the field service provider will only be able to provide a consistent set of information.

We also recognise the importance of receiving our asset data in a timely manner. To improve the timeliness of our data capture we plan to work with our field service providers to introduce key performance indicators to improve the timeframes within which field-based staff capture, and provide to us, asset-related information.



6.3.3. Asset data storage

We currently use the following main systems for storing our asset data:

- Geospatial information system (GIS): which we use for geospatial information.
- Advanced Distribution Management (ADMS) and Historian: both systems will provide real-time operational characteristics to the business.
- Financial Management Information System (FMIS): which provides us with financial data in relation to assets (for example, asset value and depreciation information).

In addition to the above, we are in the process of implementing an Asset Management Software Solution (AMSS). This will be a repository of both static and dynamic asset data. Integration of our AMSS and FMIS will enable seamless capture of asset work order information including asset type, expenditure category and cost information. This integration will enable us to efficiently and accurately track and report the cost and asset quantities associated with projects and programmes of work, which is a key requirement of our CPP Annual Delivery Reporting.

To integrate each of these stand-alone systems, we will use a third-party integration hub. This will ensure referential integrity between asset information in each of these core systems.

Each of the core systems is "best-of-breed", with a smaller scope than an enterprise resource planning solution, which minimises the amount of business change necessary for each phase of transformation. As each system is enhanced, it only needs to be integrated with the integration hub, avoiding disruption to the other core systems.

Similarly, as changes are applied to the GIS, FMIS and ADMS, integration changes will be limited to the integration hub, thus minimising the impact on other systems and their related business processes.

Once in place, this integrated structure will support and enforce digital-only data capture by our field service providers.



6.3.4. Data management

It is important that our data management practices are robust, considering the whole lifecycle of the information, from identification of need, creation, quality assurance, maintenance, reuse and ultimately to archiving or destruction once the information has ceased to be useful. To ensure that we have good quality data relating to assets we will improve our internal practices that underpin key parts of the data capture process. This will include:

- bringing a range of policies, standards and processes in place to ensure availability and integrity
- improving the ways in which we clean up our data
- implementing data management controls
- implementing data audits



6.3.5. Data reporting

To support more robust analysis and advanced asset-related reporting, we will introduce new analytical tools into the business. While the quality of the analysis will at first be limited by the quality and availability of source data, we expect to see this improve markedly over time because of new controls being implemented. The value of asset analytics should also improve accordingly as more improved historical asset information is progressively recorded.

As a result of introducing new analytical tools, we will be able to tailor reports that align to specific business needs. This will take place in line with a business intelligence and analytics framework that we plan to introduce to support internal reporting and consumption of data. The following components will be essential to that framework:

- creating an internal centre of excellence, which includes building up capability within Aurora Energy and developing a solid foundation for dashboard reporting
- creating dashboard delivery capability

6.4. EXPECTED BENEFITS

The above initiatives will realise a number of benefits for Aurora Energy and our customers, for example:

- The initiatives in this plan will deliver a requirement set out in our Asset Management Policy to "use improved asset data and complete, accurate and timely information to ensure decisions deliver value while balancing cost, risk and performance". The use of new systems, system integration, data governance and processes will significantly improve the completeness, quality and timeliness of our asset data.
- Data capture will be improved with embedded business rules that relate to asset criticality and that are aligned to deliver on strategies that improve the quality, accessibility and alignment of asset-related data, and the efficiency with which we collect and use asset-related information
- A single source of truth through an integrated data storage solution will improve the reliability and consistency of the data upon which we are making asset-related decisions, for example decisions related to risk, investment and prioritisation will benefit customers by improving both safety and reliability.
- Improving our asset attribute data and linking financial with asset information will enable us to better forecast our asset renewal and maintenance requirements. Enabling tailored reports to be prepared will mean that the data generation process is standardised including quality controls, and that reports can be updated without additional effort and without processing errors straight from the source.

6.5. MILESTONES

We expect this programme to be completed by the end of the CPP Period.

Table 6: Asset Data Collection and Asset Data Quality Development Plan milestones

| Key Activities / Milestones | TIMEFRAME | Сомментя |
|-----------------------------|-----------|----------|
| Asset data requirements | | |



| Define and document key asset and network-related data requirements | RY23 | This will include defining master and dynamic data requirements |
|---|-----------|--|
| Define and document business rules to support decision making | RY24 | |
| Asset data collection | | |
| Automated systems for collecting data from contractors | RY25 | From RY23 we will use a mix of mobility tools and integration with FSA partners |
| Improve data storage | | |
| Implementation of an asset management software solution | RY25 | The asset management software solution will be stood up in RY22 and key functionality rolled out progressively over the following 3 years |
| Development, and implementation of a data integration hub | RY25 | The integration hub will be implemented in RY23 and deployed progressively across core information systems over the following 2 years |
| Build data management framework | | |
| Bringing a range of policies, standards and processes in place to ensure availability and integrity | RY23 | |
| Improve the ways in which we clean up our data | RY23-RY24 | Will be progressively implemented across different asset types |
| Implement data management controls | RY25 | Will be prioritised based on the levels of accuracy required |
| Implementing data audits | RY23 | We will implement data audits in RY23, with a view to broadening the scope of these as our processes mature throughout the CPP Period |
| Introduction of new analytical tools for internal use | RY25 | We will progressively implement the business intelligence framework from RY23, prioritising implementation by business need |



7. Asset management practices

This chapter sets out Aurora Energy's plan for developing and improving our asset management practices and processes.

7.1. BACKGROUND AND CONTEXT

Continuous improvement in our asset management capability is a key focus area for Aurora Energy. In this chapter we document our priority asset management development actions and timeframes, including those specific initiatives outlined in the CPP disclosure requirement.

Our 2022 AMP outlines our broader asset management development initiatives and tracks our progress against AMMAT. We have made significant progress over the last two years to address asset inspection backlogs and to increase the completeness and quality of the data and information we use to inform our asset management decision making. Chapter 6 above outlines the ongoing improvements in asset data collection, management, and quality. We have also begun to quantify risk in asset fleets that have the potential for high levels of safety risk (for example, the overhead network).

Further asset management development is ongoing, and continuous improvement will be critical if we are to operate successfully in a changing environment and keep up with customers' evolving expectations. Maintaining appropriate performance of assets through leading-practice asset management across the organisation, and improved risk management, will ensure we can effectively deliver on our safety and reliability commitments.

We have identified several areas where we need to improve if we are to achieve (or exceed where appropriate) good industry practice. The implementation of our broader AMDP in our AMP will largely occur during our CPP period, and its timing will allow us to leverage the improvement outcomes to optimise future investment plans.

To monitor our progress, we will engage asset management capability specialists to periodically review our capability, with AMMAT and ISO55001 assessments where appropriate. Understanding the maturity of our asset management practices is necessary for determining the scope of asset management improvements in our AMDP.

As we progress through the CPP period and we address the more obvious safety risks associated with asset renewal and maintenance backlogs, it will become increasingly important that we improve our asset management capability to enable optimisation of the more complex future investment decisions. We will focus on developing fit-for-purpose asset fleet strategies, further improvements to our risk management approach including refinement of our asset health modelling and embedding a network-wide criticality framework.

7.2. DISCLOSURE REQUIREMENT

Aurora Energy is required to describe how we plan to develop and improve our asset management practices and processes, including, where appropriate, to develop and improve our:



- asset health models so that they are informed by network asset condition data
- understanding of asset criticality so that it informs our strategies for asset replacement and renewal
- asset risk framework so that we can make risk-based decisions in relation to our supply of electricity distribution services, including, where appropriate, based on reliability risk, environmental risk, high-impact low-probability event risk, and safety risk
- practices for identifying and reducing safety risks in relation to our supply of electricity distribution services, including using frameworks to prioritise identified safety issues and to justify investments to reduce the likelihood of those issues arising⁷

7.3. Key initiatives / Planned improvements

The objective of our asset management improvement initiatives is to ensure we can provide customers with a safe and reliable electricity distribution service, while minimising the whole-of-life cost of managing our assets.

In most cases, the initiatives outlined below do not involve starting from ground zero but are instead a review and enhancement of existing practices, and will collate and build on existing documentation to ensure alignment and consistency of application.

Key initiatives include:

- strategy and planning: develop fleet strategy documents and plans for each of our asset fleets, to support optimisation of asset interventions across the asset lifecycle. Our fleet strategies will be guided by a standalone Strategic Asset Management Plan (SAMP) reflecting our business objectives and Asset Management Policy
- define and evaluate risk: further develop our asset health/probability of failure evaluation and our asset criticality/consequence classifications to enable improved risk quantification
- asset management decision-making: document our decision-making processes and improvements to the tools and the analytics used to support our asset intervention decisions, including taking account of risk evaluation outputs to inform our asset risk reduction investments
- risk management and review: establishing effective management and governance reporting and review mechanisms to provide assurance that strategic and safety objectives are being achieved

Preparation and implementation work has started on many aspects on the initiatives above. Continuing to improve the accuracy of our *CPP Safety reporting* is dependent on making further progress to *define and evaluate risk.*

Our 'define and evaluate risk' initiative is highly dependent on the initiatives we have set out in Chapter 6 (*asset data collection and asset data quality*). Enhanced asset management decision-making is dependent on our *cost estimation practices development plan* and the outcome of our *define and evaluate risk* initiative. In our view the Commerce Commission disclosure requirement initiatives addressed in this CPP development plan are at the heart of good asset management and are therefore significant priorities in our AMDP.

⁷ Commerce Commission. (2021). Determination, clause 2.5.4(e).



7.3.1. Strategy and Planning

Documenting our SAMP and fleet strategies and plans is critical to achieving asset management line of sight and consistent application of our strategy into our business processes and technology solutions. We propose to document our:

- Strategic Asset Management Plan (SAMP): our SAMP will be guided by our Asset Management Policy and will outline how our asset management objectives support the delivery of our business strategic objectives and initiatives
- Fleet Strategies/Plans: these documents will be guided by the SAMP and define our decision-making and implementation frameworks for each asset fleet
- Asset information: as part of our Asset Data Collection and Quality development plan we will specify
 asset attributes and collection methodologies. As the maturity of our risk-based asset management
 decision making improves, we will continue to refine the specification of requirements for asset
 data attributes, including installation and location information as well as condition data for lifecycle
 management, enabling data capture in our technology systems; GIS and AMSS
- Asset failure modes: we will document failure modes, effects and consequence analysis (FMECA) for all asset fleets

7.3.2. Define and Evaluate Risk

We will develop and implement an asset risk management framework, taking account of the asset failure mode analysis above with a definition of risk components, allocation of risk treatment actions against risks and evaluation of risk management effectiveness:

- Asset Health: we will define the formula for asset health evaluation for all assets based on asset age, location or utilisation-based aging intensity and condition monitoring data. We plan to set up our information systems (AMSS, GIS and ADMS) in such a way that asset health index is updated continuously
- Asset Criticality: we will define how asset location and its functionality amplify the potential impact on safety, customer experience, environment and business operation. We will register criticality factors in our information systems and incorporate them in our calculation of an Asset Criticality Index for each affected asset
- Asset risk evaluation: we will develop a live tool which will present the current risk status for each asset and fleet

7.3.3. Asset Management Decision Making

We plan to improve how decisions are made, documented and followed. With the improvement in asset data and information, we will be in a position to systemise our asset management decision-making. This will provide us with an opportunity to compare and prioritise actions based on the value of residual risk, taking account of the inherit risk and risk mitigation effectiveness.

 Align decision-making with risk: we will define what actions target specific failure modes and causes and mark all works at their initiation with their risk drivers including safety and reliability etc. With the implementation of a live asset risk calculation described earlier, we will be able to evaluate the



need for action based on the current risk levels. This will help us to prioritise works based on the risk they mitigate

- Define and monitor risk control effectiveness: we will track asset failure root cause information and evaluate our programs of work by the forecast failure mode and risk reduction. This will allow us to establish a mechanism for further prioritisation of works by their effectiveness
- **Define and document investment approval process**: we will have a clear process of evaluation and approval of major projects, programmes and minor works within the described risk framework.
- Live asset risk evaluation (aspirational): we will extend the live risk evaluation tool outlined above to provided cost estimates and forecast risk reductions for asset investment-based intervention options

7.3.4. Risk Management and Review

We intend to review and enhance our process for tracking risk controls and updating and reporting business risks including asset related risks. Improved ownership of risk treatment plans and a consistent approach to risk management will lead to improved risk management and assurance.

- Determine our critical business risks: we will review and consolidate our critical business risks, enabling the development of improved/targeted treatment plans
- Risk and treatment plan ownership: our revised process will create greater accountability and responsibility for the development of risk treatment plans and controls
- **Governance reporting**: consolidated governance risk reporting will enable improved tracking of our critical risk treatment plans and associated actions

7.4. EXPECTED BENEFITS

These improvements are directed towards aspects of our asset management system, processes and culture where improvement is most needed but also where the benefits are likely to be material. The initiatives implement recommendations from independent reviews and reflect knowledge and experience of approaches adopted in leading distribution companies. These initiatives also reflect the innovative thinking of our asset management team to ensure that we fully realise the potential of the investment we are making in our asset management system.

Ultimately, our objective in undertaking these initiatives is to ensure customers receive a safe and reliable service that they value, while minimising the whole-of-life cost of managing our assets. We note that while many of the initiatives will underpin our post-CPP determination investment plans, others will take a number of years to fully implement.

The above initiatives, including the data enhancements identified in chapter 6, will realise a number of benefits for Aurora Energy and our customers, for example:

 improved documentation of our strategic objectives will enable improved line of sight, leading to consistent and repeatable actions and associated process efficiencies providing downward pressure on internal asset management costs



- better determination of asset health and criticality will enable us to better quantify current risk and prioritise our year ahead work plan and maximise short term improvements in safety and reliability performance
- improved understanding of our risk controls and their effectiveness will enable us to better forecast our asset renewal and maintenance requirements and thereby enable an improvement in the quality of our expenditure forecasting. Improved forecasting benefits our shareholder financial planning, informs regulatory oversight and management, and better informs future prices for customers
- effective governance reporting will ensure a clear view of business risks, and the importance of our business and asset management plans to implement and maintain our risk management controls, and thereby support investment to develop and implement enhanced asset management risk control proposals

7.5. MILESTONES

We expect this programme to be completed in a number of stages over the CPP period to RY26. Many initiatives can occur in parallel while others have a natural sequential nature. In most cases these initiatives are a review and enhancement of existing practices, and will collate and build on existing documentation to ensure alignment and consistency of application.

| KEY ACTIVITIES / MILESTONES | TIMEFRAME | Сомментя | | |
|---|--------------|---|--|--|
| Strategy and Planning | | | | |
| Strategic Asset Management Plan (SAMP): | RY23 | We will develop our SAMP in time for incorporation into our 2023 AMP | | |
| Fleet Strategies and Plans | RY23 to RY24 | We will stage our Fleet Strategies and Plans, prioritising fleets that have the potential for the highest safety risks | | |
| Asset Information | RY23 to RY24 | This initiative will be concurrent with the develop of Fleet Strategies and Plans | | |
| Asset Failure Modes | RY23 | Capture of failure modes can be completed relatively quickly but is likely to evolve as root cause fault analysis improves | | |
| Define and Evaluate Risk | | | | |
| Asset Health | RY23 to RY24 | This staged initiative will leverage the strategic direction set by the Fleet Strategies and Plans | | |
| Asset Criticality | RY23 to RY24 | This staged initiative will leverage the strategic direction set by the Fleet Strategies and Plans | | |
| Risk Evaluation | RY23 to RY25 | Risk Evaluation of some fleets is already available, but we will enhance and expand this into other fleets as we improve our asset health and criticality information | | |
| Asset Management Decision Making | | | | |
| Align decision-making with risk | RY23 to RY25 | Staged completion of failure mode analysis and risk evaluation will enable us to make incremental progress with this initiative | | |
| Define and monitor risk control effectiveness | RY23 to RY26 | We will develop root cause (failure mode) analysis and monitoring processes in RY23 for the overhead line assets with expansion into other fleets over the CPP period | | |

Table 7: Asset Management Practices Development Plan milestones



| KEY ACTIVITIES / MILESTONES | TIMEFRAME | Сомментя |
|---|--------------|---|
| Define and document investment approval process | RY23 to RY25 | We will review and enhance our broad process in RY23 and mature the risk-based decision-making aspects in parallel with other initiatives |
| Live asset risk evaluation (aspirational): | RY26 | This initiative is aspirational and is dependent on other development initiatives associated with asset data systems improvement and our cost estimation improvements |
| Risk Management and Review | | |
| Review our critical business risks | RY23 | Work is underway to review our critical risks and we expect to complete this work in RY23 |
| Risk treatment plan and ownership | RY23 to RY24 | Significant progress will be made in RY23 to improve and document our risk treatment plans with completion in RY24 |
| Governance Reporting | RY23 | Improved governance reporting will be implemented in RY23 |



8. COST ESTIMATION PRACTICES

This chapter set out Aurora Energy's plan for developing and improving our cost estimation practices.

8.1. BACKGROUND AND CONTEXT

Aurora Energy recognises that an appropriate level of cost estimation accuracy for our budgets and asset management period forecasting is important. Cost estimation informs the business case decisions we make when developing and assessing options to meet growth and asset renewals and maintenance. Our budgets and forecasts inform our regulated revenue requirements and cashflow projections.

To ensure that we effectively forecast our short- and long-term costs it is important that we have appropriate capability to forecast the drivers of capital investment and maintenance expenditure, and track and predict the associated unit costs. This plan outlines the key focus areas for cost estimation improvement over the CPP period.

In the context of Aurora Energy, cost estimation is applied to the development of budgets and forecasts in our AMP:

- Budgets: we use 'budget' terminology for short-term (typically the first year of our AMP) cost estimation. For network related expenditure the development of budgets generally targets the use of asset specific cost estimation. For example, cost estimation for a conductor renewal project will consider the scope of the work to be undertaken, including location, complexity and other associated work. The board reviews, challenges and approves our regulatory year budget prior to publication of our AMP.
- Forecasts: we use 'forecast' terminology where we are estimating the medium to long term cost of future initiatives and plans. Volumetric fleet <u>forecasts</u> are generally developed for years 2-10 of our 10-year Asset Management Plan (AMP). The development of forecasts is less detailed than budgets, and for network related expenditure it is not usually asset specific. For example, forecasts tend to rely on 'averaging' and 'escalating' historic costs across asset fleet-wide expenditure. The exception to this is large growth and renewal projects where we develop customised cost estimates for most projects in the AMP.

As implied by the disclosure requirement below, there are two key aspects of cost estimation that we discuss in this development plan:

- the determination of unit rate cost estimates for each work type
- the forecasting of volumes for each work type

8.2. DISCLOSURE REQUIREMENT

Aurora Energy is required to describe how we plan to develop and improve our practices for estimating the costs of capital expenditure and operational expenditure projects and programmes, including:

- a description of how we plan to update and manage our models for estimating costs



 a description of how we use the actual costs of completed capital expenditure and operational expenditure projects and programmes to improve future cost estimates⁸

8.3. Key initiatives / Planned improvements

As part of this development area, we expect to progress the following main initiatives:

- Enhanced unit rate estimation: we will enhance our processes for the capture of as-built costs, and put in place an annual unit rate review process to ensure that our budgets and forecasts are informed by the most up to date market rates
- Enhanced project cost estimation tool: for zone substation growth and renewal projects, and other large projects we will enhance our cost estimation tool
- Improvements to our network Opex models: we will improve the data that informs our 'Base Step Trend' forecasting models
- Review the vegetation forecasting model: improved vegetation status data and input costs for vegetation related works (e.g. customer liaison and second cut costs) will enable us to develop a more comprehensive model for forecasting vegetation management costs

In addition to the above initiatives, we note that our improved Asset Management Practices will also improve our Cost Estimation processes. For example, improved asset health and risk modelling will better inform renewal volumes and associated budgets and forecasts. Similarly, the asset data improvement initiatives in chapter 6 will enable the systematic capture of the data needed to support the cost estimation improvement initiatives above.

8.3.1. Enhanced unit rate estimation

For our CPP application forecasts we developed a unit rate spreadsheet to include cost estimates for the purchase and installation of all components of capital work projects, including poles, crossarms, power transformers, switchgear etc.

At the time, our new contracting model had only just begun to emerge with the addition of Connetics and Unison Contracting in competition with Delta. We were also ramping up in areas of work not previously undertaken (reconductoring) and therefore there was a limited dataset of actual construction costs to inform our unit rate estimates. To help inform our unit rates we engaged Jacobs to benchmark our estimates with similar projects and asset renewals work in New Zealand. We adjusted our estimates to better reflect the best view of market rates at the time.

With nearly three years of contracting experience with Delta, Connetics and Unison under the new Field Service Agreements, we have started to put in place processes and finance system modifications to help capture the as-built costs from our competitive contracting model so they can be used to inform our budgeting and forecasting. We plan to undertake the following cost estimation improvement initiatives:

 Improved management of unit rates: to ensure units rates are reviewed and modified in a robust way we will introduce a more comprehensive system and process for managing/updating our unit rates and their application to our budgets and forecasts. Enhancements are expected to include

⁸ (2021). Clause 2.5.4(f)



change control management, historical tracking of rates, the addition of known future price increases and integration links with our project cost estimation tool.

- Volumetric project scope asset breakdowns: we have recently created standardised/controlled project work scope templates and supporting application documentation that enables each asset category cost component, as supplied by our contractors in each project to be tracked in our SAP finance system, effectively creating a single source of truth. We will develop reports to monitor costs by asset type thereby enabling an annual review of unit costs for volumetric fleet asset renewals.
- Major project cost breakdowns: we will ensure that our major project tender documents provide the necessary breakdown detail to inform unit rate cost components.
- Establish contract unit rates: where appropriate we will seek to agree unit rates with our contractors for volumetric work. For example, certain types of asset inspection work or minor works such as possum or cable guard installations lend themselves to fixed rates.

8.3.2. Enhanced project cost estimation tool

We currently have a template spreadsheet for zone substation major project cost estimation. With an improvement to the unit rate input information from above, we anticipate that this spreadsheet will function quite well. However, we plan to undertake the following project cost estimation tool improvement initiatives:

- Improve project cost estimation tool: we will introduce a more comprehensive system and process for managing project cost estimation. Enhancements are expected to include change control management, project budget approval status, tracking of versions, integration with our AMP forecast reporting tool and integration with our unit rate estimation tool
- Including a broader range of projects: we will extend the development of customised estimates to include additional programmes of work such as distribution reinforcement projects and conductor renewal projects

8.3.3. Improvements to our network Opex models

Our CPP period and AMP Opex forecasts for corrective, preventive and reactive maintenance are informed by base-step-trend models. Base-step-trend models utilise historic 'base' levels of expenditure and make 'step' changes to account for any known changes in the work plan, and then apply a 'trend' factor based on changes such as an increasing network/asset fleet size. This approach is accepted as good industry practice and is a very useful method for forecasting expenditure where work volumes are high and are not fully planned/known in advance. The effectiveness of these models to forecast accurately will be enhanced by the following initiatives:

- Informed 'Base' expenditure: improvements to expenditure coding and an annual review of cost components for each Opex programme will enable a better understanding of our 'Base' expenditure cost drivers and determine whether a change in each 'Base' forecast can be made
- 'Step' expenditure review: an informed view of the 'Base' expenditure will enable us to better forecast 'Step' changes in expenditure. We will review our 'Base' assumptions and modify our 'Step' changes accordingly. We will also consider the findings of our FMECA analysis and consider whether 'Step' changes in our preventive and corrective maintenance would better target critical risks



 Review our 'Trend' assumptions: we will monitor network Opex trends and review our current assumptions to ascertain whether a change is required. For example, reactive maintenance expenditure is currently tracking much lower than forecast which is consistent with a reducing number of faults on the network and improved reliability performance

8.3.4. Review the vegetation forecast model

The status of vegetation impacting the network is changing significantly. We are coming to the end of our 'first cut' across the whole network which is forecast to lead to a decline in costs for Aurora. With regulatory compliant notification to vegetation owners the cost of the second cut will fall on the tree owner unless they declare no interest in the vegetation, in which case it will be managed at Aurora's cost. As we move into this new phase of vegetation management, it is important for accurate forecasting that we track the costs of vegetation management appropriately. Note that we are anticipating changes to the Tree Regulations, which may impact this initiative.

We propose to implement the following vegetation forecasting improvement initiatives:

- Capture vegetation programme information in our systems: the capture and recording of vegetation status data and customer liaison status is outsourced to our vegetation contractor. We propose to modify our software systems to enable the data to be captured and integrated into our vegetation management. Greater transparency of our vegetation cost drivers will enable enhanced forecasting.
- **Develop a Base Step Trend or bottom-up forecast model:** we propose to develop a new forecasting model for vegetation taking account of new data and information that was not previously available.

We do not yet have a detailed understanding of the actions within this initiative, and changes to the Tree Regulations may have a significant impact on the detailed design of our data capture, cost drivers and ultimately our forecasting model. We will provide further detail on these initiatives in future updates/reporting of this Development Plan.

8.4. EXPECTED BENEFITS

The above initiatives will realise a number of benefits for Aurora Energy and our customers, for example:

- Improved cost estimation informs the business case decisions we make when developing and assessing options to meet growth and asset renewals and maintenance
- Improved budgets and forecasts inform our regulated revenue requirements and cashflow projections
- Greater transparency of the drivers for cost enables us to take informed action

8.5. MILESTONES

We expect this programme to be completed in a number of stages over the CPP period to RY26. Many initiatives can occur in parallel but the benefits of unit rate estimation will not be fully realised until enhanced project estimation is put in place and vice versa. The network Opex initiatives can be implemented almost independently of other cost estimation improvement initiatives but they do rely on data and system enhancements, which are dependent on the broader data improvement plan.



Our asset management practices milestones will also improve our cost estimation processes. For example, improved asset health and risk modelling will better inform renewal volumes and associated budgets and forecasts.

| Y ACTIVITIES / MILESTONES | TIMEFRAME | Comments |
|--|--------------|--|
| hanced unit rate estimation | | |
| Improved management of unit rates | RY23 to RY24 | Improvement initiatives will be implemented in RY23 with unit rate data being comprehensively captured in RY24 |
| Volumetric project scope breakdowns | RY23 | We have made significant progress to date and expect to fully embed the new cost breakdowns in our process/systems in RY2 |
| Major project cost breakdowns | RY23 to RY24 | Given the long lead time on major projects we do not expect to achieving the full benefit of this initiative until RY24 |
| Establish contract unit rates | RY23 to RY26 | We envisage this as a staged initiative over time as we better specify maintenance activities and volumetric Capex |
| hanced project cost estimation tool | | |
| Improve project cost estimation tool | RY23 to RY24 | We intend to make significant progress in RY23 with completion RY24 |
| Including a broader range of projects | RY24 | Greater use of the project estimation tool will occur following the proposed improvements above |
| provements to our network opex mo | odels | |
| Informed 'Base' expenditure | RY23 to RY24 | This deliverable is somewhat dependent on better categorisatic breakdown of works and hence the RY24 timeframe |
| 'Step' expenditure review | RY23 | We will review our Opex 'Step' changes in RY23 ready for RY24 budgets and forecasts |
| Review our 'Trend' assumptions | RY23 | We will review our Opex 'Trend' assumptions in RY23 ready for RY24 budgets and forecasts |
| view the vegetation forecast model | | |
| Capture vegetation programme information in our systems | RY24 to RY25 | This is a complex initiative that may be impacted by changes to the Tree Regulations. We expect an initial implementation phas with learnings and subsequent enhancements being required |
| Develop a 'Base Step Trend' or 'bottom-up' forecast model | RY25 | The development of a new model is dependent on improved vegetation status and cost data |



9. QUALITY ASSURANCE

This chapter set out Aurora Energy's plan for developing and improving our quality assurance processes.

9.1. BACKGROUND AND CONTEXT

The purpose of Aurora Energy's quality assurance processes is to ensure that capital expenditure and operational expenditure projects and programmes are efficiently delivered and implemented to meet applicable industry standards. Quality assurance is integral to both our works management capability and to ensuring that construction works undertaken by our Service Providers meet regulations and Aurora Energy's standards, and are in accordance with what was proposed. Aurora Energy's escalated level of planned network investment during the CPP period emphasises the importance of having quality assurance processes and resources in place.

9.1.1. Works management

In 2019, we implemented a transformational project management framework that offers project managers and other key stakeholders best practice processes, tools, governance, standardised documentation and training, underpinned by PRINCE2 principles and themes. The implementation of this framework has enabled us to start to improve our works management capabilities by providing our key internal stakeholders with a platform to capture, assess and prioritise initiatives from across the business to ensure that the portfolio of work that we are delivering is strategically aligned. It also enables us to ensure that compliance and regulatory requirements are met, and that risk is effectively managed across the delivery cycle.

The framework utilises four main project stages to support a predictive, incremental and adaptive project lifecycle. This provides a clear project approach and governance across all areas of scope, time, finance and procurement, communication, risk and safety.



9.1.2. Work construction

In relation to quality assurance of constructed work, in 2020 we initiated an external review of Aurora Energy's Contractor Performance Management processes by KPMG. Aurora Energy has committed to implementing KPMG's recommendations from that review, and these recommendations are incorporated into the key initiatives outlined below.

9.1.3. Compliance with industry standards

An important function of our quality assurance process is ensuring that completed works meet the relevant industry standards. The industry standards that we ensure our completed works meet are:



- NZECP 34:2001 (New Zealand Electrical Code for Practice for Electrical Safe Distances), which is issued by Worksafe under section 36 of the Electricity Act 1992
- Electricity Safety Regulations 2010
- Safety Manual Electricity Industry (SM-EI), which is issued by the Electricity Engineers Association
- The Line Mechanics' and Cable Jointers' Handbook, which is issued by the Electricity Engineers Association

In addition to industry standards, we also ensure that completed works meet our own internal engineering and construction standards.

9.2. DISCLOSURE REQUIREMENT

Aurora Energy is required to describe how we plan to develop and improve our quality assurances processes, including a description of any actions we plan to take to ensure capital expenditure and operational expenditure projects and programmes are efficiently delivered and implemented to meet applicable industry standards⁹.

9.3. Key initiatives / Planned improvements

Building on the work that we have already undertaken in 2019 and 2020, we expect to continue to improve our quality assurances processes by progressing the following main initiatives during the CPP period:

- enhancing our works management capability by developing and improving our existing capabilities and systems
- developing our quality assurance framework for reviewing constructed works by implementing recommendations made by KPMG during its review

9.3.1. Works management capability

With a more robust works management framework already in place, our main focus areas during the CPP period will be on:

- process improvements: continuing to develop and improve works management capability, in alignment with our project management framework, for capital projects delivery, maintenance, and vegetation management
- continuous staff development: providing ongoing staff training and development opportunities in alignment with PRINCE2 methodology to drive efficient delivery of capital and maintenance projects
- enhancement of systems: improving our project and portfolio management system to enable better risk monitoring, reporting and visualisation of the 'health' of projects, leading to a consistent sequential end to end process to deliver projects

⁹ Commerce Commission. (2021). Determination, clause 2.5.4(1)(g)



9.3.2. Construction works quality assurance

Following the review by KPMG, we are committed to implementing recommendations by it to improve our quality assurance of works constructed on our network. In particular we plan on:

- construction works review standard: developing and implementing internal documentation that standardises the process undertaken by quality assurance officers reviewing construction and completed works
- scope of construction works reviews: extending the scope of construction reviews performed by our staff members who carry out quality assurance of constructed works to include scheduled maintenance tasks, connection services, and zone-substation works
- quality assurance metrics: incorporating quality assurance metrics into the wider management framework which governs our relationship with our field-based contractors
- resourcing: reviewing the resource required to provide assurance that works are constructed safely, meet Aurora Energy's Standards and are consistent with what was planned
- training and development: expanding our ongoing training and development for our staff members who carry out quality assurance of constructed works to include any additional competencies and capabilities that may be needed to facilitate the above

9.4. EXPECTED BENEFITS

The above initiatives will realise a number of benefits for Aurora Energy and our customers, for example:

- developing our works management capability through process improvements and system enhancements will provide Aurora Energy and our stakeholders clearer visibility of projects and enable fit for purpose reporting to ensure the programme is delivered efficiently and implemented to meet regulations and industry standards
- developing and improving our construction works quality assurance practices will:
 - lead to greater consistency in the application of construction reviews across the network
 - broaden the scope of works reviewed to provide enhanced assurance of work performed on the network
 - facilitate improved management of our service providers' performance
 - ensure that our staff who carry out quality assurance of constructed works are competent to deliver a broader range of construction reviews in relevant locations across the network



9.5. MILESTONES

We expect this programme to be completed by the end of RY25.

Table 9: Quality Assurance Development Plan milestones **KEY ACTIVITIES / MILESTONES** Works management capability improvements Develop and implement process The improvements that we plan to make in relation to making RY22-RY26 improvements process improvements and continuing to develop staff are not isolated to any one regulatory year and will continue throughout Continuous staff development RY22-RY26 the CPP period Construction works quality assurance improvements Develop construction works RY23 review standard Extend scope of construction RY23-RY24 works reviews Incorporate quality assurance metrics into wider contractor RY23 performance metrics Review resourcing RY22 Staff training and development RY22 - RY23 improvements



APPENDIX A. COMPLIANCE MATRIX

This schedule demonstrates how this Development Plan complies with the Commerce Commission's Electricity Distribution Information Disclosure Determination 2012.

| Determination Requirement | Determination Reference | Statement Reference |
|--|----------------------------|--------------------------|
| Aurora must do the following: | Clause 2.5.4 | |
| by 31 March 2022, publicly disclose Aurora's 'development plan' that describes how Aurora plans to develop and improve its— | Clause 2.5.4(1) | |
| low voltage network practices for – | Clause 2.5.4(1)(a) | Chapter 3 |
| monitoring voltage quality on the low voltage parts of Aurora's network; | Clause 2.5.4(1)(a)(i) | Chapters 3.3.1 and 3.3.2 |
| achieving compliance with applicable voltage requirements of the Electricity (Safety) Regulations 2010 on the low voltage parts of Aurora's network; | Clause 2.5.4(1)(a)(ii) | Chapter 3.3 |
| responding to voltage quality issues when they are identified; and | Clause 2.5.4(1)(a)(iii) | Chapters 3.3.1 and 3.3.2 |
| communicating to affected consumers the work on voltage quality that Aurora is doing on its low voltage network | Clause 2.5.4(1)(a)(iv) | Chapter 3.3 |
| engagement with consumers on Aurora's customer charter and consumer compensation arrangement; | Clause 2.5.4(1)(b) | Chapter 4 |
| planning, management, and communication of planned interruptions to consumers; | Clause 2.5.4(1)(c) | Chapter 5 |
| asset data collection and asset data quality practices, to – | Clause 2.5.4(1)(d) | Chapter 6 |
| systemise Aurora's processes for collecting and collating network asset data; | Clause 2.5.4(1)(d)(i) | Chapter 6.3 |
| improve Aurora's knowledge of network asset condition so that assets are replaced in a timely manner; | Clause 2.5.4(1)(d)(ii) | Chapter 6.3 |



| Determination Requirement | Determination Reference | Statement Reference |
|--|----------------------------|---------------------|
| ensure Aurora has an appropriate platform for sharing network asset data with internal and external stakeholders | Clause 2.5.4(1)(d)(iii) | Chapter 6.3 |
| evaluate whether Aurora is achieving its asset management policies and objectives; and | Clause 2.5.4(1)(d)(iv) | Chapter 6.3 and 6.4 |
| ensure there is a clear line of sight between Aurora's network asset condition data and Aurora's expenditure forecasts and financial reporting; | Clause 2.5.4(1)(d)(v) | Chapter 6.3 and 6.4 |
| asset management practices and processes, including, where appropriate, to develop and improve Aurora's— | Clause 2.5.4(1)(e) | Chapter 7 |
| asset health models so that they are informed by network asset condition data; | Clause 2.5.4(1)(e)(i) | Chapter 7.3.2 |
| understanding of asset criticality so that it informs Aurora's strategies for asset replacement and renewal; | Clause 2.5.4(1)(e)(ii) | Chapter 7.3.3 |
| asset risk framework so that Aurora can make risk-based decisions in relation to its supply of electricity distribution services, including where appropriate, based on reliability risk, environmental risk, high-impact low-probability event risk, and safety risk; and | Clause 2.5.4(1)(e)(iii) | Chapter 7.3.3 |
| practices for identifying and reducing safety risks in relation to Aurora's supply of electricity distribution services, including by using frameworks to prioritise identified safety issues and to justify investments to reduce the likelihood of those issues arising; | Clause 2.5.4(1)(e)(iv) | Chapter 7.3.4 |
| practices for estimating the costs of capital expenditure and operational expenditure projects and programmes, including – | Clause 2.5.4(1)(f) | Chapter 8 |
| a description of how Aurora plans to update and manage its models for estimating costs; and | Clause 2.5.4(1)(f)(i) | Chapter 8.3 |
| a description of how Aurora uses the actual costs of completed capital expenditure and operational expenditure projects and programmes to improve future cost estimates; | Clause 2.5.4(1)(f)(ii) | Chapter 8.3.1 |



| Determination Requirement | Determination Reference | Statement Reference |
|---|----------------------------|---------------------|
| quality assurance processes, including a description of any actions Aurora plans to take to ensure capital expenditure and operational expenditure projects and programmes are efficiently delivered and implemented to meet applicable industry standards. | Clause 2.5.4(1)(g) | Chapter 9 |



APPENDIX B. DIRECTORS' CERTIFICATE

SCHEDULE 18

Certification for Disclosures

Clause 2.9.5

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, the information prepared for the purposes of clauses 2.5.4(1) to (3) of the Electricity Distribution Information Disclosure Determination 2012 in all material respects complies with that determination.

Rohtm.

Stephen Richard Thompson

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Margaret Patricia Devlin 30 March 2022

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