5.18

Information Communication Technology (ICT) plan for 1924 period

Ausgrid

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1 EXECUTIVE SUMMARY

1.1 Introduction

The 2019–24 technology plan sets out a plan and an approach to continue to meet regulatory requirements and close out critical in-flight technology initiatives.

The purpose of this document is to provide an overview of Ausgrid's Technology Plan for the period from 1 July 2017 to 30 June 2024. This period encompasses Ausgrid's second Regulatory Control Period under the Australian Energy Regulator (AER), which will run from 1 July 2019 to 30 June 2024.

1.2 Changing global environment

The environment for distributed network service providers is changing globally. Ausgrid technology needs to be able to adapt to shifting market demands, maintain a stable technology environment and to put our customers first…

We anticipated and planned for this change through our previous regulatory submission (2014–19) and our 2019-24 submission provides continuity to complete what we started.

1.3 Changing business environment

Ausgrid's external and internal business environment is undergoing unprecedented change which presents new challenges and opportunities across areas such as customer, cost to serve, technology and regulation.

Customers are now more empowered and savvy on the service they want and expect. This has been facilitated by the advancement of new technologies e.g. distributed generation and storage technologies, which has had a flow-on effect to how our customers perceive the service they expect from distributors. Customers are also expecting no differential in their digital experience from what they receive from other more digitally mature industries, e.g. transport (Uber), music (Spotify) and food delivery (Deliveroo).

Cost pressures across the industry continue to impact both distributors and their customers. Measures must be put in place to deliver operational efficiencies that can translate into savings for our customers.

Technology led disruption across the utilities industry is significant as it disrupts the traditional, centralised, energy distribution value chain, to one that takes a more decentralised and distributed model. Therefore, providing customers more control of how they consume services.

Regulatory compliance at both state and national levels continues to shape how technology is deployed and operated.

The recent privatisation of Ausgrid further compels us to examine how we deliver technology and network services to ensure compliance with License obligations. Whilst continuing to deliver foundational capabilities, continuous improvement, digital enablement and cyber security solutions.

1.4 Technology objectives

To meet these challenges four technology objectives have been defined that shapes and prioritises our activities over the forthcoming period:

- Comply - Deploying technology solutions and processes to ensure compliance for both national and state based regulatory obligations.

- Maintain - Ensure technology solutions and processes are maintained to preserve the quality, reliability and the security of the distribution network or the supply of standard control services.
- Adapt - Implementing technology systems, processes and people that enables Ausgrid to meet and manage customer and regulatory demand.
- Protect - Maintaining the safety of the distribution system through the supply of standard control service.

1.5 Technologies

These objectives will be fulfilled by five technologies that identify how we will address the external and internal challenges:

- Automation - Increase efficiencies through the automation of manual and repetitive processes.
- Cyber - Protection of critical Ausgrid assets ranging from physical sites through to information and data
- Cloud - Create agility and increase efficiencies by migrating on-premise infrastructure and applications to Cloud service providers
- Mobility - Improve field and corporate workers' efficiency, productivity and safety regardless of their work location
- Data - Consolidated view on how to manage, govern and control information / data assets.

Collectively these technologies will provide the capabilities required to comply with our regulatory obligations, to maintain a stable and efficient environment and enable us to protect our customers and assets.

A portfolio of technology initiatives has been designed to deliver the required outcomes and objectives of this technology plan across these technologies.

1.6 Meeting business and customer demands

This technology plan will be delivered over three horizons to meet business and customer demands. The plan will address today's priorities and transition to a stable, efficient and adaptable environment.

The roadmap for delivery of these technologies has been structured into three delivery horizons; Today 2017-18 (Reform), Tomorrow 2019-21 (Optimise) and Beyond 2022-24 (Sustain).

2 INTRODUCTION

2.1 Purpose of this document

The purpose of this document is to provide an overview of Augrid's Technology Plan for the period from 1 July 2017 to 30 June 2024. This period encompasses Ausgrid's 2nd Regulatory Control Period under the AER, which will run from 1 July 2019 to 30 June 2024.

2.2 Scope

The scope of this document is to provide a blueprint of transitional states of the Ausgrid technology landscape over the period 2017-24. This includes both traditional technologies such as enterprise applications, hardware, and corporate data as well as operational technology such as work force technologies. This document also acknowledges the delivery of continuous improvement opportunities post-delivery of core technology roadmap activities.

2.3 Overview

Like many utilities globally, Ausgrid is responding to the challenges brought about by new technology and in particular addressing the demands for a more customer centric focus. Ausgrid's future lies in understanding and meeting rapidly changing customer needs. This means building a flexible and responsive business that is focused on delivering direct benefits to our customers, through continuous improvement and increasing productivity from the valuable community assets it manages.

Technologies such as self-generation, renewable energy, battery storage and better energy efficiency through digitally enabled technologies are driving demand for future technology services across the industry. Given its current maturity Ausgrid is well placed to adapt to and extract the opportunities these new technologies provide. These opportunities can be exploited to drive greater affordability and choice in the provision of electricity, benefitting both electricity customers and the State's economic development.

Ausgrid is seeking to utilise technology led opportunities to improve the safety, reliability and affordability of electricity for its customers

3 BUSINESS CONTEXT

3.1 Overview

This section describes the macro business environment changes that will influence and direct Ausgrid's technology strategy. How Ausgrid responds to core external drivers for change will play a big role in shaping and defining the vision and plan for technology over the coming regulatory submission.

In response to the external pressures (described in section 3.2) the priorities for Ausgrid through 2017-24 are:

- To become more **customer centric** and deliver our customers **affordable services** that reflect value for money
- Ensure all systems and processes are **compliant** and deliver on regulatory requirements and license conditions
- To identify and implement **productivity efficiencies through digital enablement** and to invest in sustainable, efficient and future focused technologies
- To maintain **safety, stability and reliability** across our systems and network
- To **protect** our people, assets and customers.

In order to achieve these outcomes in the 2019-24 regulatory period, Ausgrid needs to invest in today's network whilst ensuring that these investments are adaptable and can support the changing nature of the distribution network and the way in which customers will use it in the future. Ausgrid is conscious that these capital investments must also support efficiencies in expenditures and lower the cost to serve.

Ausgrid will invest in new smarter ways of doing things, simpler processes, greater transparency, quicker decision making, a more adaptable environment and better engagement with our customers. These changes will allow us to deliver services that meet customers' expectations. This journey of continuous improvement will maintain and enhance the quality, reliability and security of the network while maintaining safety as a top priority.

The external pressures and drivers that are expected to impact Ausgrid over the coming regulatory period are described in subsequent sections of this document

3.2 Market context

Ausgrid's external environment is undergoing unprecedented change which presents new challenges and opportunities. One of the key changes in recent years is the changing needs and expectations of our customers. Customers are now more empowered and savvy on the service they want and expect. This has been facilitated in part by advancement of new technologies, e.g. distributed generation and storage technologies, which has had a flow-on effect to how our customers perceive the service they expect from distributors.

Cost pressures across the industry continue to impact both distributors and their customers. Measures need to be put in place to deliver operational efficiencies that can translate into savings for our customers.

Regulatory compliance at both State and National levels continues to shape how technology is set up and operated. The recent privatisation of Ausgrid further compels us to examine how we deliver technology and network services to ensure compliance with License obligations.

3.2.1 Delivering for customers

Meeting customer expectations has long been a key focus for Ausgrid. The rapid paced change of technology advancements and the volatile business environment in which we operate, means that there has been some significant changes in customer needs and expectations that need to be addressed.

Our customers are now more knowledgeable and empowered in the way in which they expect energy to be generated and consumed. We must understand our customers and their expectations. Customer centricity at Ausgrid means that we will put the customer at the forefront of everything we do.

Other priorities for our customers include their demands for safe and reliable services including timely and accurate provision of information.

3.2.2 Business model disruption

Cost to serve

Wholesale costs for electricity distribution is set to increase in FY18 and the cost to serve for all east coast based utilities will increase by 20% from this period. It is our duty of care to our customers to ensure that we have examined all opportunities to drive efficiencies across our business.

It is important to note that whilst delivering cost savings to our customers is a focus, driving efficiency without compromising safety, stability, reliability of our network and without compromising our customer service experience remains our core priority.

Peer to peer economy

Technological advancement across the utilities industry is significant as it disrupts the traditional centralised energy distribution value chain, to one that takes a more decentralised and distributed model.

This is changing the fundamentals of distributed network businesses worldwide and has been catalysed by the pace of technology change. Technologies such as advanced metering, distributed generation (e.g. solar cells), distributed storage (e.g. batteries), stand-alone power systems, micro-grids, electric vehicles, consumption monitoring appliances and data analytics.

Increasingly, customers (or representatives on customers' behalf) are seeking to use the network as a flexible platform that enables energy products and services to be traded. This has created the opportunity of a secondary energy utilities market where customers can trade energy between themselves.

3.2.3 Meeting regulatory requirements

Current requirements

Compliance with regulatory policy is a key driver of this technology plan. Responding to, and complying with regulatory policies remains a priority.

At a national level this includes alignment with regulatory changes and reforms as set by the Australian Energy Market Commission. Ensuring that Ausgrid delivers on its customer centricity vision and that we continue to maintain a stable, reliable and efficient network.

In addition following Ausgrid's privatisation, safeguarding its technology assets and therefore protecting our customers is a key strategic objective for Ausgrid. This is line with Ausgrid's ministerially imposed distribution license obligations and Ausgrid will implement the necessary initiatives that will proactively minimise risk to critical infrastructure.

New requirements

In 2016 Ausgrid underwent a sale process that resulted in the ownership transfer of approximately 51% of Ausgrid to a private consortium. Consequently there are several considerations that need to be front of mind as Ausgrid develops its forward looking technology plan.

The new owners of Ausgrid are focused on ensuring ongoing value for Ausgrid's customers and a program of continuous improvement is in place to identify ways of operating to maintain service levels and improve efficiency. The new ownership also allows Ausgrid to leverage new partnerships and flexibility in delivery mechanisms that were not available to Ausgrid as a State Owned Corporation.

In addition, due to the change of ownership, Ausgrid now has new regulatory obligations and changes in our operating environment with which we must comply. This includes:

- New reporting requirements
- New licensing conditions
- The National Critical Infrastructure resilience
- Employee guarantees.

Ausgrid will be required to adapt its operating environment to execute these changes in order to maintain its operations and comply with new regulations.

3.3 2014–19 Initiatives

As part of our previous regulatory submission (2014-19), Ausgrid put in place initiatives to pre-empt the challenges described in section 3.2. Our approach for the 2019–24 submission is to continue to deliver and close out those initiatives.

Lessons carried forward from 2014–19 have taught us the importance to plan for an organisation that can adapt to a continually changing environment. Given the dynamic nature of today's technology environment and the uncertainty of the market within which we operate, we have developed a technology plan that will deliver the technologies, tools and processes that will enable us to adapt as the environment around us evolves.

3.4 Foundational capabilities

A program of work across Ausgrid was launched during 2014–19 to oversee implementation of a number of initiatives designed to deliver a set of outcomes which will enable Ausgrid to deliver its vision of continuous improvement. These outcomes will be delivered in line with the 2019-24 regulatory period.

As part of this journey so far, focus has been on establishing the right platforms and commercial models to enable Ausgrid to drive efficiencies for our customers whilst maintaining a safe and reliable set of technology services. Ausgrid has also driven efficiency across its technology application architecture through legacy application consolidation and decommissioning.

3.5 Continuous improvement

To address the challenges of the volatile and uncertain external environment Ausgrid embarked on a journey of continuous improvement and is committed to delivering an efficient, safe, reliable and future ready set of digitally enabled technology services. In order to achieve these outcomes in the next AER period, Ausgrid needs to invest in today's network but ensure that these investments are adaptable and can support the changing

nature of the distribution network and the way the customers will use it in the future. That notwithstanding, Ausgrid is conscious that these capital investments must also support efficiencies in expenditures and lower the cost to serve.

Ausgrid will invest in new and smarter ways of doing things i.e. simpler processes, greater transparency, quicker decision making, a more adaptable environment and better engagement with our customers. These changes will allow Ausgrid to deliver services that meet our customers' expectations. This journey of continuous improvement will maintain and enhance the quality, reliability and security of the network while maintaining safety as a top priority.

3.6 Digitally enabled environment

Building on top of these, Ausgrid will lay out digitally enabled systems and processes which allow smarter ways of doing things that are supported by simplified business and workflow processes. Greater data transparency will enable quicker decision making that is underpinned by a more flexible operating environment, such as: cloud based technologies for back-office operations (e.g. contract management); and the presentation of customer outages on our website. Based on positive customer feedback, Ausgrid will continue to build on these digital technologies.

An end to end digitally enabled environment is driven at the core of the organisation. It requires alignment and integration between all layers of the technology stack. From channels i.e. mobile, desktop through to backend platforms and systems. Putting in place the right integration capabilities between these two layers can unlock huge value through enabling enhanced business insights and real time decision processes. This can deliver increased speed and accuracy of fault identification and a reduction in manual intervention through increased automation.

3.7 Cyber

Ausgrid has implemented Security Incident Event Monitoring system to assist with the analysis of security incidents and the correlation of such events. These capabilities have been further strengthened by the Cyber security assurance and governance initiatives that have been deployed.

To address increasing demands on Cyber security Ausgrid have put in place new service and delivery models, where external vendors with deeper expertise in cyber security deliver operations and provide independent advice. Ausgrid shifted to this model for cyber security in order to obtain an efficient outcome and also demonstrate prudency.

Whilst the majority of focus around cyber is on external threats and risks, attention is required on potential threats from within. As Ausgrid implements mobile technologies to better service customers and to drive service efficiency in the field, we must also safeguard our environment from new risks introduced through the mobile environment, e.g. increase security on who has access to what data and where. With the move to cloud based services there is also a need to understand and safeguard against additional security complexity with particular focus being on data sovereignty.

4 TECHNOLOGY OBJECTIVES

In response to the challenges described in described in section 3 and to shape our response to a dynamic market, this technology plan has been anchored against a set of objectives.

There are four objectives that underpin this technology plan for the 2019-24 regulatory period. Each of these objectives provides an anchor back to the business context of this document. These objectives provide context for Ausgrid to respond to the external / internal business pressures and meet the AER expenditure objectives.[1]

The four objectives for Ausgrid Technology are:

- Comply
- Maintain
- Adapt
- Protect.

4.1 Comply

Deploying technology solutions and processes that ensure compliance for both national and state based regulatory obligations:

- Ensure a controlled environment process, people, and technology are in place to achieve legislative requirements (e.g. license conditions).
- Meet the compliance requirements from third-parties, such as, suppliers and market participants. As an example, Ausgrid must be up to date with licensing, support arrangements etc required by a vendor in order to be compliant with their support and maintenance policies.
- Reword to towards to compliance report / regulatory reporting
- Provide timely and accurate data that has integrity and enables effective reporting for compliance and regulatory purposes
- Provide and a safe, stable and reliable technology environment.

4.2 Maintain

Ensure technology solutions and processes that maintain the quality, reliability and the security of the distribution network or the supply of standard control services:

- Provide stable solutions that provide safe and secure services to our customers and employees.
- Deliver reliable and robust services through provision of continuous infrastructure upgrades and patch fixes and maintaining currency of application
- Provide simplified and standardised processes to enable efficient and stable ICT operations

[1] Ausgrid is subject to a ministerially imposed licence conditions for Ausgrid Operator Partnership to operate a distribution system (effective from 1 December 2016). For further details refer to: https://www.ipart.nsw.gov.au/files/sharedassets/website/shared-files/licensing-administrative-electricity-network-operations-proposed-new-licence-conditions/ausgrid-ministerial-licence-conditions-1-december-2016.pdf

- Provide a modernised workforce capabilities through adoption of digitally enabled services and lower the costs to serve, e.g. mobility services to improve business processes.

4.3 Adapt

Implementing technology systems, processes and people in place that enables Ausgrid to meet and manage customer and regulatory demand:

- Provide platforms and investments for the long-term that will meet the network demands of the future in the most cost-effective manner
- Provide flexibility in achieving changing demands across external and internal environments e.g. evolving customer demands and expectations and changing regulatory policies
- Provide a simplified the technology landscape (systems and processes) to deliver efficiencies and reduce operational risk
- Provide capabilities and solutions that enables Ausgrid to quickly adapt to changes in both external and internal environments
- Identification and implementation of continuous improvement opportunities across the technology landscape including systems, delivery processes/models and commercial arrangements.

4.4 Protect

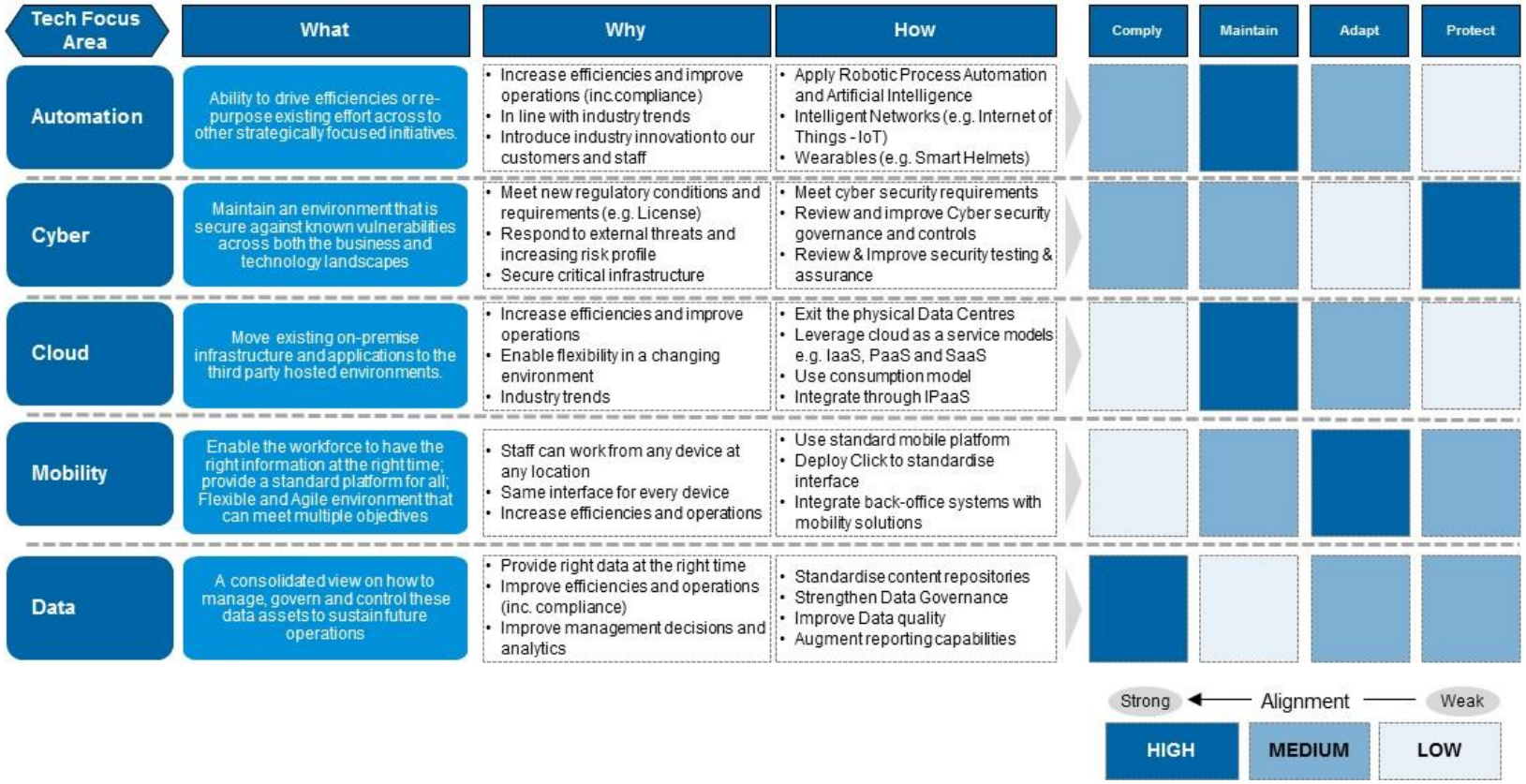
Ensuring the safety of the distribution system through the supply of standard control service:

- Protecting the critical distribution network from internal and external cyber security threats
- Maintaining the integrity of customers and market participants information
- Meeting regulatory requirements, such as, Distribution Network license conditions, Critical Infrastructure requirements, Privacy Act and others
- Use ICT technologies where they provide a prudent mechanism to increase safety standards.
- Providing a trusted service that is secured enabling quality, reliability and security of supply.

5 AUSGRID TECHNOLOGY FOCUS AREAS

Ausgrid considers technology to be a strategic enabler that should be leveraged to drive business performance where benefits exceed the corresponding costs. All technology investments are expected to continue to unlock opportunities to improve business outcomes and benefits for our customers. To deliver on our technology objectives as part of the 2017–24 Technology Plan, we will implement and invest in five technology focus areas.

Figure 1. Ausgrid technology focus areas and alignment with technology objectives



5.1 Automation

The intent of automation is to increase efficiencies through the automation of heavily manual and repetitive processes and activities performed across the Ausgrid workforce.

Key outcomes of delivering automation is the ability to drive efficiencies and re-purpose existing effort to other capital delivery activities and to drive value for customers. Automation aligns to the Maintain technology objective Maintain. The deployment of automation capabilities is aligned to the "Maintain" technology focus area because automation streamline the way in which the business and technology functions operate (e.g. Robotics Process Automation).

5.1.1 Objectives

The way organisations operate is evolving as they move and flex to meet the dynamic nature of the internal and external demands (driving down costs, increasing customer experience etc.). With the increasing amount of data ingested by systems and the need to process this data at speed and with increased analytics puts additional workload pressure across the entire organisation. To address this automation techniques can be applied that ports the manual, repetitive activities to a robotic process automation solution. Examples of this are being seen in the industry where "bots" are now performing a number of repeatable activities across internal business process with increased speed and without deviations (e.g. accounting and financial processing).

5.1.2 Deployment

To take advantage of these technical advancements, Ausgrid will deploy automation across a number of areas of its business areas, as it relates to the AEMO Industry Model (see Appendix A):

- Works Management
  - Deployment of planning and scheduling applications that enable automation across the field work force focus on asset, capital and vegetation maintenance
  - Enables Ausgrid to focus at improving the customer service (meeting appointment times), accuracy of data (through mobile collection facilities) and reduce costs (efficiency of planning – more jobs less time).
- Asset Operations
  - Advancements in technology enable multiple bespoke systems to be consolidated into a best of breed architecture that enables the automation of a number of operational activities.
- Enterprise Management
  - Assessment of the internal business process to identify the top 20 process that have the highest levels of repetition and then deploying a series of "robots" via Robotic Process Automation to re-purpose these resources to drive value to customers and deliver other capital initiatives.

5.2 Cyber

Cyber security is the protection of critical assets across Ausgrid ranging from physical sites through to information and data flowing through systems and workflow processes. Without a holistic view on providing protection across these systems leaves Ausgrid at operational risk. This risk could result in Ausgrid not meeting regulatory compliance and leaving the

organisation vulnerable to attacks. Cyber aligns to the Protect technology objective. Every element of the Ausgrid technology architecture requires protection in some shape or form whether that is implementation of the latest security software/patches, upgrades to applications, network infrastructure deployment or enhanced analysis of data to identify potential malicious attacks.

5.2.1 Objectives

The rise of widespread attacks (e.g. worms, phishing, distributed denial of services) and malicious code targeting known vulnerabilities, and the resultant downtime, media exposure and expense they bring, is one of the biggest reasons there is a continued focus on Cyber Security. Our primary objective is to establish a consistently configured environment that is secure against known vulnerabilities across both the business and technology landscapes. Additional complexities will be introduced when the workforce (both internal and external) increases its mobility capabilities. Whilst driving efficiency and enhanced customer service, mobility also increases the risks of latching onto unsecure internal access points to exchange sensitive data and potentially expose Ausgrid to further vulnerabilities.

5.2.2 Deployment

To take advantage of these technical advancements, Ausgrid will deploy cyber across a number of areas of its business areas, as it relates to the AEMO Industry Model (see Appendix A):

- Works Management
  - Field workers will use standard devices and increased reliance on digital platforms. These devices could be used as an entry point from unauthorised users and/or malicious attacks (e.g. ransomware). Ausgrid must extend security measures to the field and the systems that feed information to these field devices
  - Deploy training in basic security considerations to increase staff awareness of the most common threats and identify resources that could help them when in doubt.
- Asset Operations
  - Ausgrid must maintain its license and the safety of the distribution system. The critical systems that manage and control the network need to be safeguarded. Due to its role as a critical infrastructure provider, Ausgrid is responsible for ensuring its systems and information are secured, monitored against breaches and such breaches are contained if and when they occur.
- Market Management
  - Ausgrid must maintain the integrity of market participants' information and maintain its market systems in accordance to the latest security standards.
- Customer Management
  - Customer protection from a safety of supply and from a customer personal data perspectives are paramount for Ausgrid. As Ausgrid deepens customer engagement by capturing the "moments that matter" and their preferences, Ausgrid must protect customers' information from both regulatory (e.g. Privacy Act) and customer-trust points of view.
- IT Management
  - Cyber security is continually evolving as is the level of sophistication in the attacks made. Ausgrid is putting emphasis in the ability to monitor and detect security threats and counteract intrusions quickly through incident response.

Ausgrid will enable a quick return to normal operations in case of any breaches. As such, Ausgrid's enterprise systems are governed by a unified set of policies, procedures and strategy for cyber security

- Implementation of proactive measures across the systems landscape that can identify potential and known risks in advance and put plans in place to mitigate or eliminate them as they are mapped (Managed Security Services).

5.3 Cloud

The intent of Cloud technologies is to move existing on-premise infrastructure and applications to third-party hosted environments. Cloud operates in a "as a service" consumption model where Ausgrid pays per use, which provides greater flexibility and agility to Ausgrid. Consumption of infrastructure services can scale up and down according to demand instead of consuming services on a future forecasted demand that may not eventuate and resources are not fully utilised.

Key outcomes of delivering cloud is the ability to maintain in line with the industry standards in technology. Cloud aligns to the Maintain technology objective. The deployment of Cloud technologies enables Ausgrid to maintain technology services while being flexible to meet the changing needs of both the regulator and customer. Applying prudency across which elements of the technology stack are migrated to the Cloud and in what form (e.g. SaaS, IaaS) will be important.

5.3.1 Objectives

Deploying Cloud technologies will provide a flexible, agile and efficient platform to enable rapid on-boarding of new applications and processes to meet business demand. This is in addition to remaining complaint to both industry and regulatory requirements. More importantly for Ausgrid, this will enable the business to keep up with an increase in demand for data and processing capacity to enable greater business management (e.g. 25% growth in storage requirements). These benefits are summarised below:

- Digital Enablement: Transitioning to Cloud will enable rapid deployment of applications and new processes. Whilst also addressing the physical and cybersecurity considerations, data sensitivity and privacy, data sovereignty and regulatory requirements
- Commercial Flexibility: Develop ICT commercial predictability through one of the "as a service" utility commercial models that allow Ausgrid to dial capacity up/down to match business needs in a predictable fashion
- Cost Savings: Capital cost savings by using the power of Cloud to drive ongoing efficiencies (e.g. transitioning from software licensing model to consumption/on-demand models). Ausgrid will reduce and/or avoid capital spending on certain parts of the technology stack as the transition to cloud services progresses downstream.

5.3.2 Deployment

To take advantage of these technical advancements, Ausgrid will deploy cloud across a number of areas of its business areas, as it relates to the AEMO Industry Model (see Appendix A):

- Works Management
    - Cloud based applications enable increase accuracy of the data that will enable a safer more reliable environment through a standardised platform that is easily accessible from both corporate offices and in the field.

- Enterprise Management
    - Moving to cloud based workplace technologies to enhance the efficiency and productivity of the workforce. Ausgrid will standardise on cloud platforms for many of its back-office systems for finance, HR and others. The cloud platforms will allow Ausgrid to increase the efficiency of these systems by reducing capital costs and for the quick deployment of new versions of existing platforms.
- IT Management
    - Ausgrid aims to migrate the majority of technology platforms to either Software, Platform or Infrastructure as a service which will allow Augrid to exit its data centres and fully transition to Cloud solutions. These solutions will be continuously optimised to achieve the expenditures objectives of an efficient and prudent operator.

5.4 Mobility

Mobility aims to provide Ausgrid's users of technology with the tools to perform their work regardless of their location while providing a consistent user experience in any device. This flexibility in location combined with standardardised platforms will allow Ausgrid to improve field and corporate worker efficiency and will help improve safety, security and reliability.

The definition of mobility applies to both the workforce as well as the activities performed by supporting systems at Ausgrid. Mobility aligns to the Adapt technology objective. The deployment of mobility across the field and internal workforces is required to increase the levels of safety and efficiency. More timely and accurate information enables a safer more reliable environment from which to operate.

5.4.1 Objectives

The key objective for mobility is to enable the workforce to have the right information at the right time while providing a standard platform for all. This will deliver a flexible and agile environment that can meet multiple purposes. Workplace Technology solutions are about ensuring that both individuals and Ausgrid as an organisation has the tools required to be productive in the workplace. This means ensuring the existing workplace technology tools remain useful and current to allow staff to access the organisation's key business applications and corporate data repositories, such as, safety documentation for field workers or the enterprise content management. The mobile device fleet is used by field services staff to manage resources in real-time and allocate them to where they are needed most based on the operational, outage and other variables. The integration of back-office systems with the mobility solutions and platforms is key to achieve this seamless location and data coherence.

5.4.2 Deployment

To take advantage of these technical advancements, Ausgrid will deploy mobility across a number of areas of its business areas, as it relates to the AEMO Industry Model (see Appendix A):

- Asset Lifecycle Management
    - Provide asset information from and to the field in a consistent and digital format that updates asset information in near or real-time. Assets can be better managed and minimise safety issues in field. This can be achieved through the integration of back-office systems and the mobility solution.
- Works Management

- Field workers can have an updated scheduling and dispatch in real-time based on availability of resources, replacement parts and other criteria using the integrated mobility solution
- Reduce number of trips to depots for management and administrative tasks related to scheduling and dispatch
- Redirect resources based on a holistic view to meet the quality, reliability, safety and security objectives based on the needs of the distribution network to improve capital delivery.

- Asset Operations
  - Enable safety alerts and network outage issues to the workforce in near/real time
  - Improve the reliability of the network by providing up to date information about the status of the distribution network to field workers and allowing authorised users to access the same information.
- Enterprise Management
  - Reduce number of trips to depots or corporate locations for management and administrative tasks related to timesheets, payments, reimbursements etc.
- IT Management
  - Roll-out of standard devices and common interface of tools across the enterprise
  - Enabling the integration of the back-office systems with the standard devices.

5.5 Data

Information assets (data) are one of the most valuable within an organisation. At Ausgrid multiple information assets flow between multiple systems and processes. A consolidated view on how to manage, govern and control these data assets is integral to sustain future operations at Ausgrid.

A key outcome of data for Ausgrid is the compliance of ministerially imposed license conditions, such as key metric reporting, management of Ausgrid data in Australia and protecting the data against threats. Data is aligned to the Comply technology objective. The deployment of data capabilities is aligned to the “Comply” technology focus area because data is an important element of the distribution license conditions.

5.5.1 Objectives

The key objective is to for Ausgrid to meet regulatory requirements and to enable the workforce to have the right information at the right time that will direct resources across the business to focus on efficient delivery of capital initiatives. Ausgrid has a customer centric focus and our priority is providing a tailored experience for each customer, this includes specific communications based on specified preferences and in more multiple languages. An increasing level of customer engagement and the understanding of the needs to the customer for today’s network and in the future will be key for Ausgrid. The deployment of new technologies such as pattern matching, artificial intelligence and data analytics will assist Ausgrid to further enhance the use of information to improve and sustain performance in the future. These technologies will use data to provide Ausgrid with new ways of doing things and even present Ausgrid with better ways of executing business as usual processed. More importantly, these technologies will assist Ausgrid in maintaining a safe environment for field workers as patterns of reliability, quality and security concerns can be maintained for future reference and proactive alerts.

5.5.2 Deployment

To take advantage of these technical advancements, Ausgrid will deploy data across a number of areas of its business areas, as it relates to the AEMO Industry Model (see Appendix A):

- Asset Lifecycle Management
    - In order to obtain the greatest value from assets, Ausgrid will provide a more granular asset management leveraging data and optimisation technologies. Ausgrid will use richer and standardise data that will significantly improve the lifecycle management of its assets.
- Works Management
    - Ausgrid will streamline operations through data technology and change the way most teams work to be safer, more efficient and provide greater levels of customer service.
    - Information at the fingertips, future wearable technologies (e.g. Smart Helmets and Glasses), and integrating with Internet of Things technologies like In Vehicle Monitoring System will provide apprentices and other field workers with virtual rooms that can simulate day-to-day operations in the field. This training facility will provide greater learning opportunities with immediate feedback, hence increasing safety in the field.
- Asset Operations
    - Maintain compliance requirements in the most efficient manner such as reporting of performance, reliability and other metrics.
- Market Management
    - Maintain data integrity and accuracy in markets systems and participants.
- Customer Management
    - Implementation of a customer focused CRM that will capture all customer interactions and provide Ausgrid with a better view of its customers and how to engage with them. Ausgrid will increase customer safety though tailored and customer-specific outage maps.
- Enterprise Management
    - Roll out of training to improve staff awareness of the importance of standardised tools and information systems. Also, increase staff capabilities in terms of use of data and systems to maximise their efficiency and communicate how data can improve their safety.
- IT Management
    - Ausgrid to implement simple to use and standardise repositories for the entire organization so users and systems can leverage from a single source of truth, minimise data siloes, simplify interfaces and ultimately better data quality
    - Implementation of an enterprise content management (ECM) solution as a repository of key information across the organisation, such as policies and procedures.

5.6 Technology initiative portfolio

The 2019–24 submission is underpinned by six technology programs. Collectively these programs form the basis of regulatory submission funding for 2019–24. Each program can be aligned to at least one technology focus areas described in section 5.

Table 1. Summary of technology plan programs

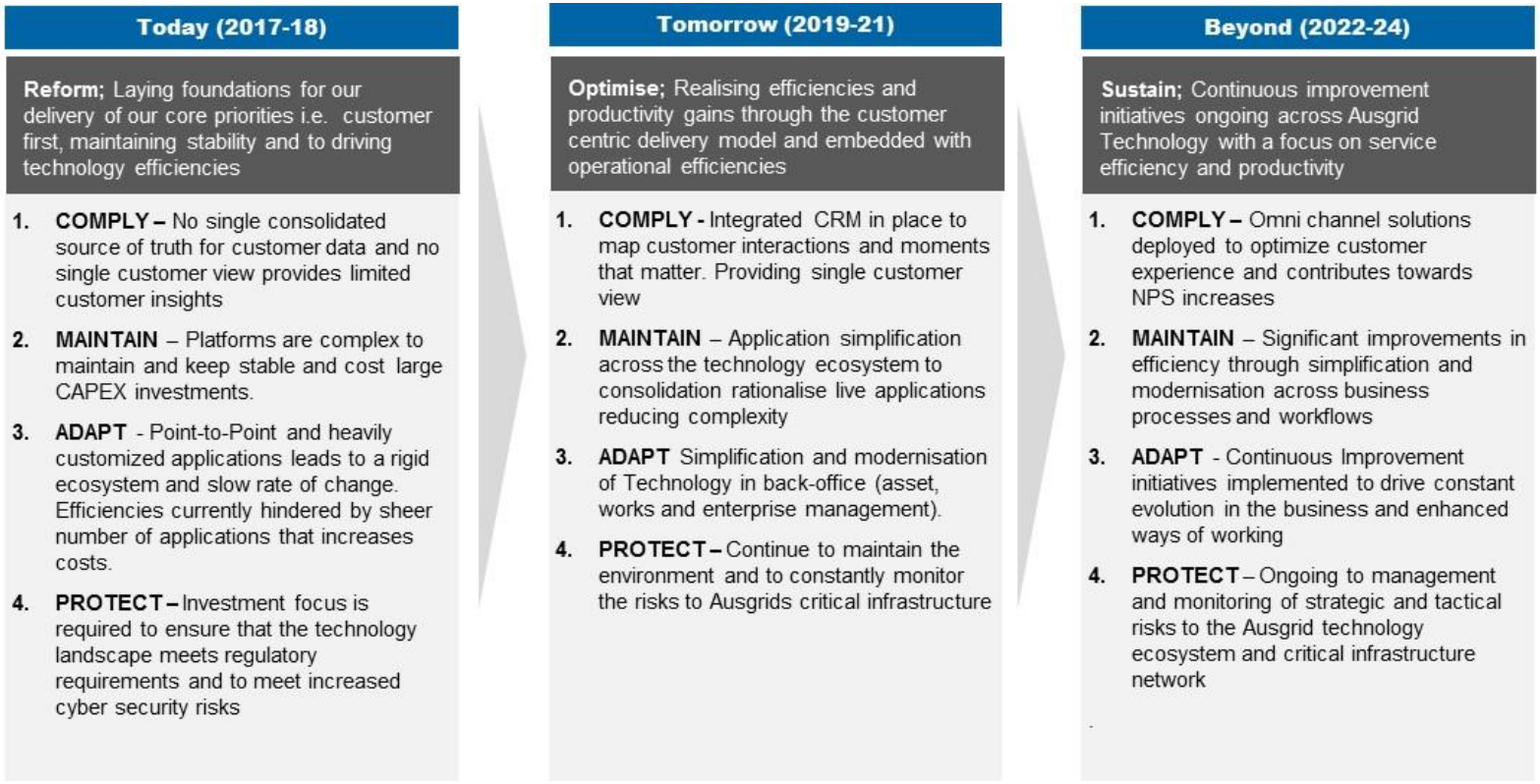
Ref	Program Name	Description	Automation	Cyber	Cloud	Mobility	Data
1	Regulatory and Compliance Systems	Periodic software maintenance to operate and comply with energy regulation and legislation		✓			✓
2	Cyber Security	Actions to minimise risk to critical infrastructure and maintain distribution licence	✓	✓	✓	✓	✓
3	Application maintenance	Maintaining existing End of Life applications to align with vendor recommended product roadmap		✓	✓		✓
4	Infrastructure and Telecommunications maintenance	Transitioning existing infrastructure to an outsourced model and maintaining telecommunications hardware and software		✓	✓	✓	
5	Workplace technology	Maintenance of current agile workplace model		✓	✓	✓	✓
6	Data and digital enablement	Deployment of digital and data innovation and process simplification	✓	✓	✓	✓	✓

6 TECHNOLOGY DELIVERY PLAN

6.1 Delivery horizons

To meet business and customer demands the Ausgrid Technology environment and ecosystem needs to address today's priorities and transition to a stable, efficient and adaptable environment. The roadmap for delivery has been structured into three delivery horizons i.e. Today (Reform), Tomorrow (Optimise) and Beyond (Sustain). The diagram below illustrates the delivery horizons for the Ausgrid Technology Plan 2017–24.

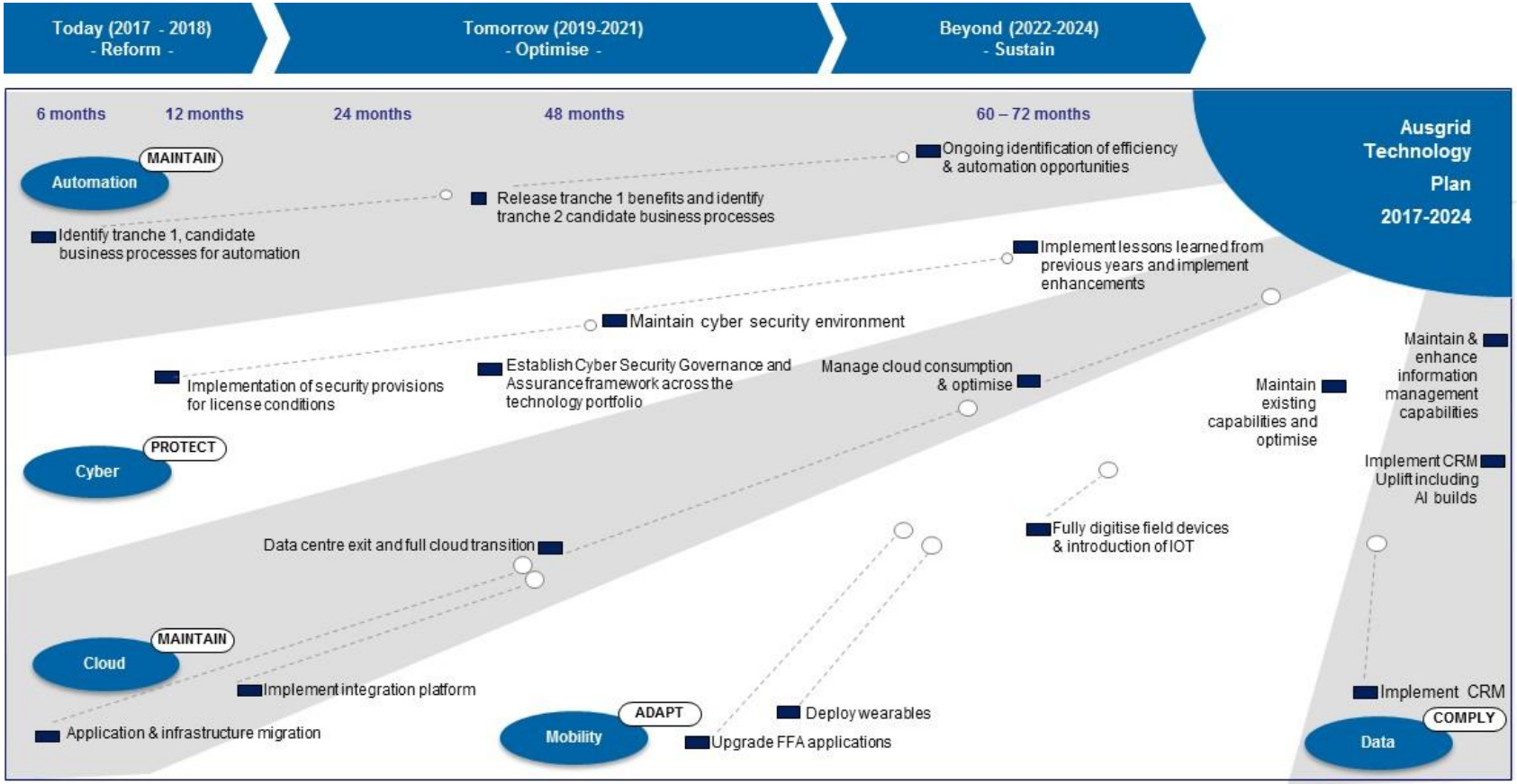
Figure 2. Ausgrid Technology Plan 2017–24 Delivery Horizons



6.2 Delivery roadmap

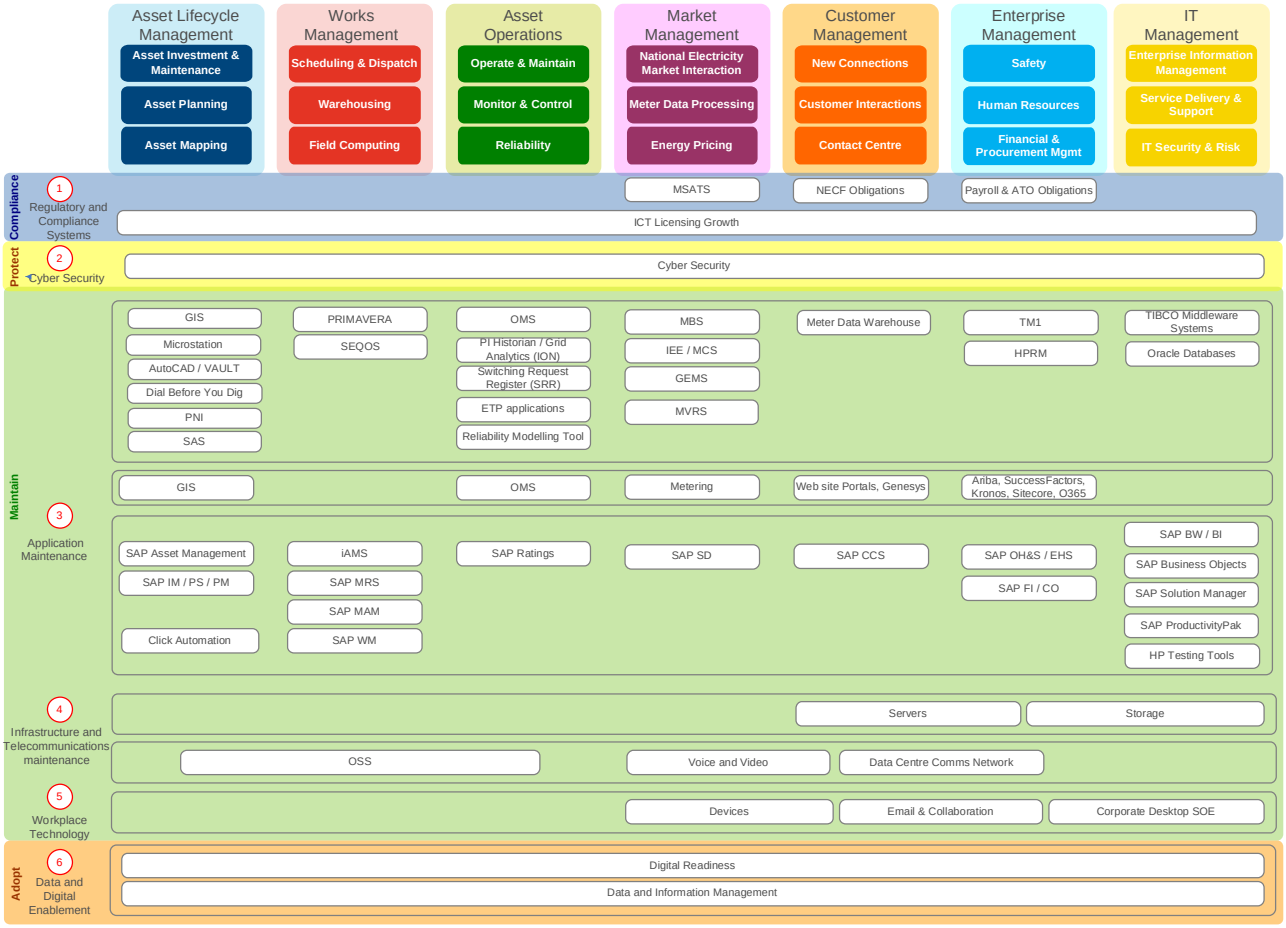
The diagram below illustrates the major technology shifts and transitionary states for each of technology focus area across the three delivery horizons of the technology plan. The technology shifts below will be delivered by the initiatives listed in Figure 3.

Figure 3. Ausgrid Technology Plan 2017–24 Delivery Roadmap



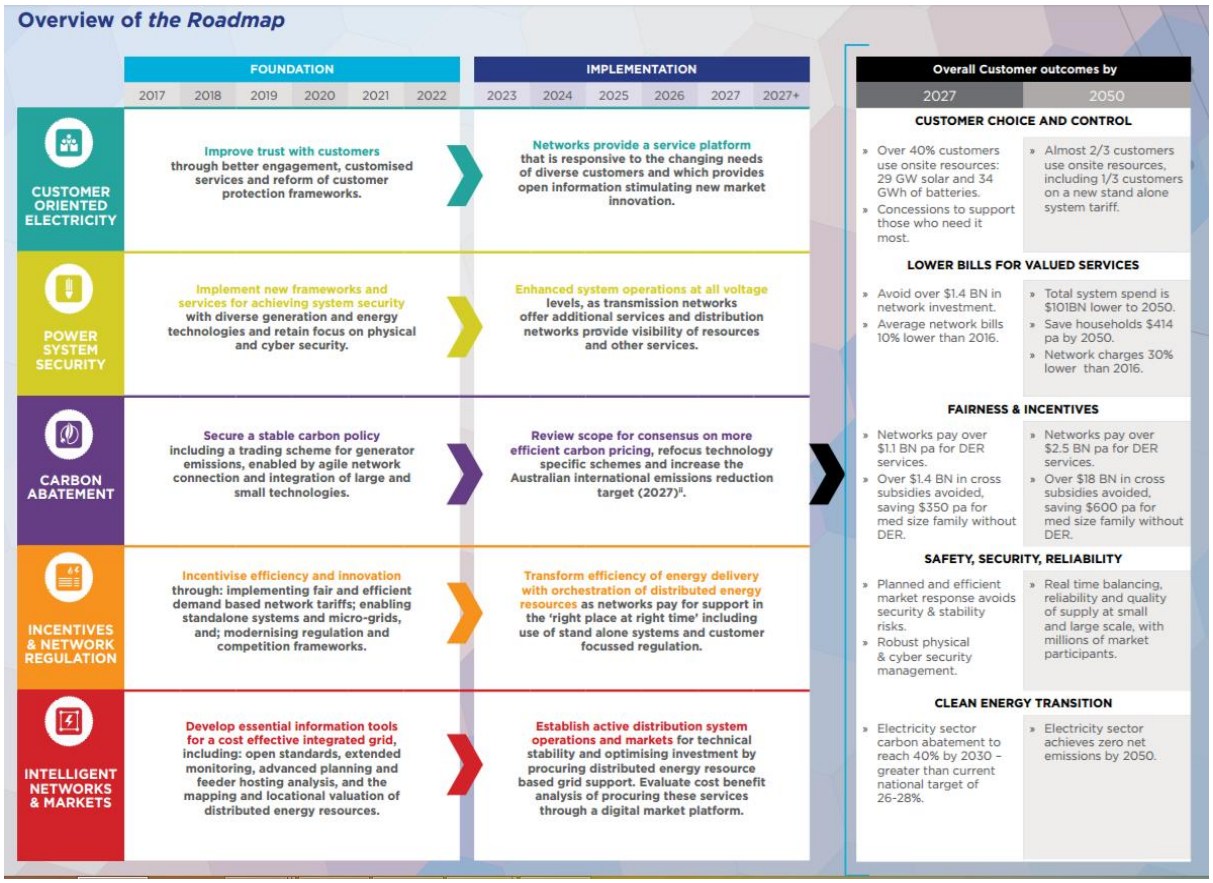
APPENDIX A. PROGRAMS AND TECHNOLOGY FOCUS AREAS

Figure 4. Programs and technology focus areas



APPENDIX B. OVERVIEW OF THE ENA ROADMAP

Figure 5. Overview of the Roadmap



APPENDIX C. INDUSTRY ALIGNMENT

Customers are driving many of the industry changes and Ausgrid will need to adapt to these changes in the industry in order to be efficient and deliver relevant services in the future. Ausgrid's technology focus areas are also aligned to the industry direction that will maintain the stability of the network (compliance, quality, safety, reliability and security) while putting the future needs of customer at the centre.

As part of this industry alignment, the CSIRO and Energy Networks Australia (ENA) have partnered to develop an Electricity Network Transformation Roadmap (Roadmap).[2] This Roadmap has been developed to provide detailed milestones and actions to guide an efficient and timely change of Australia's Electricity Network over the next decade (2017-27). The initiatives in the Roadmap have been identified to enable balanced, long term outcomes for customers, enable the maximum value of customer distributed energy resources and position Australia's networks for resilience in uncertain and divergent futures.

The Roadmap has been divided into two five-year periods (2017-22 and 2023-27):

- 2017-22 is considered Foundation
- 2023-27 is considered Implementation.

Ausgrid needs to build a solid foundation from 2017 as per the Roadmap indicated, in particular, Ausgrid should focus on the following technology aspects of the roadmap below and have been mapped to the Technology Focus Areas.

Table 2. ENA Roadmap initiatives and Technology Focus Areas mapping

Initiative	Foundation (2017-22) Technology aspects	Implementation (2023-27) Technology aspects	Customer Outcome	Ausgrid Technology Focus Areas
Customer Oriented Electricity	Better engagement with customers Provide customised services	Networks provide a service platform that is responsive to the changing needs of diverse customers Provide open information stimulating new market innovation	Customer choice and control	Adapt
Power System Security	Retain focus on cyber security	N/A	Lower Bills	Protect
Incentives and Network Regulation	Enabling standalone systems and micro-grids	Orchestration of distributed energy resources. Support in the 'right place at right time' including use of stand alone systems	Safety, Security and Reliability	Maintain
Intelligent Networks and markets	Develop essential information tools for cost effective integrated grid	Establish active distribution system operations and markets for technical stability. Optimise investment by procuring distributed energy resource based grid support. Enable digital market platforms.	Clean Energy transition	Adapt

Note that the Comply Technology Focus Area is mapped across all initiatives as Ausgrid must be compliant with all of its regulatory obligations.

[2] http://www.energynetworks.com.au/sites/default/files/entr_final_report_web.pdf