

Supporting Document 12.1.16a
Essential Energy ICT Plan
Financial Years 2020 to 2024

April 2018

v1.1



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Version History

Date	Version	Cost Model	Notes	Contact
02/11/2017	V0.4	V1.00	First full draft released for eTech and Regulatory Team review	Peter Scalia
20/11/2017	V0.5	V1.00	Updated with feedback from Col Ussher. Applied Nicole Wright's re-styling of roadmap and strategy graphic. Standardised embedded tables to Arial font. Updated Gartner PACE narrative and figure.	Peter Scalia
29/11/2017	V0.6	V1.01	Updated to version 1.01 of the cost model which is consistent with the ERP EAM Transformation Program forecast. Also applied updates based on review feedback	Nicole Wright
30/11/2017	V0.7	V2.05	Updated to version 2.05 of the cost model and applied other changes based on feedback from Nicole Wright. This version is consistent with V1.0 of the ICT Plan FY20-24 PowerPoint provided to the Essential Energy Regulatory team on 30/11/2017	Peter Scalia
15/02/2018	V1.0	V2.10	Updated Forecast \$ in line with Cost Model Updates	Nicole Wright
30/03/2018	V1.1	V2.10	Minor Changes as per peer review feedback	Rachel Swain

1 Executive Summary

Essential Energy uses Information and Communications Technology (ICT) to support the efficient operation of the electricity network consistent with the following National Electricity Rule (NER) objectives.

- Comply with all applicable regulations;
- Maintain quality, reliability and security; and
- Maintain the safety of the distribution system.

In the first few years of the current regulatory period, Essential Energy under-invested in ICT, focussing primarily on critical system upgrades and remediation. As such, the age profile of existing assets increased and the company yielded limited benefits from the new efficiency opportunities available through modern digital technologies.

Since early 2017, Essential Energy has revised its ICT strategy with a renewed focus on leveraging ICT as a key enabler of business transformation and efficiency improvement. This new strategic direction is summarised as follows.

1. Deploy **best practice systems, technology and processes** to drive business performance efficiency
2. **Rationalise infrastructure and applications** to ensure a secure and sustainable operating environment
3. Transition to **innovative lower cost platforms** for reduced total cost of ownership and future flexibility
4. Utilise modern **as-a-service solutions** as an alternative to traditional long-cycle asset investments
5. **Continuous improvement** of the ICT delivery group for ongoing efficiency and customer value

Essential Energy recognises the opportunity to leverage the renewal of ICT systems and modern digital technologies to enable efficiency improvement across the business. The **ERP EAM Business Transformation program capitalises on this opportunity** and will replace several of the company’s aging core systems with modern as-a-service Enterprise Resource Planning (ERP) and Enterprise Asset Management (EAM) solutions. This program will ensure the long-term sustainability of the company’s Asset Management, Works Management, HR, Finance, Payroll and Supply Chain functions, while also delivering efficient operational processes to improve business productivity.

In addition to the ERP EAM initiatives, the ICT program will focus primarily on upgrades and replacements driven by prudent ICT Asset Lifecycle Management practices. Beyond the existing ERP EAM applications, key planned upgrade and renewal initiatives include:

- **Market System and Meter Data Management** renewal and upgrade (PEACE and EDDIS)
- **Geographic Information System** upgrade (General Electric Smallworld)
- **Asset Inspection System** renewal and upgrade (DAIS)
- **Distribution Management System** renewal and upgrade (General Electric PowerOn)
- **Customer Engagement and Interaction Systems** renewal

Table 1 (below) summarises the forecast ICT operating and capital expenditure for the coming regulatory period. Essential Energy considers this expenditure to be prudent and efficient in delivering upon the NER objectives. It is also a critical enabler of Essential Energy’s broader business strategy to drive productivity improvement across the company.

\$M 2018/19 Real	FY20	FY21	FY22	FY23	FY24	5yr Total
ICT OpEx	58.4	52.3	43.6	37.2	34.3	225.8
ICT CapEx	63.5	31.7	36.4	23.0	22.8	177.4
ICT TotEx	121.9	83.9	80.0	60.3	57.1	403.2

Table 1 Forecast ICT Expenditure

Figure 1 below, summarises current period and coming period ICT expenditure, including the reduction in average per annum ICT TotEx between the two periods¹.

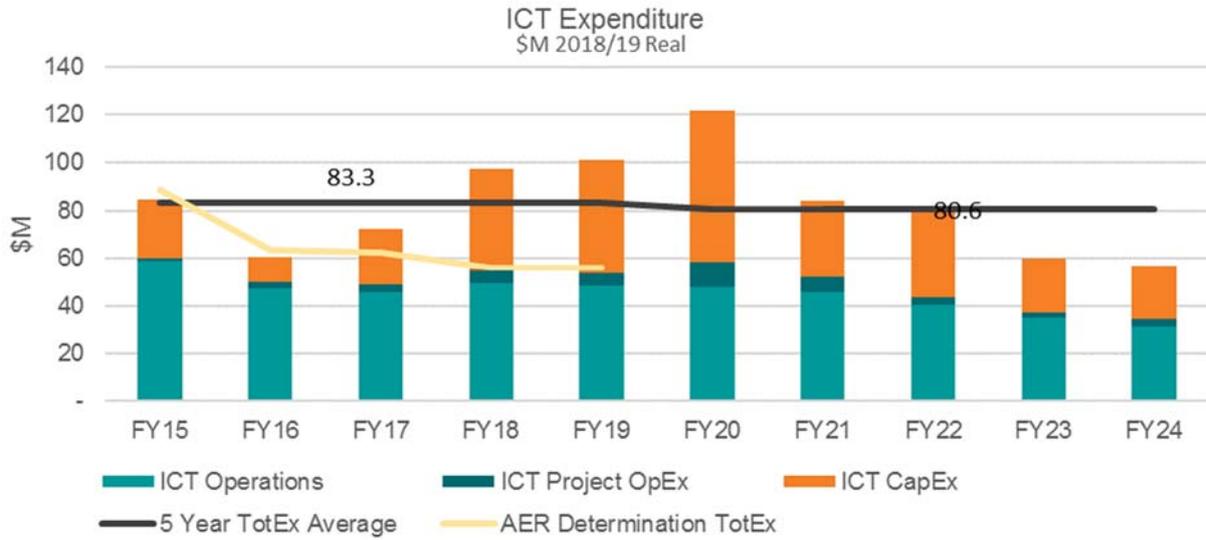


Figure 1 ICT expenditure summary (current and forecast period)

The proposed short-term increase in ICT TotEx (FY18-FY19) enables substantial bottom-line operational savings across the business. Thereafter, it is planned to transition to a sustainable ongoing ICT investment profile, resulting in an overall reduction on average ICT TotEx of \$2.7M p.a. into the next regulatory period and a target state of \$52.7M TotEx in 2023/24. Therefore, this program is critical to Essential Energy keeping downward pressure on customer electricity prices.

¹ All figures in this document are provided in FY19 real terms and represent post-CAM SCS regulated amounts only.

2 Introduction

As a modern electricity distribution business, Essential Energy relies on stable and efficient ICT systems to meet its regulatory, customer and stakeholder obligations.

In the first years of the current regulatory control period, Essential Energy under-invested in ICT, with expenditure lower than the modest forecasts originally proposed. This under-investment was a result of the industry uncertainty present at the time and cost containment. This included various industry disruptions such as the growth in solar, energy efficient appliances and lighting, and the changing energy consumption curve. As such, a re-baselining of both ICT and business strategy has occurred.

The revised ICT strategies include leveraging of modern digital technologies and cloud-based services for long term ICT sustainability and both short and long-term business efficiencies.

This paper summarises:

- The renewed ICT strategic focus for ICT sustainability and business improvement;
- Current period performance in both ICT operations and program delivery;
- Forecast period plans for ICT operations and program delivery; and
- The current and planned delivery model for ICT services.

3 Strategic Focus

Essential Energy's ICT objectives and strategy deliver upon the company's established corporate objectives as described in Figure 2 below.

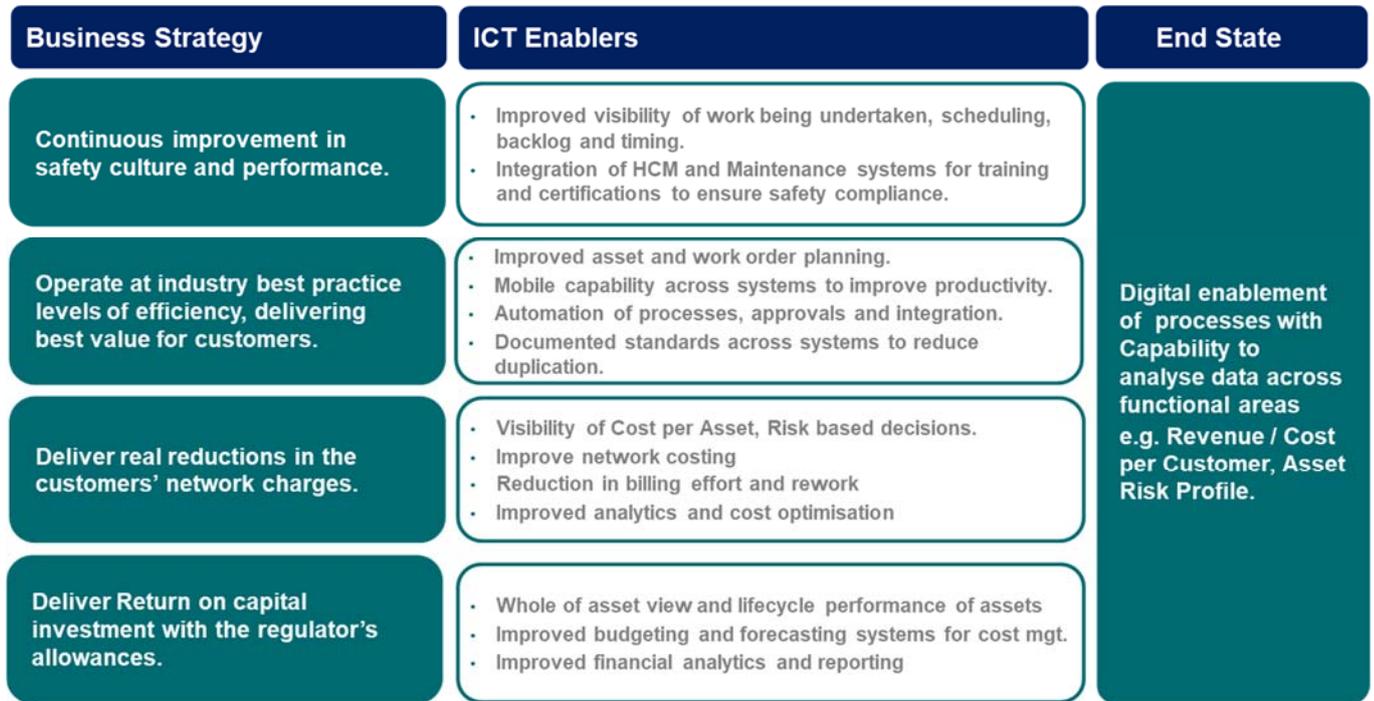


Figure 2 Alignment between corporate objectives and ICT strategy

The five ICT strategies are described in the sections below.

3.1 Best practice systems, technology and processes

Essential Energy is on the path of enabling business improvement through deployment of “best practice systems, technology and processes”.

Key to this strategy are the “Working Mobile” initiatives, currently delivering an ICT-enabled business transformation based on the General Electric PowerOn Mobile field switching tool and the Click Software field service management solution.

The strategy will be further delivered through the planned “ERP EAM Business Transformation” initiatives discussed later in this paper.

3.2 Rationalise Infrastructure and Applications

Essential Energy is rationalising its legacy applications and infrastructure through each planned initiative in the ICT program. Major initiatives, such as the ERP EAM Business Transformation, will enable the decommissioning of legacy applications currently hosted on in-house infrastructure. Through these renewal initiatives, Essential Energy will progressively transition to best practice commercially hosted and managed business systems.

When undertaking required major upgrades for significant systems, the case for consolidating multiple applications for improved operational efficiency and transition to cloud hosting arrangements is assessed.

3.3 Innovative Lower Cost Platforms

Essential Energy is focussed on managing the cost to serve through the prudent use of modern lower cost technology platforms.

Examples of such platforms include the recent deployment of iPads with the Working Mobile initiative, in place of significantly more expensive ruggedised PCs typical in the industry.

In the coming years, Essential Energy plans to extend this strategy to reduce the cost of end-user device renewal through the selective replacement of Windows based PCs with lower cost devices including Chromebooks and "Bring Your Own Device" (BYOD) alternatives.

Other opportunities to utilise lower cost platforms include the use of cloud storage, public hosting facilities and other arrangements. The ICT industry is evolving rapidly in this regard. Essential Energy will monitor opportunities to utilise new technologies to reduce the cost to serve while improving change agility and maximising business performance.

3.4 As-a-service Solutions

Essential Energy is utilising as-a-service solutions as a primary alternative to traditional long-cycle capital investments. This enables the business to reduce technology implementation time and costs substantially so that it can respond quickly to the changing industry environment. Through execution of this strategy, Essential Energy will transition its service delivery model to a combination of:

- **Software-as-a-service (SaaS)**

This will include multi-tenant public hosted solutions where available, subject to strict considerations of security, privacy and service levels. Essential Energy has already made substantial steps in execution of this strategy, such as the recent migration to cloud-hosted Microsoft Office 365 and will soon implement both Concur (Travel & Expenses) and Hyperion (Performance Management).

The strategy will also include hosted managed service solutions, where a software vendor or third party hosts a dedicated instance of an application or solution on behalf of Essential Energy.

- **Platform-as-service (PaaS) and Infrastructure-as-a-service (IaaS)**

This includes the use of public and private hosting to provision operating platforms, databases, storage and specific infrastructure in place of the traditional capital procurement and operation of servers, storage and other infrastructure technologies. Essential Energy has already made substantial progress in this strategy, including the migration of Windows Server platforms to Microsoft Azure hosting.

3.5 Continuous Improvement

The Essential Energy ICT business unit, eTech, is focussed on the continuous improvement of its operations and service in delivering ongoing efficiencies for our customers. Through this process of continuous improvement, the following changes are underway:

- eTech is transforming to a contemporary and innovative operating model, consistent with the rapid adoption of as-a-service solutions and delivery of the transformational ICT program;
- The operating model is based on vertically integrated product towers aligned to core business functions and is supported by cross functional ICT services. The product lines include: Enterprise Services, Asset Management, Field & Network Operations and Customer & Market Interaction. These also form the basis of the business' architecture segments.
- Cross functional ICT services include Strategy, Architecture, Infrastructure Services, Strategic Vendor Management, Service Integration, Risk Management and Security; and
- Within each product tower, an agile approach has been adopted to plan, build and operate delivered services.

4 ICT Asset Lifecycle Management

As noted in section 2 in the first years of the current regulatory control period, Essential Energy under-invested in ICT due to industry uncertainty, cost containment and a revision of both the ICT and business strategies. Consequently, the age profile of existing assets increased and the company yielded limited benefits from the new efficiency opportunities available through modern digital technologies.

Since the introduction of the new strategies, the focus has now shifted to the prudent and efficient investment in ICT for long-term sustainability and business productivity improvements (see section 3 above).

As part of this renewed strategy, Essential Energy has established structured ICT Asset Lifecycle Management practices to ensure the sustainability of the company's infrastructure and applications.

4.1 Infrastructure Asset Lifecycle Management

As noted in section 3.4, Essential Energy is implementing a strategy to utilise modern as-a-service solutions as an alternative to traditional long-cycle asset investments. Substantial progress has been made in the transition to aaS infrastructure hosting and this will continue into the coming regulatory control period as shown in Figure 3 below.

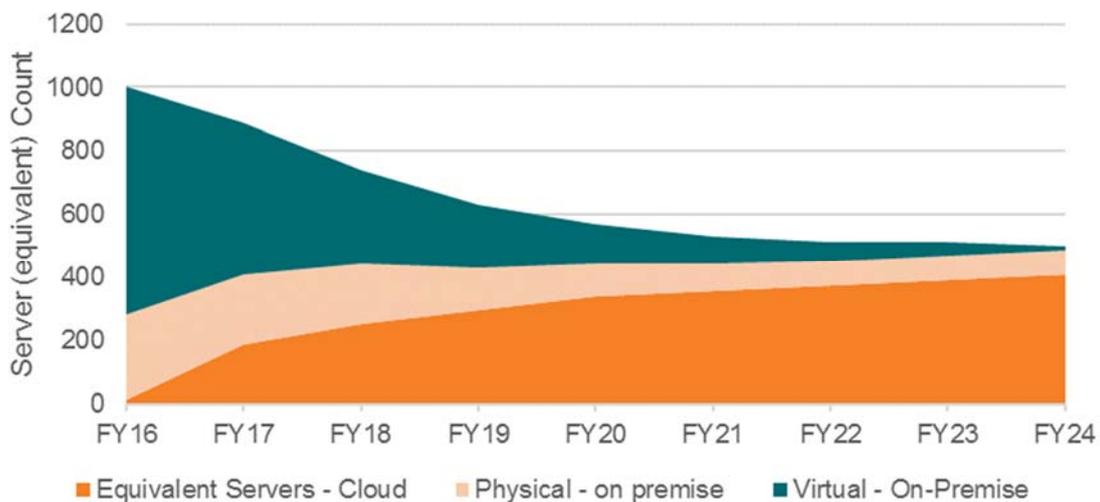


Figure 3 Server Hosting Profile (IaaS and PaaS)

For residual on-premise infrastructure, prudent Asset Lifecycle Management practices are in place to ensure the ongoing security, serviceability and sustainability of equipment. Details regarding agreed lifecycle periods of both on premise and cloud provisioned infrastructure can be found in the ICT Infrastructure Management Plan.

4.2 Application Asset Lifecycle Management

Essential Energy maintains an Enterprise Architecture approach which models each of the company's key applications through consistent lifecycles. This minimises support and failure risk and ensures that the business is receiving optimal benefits from contemporary improvements in its core application suite. This has resulted in significant application upgrades and replacements being planned in the upcoming regulatory period.

The approach also provides an opportunity to maximise the efficiency and business value of such investments through consolidation, bundling the delivery of related initiatives and alignment with business and environmental triggers.

Each application within the architecture is classified and managed in accordance with the ICT industry recognised Gartner PACE model. Under the PACE model, applications are classified as:

- a) Systems of Record
- b) Systems of Differentiation
- c) Systems of Innovation

Figure 4 (below) summarises the Gartner proposed lifecycle characteristics for applications in each of the above three categories.

Category	Attributes	Systems of Record	Systems of Differentiation	Systems of Innovation
General Principles	Driving Force	Common Ideas	Better Ideas	New Ideas
	Business Processes	Well-understood, integrated and commoditized, interdependent, stable	Well-understood, highly configurable and customizable; autonomous	Unique, not well-understood, experimental, ambiguous, dynamic and ad hoc
	Pace of Change	Slow, infrequent, incremental; changes every six to 12 months	Moderate, more frequent, configurability is key. Changes every three to six months.	Rapid, frequent and ad hoc; "throwaway" customization; changes weekly, sometimes daily
	Lifetime <i>How long it usually stays in layer</i>	5 to 10 years or longer	Two to five years	Three to 12 months
	Planning Horizon <i>How long you describe the plan in application strategy</i>	More than seven years	One to two years	As long as six months
Business Aspects	Strategic Focus	Standardization; wide deployment; operational efficiency; "Run the business"	Agility/flexibility; competitive differentiation; "Grow the business"	Disruptive thinking; alternative business models, market leadership; "Transform the business"
	Stakeholders/Ownership	High business executive engagement and alignment between business and IT strategy; low end-user engagement; formal handover from business to IT	High business executive engagement, but driven by lines of business; moderate end-user engagement; business engaging on hot spots and IT filling the gaps	Moderate business executive engagement, some sponsored and under-the-radar, tactical; high end-user engagement, often business users or even circumventing IT
	Funding	Mix of capex and opex; corporate or divisional funding; annual budget	Mix of capex and opex; corporate IT budget or departmental expense budget; discretionary	Mainly opex; departmental expense budget; innovation fund
	Risk	Minimum	Medium	High

Figure 4 Gartner PACE Layer Characteristics (Source: Gartner, April 2015)

Application upgrades and renewals are forecast and planned on the basis of the above Application Asset Lifecycle Management approach.

Planned significant upgrades and replacements/renewals planned from now through to the end of the coming regulatory control period are summarised in Table 2 below.

Application Functions	Replacement	Upgrade
Enterprise Resource Planning (ERP) (Oracle Peoplesoft and related applications) <ul style="list-style-type: none"> • Human Resources and Payroll, • Finance and Accounting • Procurement 	✓ FY19-FY20	✓ FY23-FY24
Enterprise Asset Management (EAM) (Oracle Peoplesoft, WASP and related applications) <ul style="list-style-type: none"> • Network Asset Management and Maintenance • Supply Chain and Execution 	✓ FY20-FY22	✓ FY24
Geographic Information System (GIS) (General Electric Smallworld)		✓ FY22
Asset Inspections (DAIS – Distribution Asset Inspection System)		✓ FY18-19
Vegetation Management (VIMS – Vegetation Information Management System)	✓ FY21	
Distribution Management System (General Electric PowerOn)		✓ FY19 & FY24
Market, Network Billing and Meter Data Management Systems (Hansen PEACE and EDDIS)	✓ FY19-FY20	✓ FY24

Table 2 Significant Application Replacements and Upgrades

5 Expenditure Summary

This section summarises ICT expenditure for the current regulatory control period (FY15-FY19) and for the upcoming regulatory control period (FY20-FY24). Further detail is provided in sections 6 to 8.

5.1 Summary Financials

Figure 5 depicts ICT expenditure in the current and upcoming periods. The expenditure representing each financial year is broken into three elements:

- ICT Operations expenditure (as described in section 7);
- ICT Project OpEx (as described in section 8); and
- ICT CapEx (as described in section 8).

The dark line represents the average annual ICT TotEx in each of the two periods.

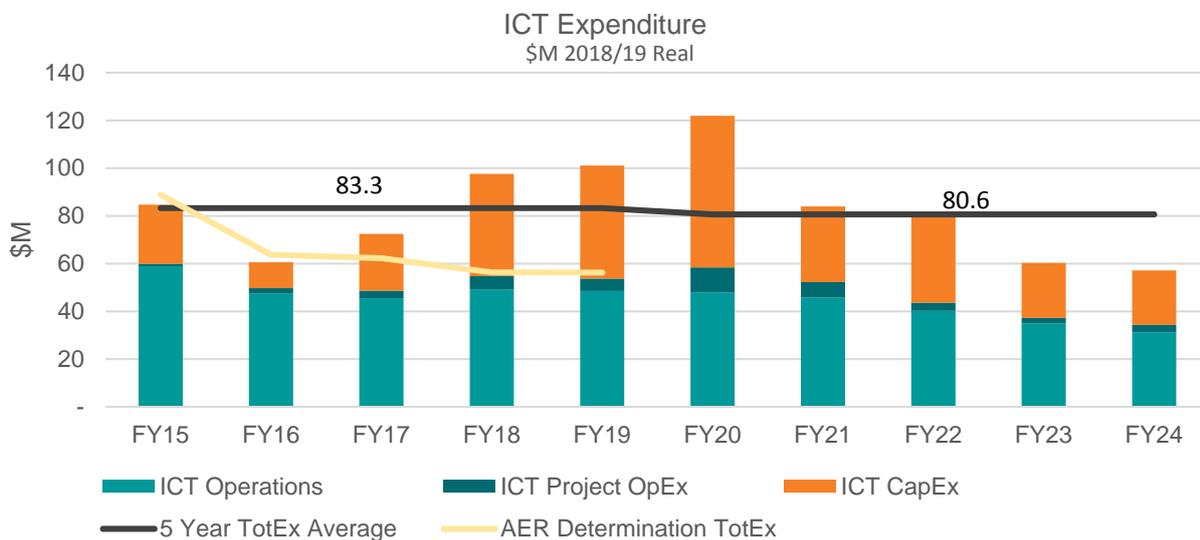


Figure 5 ICT expenditure summary (current and forecast period)

Table 3 (over page) details the actual and forecast ICT expenditure across the two periods. The table is broken into two sections:

- **ICT OpEx**
Represents total ICT OpEx, further broken into ICT Operations expenditure (as described in section 7) and ICT Project OpEx (as described in section 8).
ICT Operations is further broken into expenditure for eTech Support, Third Party Costs and Telecommunications. See section 7 for further discussion.
- **ICT CapEx**
Represents total ICT CapEx, further broken into the four AER ICT investment categories (as described in section 8).

\$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 OpEx	59.9	49.7	48.6	54.7	53.7	266.7	58.4	52.3	43.6	37.2	34.3	225.8
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
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
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
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
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 TotEx	84.7	60.5	72.4	97.6	101.1	416.3	121.9	83.9	80.0	60.3	57.1	403.2

Table 3 ICT expenditure summary (current and forecast period)

5.2 Observations

- Total ICT **expenditure was lower than forecast** in the first years of the current regulatory control period.
- Expenditure is now planned to **increase during the FY18-FY21** period consistent with the strategy to leverage ICT as a key enabler of business transformation and efficiencies. During this time, the company's core systems will be renewed including ERP, EAM, DMS, Market Systems, Network Billing, Meter Data Management and IVR.
- Thereafter, investment will stabilise with a **structured program for ongoing business sustainability**.
- During this time, costs for **ICT Operations will reduce**, despite the increased use of market provisioned cloud services in place of traditional capital assets.
- Overall, **ICT TotEx will reduce by \$40.6M (-59%) p/a** in 2023/24 in comparison to the base year of 2018/19, as well as delivering considerable OpEx and CapEx savings across the broader business.

6 Current Period Performance

6.1 Financial Summary

ICT operating and capital expenditure for the current regulatory control period to-date is summarised in Figure 6 and Table 4 below.

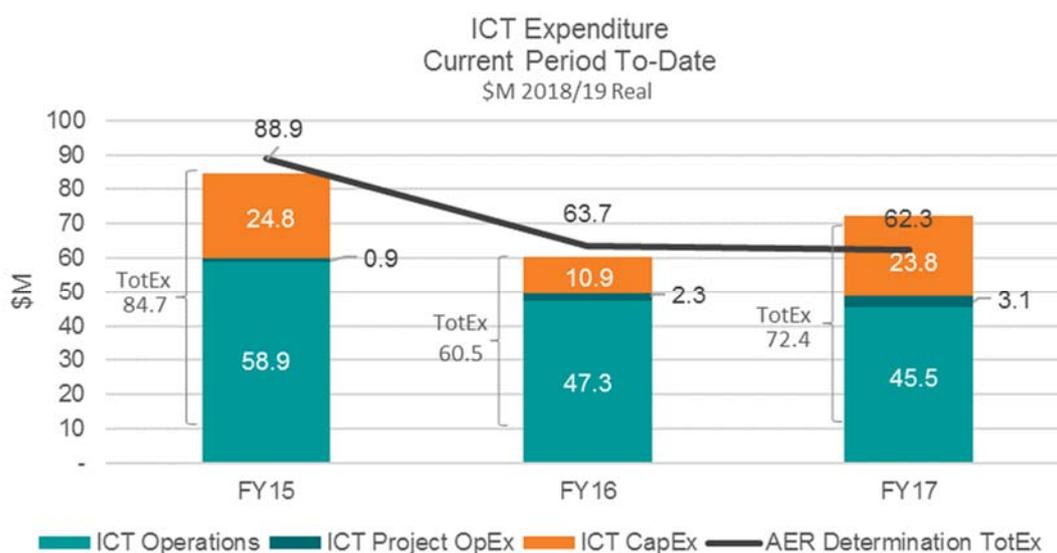


Figure 6 ICT Actual expenditure for current period to-date

\$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)

Table 4 ICT Actual expenditure against determination

As indicated in the above figure and table, total ICT expenditure tracked materially below the AER determination in the first two years of the current period (FY15 and FY16). This lower-than-planned expenditure resulted primarily from under-investment in ICT capital. In those years, capital investment largely focussed on upgrades of critical business systems for basic supportability until their planned renewal in the coming period (e.g. PEACE and Peoplesoft) as well as other smaller upgrades, extensions and remediation.

In FY17, ICT expenditure tracked marginally higher than the AER determination forecast. This was driven through a combination of:

- The new ICT strategic focus on **best practice systems and processes to accelerate business efficiencies and savings in this regulatory period** (see section 3.1 above), specifically including expenditure associated with the Working Mobile program.
- Meeting regulatory obligations through delivery of the **Power of Choice** program, which had not been fully legislated at the time of the previous regulatory submission.

Overall, total ICT expenditure for this 3-year period is approximately **\$2.7M** above the AER determination.

6.2 Performance Benchmark

Essential Energy participated in the KPMG 2016 Utilities ICT Benchmarking analysis. This analysis compared Essential Energy’s ICT operations against the following seven (7) peer businesses:

- AusNet Services (VIC)
- Ausgrid (NSW)
- ElectraNet (SA)
- SA Power (SA)
- Transgrid (NSW / ACT)
- United Energy (VIC)
- Western Power (WA)

Through the KPMG analysis, Essential Energy was found to have performed better-than-average or best-in-group in most relevant measures. The notable measure where Essential Energy exceeded the average was a measure relative to the number of corporate customers. The result for this measure was very close to the average, and the higher-than-average value was to be anticipated given Essential’s relatively small customer base supporting a large regional distribution area.

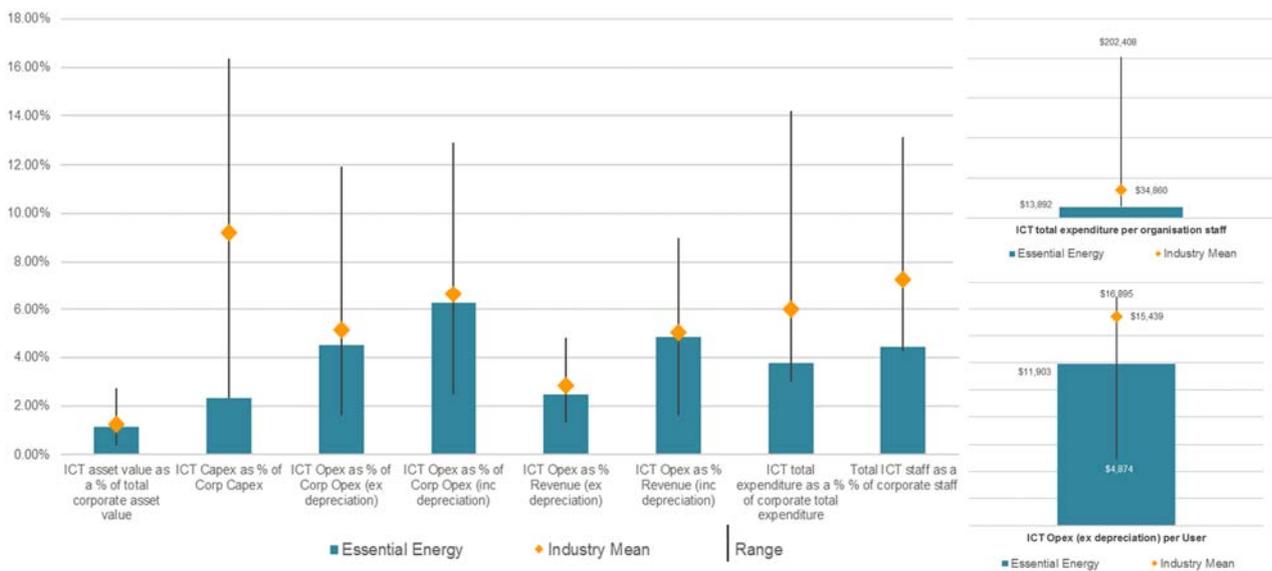


Figure 7 Essential Energy KPMG benchmarking results

6.3 Observations

In the first years of the current regulatory control period, Essential Energy under-invested in ICT due to cost containment, focussing primarily on critical system upgrades and remediation.

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

Essential Energy’s ICT function continues to benchmark better than average in most key measures.

7 ICT Operations Forecast

7.1 Financial Summary

Figure 8 and Table 5 (below) summarise the costs of ICT Operations for the current and forecast regulatory control periods (excluding Project OpEx which is summarised in section 8).

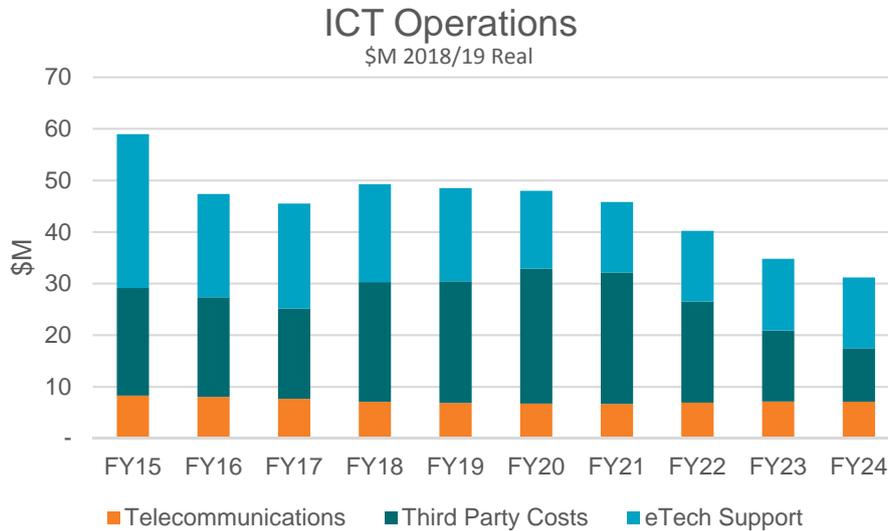


Figure 8 ICT Operations Forecast (OpEx)

\$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
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
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
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

Table 5 ICT Operations Forecast (OpEx)

Expenditure associated with ICT Operations is broken into three elements:

- **eTech Support**

Expenditure of the ICT business unit (eTech) in delivery of operational support services for Essential Energy. This includes operational labour (insourced and outsourced), materials, accommodation and other operational expenses.

- **Third Party Costs**

Expenditure to third parties for operational services. Includes software licence maintenance, support agreements and as-a-service charges (excluding telecommunications).

- **Telecommunications**

Expenditure for operational telecommunication service contracts. This includes telephony and data network service charges.

Both the eTech Support and Third Party Cost elements are further broken into two sub-elements:

- **Baseline for current services**
Represents the actual and forecast expenditure for the continued delivery of current operational services.
- **Step change from forward program**
Represents the step-change (compared with FY17) for delivery of additional or reduced operational services arising from initiatives in the ICT investment program².

7.2 Forecast Basis

The ICT Operations forecast has been developed using the base-step-trend method, with FY17 serving as the appropriate base year. The base-step-trend forecast has then been refined in the following regards:

- ↓ **eTech Support Costs will reduce by 28% (\$5.3M p.a.)** due to continuous improvement in service delivery, including the progressive transition to as-a-service solutions and hosting³.
- ↓ **Third Party Costs will reduce by 55% (\$12.8M p.a.)** due to significant rationalisation of the application and infrastructure portfolio and opportunistic utilisation of As-a-Service offerings
- ↔ **Telecommunications operating costs will remain largely stable (in real terms)** despite increased reliance on mobile data, video conferencing and network communications.

Despite the substantial shift to Cloud / AAS service delivery and the corresponding CapEx / OpEx trade-off, **net ICT Operations costs for the regulatory period will reduce by 20% (\$49.6M)⁴** in comparison to the current regulatory period.

7.3 Observations

Given that:

- a) existing ICT OpEx was recently assessed as better-than-average in the KPMG industry benchmarking analysis⁵; and
- b) a compounding cost reduction is forecast ICT Operations costs;

Essential Energy's ICT operating performance is forecast to continue to exceed its peer group.

² The planned ICT investment program is described in section 8.

³ FY24 vs FY18

⁴ FY20-FY24 regulatory period vs FY15-FY18 regulatory period.

⁵ See section 6.2 regarding the KPMG industry benchmarking analysis.

8 ICT Program Forecast

8.1 Financial Summary

Figure 9 and

Table 6 below summarise the ICT program expenditure for the current and forecast regulatory control periods.

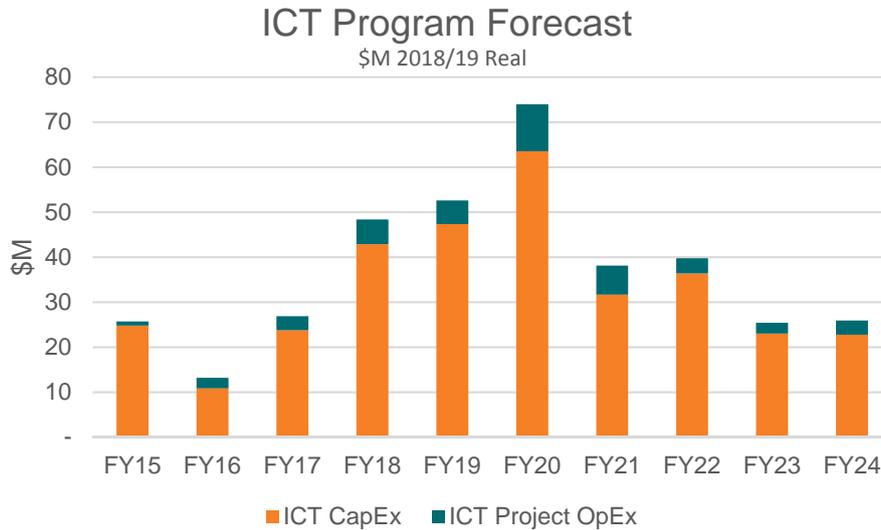


Figure 9 ICT Program Expenditure Forecast (CapEx and OpEx)

\$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

Table 6 ICT Program Expenditure Forecast (CapEx and OpEx)

As shown above, the ICT Program TotEx for the upcoming regulatory period will be 22% more than the current period (i.e. \$203.2M, vs \$166.8M). This uplift however, is offset by significant operational savings across the business and ICT and will drive a reduced ICT investment program in the long term due to the transition to more aaS offerings across the ICT footprint.

8.2 Forecast Basis

Essential Energy maintains a rolling view of the forward ICT investment program. Initiatives within the program have been classified in accordance with the four AER ICT asset investment category definitions as described in Table 7 over page.

AER ICT asset investment category	AER definition	Characteristics of initiatives within the Essential Energy ICT program	FY20-24 ⁶	
			CapEx	OpEx
ICT Asset Extension	“The extension of existing ICT assets to broaden its functionality.”	<ul style="list-style-type: none"> ICT enhancements, primarily to improve the functionality of existing solutions or to maximise their effectiveness for the business. Selected extensions have been forecast individually. There is also a small steady amount allocated per annum for other minor extensions subject to business need. 	\$5.4M	\$25.8M (full program)
ICT Asset Remediation	“The correction or optimisation of the performance of existing ICT assets that are not performing to the required service performance requirement.”	<ul style="list-style-type: none"> ICT repairs or changes to rectify operational issues. Investment is forecast at a small steady amount per annum for remediation subject to business need. 	\$2.4M	
ICT Asset Replacement	“The replacement of an existing ICT asset with its modern equivalent where the asset has reached the end of its economic life. This capex has a primary driver of replacement if the factor determining the expenditure is the existing ICT asset has an inability to efficiently maintain its service performance requirement.”	<ul style="list-style-type: none"> Cyclic renewals and significant upgrades to ensure the ongoing supportability and sustainability of ICT solutions. Investments are forecast based on ICT Asset Lifecycle Management practices (See section 4) 	\$135.8M	
ICT Capability Growth	“The acquisition, development and implementation of new ICT assets to meet a business purpose or capacity requirement.”	<ul style="list-style-type: none"> Business transformation or improvement initiatives which involve deployment on new ICT business systems and/or infrastructure. Investments are forecast to support the Essential Energy business strategy over the regulatory period. A small annual amount is included for other minor capability growth, such as may result from new mandatory regulated obligations. Where the impact of a new obligation exceeds this amount, treatment as a pass-through event may be proposed. 	\$33.8M	
Totals			\$177.4M	\$25.8M
ICT Program TotEx			\$203.2M	

Table 7 Categorisation of ICT program by AER ICT investment category

⁶ All figures provided in FY19 Real Terms.

Figure 10 (over page) summarises the planned ICT investment program in the form of a seven-year roadmap.

Initiatives within the roadmap are grouped within the Essential Energy enterprise architecture segments and colour-coded based on the AER ICT Investment Category they primarily fulfil. A further initiative-level financial view of the program is provided in “Appendix A – ICT Initiative Financial Summary”.

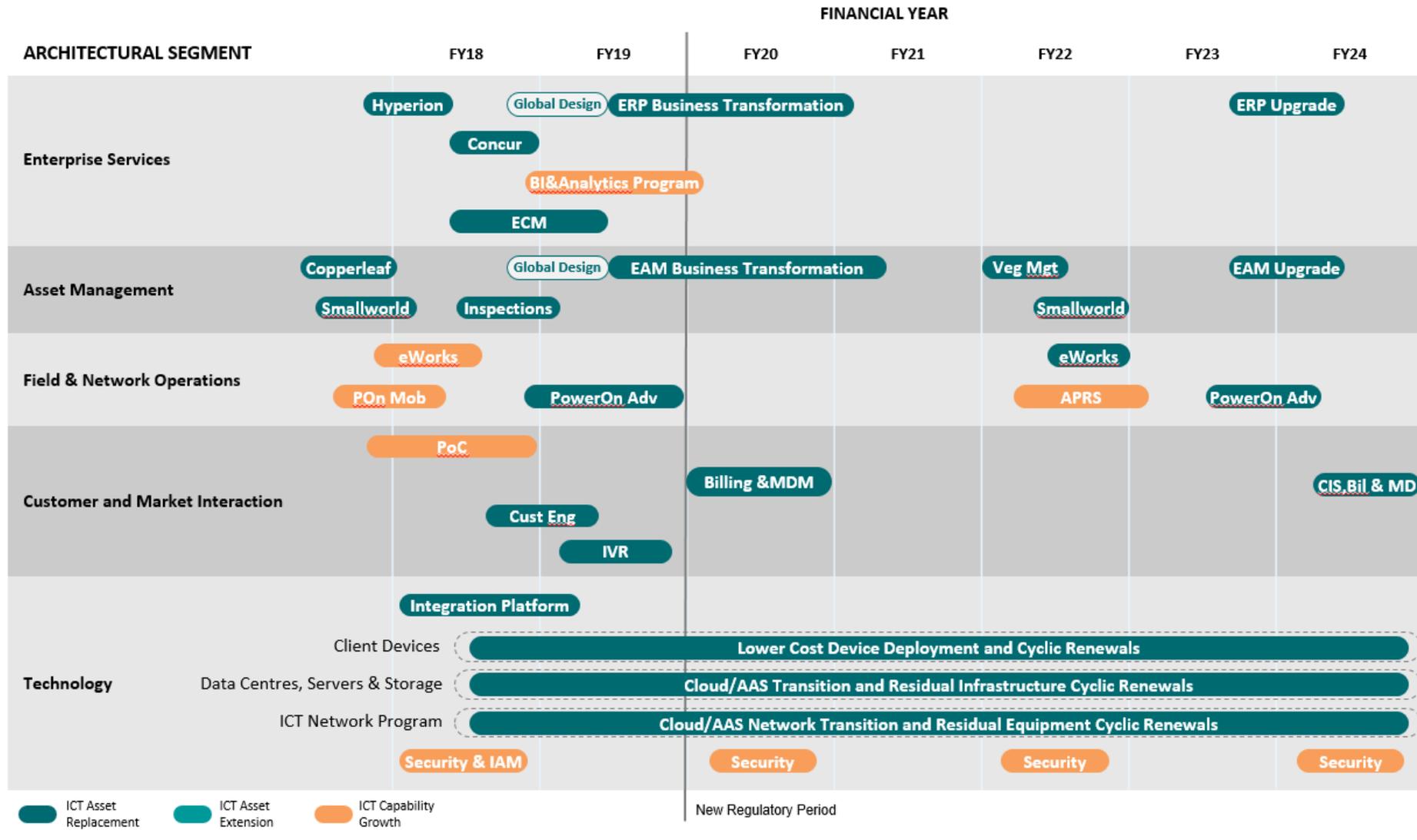
The roadmap has been developed comprising:

- Significant initiatives currently underway or planned for initiation prior to the end of the current regulatory control period.
- Significant Infrastructure and Applications ICT Asset Lifecycle Management initiatives, forecast to maintain the supportability, reliability and security of key platforms and business systems (see section 4). These initiatives are primarily classified as ICT Asset Replacements but will also derive business benefits where they enable process improvement or greater business efficiency.
- New Capability Growth business improvement initiatives specifically targeting business improvement including increased safety, security, efficiency, productivity or service reliability.
- Allowances for other Minor ICT Remediation, Extensions and Replacements.

See the ICT Program Roadmap over page

8.3 ICT Program Roadmap

Figure 10 Essential Energy ICT Program Roadmap



The sections which follow, summarise the scope of the Enterprise Architecture Segments and the planned ICT Program Roadmap investments within these segments.

8.3.1 Enterprise Services

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

- Finance and Accounting (including Accounts Payable and Receivable)
- Human Resources and Payroll
- Procurement
- Document, Content and Records Management
- Business Intelligence and Analytics

Current major applications within this segment include Peoplesoft Financials and Supply Chain Management (FSCM), Peoplesoft Human Resource Management System (HRMS), PageUp (Talent Management and Recruitment), Spotfire (BI & Reporting) and Objective document management.

Significant planned initiatives within the forecast period are summarised in Table 8 below.

Initiatives	Description
<p>ERP Business Transformation</p> <p>Primary Category ICT Asset Replacement</p>	<p>This set of initiatives will transform Essential Energy’s back office operations through deployment of an integrated suite of business software and efficient operational processes.</p> <p>The solution will be closely integrated with the capability delivered by the EAM Business Transformation initiative-set within the Asset Management segment (see Section 8.3.2).</p> <p>Capability deployed will include:</p> <ul style="list-style-type: none"> • Human Resource (HR) • Payroll and Timesheeting • Procurement • Core Finance and Accounting • Asset Register (Financial) <p>The initiative is primarily an ICT Asset Replacement, as it will replace functions currently provided by the aging Peoplesoft FSCM and HRMS platform which was first implemented in 2002. Nonetheless, given the significance of this transformational initiative, it will also drive the business process efficiency underpinning the operational forecasts of other Essential Energy business units.</p> <p>Following the solution implementation, which will occur progressively across FY19-FY20, a mid-life upgrade is forecast to be required in FY23-FY24.</p>

Initiatives	Description
<p>Other Minor Investments</p> <p>Primary Category ICT Asset Remediation, Extension and Replacement</p>	<p>This item represents minor investments for the remediation, extension or replacement of core business applications and tools. Examples of minor investments within this segment include (but are not limited to):</p> <ul style="list-style-type: none"> • Environment, health and safety software (TotalSafe, ChemAlert, Wellnomics) • Expense management software (Concur) • Budgeting and planning software (Hyperion) • Internal portals, intranets, content management, knowledge management and internal dashboarding • Various other minor tools and software supporting financial management tools, HR management, risk and governance management <p>The following larger-scale applications may also require minor remediation investments between the planned upgrades / replacements itemised in the roadmap to allow for events such as legislative and industry changes:</p> <ul style="list-style-type: none"> • ERP suite applications including HR/HCM, Procurement, Finance and Accounting.

Table 8 ICT Roadmap Initiatives – Enterprise Services Segment

8.3.2 Asset Management

The Asset Management segment comprises business systems supporting 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

Current major applications within this segment include WASP, Copperleaf, General Electric Smallworld GIS, ESRI GIS and various other related applications and tools.

Significant planned initiatives within the forecast period are summarised in Table 9 below.

Initiatives	Description
<p>EAM Business Transformation</p> <p>Primary Category ICT Asset Replacement</p>	<p>This set of initiatives will transform the business' core asset management practices through deployment of a contemporary integrated suite of asset management software and efficient business processes.</p> <p>The solution will be closely integrated with the capability delivered by the ERP Business Transformation initiative within the Enterprise Services segment (see Section 8.3.1).</p> <p>Capability deployed will include:</p> <ul style="list-style-type: none"> • Asset Management and Maintenance • Supply Chain Planning and Management • Asset Register (Physical) • Portfolio, Program and Project Management <p>The initiative is primarily an ICT Asset Replacement, as it will replace functions currently provided by the aging Peoplesoft FSCM platform and the WASP asset management platform (first implemented in 2003). Nonetheless, given the significance of this transformational initiative, it will also drive the business process efficiency underpinning the operational forecasts of other Essential Energy business units in the upcoming regulatory period.</p> <p>Following the solution implementation, which will occur progressively across FY20-FY22, a mid-life upgrade is forecast to be required from FY24.</p>
<p>Vegetation Management Renewal</p> <p>Primary Category ICT Asset Replacement</p>	<p>The existing Vegetation Management Information System was implemented in 2014. It is planned for renewal (i.e. upgrade or replacement) in the coming regulatory control period and will be assessed for better integration with the replacement EAM/ERP systems</p>

Initiatives	Description
<p>Smallworld GIS Upgrade</p> <p>Primary Category ICT Asset Replacement</p>	<p>Essential Energy uses the General Electric (GE) Smallworld Geographic Information System (GIS) as the master record of network layout.</p> <p>While the system was first implemented over 15 years ago, investment was recently made to upgrade to a modern version of the product (v5).</p> <p>A further upgrade will be required during the coming regulatory control period. At that point, assessment of the value of transitioning to the new Smallworld ‘Electric Office’ toolset will be made.</p> <p>Opportunities will also be assessed to automate the network model interface between the GE Smallworld platform and the GE PowerOn Distribution Management System (following upgrade to PowerOn Advantage – see Section 8.3.3)</p>
<p>Other Minor Investments</p> <p>Primary Category ICT Asset Remediation, Extension and Replacement</p>	<p>This item represents minor investments for the prudent remediation, extension or replacement of applications and tools. Examples of minor investments within this segment include (but are not limited to):</p> <ul style="list-style-type: none"> • Asset Management Planning Software (incl. C55 Copperleaf) • Inspections Management System • Engineering Tools (incl. LABView, Mathcad and others) <p>The following larger-scale applications may also require minor remediation investments between the planned upgrades / replacements itemised in the roadmap due to legislative or business changes during the period:</p> <ul style="list-style-type: none"> • Vegetation management software • Geographic Information System (Smallworld) • EAM suite applications including Asset Management and Supply Chain Management

Table 9 ICT Roadmap Initiatives – Asset Management Segment

8.3.3 Field and Network Operations

The Field and Network Operations segment comprises operational systems supporting business functions including:

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

Current applications within this segment include ClickSoft, GE PowerOn Fusion, PowerOn Mobile, PI Historian, Microstation, AutoCAD and various other related applications and tools.

Significant planned initiatives within the forecast period are summarised in Table 10 below.

Initiatives	Description
<p>eWorks Upgrade</p> <p>Primary Category ICT Asset Replacement</p>	<p>A key element of the Best Practice Systems, Technology and Processes strategy has been the deployment of the ClickSoft mobile workforce management solution. Internally the solution is known as eWorks and it represents a transformational improvement in operational effectiveness across the field business.</p> <p>An upgrade of this platform is forecast to be required in FY22.</p>
<p>PowerOn Advantage DMS Upgrade</p> <p>Primary Category ICT Asset Replacement</p>	<p>Essential Energy uses the GE PowerOn Fusion Distribution Management System (DMS) for high voltage (HV) network monitoring and control. The product has recently been complemented with the deployment of the PowerOn Mobile field switching management solution.</p> <p>The PowerOn Fusion product undergoes regular minor updates in collaboration with GE. However, with the vendor having now introduced the next generation of the product, known as PowerOn Advantage, it is necessary to upgrade the solution to ensure ongoing sustainability and vendor support. This will be completed in the current regulatory control period.</p> <p>Following the upgrade, opportunities will be assessed to automate the network model interface between the GE Smallworld platform and the GE PowerOn DMS.</p> <p>A mid-lifecycle upgrade of the PowerOn Mobile and PowerOn Advantage platforms is forecast to be required in FY24.</p>
<p>APRS</p> <p>Primary Category ICT Capability Growth</p>	<p>Leveraging the capabilities of the upgraded PowerOn Advantage solution, improved operational efficiency and network reliability will be delivered through the deployment of Automated Power Restoration Schemes (APRS), including in areas of higher network density where remote network re-configuration is feasible.</p>

Initiatives	Description
<p>Other Minor Investments</p> <p>Primary Category ICT Asset Remediation, Extension and Replacement</p>	<p>This item represents minor investments for the remediation, extension or replacement of business applications and tools. Examples of minor investments within this segment include (but are not limited to):</p> <ul style="list-style-type: none"> • Network Design and Engineering Software (incl. AutoCAD, Microstation) • Network Data Historian (PI) • Power system analysis (PSS SINICAL) • Dial Before You Dig • Rostering and Shift Management • Storm Tracker • Fleet Management Tools <p>The following larger-scale applications may also require minor remediation investments between the planned upgrades / replacements itemised in the roadmap to address legislative or industry changes:</p> <ul style="list-style-type: none"> • Distribution Management System (PowerOn DMS, PowerOn Mobile, SCADA Masterstation) • eWorks Mobile Workforce Management (ClickSoft)

Table 10 ICT Roadmap Initiatives – Field and Network Operations Segment

8.3.4 Customer and Market Interaction

The Customer and Market Interaction segment comprises operational 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 & Portals

Current applications within this segment include Hansen PEACE, Gatekeeper Formfill, EDDIS (Meter Data Management), Lotus Notes (Complaints & Compliments), SharePoint 2010 and various other related applications and tools.

Significant planned initiatives within the forecast period are summarised in Table 11 below.

Initiative	Description
<p style="text-align: center;">Market, Network Billing and Meter Data Management Upgrade</p> <p>Primary Category ICT Asset Replacement</p>	<p>Essential Energy currently uses the Hansen PEACE suite of software for the regulated management of customer information and market transactions. The solution is closely integrated with the EDDIS in-house customer meter data management system.</p> <p>Having been implemented almost two decades ago, the existing PEACE solution was originally implemented to also support the previous retail function within the business and has undergone several upgrades. It is now nearing the end of its useful life and is built on an obsolete technology stack.</p> <p>The EDDIS meter data management system was also implemented in the late 1990's and is an in-house custom-built solution. Architectural limitations require that it be replaced to ensure ongoing business sustainability and to support the increased rollout of interval-based metering.</p> <p>Through prudent asset lifecycle management and to mitigate issues associated with current platform limitations, these systems are forecast for replacement in FY19 (prior to the coming regulatory control period).</p> <p>A further upgrade is then forecast to be required in FY24.</p>
<p style="text-align: center;">Other Minor Investments</p> <p>Primary Category ICT Asset Remediation, Extension and Replacement</p>	<p>This item represents minor investments for the remediation, extension or replacement of applications and tools. Examples of minor investments within this segment include (but are not limited to):</p> <ul style="list-style-type: none"> • Meter configuration and diagnostic tools • Non-routine meter reading tools • Power of Choice and National Electricity Customer Framework (NECF) tools <p>The following larger-scale applications may also require minor remediation investments between the planned upgrades / replacements itemised in the roadmap due to legislative or industry changes:</p> <ul style="list-style-type: none"> • Market, Network Billing and Meter Data Management System • IVR • Website

Table 11 ICT Roadmap Initiatives – Customer and Market Segment

8.3.5 Technology

The Technology segment comprises ICT infrastructure, devices, equipment and support tools including:

- Client Devices
- Data Centre, Server and Storage Infrastructure investments
- ICT Network investments
- Cyber Security investments
- ICT Tools and Platforms

Significant planned investments within the forecast period are summarised in Table 12 below.

Initiative	Description
<p>Infrastructure Management Investments</p> <p>(Individual items below)</p>	<p>Aligned with the above broader Essential Energy ICT objectives and strategies (section 3), the following principles guide the planned investment in the ICT Infrastructure portfolio:</p> <ol style="list-style-type: none"> 1. Maximise utilisation of as-a-service solutions <ul style="list-style-type: none"> • Deploy the foundations to adopt as-a-service hosting. • Transition to as-a-service solutions, deploying vendor hosted Software-as-a-Service (SaaS) where viable, or Platform-as-a-Service (PaaS) or Infrastructure-as-a-Service (IaaS). • Rationalise and consolidate remaining infrastructure assets to achieve the lowest cost of ownership. 2. Implement innovative technologies including lower-cost devices and BYOD ('Bring Your Own Device') alternatives. 3. Ensure the prudent and efficient management of remaining on-premise ICT Infrastructure assets within target age profiles. <p>On the above basis, Infrastructure Management investments have been broken into four sub-initiatives as described in the rows below (Client Devices, Data Centre & Server Infrastructure, ICT Network Infrastructure and Cyber Security).</p>
<p>Client Devices</p> <p>Primary Category ICT Asset Replacement</p>	<p>Essential Energy is managing the cost of end user device renewal through the selective replacement of Windows-based PCs with lower cost Chromebooks and support for BYOD alternatives.</p> <p>Consistent with this strategic direction, investments in Client Devices comprise:</p> <ul style="list-style-type: none"> • Limited renewals of Windows based laptops and desktop equipment • Deployment and renewals of lower-cost devices such as Chromebooks • Renewals of tablet devices, including those used with the ClickSoft eWorks Mobile Workforce Management solution • Renewals of mobile phones • Renewals of printers

Initiative	Description
<p>Data Centre and Server Infrastructure</p> <p>Primary Category ICT Asset Replacement</p>	<p>Forecast data centre and server infrastructure investments are premised on continuing to transition to as-a-service platforms when renewing ICT infrastructure assets. Like-for-like server renewal will occur only where SaaS, PaaS or IaaS options are not available, suitable or cost-effective.</p> <p>On this basis, program investments in data centres and server infrastructure are limited to:</p> <ul style="list-style-type: none"> • Cloud data centre establishment and migration • On-premise data centre consolidation and selective decommissioning • Residual on-premise server renewals consistent with prudent ICT Asset Lifecycle Management practices
<p>ICT Network Infrastructure</p> <p>Primary Category ICT Asset Replacement and Extension</p>	<p>ICT network equipment will continue to be maintained for ongoing supportability, sustainability and security.</p> <p>Planned investments comprise:</p> <ul style="list-style-type: none"> • Renewal of network equipment as part of prudent ICT Asset Lifecycle Management practice and to address rising data traffic across the network • Planned telephony system renewal • Planned video conferencing renewal • Network, WiFi and monitor tools capacity extension
<p>Security and Identity Access Management</p>	<p>Investment in contemporary Cyber Security controls, for managing security in a hyper-connected business environment is planned during the current and upcoming regulatory periods This has included investment in Okta for Single Sign On (SSO) access management.</p> <p>In 2016 the energy sector had the highest number of cybersecurity incidents as reported to CERT Australia (Australian Chief Scientist, Dr Alan Finkel AO)⁷</p> <p>Consistent with this observation, the CSIRO and the Energy Networks Association (ENA) have identified investment in “Robust Physical & Cyber Security Management” as a key enabler of network safety, security and reliability over the coming decade⁸. By 2020, it is anticipated that Australian Standards will be established for the transformation of the industry, including standards for interoperability, communications frameworks and protocols, control systems and protocols, data frameworks and protocols, and cyber security.</p> <p>Essential Energy will continue to operate its network and systems with strong Cyber Security controls and will invest appropriately in Cyber Security to maintain this position.</p>

⁷ Future Security of the National Electricity Market report (2016)

⁸ ENA / CSIRO Electricity Network Transformation Roadmap report (2017)

Initiative	Description
Other Minor Investments	<p>This item represents minor investments for the remediation, extension or replacement of applications and tools. Examples of minor applications and tools within this segment include (but are not limited to):</p> <ul style="list-style-type: none"> • Email, SharePoint, Office tools • Application virtualisation tools (e.g. Awingu, Citrix) • Configuration management tools • Version control management tools • Testing tools • Scripting and job scheduling tools • Operating system and application package administration tools. • Team collaboration tools • Database, server, network and environment administration tools

Table 12 ICT Roadmap Initiatives – Technology Segment

8.4 Observations

The ICT Investment Program is:

1. Primarily **focussed on the prudent ICT Asset Lifecycle Management** practices, ensuring the ongoing supportability and serviceability of systems and infrastructure;
2. **Based on a multi-year investment roadmap**, built upon a corporate enterprise architecture with effective processes that optimises business value;
3. **Renewing several core systems** in the FY18-FY21 timeframe (ERP, EAM, Market, Network Billing, DMS and IVR), prior to then stabilising with a structured program for ongoing sustainability; and
4. Commensurate in scale with peer businesses, while **focussing on the best-practice transition to market-provisioned as-a-Service solutions**.

9 CapEx / OpEx Trade-off for Cloud

As described in section 7, eTech Support Costs will reduce in the coming period (in real terms) due to continuous improvement in ICT service delivery. However, this will be partly offset by a short-term increase in third party costs as a result of the transition from capital investment in software licensing and infrastructure to modern market-provisioned as-a-Service cloud solutions and transitioning off existing contracts.

9.1 Observations

- **Essential Energy is transitioning to commercially provided as-a-service solutions**, including Software-as-a-Service (SaaS), Platform-as-a-Service (PaaS) and Infrastructure-as-a-Service (IaaS).
- The transition to **as-a-Service enables a significant reduction in both ICT OpEx and CapEx overall in the 2020-24 Regulatory Period.**
- Through the as-a-Service transition and the corresponding CapEx / OpEx trade-off, Essential Energy is satisfying its NER obligations to maintain the **quality, reliability, security and safety** of the distribution system while also ensuring **ICT investment prudence** and maximising **ICT operational efficiency**.

[Redacted]

[Redacted]

[Redacted]

Appendix B – Glossary

Term	Definition
AER	Australian Energy Regulator
APRS	Automated Power Restoration Schemes
as-a-Service (aaS)	Commercially provided hosted solutions provided on a fee-for-service basis
Baseline [Costs] for Current Services	Represents the actual and forecast expenditure for the continued delivery of current operational services.
BYOD	Bring Your Own Device, referring to the option to use personally owned devices on the corporate network in place of company-supplied devices.
CAM	Cost Allocation Model
CapEx	Capital Expenditure
DAIS	The existing Essential Energy Asset Inspection System.
Distribution Management System (DMS)	An electricity distribution network management system used for operational monitoring and control of the grid (currently General Electric PowerOn Fusion).
EDDIS	The existing Essential Energy Meter Data Management System.
ENA	Energy Networks Association
Enterprise Asset Management (EAM)	A suite of applications supporting core asset and works management functions including Asset Planning, Forecasting, Maintenance and Program Management.
Enterprise Resource Planning (ERP)	A suite of applications supporting core enterprise functions including Finance, Accounting, Accounts Payable / Receivable, Human Resource Management, Payroll and Procurement
eTech	The ICT business unit of Essential Energy.
eTech Support [Costs]	Expenditure of the ICT business unit (eTech) in delivery of operational support services for Essential Energy. This includes operational labour (insourced and outsourced), materials and other operational expenses.
GE	General Electric
Geographic Information System (GIS)	A spatial mapping and layering system used for managing the layout, configuration of the electricity network model (currently General Electric Smallworld).
HCM	Human Capital Management (see HR)
HR	Human Resource Management
HV	High Voltage

Term	Definition
ICT	Information and Communication Technology
ICT Asset Lifecycle Management	The cyclic management, upgrade and renewal of ICT infrastructure and applications to ensure ongoing serviceability, supportability and sustainability.
ICT Operations [Costs]	A subset of total ICT OpEx. Represents the costs of operating Essential Energy’s ICT services. It excludes the ICT Project OpEx (see section 7).
Infrastructure	ICT hardware, equipment and operating platforms
Infrastructure-as-a-Service (IaaS)	Commercially provided hosting of physical and virtual server capacity. See also “as-a-Service (aaS)”.
IVR	Interactive Voice Response system
LV	Low Voltage
NER	National Electricity Rules
OpEx	Operating Expenditure
PC	Personal Computer
PEACE	The existing Customer Market Information System provided by Hansen.
Platform-as-a-Service (PaaS)	Commercially provided hosting of operating platforms including hosted operating systems, databases, storage and other platforms. See also “as-a-Service (aaS)”.
SCS	Standard Control Services
Software-as-a-Service (SaaS)	Commercially provided and hosted software applications, included multi-tenant public software offerings and private single-tenant hosted software. See also “as-a-Service (aaS)”.
Step Change from Forward Program	Represents the step-change (compared with FY17) for delivery of additional or reduced operational services arising from initiatives in the ICT program. (The planned ICT program is described in section 8).
Telecommunications Costs	Expenditure for operational telecommunication service contracts. This includes telephony and data network service charges.
Third Party Costs	Expenditure to third parties for operational services. Includes software licence maintenance, support agreements and as-a-service charges (excluding telecommunications).
TotEx	Total Expenditure (i.e. OpEx + CapEx)

Table 14 Glossary