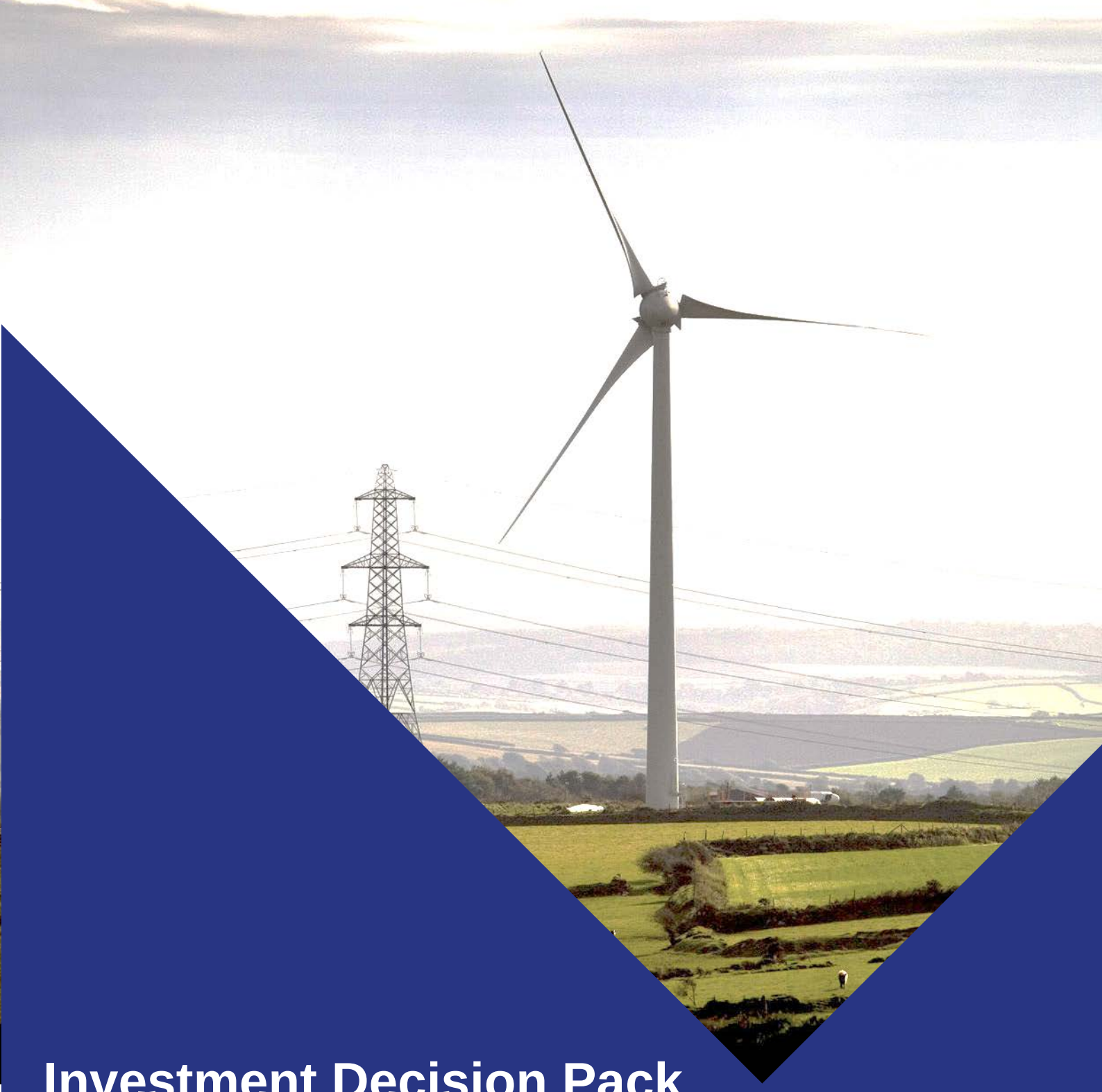

Investment Decision Pack
NGET A14.19 End User Compute
December 2019

As a part of the NGET Business Plan Submission

nationalgrid

Engineering Justification Paper End User Compute			
Asset Family	IT Infrastructure – End User Compute		
Primary Investment Driver	Replacement		
Reference	NGET_A14.19_End User Compute		
Output Asset Types	- Unified Communications (Videoconferencing & SharePoint) - Desktop Devices (Laptops and Desktops) - Applications to operate and manage assets (incl mobile devices)		
Cost	£36.3m (£30.6m Capex / £5.7m Opex)		
Delivery Year(s)	2021-2026 (ongoing annual investment desktop and mobile devices)		
Reporting Table	ETO Table D4.3a		
Outputs included in RIIO T1 Business Plan	Nil		
Spend Apportionment	**T1**	**T2**	**T3**
	-	£36.3m	£19.9m

Contents

1. Executive Summary

End User Compute comprises traditional end-user computing, managed printing, and the new digital workplace, to provide fast, frictionless, and end user-focussed services.

End User Compute ensures that all employees, contractors and partners have a reliable, secure and high performing work environment that supports National Grid business operations. At the heart of End User Compute is transforming the end user experience of technology, thereby protecting productivity and efficiency, by supporting the introduction of new capabilities and delivering a service that is focussed on eliminating the need for the user to contact the IT function for support, and ensuring that when they do, those interactions with the IT function are convenient, fast and frictionless.

By providing these End User Compute services and ensuring employees are skilled to fully utilise the benefits, significant improvements in productivity can be achieved as well as the retention of skilled resources. This supports the 1.1% year on year efficiency improvements in our performance which results in cost reductions for consumers.

We propose investment of £36.3m in the RIIO T2 period, with investments required on an annual basis to refresh and enhance assets that deliver these services. This will enable the asset refresh of end user devices on a three yearly replacement cycle (3000 devices per annum) and the establishment of an Enterprise Mobility Management capability, together with communication and collaboration tools which support customer and environmental objectives.

Replacement of end user devices on a 3 year cycle is aligned with our Business IT Security investment plan, which assumes up to date and effective end-point security is in place on end user devices.

The asset policies that underpin these investments and the level of investment required were assessed by Gartner, a recognised expert in technology benchmarking. Gartner[1] indicate the asset health policies are in line with industry practice, and the value of investment is within their benchmark range.[2]

2. Introduction

National Grid is undergoing a technological and digital transformation, driven by our ambition to meet the expectations of our customers, stakeholders, and communities in a rapidly changing, and increasingly competitive, energy landscape. Technology plays a vital role, by enabling us to optimise operational performance, identify and realise opportunities to grow, and be better equipped for the future.

A key focus for the IT function is improving the technology experience for our end users, employees, contractors and partners. We need to enable our end users to be more engaged, agile, secure, and therefore productive, via the technologies that they interact with daily. A study by Forrester Research of Microsoft Office 365 collaboration software showed savings of 1.81 hours per week per knowledge worker and a 12.75% reduction in decision making time allowing for improved customer response.[3]

As National Grid starts to move devices from the older Microsoft Windows 7 platform to the newer Microsoft Windows 10 platform, we are seeing improvements in boot time from an average of 180 seconds to 30 seconds. Scaled across 9000 users, 220 working days, average hourly cost of £35, discounted 50% (not all the time saved will result in more work done) this equates to annual savings of £1.4m or £7.4m over the T2 period.

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[1] Use These Recommended Life Spans to Guide Mobile, PC and Other Device Replacement Strategies, Gartner Research, ID G00350411

[2] For example, the typical range for end user devices identified by Gartner is 2 to 5 years with the typical policy focused around 3.5 yearly replacement. National Grid's 3 year policy is considered well aligned by Gartner with what they typically see. (Slide 87 of main Gartner report.)

[3] The Total Economic Impact™ Of Microsoft 365 Teamwork Solutions, Forrester Research, 2018

The End User Compute investment covers two main themes: -

- End User Services – Ongoing program of work to maintain currency and performance of end user devices and associated services, including initiatives to analyse and implement appropriate disruptive/new technologies.
- Unified Communication and Collaboration – ongoing program to support efficient employee collaboration and communication

3. Background Information

Delivery Model

National Grid has chosen to source selected elements of IT from external companies who can bring economies of scale, best-in-class services, and innovation. National Grid has recently completed a sourcing exercise and has awarded contracts to several global IT vendors to deliver Managed Workplace Services, Application Maintenance and Application Development.

These contracts and in particular, the Managed Workplace Services contract have been scoped to deliver these Managed Workplace investments. For example, the Managed Workplace Services contract includes the activities necessary to deploy devices in line with the three-year refresh.

Workforce

The Y & Z generation, who have grown up in a connected, collaborative and mobile world, and will account for over half of the workforce before the end of the RIIO-2 period. This change in workforce balance will redefine corporate culture and expectations of work. Our systems will need to support flexible working, a more open and social approach to collaboration, that are increasingly automated, intelligent and thus very data centric.

4. Overview of Investments

End User Services
This investment supports the ongoing maintenance of end user services ensuring performance continues to support productivity and meets the needs of business operations. Investments include end user devices and applications to manage and operate mobile devices. National Grid's starting point, the high demand for devices from the large contingent of field based staff and the current lack of standardisation means that the proposed expenditure is towards Gartner's higher benchmark rather than the low.

Device Refresh [redacted]:
During the RIIO T1 period client devices (laptops etc) have been replaced based on service failure, replacing on average after 4 – 5 years of use. During the later stages of T1 this approach has proved to be incompatible with the move to cloud services and was having a significant impact on the user experience and subsequent loss of productivity for users of devices 4 years and older. Examples of this are extended log in periods, poor performance with shared documents etc. In addition, employee survey feedback throughout the T1 period highlighted that employees found technology to be a blocker to being as effective as they could be in their jobs. The increased levels of frustration with IT was evidenced through a dip in our June 2019 cNPS score. This was also one of the causes for the Enablement score from our 2019 Employee Opinion Survey dropping to 57 compared to a score of 73 for a high performing norm. IT equipment and IT systems were two of the top three areas commented upon.

Therefore in order to ensure a managed approach to maintain currency and appropriate performance levels for end user devices the asset refresh policy for devices has been updated to replace devices every 3 years (3000 devices per annum) as a continuous program of work (rather than discrete projects as previously).

This has been benchmarked by Gartner Research[4] as in line with industry best practice. Key drivers of this approach are:

- Having up to date infrastructure is an essential pre-requisite for maintaining the right levels of security for an organisation running critical national infrastructure
- Aged equipment consumes increasing resources and budget with diminishing return.
- Inflexible and outdated technology makes it difficult to support new business demands and the digital workplace
- End Users are equipped with effective IT tools enabling them to do their jobs efficiently.

In addition to the client devices it is also necessary to replace smartphones and tablets over this period. As these devices increasingly become mobile compute devices it is essentially for security and asset health that they remain current and supported by the manufacture. This ensures security of data and performance of device.

Services Upgrade and Refresh / Living with Cloud [redacted]

Ongoing program to support refreshes and upgrades of core services e.g. Microsoft O365 and Windows 10 Service Health is critical to performance. As more cloud-based services are used that dictate the pace of change we will need new capability to manage updates and refreshes to the services. This includes services to manage the change as well as reducing complexity in estate to reduce impact of changes. For example, Microsoft have released 343 updates to Office 365 in the last 12 months and have a further 330 updates planned for the next 12 months. The inability to evaluate future changes will at best prevent efficiency improvements and at worse disrupt services to end users. Examples of recent changes include:

- Secure biometric login of Windows 10 requires appropriate hardware support not present in the current National Grid device estate. With the right hardware these features provide a more secure and efficient login to devices.[5]
- Microsoft have added a new mobile messaging service (Kaizala) to Office 365. Potentially this application can provide significant safety and productivity improvements through the digitalisation of field process such as recording of job progress or remote expert support
- Microsoft have announced that Skype for Business (currently National Grid messaging tool) will be retired in June 2021 and the functionality moved to Teams which launched in 2017. The impact of this decision needs to be assessed and user ultimately migrated to Teams by 2021

Security and management of Devices (**EMM)** [redacted]

As demand for more diverse selection of devices grows and cloud services evolve the management of these devices and services becomes more complex and tools and services are required to ensure efficient management of these devices and services. An Enterprise Mobility Management solution will be deployed to manage tablets, mobiles and laptops on a common platform.

Innovation / Emerging Technologies [redacted]

With the rapid development of technology services such as augmented reality, automation, and Intelligent algorithms opportunities will emerge through the RIIO-2 period that can be exploited to improve productivity with efficiency savings shared with consumers.

Unified Communications and Collaboration

Unified Communications and Collaboration tools support the customer environmental objectives and also improve productivity by improving employee's ability to collaborate over different sites and so reduce travel. The demands that National Grid makes on these systems means that the costs appear high compared to the

[4] Use These Recommended Life Spans to Guide Mobile, PC and Other Device Replacement Strategies, Gartner Research, ID G00350411

[5] https://docs.microsoft.com/en-us/windows/security/identity-protection/hello-for-business/hello-why-pin-is-better-than-password

comparators identified by Gartner (a total of between [redacted] and [redacted]). However, the costs proposed by National Grid are required to deliver these services.

Fixed Video and Telepresence Conference Units [redacted] National Grid has 86 Videoconference fixed units to support. The Videoconference units have a lifespan of five years and it is proposed to replace each device once over the RIIO-2 period. To further improve efficiency and reduce travel and associated impact it is proposed to increase to 110 units. National Grid also have two large tele presence units in the UK which will require refreshing in year 3 of RIIO2

SharePoint Refresh [redacted] Existing SharePoint Collaboration platforms are end of life and without supplier support leading to increased support costs and security risks. These platforms need to be Migrated to the current collaboration Office 365.

Commercial Contract Renewal

End User compute services are provided in the main via an outsource contract with Atos. This contract will expire in June 25 and will require a market event to source a new contract to ensure compliance with The Utilities Contracts Regulations Act 2016. This is a large procurement activity which require programme management and legal capability to manage the switch of service to the new provider. Forecast cost to achieve is [redacted].

This is above the range Gartner identified from comparators, but reflects the complexity and scale of the situation faced by National Grid.

5. Optioneering

Options considered for each theme are described below.

Hardware Refresh

Options for hardware refresh were assessed against the following criteria as detailed in Appendix 1 to provide an overall evaluation.

- Total cost of ownership – capital investment and associated operating costs borne by consumers and the need to ensure value for money
- Capacity to deliver - the level of risk associated with the ability of NG and its supply chain to deliver the option
- Business/strategic fit - the alignment of this option to our overall business direction
- Addressing the problem – how well the option resolves the identified issue
- Risk – the overall risk to the business associated with this option

We have listened to users through our employee engagement surveys and feedback from direct interactions with IT, analysed failure trends and performance data such as login times. With analysis and feedback demonstrating the user productivity is being impacted by aged assets and inappropriate services. With a need to improve user experience and an aging estate of end user devices, the preferred option was for a three-year refresh cycle. Benchmarking was undertaken with Gartner Research to understand factors influencing refresh (reliability and suitability) as well as typical policies in other sectors.

Service Health

These investments allow for services to accommodate supplier driven changes of modern IT cloud services. The options are either to undertake the required investment in order to maintain the service health or do nothing. An assessment of each change would be undertaken to determine the extent of service degradation that results from not implementing. Only changes having a material impact would be remediated.

Efficiency Improvement

These investments allow for services to exploit the continuous delivery of new capability in modern IT cloud services. The options are either to undertake the required investment in order to exploit the new feature or do nothing. Exploiting the feature delivers productivity improvements that result in efficiency savings shared with the consumer. The do-nothing option results in these efficiency opportunities to not be delivered.

6. Detailed Analysis & CBA

Costs have been extensively market testing during the OJEU compliant procurement exercise to retender for end user compute services. These costs have been utilised in the detailed CBA, attached as Annex NGET_A14.19_End User Compute_CBA01.

The investment costs profile and associated benefits is set out in the table below.

£m	2022	2023	2024	2025	2026	Total
Preferred Option - Costs	-7.64	-6.64	-6.84	-8.84	-6.34	**-36.30**
Preferred Option - Benefits						**0.00**
Net Cost	**-7.64**	**-6.64**	**-6.84**	**-8.84**	**-6.34**	**-36.30**

The table below summarises the output from the CBA.

Option	NPV @ 2.9%
Baseline - 5 Yr Replacement	-23.0
Preferred Solution - 3 Yr Replacement	-33.7
4 Yr Replacement	-33.9

The baseline 5 year replacement cycle for end user devices has already been shown to be unsustainable through the T1 period, as it adversely impacts operational performance and workforce efficiency and morale. The credible options are a 4 year replacement cycle and a 3 year cycle. The 3 year cycle has a more favourable NPV than the 4 year option, and is also supported through external benchmarking. The rate of change of technology and the requirement for frequent operating system and application updates is leading to reduced refresh cycles for end user devices.

The table below includes sensitivities for our preferred solution at 5% discount rate, and costs at plus and minus 10%. This indicates that the preferred solution is resilient to a credible level of change.

£m	NPV @ 2.9%	NPV @ 5.0%	Costs - 10%	Costs +10%
Preferred Solution	-33.67	-34.67	-30.30	-37.04

In addition to the savings relating to procurement of lower cost devices with the shorter replacement cycles, there are other savings – most of which are difficult to quantify. As noted in the introduction, time savings could generate over £7m of savings per annum from the two options. This would further improve the rationale for moving away from the current baseline 5 year replacement.

On the basis of the evaluation of options against the criteria outlined above and the detailed CBA, the 3 year refresh cycle will be used as the basis for our end user compute investment in the T2 period. This approach is aligned with our Business IT Security investment plan, which assumes up to date and effective end-point security is in place on end user devices.

7. Key Assumptions, Risk and Contingency

Risk	Assumptions	Impact
Most of the investment is driven by device refresh which is dependent on user numbers and device to user ratio.	It is assumed user numbers remain broadly flat	A significant change in device numbers (up or down) would result in a corresponding change in investment value (up or down)
Most of the investment is driven by device refresh. Technology hardware is typically initially priced in US Dollars	It is assumed that GBP:USD currency rates remain stable and vendors don't realign UK pricing	A significant change in GBP:USD exchange rate due political events may have in impact on hardware purchase costs (as seen during RIIO1)
RIIO2 covers a large time period from a technology development perspective. New technologies or methods of working may emerge that change investment profile	Current planned solutions will not change unless there is a financial / efficiency benefit from doing so	Split between Opex and Capex may change but Totex will remain the same or be reduced

8. Conclusion

Modern end user compute capabilities will deliver a reliable, secure and high performing modern workspace delivering the excellent user experience and a work environment our users and stakeholders told us they needed to operate effectively. This will support our business operations, enabling us to meet the expectations of our customers and stakeholders efficiently and cost effectively.

This investment is consistent with and complimentary to our proposed investment in Hosting, Networks and IT Operations and Tools and is essential to our Business IT Security investment plan, which assumes up to date and effective end-point security is in place on end user devices.

9. Outputs included in RIIO T1 Plans

Nil as this is a new strategy in response to the unsustainable situation which has arisen during RIIO-T1.

Appendix 1: Table of options considered

Option	* Total Cost of Ownership	Capacity to Deliver	Business / Strategic Fit	Addressing the problem	Risk	Overall
Do nothing / Refresh over 5 years	**Red** Minimal IT investment but incremental costs and inefficiencies in the business	**Red** Aged device estate already causing significant disruption to business	**Red** Devices are not able to support new technology, therefore hinder ability to exploit value from new technology	**Red** Does not address End user experience and performance issues	**Red** The rapid change and evolution of new technology forces older environments to be rendered obsolete and unsupported at an increased pace. This poses a risk to cybersecurity, resiliency and enterprise efficiency.	Not Viable / Rejected
Refresh over 3 years	**Green** Ensures best value between staying modern while leveraging asset. In line with Gartner "mainstream" recommendation"	**Green** New MWS contract structured to give rolling upgrade of devices	**Green** Devices replaced every 3 years in line with asset refresh policy. Ensuring that all devices are maintained to current operating systems, receive ongoing security patches and deliver good performance	**Green** Ensures improvement to end user experience and performance, and supporting introduction of new technologies	**Green** Security reliability and performance risks mitigated	Viable / Recommended
Refresh over 4 years	**Amber** While within Gartner 2 to 4 year recommendation would require higher spec devices with higher initial cost	**Green** New MWS contract structured to give rolling upgrade of devices	**Green** Ensuring that all devices are maintained to current operating systems, receive ongoing security patches and deliver reasonable performance	**Green** Ensures improvement to end user experience and performance, and supporting introduction of new technologies	**Green** Security reliability and performance risks mitigated	Viable / Rejected