

Business Plan

Information and Communication Technology

April 2018

Supporting Document 12.1.16

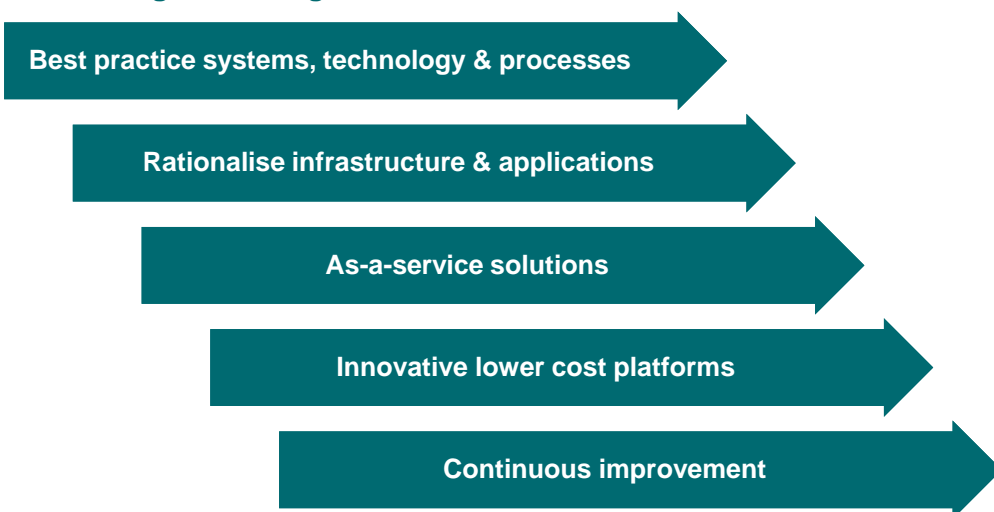
Executive Summary

\$177M

**CAPITAL
INVESTMENT PLAN**

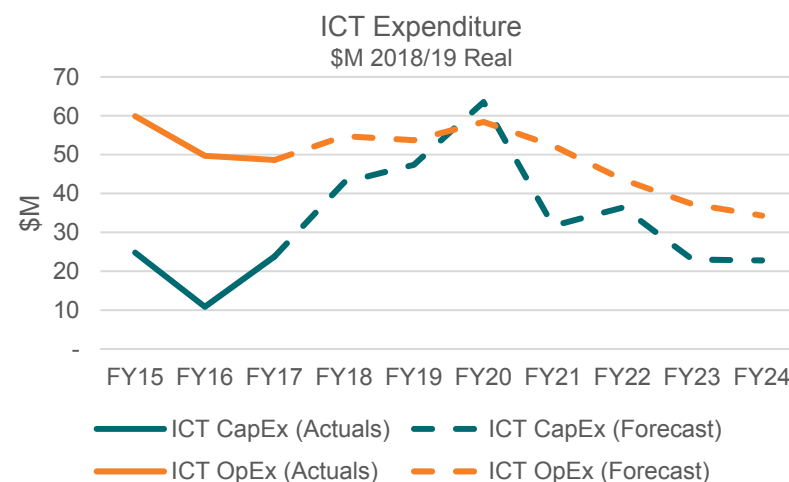
\$M 2018/19 Real

ICT Strategic Planning:



\$226M

**OPERATIONAL
INVESTMENT PLAN**



ICT Portfolio

- > Enterprise Services Systems
- > Enterprise Asset Management Systems
- > Field & Network Operation Systems
- > Customer & Market Interaction Systems
- > Technology & Cyber-security

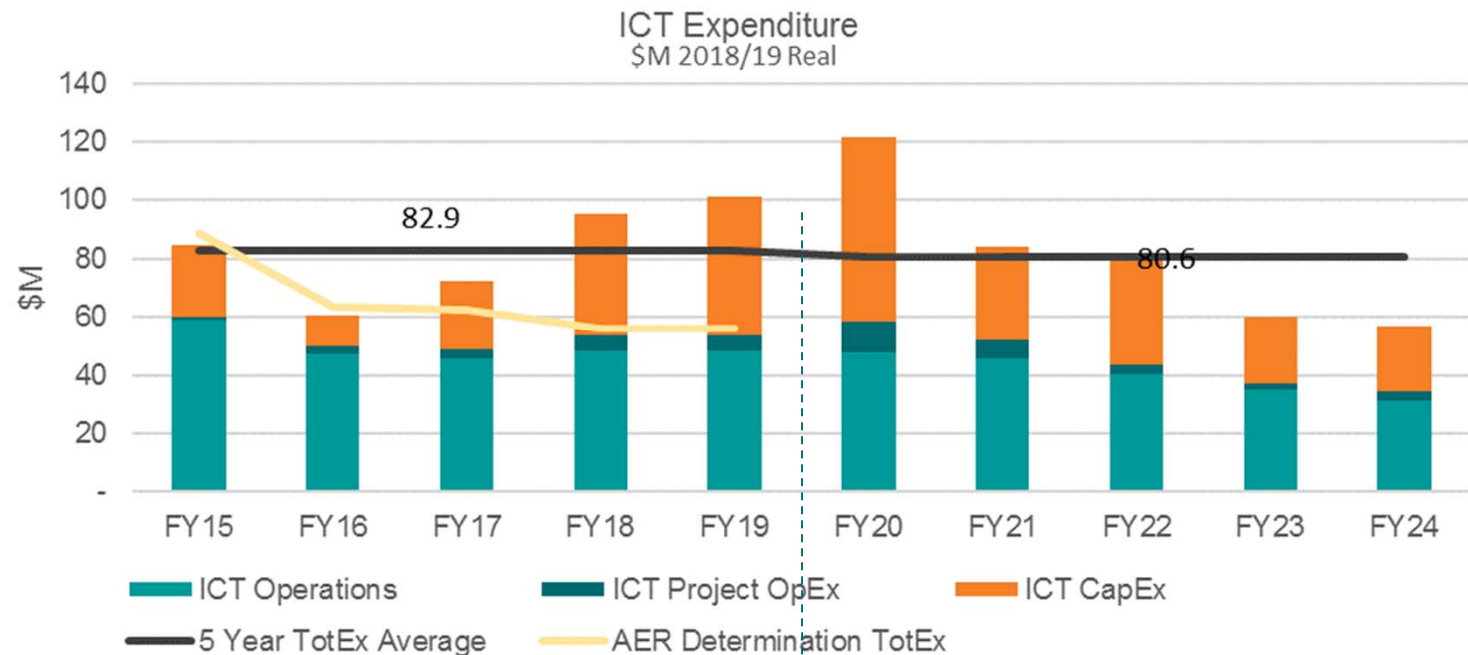
Key Challenges

- > Cyber-security threats
- > Aging core systems
- > Digital disruption

Key Opportunities

- > Maturing market for commercially provided cloud services
- > Ability to leverage planned ICT renewals for business transformation and improvement creating significant business benefits and savings to our customers

Executive Summary – Actual and Forecast Expenditure



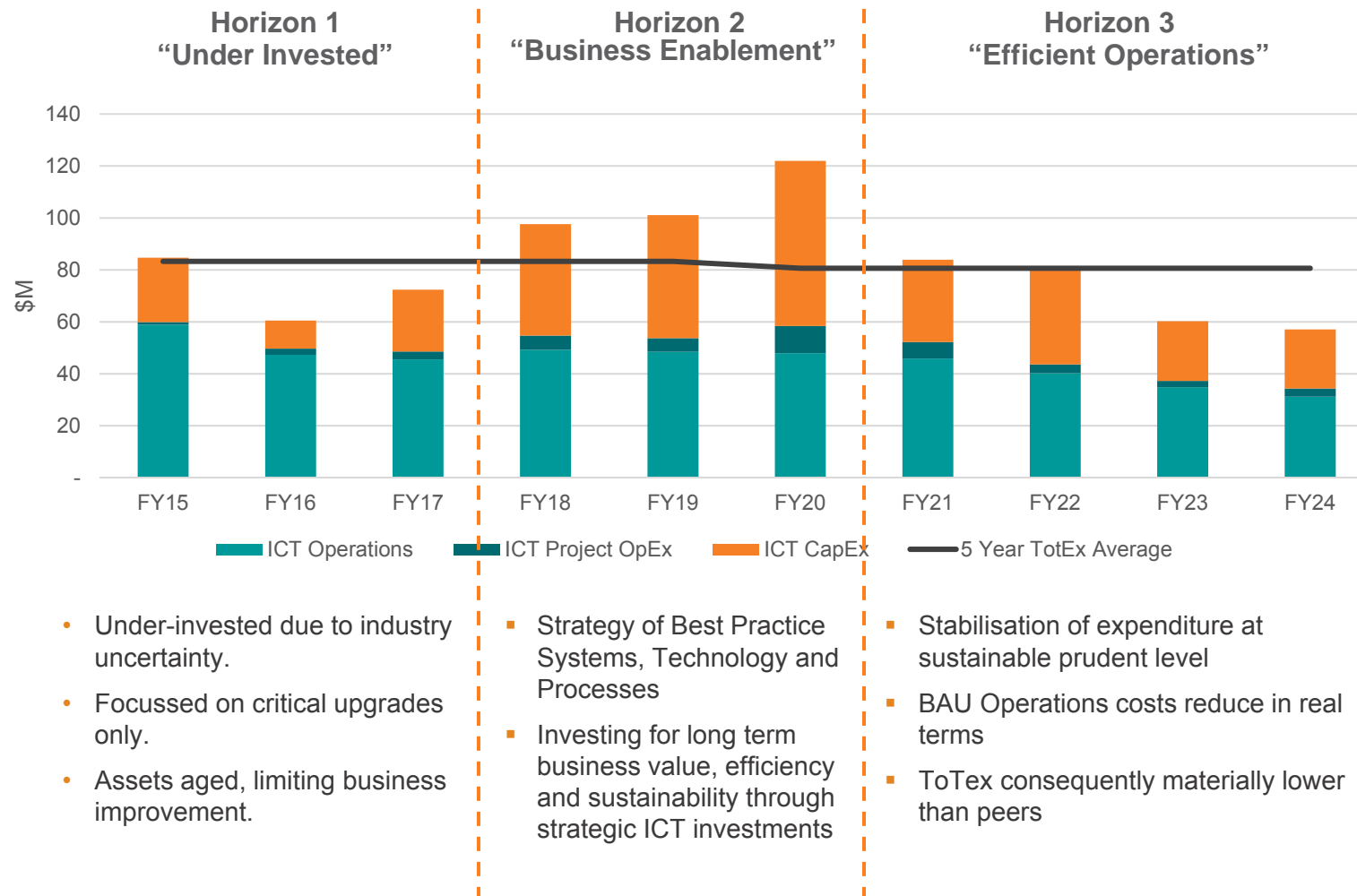
\$M 2018/19 Real	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24
ICT CapEx	24.8	10.9	23.8	42.0	47.4	63.5	31.7	36.4	23.0	22.8
ICT Project OpEx	0.9	2.3	3.1	5.4	5.2	10.4	6.4	3.4	2.4	3.1
ICT Operations	58.9	47.3	45.5	48.2	48.5	48.0	45.8	40.2	34.8	31.2
ICT TotEx	84.7	60.5	72.4	95.6	101.1	121.9	83.9	80.0	60.3	57.1
AER Determination	88.9	63.7	62.3	56.3	56.2	-	-	-	-	-
Actuals v AER Determination	-4.2	-3.2	10.1	39.3	44.8	-	-	-	-	-
5 Year Total	414					403				

(Negative denotes underspend)

Current Period → Proposal Period

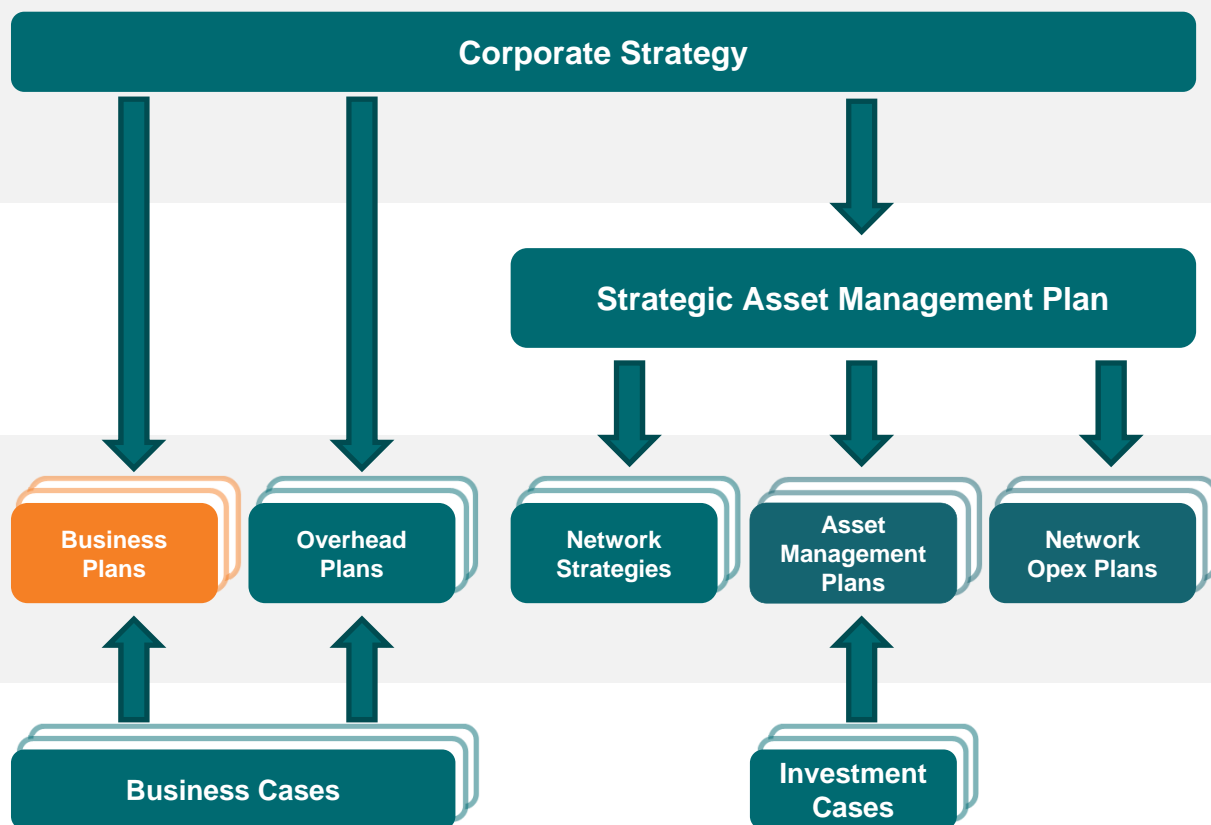
All figures are provided in FY19 real terms and represent post-CAM SCS regulated amounts only

Executive Summary – Actual and Forecast Expenditure



Document Hierarchy and Purpose

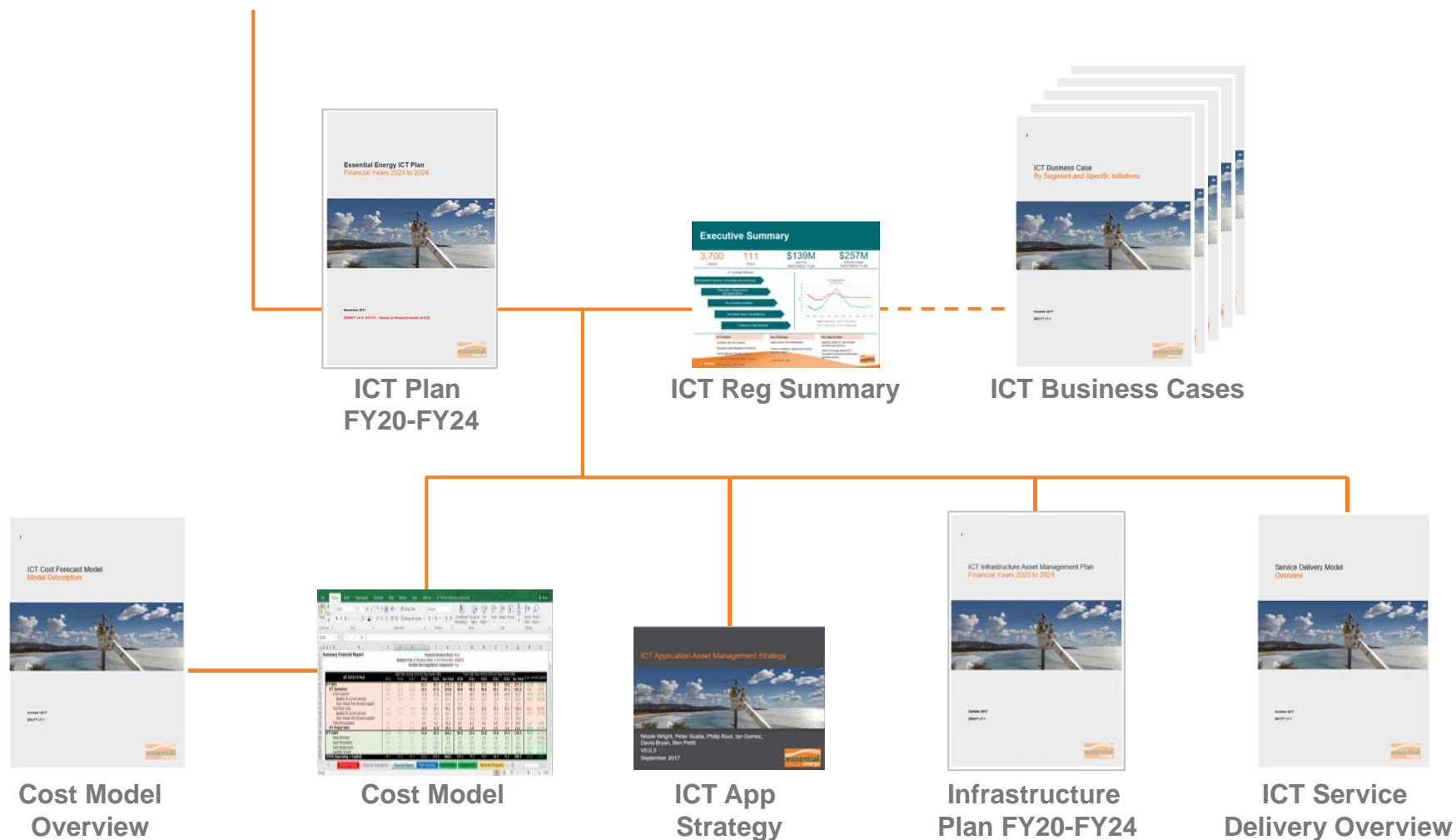
Document Hierarchy



Document Purpose

- > Set corporate direction in view of stakeholder requirements, mandate specific strategic initiatives, and stipulate corporate objectives.
- > Translate the corporate objectives into guiding asset management principles, develop strategic responses, and stipulate asset management objectives.
- > Translate the asset management objectives into specific plans and actions to be delivered to manage the assets.
- > Detailed financial and non-financial consideration of specific investment.

Document Hierarchy and Purpose



Business Plan - ICT

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Current State of Technology



Strategic Focus

Business Strategy	ICT Enablers	End State
Continuous improvement in safety culture and performance.	<ul style="list-style-type: none"> > Improved visibility of work being undertaken, scheduling, backlog and timing. > Integration of HCM and Maintenance systems for training and certifications to ensure safety compliance. 	<p>Digital enablement of processes with Capability to analyse data across functional areas e.g. Revenue / Cost per Customer, Asset Risk Profile.</p>
Operate at industry best practice levels of efficiency, delivering best value for customers.	<ul style="list-style-type: none"> > Improved asset and work order planning. > Mobile capability across systems to improve productivity. > Automation of processes, approvals and integration. > Documented standards across systems to reduce duplication. 	
Deliver real reductions in the customers' network charges.	<ul style="list-style-type: none"> > Visibility of Cost per Asset, Risk based decisions. > Improve network costing > Reduction in billing effort and rework > Improved analytics and cost optimisation 	
Deliver Return on capital investment with the regulator's allowances.	<ul style="list-style-type: none"> > Whole of asset view and lifecycle performance of assets > Improved budgeting and forecasting systems for cost mgt. > Improved financial analytics and reporting 	

ICT Strategies

The ICT objectives and strategy deliver on the established corporate objectives

-
- | | |
|---|--|
| 1. Best practice systems, technology and processes | Enable business improvement through modern digital capability and efficient work practices. |
| 2. Rationalise Infrastructure and Applications | Rationalising legacy applications and infrastructure through each planned initiative in the ICT program. |
| 3. Innovative Lower Cost Platforms | Manage the cost to serve through the prudent use of modern lower cost technology platforms. |
| 4. As-a-service Solutions | Essential Energy is making prudent use of as-a-service solutions as a primary alternative to traditional long-cycle capital investments. |
-

The ICT objectives and strategy deliver on the established corporate objectives

5. Continuous Improvement

The ICT business unit, eTech, is focussed on the continuous improvement of its operations for ongoing efficiency improvement and prudence. This includes:

- > Transformation to a contemporary as-a-service operating model
- > Best-practice focus on product towers aligned with the enterprise architecture and core functional services including:
 - Strategy and Architecture
 - Infrastructure Services,
 - Strategic Vendor Management,
 - Service Integration,
 - Risk Management and Security

ICT Asset Lifecycle Management

ICT Asset Lifecycle Management



ICT Infrastructure Management

1. Maximise utilisation of **platform-as-a-service (PaaS)** and **infrastructure-as-a-service (IaaS)**
2. Implement **innovative technologies** including lower-cost devices and BYOD alternatives.
3. Ensure the **prudent and efficient maintenance and replacement** of on-premise ICT Infrastructure assets



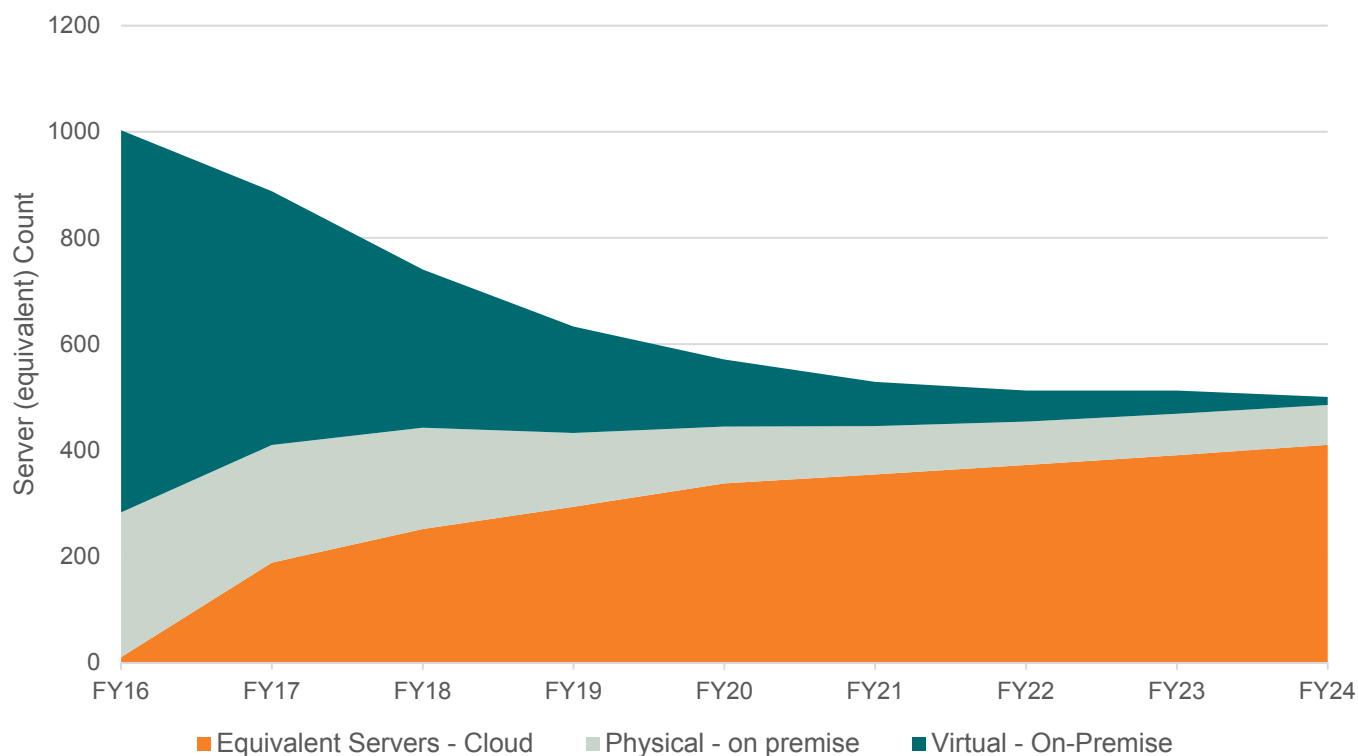
ICT Applications Management

1. Maximise utilisation of **software-as-a-service (SaaS)** solutions
2. **Plan application upgrades and replacements** for sustainability and prudent risk management, consistent with the Gartner PACE model.
3. **Leverage upgrades and replacements** for business improvement and alignment with external triggers.

ICT Asset Lifecycle Management

ICT Infrastructure Management

Substantial progress made in transition to as-a-service infrastructure



Structured Asset Lifecycle Management for residual on-premise infrastructure

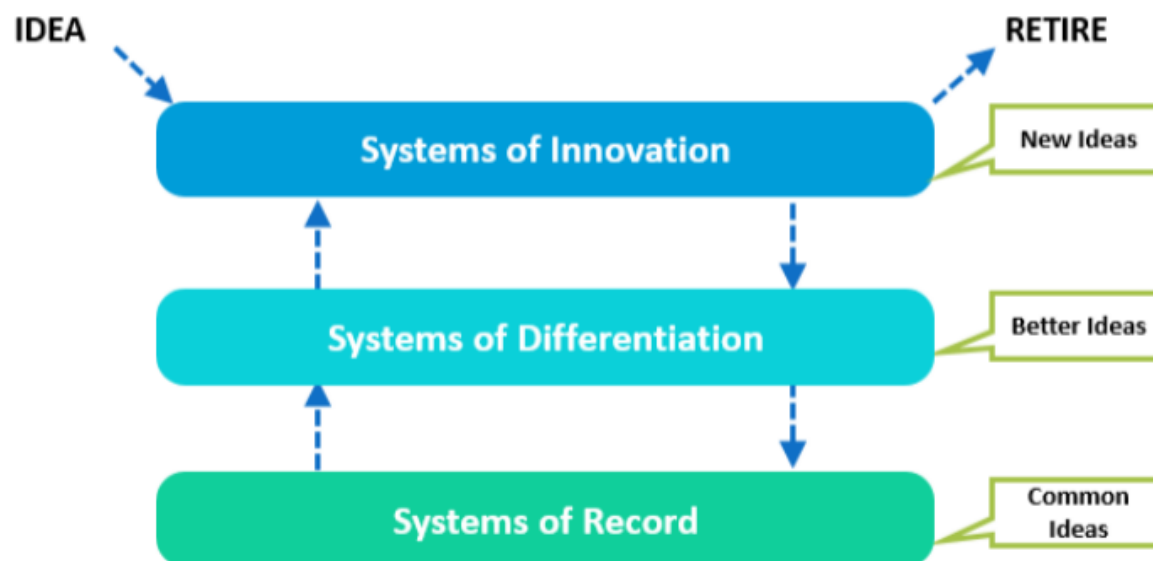


Ongoing security, serviceability, sustainability of equipment

ICT Asset Lifecycle Management

ICT Applications Management

- Through management within enterprise architecture, significant application upgrades and replacements are planned to ensure system sustainability and prudent risk management.
- Applications are managed in accordance with the Gartner PACE model.



Source: Gartner (April 2015)

Key Challenges

Key Challenge	Description
Cyber-Security Threats	<ul style="list-style-type: none">> As noted by the Australian Chief Scientist in the recent Independent Review into the Future Security of the National Electricity Market report, in FY16 the energy sector had the highest number of cybersecurity incidents reported to CERT Australia.> Keeping ahead of these threats and maintaining the security of critical systems, infrastructure and information is a challenge of the highest organisational priority.
Aging Core Systems	<ul style="list-style-type: none">> Aging systems supporting core business functions limit organisational flexibility and efficiency. Essential Energy operates several core systems which are nearing the end of their operational life. They must be upgraded or renewed to maintain their ongoing security and serviceability.> Such renewals also bring the opportunity for reconsideration of operational business processes, to deliver efficiency improvement and optimisation.
Digital Disruption	<ul style="list-style-type: none">> The rapid evolution of modern digital technologies, platforms and communications are driving unprecedented change in commercial practices and the modern social fabric. This disruption brings both challenge and opportunity.> The energy industry must remain in step with customer expectations for digital engagement and enablement. Business also have the great opportunity to leverage digital capabilities for greater efficiency and operational effectiveness.

Risk Considerations

Risk and control context

Key risks:

- > Loss of ICT and IT service
- > Breach of data integrity and/or security

Mitigated through:

- Renewal of aging systems, including core Asset, Works, Finance and Market systems to ensure ongoing supportability
- Transition to market provisioned cloud services for ongoing hosting support and extensibility
- ICT security management to maintain an appropriate residual risk profile in an environment of growing cyber threat

Alternative / differentiated control options considered

- > Continued operation of aging in-house hosted infrastructure
- > Renewal of existing assets with new in-house hosted and managed solutions

Current control effectiveness

- > In the first years of the current regulatory control period, core applications were upgraded for supportability through to their planned end-of-life in the coming period. Notably, these included Hansen PEACE and Oracle Peoplesoft. To ensure ongoing sustainability however, these platforms are now due for replacement.
- > In the same period, some elements of ICT infrastructure (including servers and client devices) aged through under-investment. This is now being rectified through the transition to cloud services and prudent infrastructure asset lifecycle management.
- > Security continues to be managed professionally and effectively. However as the inherent threat grows, ongoing focus and investment is required to maintain an appropriate residual risk.

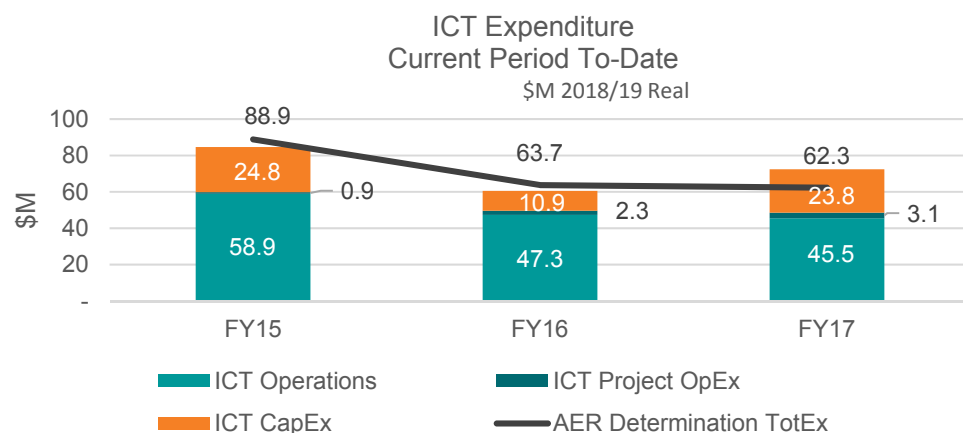
Risk considerations and rationale for proposed plan

Proposed plan appropriately addresses current control issues through with particular considerations of:

- > Ensuring the safety, security and reliability of ICT systems supporting Essential Energy operations
- > Cost efficiency through use of market provisioned commercial services

Performance to-date

Total ICT expenditure for the 3 year period to-date is approximately **\$2.7M** above the AER determination ¹



Essential Energy under-invested in ICT from FY15 to FY17, focussing primarily on critical system upgrades and remediation



Since 2017, the ICT strategy has been revised with a renewed focus on leveraging ICT as a key enabler of business transformation and efficiency improvement

¹ – Includes proposed ICT OPEX

\$M 2018/19 Real	FY15	FY16	FY17	3 Yr Total
Actual ICT TotEx	84.7	60.5	72.4	217.6
ICT OpEx	59.9	49.7	48.6	158.2
ICT Operations	58.9	47.3	45.5	151.8
ICT Project OpEx	0.9	2.3	3.1	6.4
ICT CapEx	24.8	10.9	23.8	59.4
AER Determination ICT TotEx	88.9	63.7	62.3	214.9
ICT OpEx	48.1	47.3	46.7	142.1
ICT CapEx	40.8	16.4	15.6	72.8
Actuals v AER Determination	-4.2	-3.2	10.1	2.7

(Negative denotes underspend)

Performance to-date

In the KPMG 2016 Utilities ICT Benchmarking analysis, Essential Energy performed better-than-average or best-in-group in most relevant measures

Best in group	ICT TotEx per organisational personnel	\$13,982
	ICT OpEx (incl depreciation) as a % of corporate revenue	4.84%
	ICT OpEx (excl depreciation) as a % of corporate revenue	2.47%
	ICT OpEx (incl depreciation) as a % of corporate OpEx	6.26%
	ICT OpEx (excl depreciation) as a % of corporate OpEx	4.51%
Better than average	ICT OpEx (excl depreciation) per user	\$11,903
	ICT CapEx as a % of corporate CapEx	2.34%
	ICT asset value as a % of total corporate asset value	1.14%
	ICT TotEx as a % of corporate TotEx	3.76%
	ICT staff as a % of corporate staff	4.46%
Near average	ICT TotEx per corporate customer	\$59

Proposed Target State expenditure in 2024 will have Essential Energy well placed as Best in Group for various measures

ICT Operations Forecast

\$M 2018/19 Real	Cash Flow During 2015-20 Reg Period (\$M)						Cash Flow During 2020-24 Reg Period (\$M)					
	FY15	FY16	FY17	FY18	FY19	5yr Total	FY20	FY21	FY22	FY23	FY24	5yr Total
ICT Operations	58.9	47.3	45.5	49.2	48.5	249.6	48.0	45.8	40.2	34.8	31.2	200.0
A. eTech Support	29.8	20.0	20.3	19.0	18.1	107.1	15.1	13.7	13.7	13.9	13.7	70.0
Baseline for current services	29.8	20.0	20.3	20.3	19.9	110.3	19.8	19.5	19.5	19.8	19.5	98.0
Step change from forward program	-	-	-	-1.3	-1.8	-3.2	-4.7	-5.8	-5.8	-5.9	-5.8	-28.0
B. Third Party Costs	20.9	19.3	17.5	23.2	23.6	104.4	26.2	25.5	19.6	13.8	10.4	95.3
Baseline for current services	20.9	19.3	17.5	17.5	17.1	92.3	17.0	16.8	16.8	17.0	16.8	84.5
Step change from forward program	-	-	-	5.7	6.4	12.1	9.1	8.7	2.7	-3.3	-6.5	10.8
C. Telecommunications	8.3	8.0	7.7	7.1	6.9	38.0	6.7	6.7	6.9	7.2	7.1	34.6

Forecast Basis

- ↓ **A.** 28% reduction in eTech Support costs (\$5.3M pa)¹
- ↓ **B.** 55% reduction in Third Party costs (\$12.8M pa)¹
- ↔ **C.** Telecommunications costs remain largely stable (real terms) despite increased reliance on connectivity

↓ **5-year ICT Operations costs reduce by 20% (\$49.6M)²**

All figures quoted are in FY19 real terms.

¹ FY24 vs FY18 ² FY20-24 vs FY15-19

ICT Program Forecast

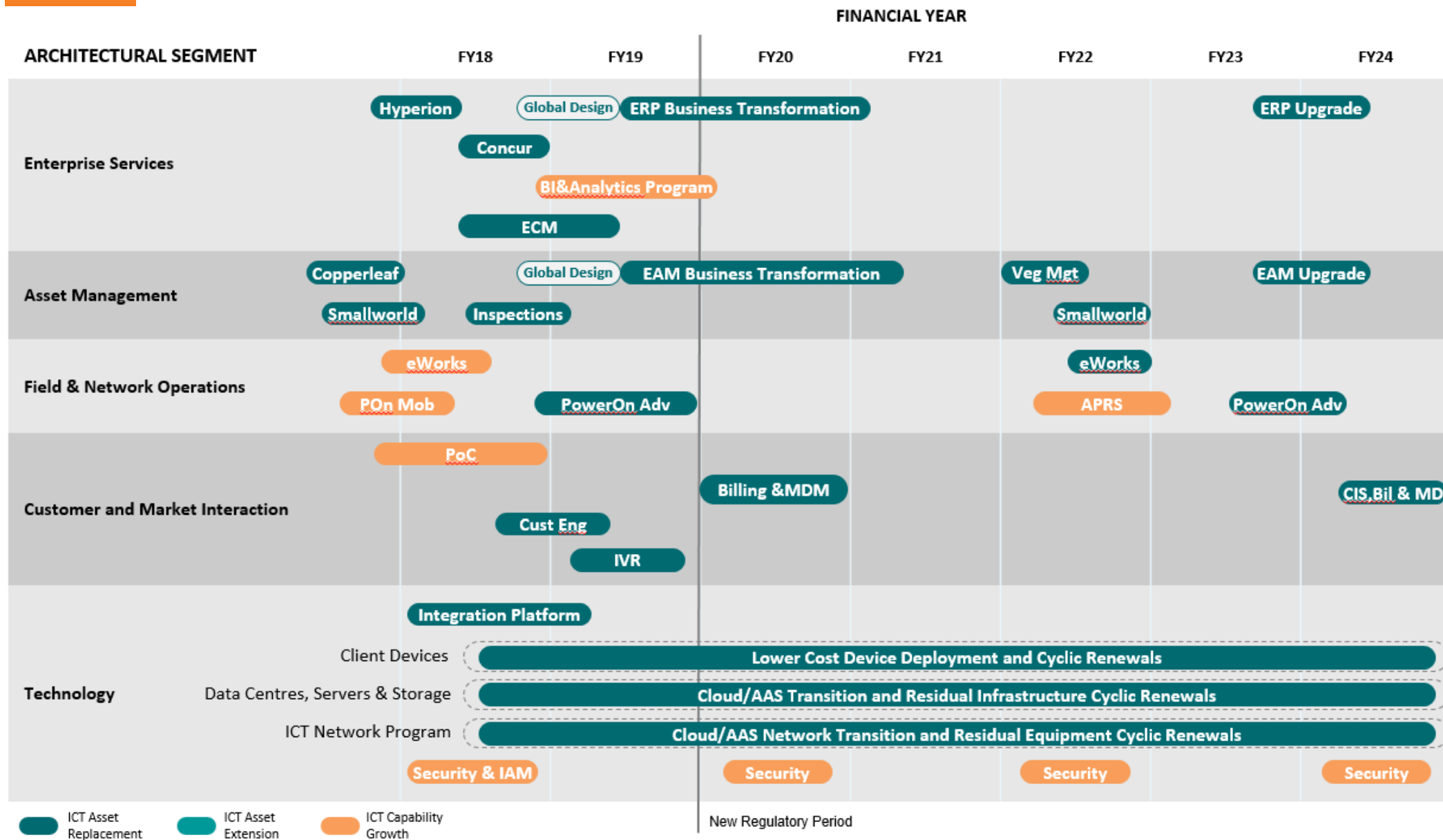
\$M 2018/19 Real	Cash Flow During 2015-20 Reg Period (\$M)						Cash Flow During 2020-24 Reg Period (\$M)					
	FY15	FY16	FY17	FY18	FY19	5yr Total	FY20	FY21	FY22	FY23	FY24	5yr Total
ICT Project OpEx	0.9	2.3	3.1	5.5	5.2	17.1	10.4	6.4	3.4	2.4	3.1	25.8
ICT CapEx	24.8	10.9	23.8	42.9	47.4	149.7	63.5	31.7	36.4	23.0	22.8	177.4
ICT Asset Extension	0.2	0.5	2.7	1.5	2.5	7.3	1.4	1.1	1.0	0.9	0.9	5.4
ICT Asset Remediation	0.1	0.2	0.1	0.6	1.1	2.0	0.6	0.4	0.4	0.4	0.4	2.4
ICT Asset Replacement	21.8	9.1	12.5	19.3	34.0	96.6	50.5	25.0	24.7	18.8	16.9	135.8
ICT Capability Growth	2.8	1.1	8.6	21.6	9.8	43.8	11.0	5.1	10.3	2.9	4.5	33.8
ICT Program TotEx	25.7	13.2	26.9	48.4	52.6	166.8	74.0	38.1	39.8	25.4	25.9	203.2

The ICT program:

- > Comprises both CapEx and OpEx investment
- > Is reduced in scale due to the transition from traditional capital assets to outsourced cloud services
- > Derived from an investment roadmap to enable the business strategy
- > Primarily ICT Asset Replacements to prudently ensure system security, supportability & sustainability

ICT Program Forecast - Investment Roadmap

As at March 2018



ICT Program Segment

Enterprises Services

Scope

The Enterprise Services segment comprises corporate systems supporting business functions including:

- > Finance and Accounting
- > Human Resources and Payroll
- > Procurement
- > Environment, Health and Safety (EH&S)
- > Document, Content and Records Management
- > Business Intelligence and Analytics

Activity	Description	Forecast Capex Expenditure (FY20-24)
ERP Business Transformation	<ul style="list-style-type: none"> > Scope: Cloud replacement of aging systems to manage corporate business functions including: <ul style="list-style-type: none"> - Human Resources (HR) and Payroll - Finance and Accounting - Procurement > Objective: Ensure ongoing security, supportability and sustainability of core business systems while also enabling critical business efficiencies factored into the Essential Energy's operating forecasts. 	
Other minor investments	<ul style="list-style-type: none"> > Scope: Minor investments for the prudent remediation, extension or replacement of enterprise applications and tools including: <ul style="list-style-type: none"> - TotalSafe, ChemAlert, Wellnomics (EH&S software) - Concur (expense management software) - Hyperion (budgeting and planning software) - Manhattan (property management software) - Internal portals, intranets, content management, knowledge management - Various other minor tools and software > Objective: Ensure ongoing security, supportability and sustainability of core business systems while also enabling critical business efficiencies factored into the Essential Energy's operating forecasts. 	

ICT Program Segment

Asset Management

Scope

The Asset Management segment comprises corporate systems supporting business functions including:

- > Network Asset Management and Maintenance
- > Asset Inspections and Condition Monitoring
- > Network Planning and Forecasting
- > Program and Project Management
- > Vegetation Management
- > Network Model Management
- > Non-Network Asset Management

Activity	Description	Forecast Capex Expenditure (FY20-24)
EAM Business Transformation	<ul style="list-style-type: none"> > Scope: Cloud replacement of aging systems to manage corporate business functions including: <ul style="list-style-type: none"> – Network Asset Management and Maintenance – Supply Chain and Execution > Objective: Ensure ongoing security, supportability and sustainability of core business systems while also enabling critical business efficiencies factored into the Essential Energy's operating forecasts. 	
Vegetation Management	<ul style="list-style-type: none"> > Scope: Upgrade or replace the Vegetation Management system > Objective: Ensure ongoing security, supportability and sustainability of core business systems 	
Smallworld GIS Upgrade	<ul style="list-style-type: none"> > Scope: Essential Energy uses the Smallworld Geographic Information System (GIS) as the master record of network layout. While the system was first implemented over 15 years ago, investment was recently made to upgrade to a modern version of the product (v5). In the coming period it will require a further upgrade to the Smallworld Electric Office toolset which is now reaching maturity within peer businesses > Objective: Ensure ongoing security, supportability and sustainability of core business systems 	
Other minor investments	<ul style="list-style-type: none"> > Scope: Minor investments for the prudent remediation, extension or replacement of asset management applications and tools including: <ul style="list-style-type: none"> – Asset Management Planning Software (incl. C55 Copperleaf) – Engineering Tools (incl. LABView, Mathcad and others) – Various other Asset Management tools > Objective: Ensure ongoing security, supportability and sustainability of core business systems while also enabling critical business efficiencies factored into the Essential Energy's operating forecasts. 	

ICT Program Segment

Field & Network Operations

Scope

The Field & Network Operations segment comprises corporate systems supporting business functions including:

- > Mobile Workforce Management (including Schedule / Despatch)
- > Network Control and Operations
- > Network Monitoring and Data
- > Network Design

Activity	Description	Forecast Capex Expenditure (FY20-24)
eWorks Upgrade	<ul style="list-style-type: none"> > Scope: A key element of the Best Practice Systems, Technology and Processes strategy has been the deployment of the ClickSoft mobile workforce management solution (known as eWorks). A mid-life upgrade is planned during the coming regulatory control period. > Objective: Ensure ongoing security, supportability and sustainability of core business systems 	
PowerOn Advantage Upgrade	<ul style="list-style-type: none"> > Scope: Prior to the coming period, the existing PowerOn Fusion distribution management system will be migrated to the newer PowerOn Advantage platform. In the latter part of the coming period, the system will require a further upgrade. > Objective: Ensure ongoing security, supportability and sustainability of core business systems 	
APRS	<ul style="list-style-type: none"> > Scope: Leveraging the capabilities of the upgraded PowerOn Advantage solution, deliver a targeted deployment of Automated Power Restoration Schemes (APRS), including in areas of higher network density where remote network re-configuration is feasible. > Objective: improved operational efficiency and network reliability. 	
Other minor investments	<ul style="list-style-type: none"> > Scope: Minor investments for the prudent remediation, extension or replacement of asset management applications and tools including: <ul style="list-style-type: none"> - Network Design and Engineering Software (incl. AutoCAD, Microstation) - PI (Network Data Historian) and PSS SINCAL (Power system analysis) - Dial Before You Dig - Rostering and Shift Management - Storm Tracker - Fleet Management Tools > Objective: Ensure ongoing security, supportability and sustainability of core business systems while also enabling critical business efficiencies factored into the Essential Energy's operating forecasts. 	

ICT Program Segment

Customer & Market Interaction

Scope

The Field & Network Operations segment comprises corporate systems supporting business functions including:

- > Customer Information Management (and the stakeholder portal)
- > Market Interface
- > Network Billing Management
- > Meter Data Management
- > Contact Management
- > Interactive Voice Response (IVR)
- > External Website

Activity	Description	Forecast Capex Expenditure (FY20-24)
Market, Network Billing and Meter Data Management	<ul style="list-style-type: none"> > Scope: Prior to the coming period, the existing PEACE-based market system and EDDIS meter data management system will be replaced with a new hosted solution. In the latter part of the next period, the system will require a further upgrade. > Objective: Ensure ongoing security, supportability and sustainability of core business systems. 	
Other minor investments	<ul style="list-style-type: none"> > Scope: Minor investments for the prudent remediation, extension or replacement of asset management applications and tools including: <ul style="list-style-type: none"> - Remote meter reading and meter management tools (MV90) - Customer Website and Channel Management - Customer Engagement system (incl Contact, Compliment & Complaint Management) - Business Partner Ecosystem tools - Non-routine meter reading tools - Power of Choice and National Electricity Customer Framework (NECF) tools > Objective: Ensure ongoing security, supportability and sustainability of core business systems while also enabling critical business efficiencies factored into the Essential Energy's operating forecasts. 	

ICT Program Segment

Technology

Scope

The Technology segment comprises systems, infrastructure, devices and equipment investments including:

- > ICT Tools and Platforms
- > Client Devices
- > Data Centre, Server and Storage Infrastructure investments
- > Contact Management
- > Interactive Voice Response (IVR)

Activity	Description	Forecast Capex Expenditure (FY20-24)
Client Device Renewal	<ul style="list-style-type: none"> > Scope: Renewal of client devices consistent with prudent Infrastructure Lifecycle Management practices. This includes selected renewals of Windows devices, as well as phased renewal of lower-cost alternatives (ie. Chromebooks and iPads) as well as mobile phones and printers. > Objective: Cost effective management of end-user devices for ongoing serviceability, security and staff productivity. 	
Data Centre and Server Infrastructure	<ul style="list-style-type: none"> > Scope: Cloud data centre establishment and migration. On-premise data centre consolidation and selected decommissioning. Residual on-premise server renewals consistent with prudent ICT Asset Lifecycle Management practices. > Objective: Cost effective management of data centre hosting and infrastructure for ongoing serviceability, reliability and security. 	
ICT Network Infrastructure	<ul style="list-style-type: none"> > Scope: Renewal of network equipment consistent with prudent ICT Asset Lifecycle Management practice, Planned telephony and video conferencing renewal. Network, WiFi and monitor tools capacity extension > Objective: Cost effective management of network services for ongoing serviceability, reliability and security. 	
Security and Identity Management	<ul style="list-style-type: none"> > Scope: Essential will continue to prudently invest in new and enhanced Cyber Security controls, for operation in a hyper-connected business environment. > Objective: ICT security management to maintain an appropriate residual risk profile in an environment of growing cyber threat 	
Other minor investments	<ul style="list-style-type: none"> > Scope: Minor investments for the prudent remediation, extension or replacement of technology management tools. These include email, SharePoint, middleware, virtualisation tools, configuration management tools, testing tools, scripting tools, database and environment administration tools, data network management tools. > Objective: Ensure the ongoing security, supportability and sustainability of technology management tools and applications (aside from the above listed significant investments). 	

Supporting documents

ICT supporting documents

Document	Relevance to the Business Plan
ICT Plan FY20-FY24	Documents further describe the ICT strategy, as well as ICT OpEx and CapEx forecasts
ICT Infrastructure Management Plan FY20-FY24	
ICT Service Delivery Model	Describes how the approach to ICT Service Delivery

Investment case documents

Documents	Relevance to the Business Plan
ERP Replacement Program	Investment cases for material initiatives in the ICT Plan
EAM Replacement Program	
Market, Billing and Meter Data Management Replacement	
PowerOn Advantage Upgrade	
APRS	
Business Intelligence and Analytics	
Enterprise Content Management	
Vegetation Management Replacement	
Smallworld GIS Upgrade	

Relevant Legislation and Policies

Legislation

Document	Relevance to the Business Plan
Preliminary guidance on funding as a service solutions	Guidance on funding for as a service solutions
NSW ICT Investment Policy and Guidelines	Ensure program conforms to NSW guidelines
NSW Government Cloud Policy	Ensure program conforms to NSW guidelines

Policies

Document	Relevance to the Business Plan
CECP7018 Software Asset Management	Proposed software investments based on mature software lifecycle principles
CEOP1005.02 Acceptable Use Of Technology	Evidence of appropriate use of technology
CEOP7003.01 CMDB	Evidence of mature asset management processes
CEOP9148.13 ICT Data Facility Procedures	Evidence of mature data centre management processes

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