



What we have delivered

**CP APP02 - What we have delivered - Jan2020 -
Public**

Regulatory proposal 2021–2026

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1 Overview

During the 2016-2020 regulatory period, we have delivered significant expenditure savings through our 'World Class' program. Our World Class program drove momentous transformations across all aspects of business operations leading to long term savings for our customers.

As a result of our World Class program we retained our position as efficiency frontier networks and have extended the frontier through investment in innovative technologies - paving the path for other networks to follow at lower risk.

Our World Class program has set us up well to continue to efficiently deliver our expenditure programs during 2021-2026 and effectively address the new challenges and opportunities we are presented with in the forthcoming period, including:

- numerous new and changed regulatory obligations which materially impact our operations
- significant uptake of renewable innovations including solar, batteries and electrical vehicles
- continuing strong customer and demand growth.

As efficiency frontier networks we cannot absorb additional costs resulting from these challenges. While our World Class program will provide enduring benefits for customers, the savings have been realised and are not repeatable. Further efficiency savings can only be achieved through investments in new, higher risk, technological innovations. Consequently, in preparing our regulatory proposal we have been conscious of customer's desire for affordable network charges while making sure we invest to deliver a safe, reliability and secure network which also meets customer expectations regarding network flexibility and accessibility.

This attachment provides more details on the savings achieved through our World Class program over the current regulatory period and the new challenges ahead for the forecast regulatory period. This attachment also fulfils our obligations under Schedule 6 of the National Electricity Rules (**Rules**) to explain significant variations between our historical and forecast expenditure (sections 6.1.1 (7) and 6.1.2(8)).

2 2016-2020 regulatory period

During the 2016-2020 regulatory period we have delivered significant savings for our customers, as shown in table 1 below. These savings were achieved through our World Class program. Our World Class program involved a comprehensive review of all business processes as well as benchmarking comparisons to domestic and international peers. Savings were achieved through four broad approaches:

- technology innovations which enabled us to transform how we deliver services
- renegotiating contracting arrangements with service providers through market testing
- ensuring a lean and efficient internal service delivery model
- efficient investment decisions which maintain network safety and reliability.

Table 2 Expenditure savings compared with Australian Energy Regulator allowances, 2016-2020 (\$ million, 2021)

	Opex savings	Capex savings	Total savings
Powercor	132.0	334.2	466.2
CitiPower	59.1	273.7	332.8
Total	191.1	607.9	799.0

Source: Powercor and CitiPower

2.1 Technology innovations

We have achieved major efficiency and effectiveness gains through the deployment of innovative new technologies which have transformed our everyday approach to delivering services. This includes:

- investing in automation technologies for field works scheduling and dispatch, managing connections applications, and undertaking design functions (discussed more below)
- using modern technologies such as light detection and ranging (**LIDAR**) and drones to optimise our maintenance activities, leading to reduction in work volumes for cross arms and pole caps and extending maintenance windows
- implementing robotic process automation to remove thousands of manual transactions across the range of corporate services.

Automation in field works

We have revolutionised our approach to delivering field services. Through investment in IT systems, software applications and deployment of mobile devices in the field, we have moved from a predominately manual sequential approach to planning and delivering field services to a highly automated rapid approach. Key changes to field operations include:

- automated, centralised and optimised works scheduling, remote crew dispatch, live onsite reporting of works completed and live fault monitoring
- onsite access to a vast range of location specific network information in one consolidated place through our map insights application. This has improved site specific information and reduced the need for revisits and/or off-site calls to source information
- onsite automated safety checks, safety standards, safety training and safety incident logs.

This transformation in field service delivery has provided the following benefits for our customers:

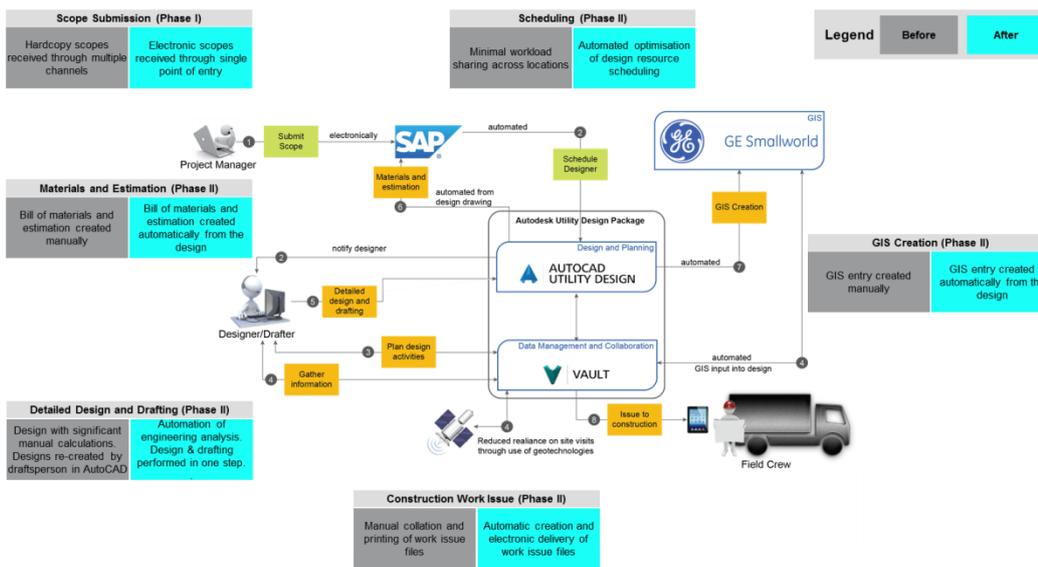
- lower costs of delivering field services through better utilisation of field crew, reduced back office support and better utilisation of heavy fleet, generating savings of greater than \$20m over the past five years
- improved network reliability through optimised and automated dispatch of fault crews and remote live fault monitoring
- reduced safety risks as field staff have ready access to safety notifications and technical safety standards, safety monitoring apps and safety incidents log while in the field.

Automation in design

We invested in automated design software, Autodesk Utility Design, which enabled automation of key functions in the design process, including manual processes being replaced with centralised electronic processes, optimised automation of design resource scheduling, automation of GIS entry and engineering analysis and consolidation of design and drafting into one step. Refer to figure 1.

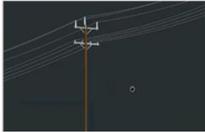
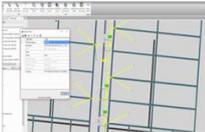
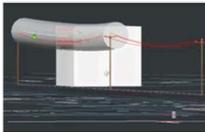
Implementation of the software enabled us to reduce design effort as shown in figure 2 below. The saving in design effort also enabled us to efficiently insource some previously outsourced services at lower cost.

Figure 1 Design processes before and after implementation of Autodesk Utility Design



Source: CitiPower

Figure 2 Effort savings in design activities from implementing Autodesk utility design

Example design activities	Effort before	Effort after
Design of greenfield three pole extension 	10 hours (3 days duration)	1 hour (1 day duration)
Import project area data from GIS 	1 hour	30 seconds
Determine safe clearance from conductor to buildings 	1 hour	5 minutes
Creation of GIS switch numbers 	0.5 day (2 days duration)	30 seconds (effort & duration)

Source: CitiPower

Automation in connections

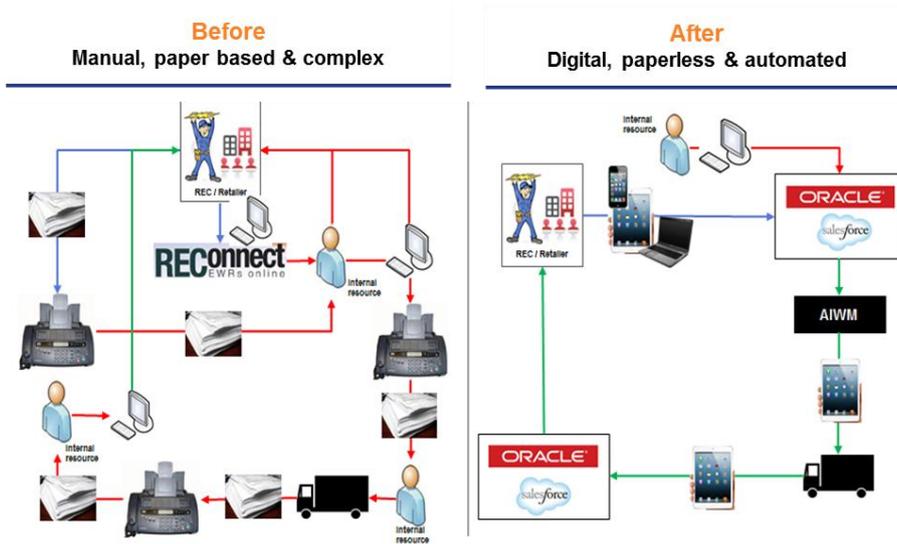
We invested in an integrated, web enabled application, eConnect, to initiate and track connection services processes such as new connections, alterations, investigations and solar pre-approvals. Automation of our connections processes enabled:

- electricians, retailers and customers to initiate connections request from any web enabled device
- automation of the scheduling, dispatch and close out of connections requests
- standardisation and simplification of connections applications, processes and policies.

As demonstrated in figure 3, eConnect enabled us to replace cumbersome paper based connection application processes with automated electronic processes. eConnect has delivered the following benefits for customers:

- considerable time and effort saved for customers and electricians in initiating the connection process
- quicker connections times by reducing time spent on processing paper-based connection applications
- process efficiency savings leading to lower costs to customers.

Figure 3 Connections process before and after eConnect



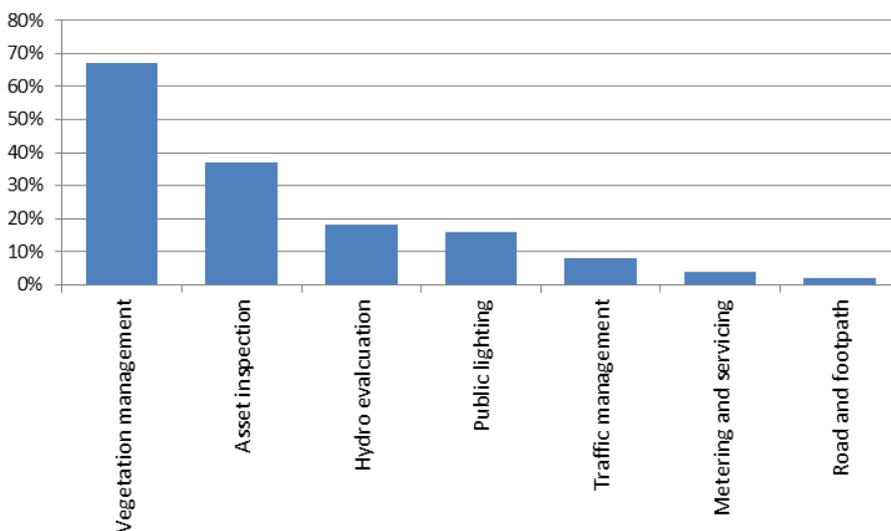
Source: CitiPower

2.2 Contracting arrangements

We achieved significant savings in our external spend through renegotiation of contracts for the range of outsourced services. In particular, significant savings were achieved in vegetation management services by market tendering the contract and restructuring the contract terms to reduce the scope of services to inspection and cutting only, with management, technology and audit services insourced and move from a fixed price service to fixed unit rates. Savings in procurement of materials were achieved by centralising our procurement functions enabling us to leverage bulk purchase discounts.

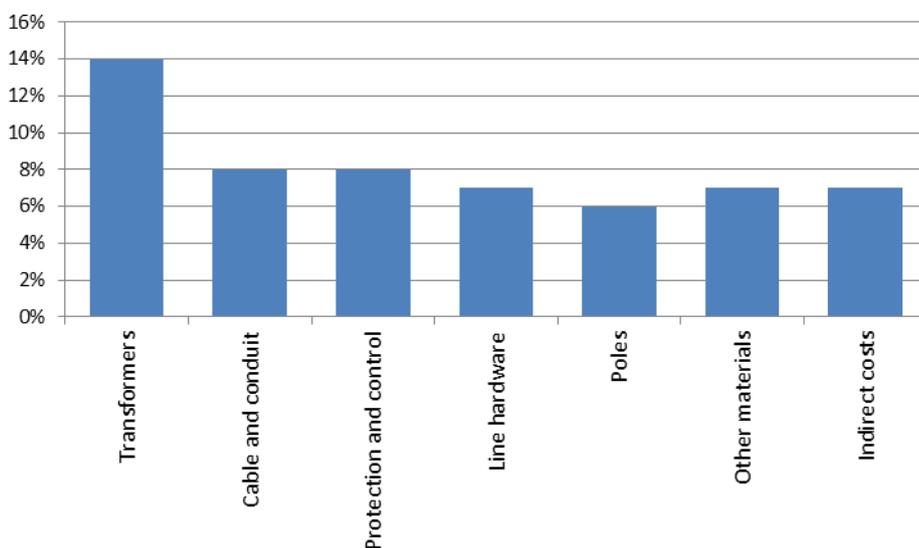
Figures 4 and 5 below demonstrate the savings achieved during renegotiation of contracted services and materials procurement.

Figure 4 Percent savings in unit rates for contracted services, % saving



Source: CitiPower

Figure 5 Percent savings in annual network materials costs, % saving



Source: CitiPower

We also changed our delivery model, where it was found efficient through market testing, including:

- insourcing a number of functions that had previously been outsourced, e.g. some regional field operations and vegetation management and technology services
- outsourced functions previously insourced e.g. IT support and project delivery, which followed a full review and restructure of our IT delivery model. Our new IT delivery model is discussed in our IT deliverability plan.

2.3 Efficient internal delivery model

We reviewed and restructured our internal service delivery model to ensure we adopt a lean and efficient approach. Efficiency savings have been achieved through:

- consolidation of key functions into a single point of responsibility. For example, procurement functions were previously undertaken within different business units depending on the nature of materials or services being procured, all procurement activity is now undertaken within a single business unit, enabling us to deliver more effective and efficient procurement processes reducing internal costs and obtain better rates
- removing management layers and reducing management to staff ratios
- deriving synergies through joint service provision with United Energy, including customer services, finance, regulatory and IT support.

2.4 Efficient investment decisions

We only invest when it is necessary and efficient for maintaining network safety and reliability. We have:

- leveraged AMI data to better manage the network, including to:
 - monitor and manage loads on the LV network enabling deferral or avoidance of capital expenditure, for example through improved phase rebalancing and reduced asset overloading
 - improved voltage and current monitoring enabling avoidance of voltage investigations and quicker complaints resolution reducing our costs and customers time

- proactive identification and response to safety risks arising through faulty neutrals or overvoltages
- faster fault identification and rectification and quicker rectification of customer fault calls
- deferred four transformer replacement projects through the introduction of risk monetisation and calibration of our condition based risk model to take account of recent performance of comparable assets, refer to appendix A.2 for more detail
- deferring three projects relating to the West Melbourne Terminal Station which are driven by AusNet's upgrade timeline, refer to appendix A.2 for more detail
- not proceeded with upgrading our billing system (valued at \$50 million) as a result of the Victorian Government's decision to only allow opt in demand tariffs which diluted the customer benefits case and the future opportunity to consider migrating to United Energy's system.

3 2021-2026 regulatory period

The 2021-2026 regulatory period however presents new challenges which necessitate continued investment in innovative and compliance based solutions which include:

- new and changed regulatory obligations which materially impact our operations
- significant growth of renewable innovations including solar, batteries and electrical vehicles
- continued strong customer and demand growth.

As an efficiency frontier network, we cannot absorb additional costs resulting from these challenges. While our World Class program will provide enduring benefits for customers, the savings have been realised and are not repeatable. Further efficiency savings can only be achieved through investments in new, higher risk, technological innovations. Consequently, in preparing our regulatory proposal we have been conscious of customer's desire for affordable network charges while making sure we invest to deliver a safe, reliability and secure network which also meets customer expectations regarding network flexibility and accessibility.

The impact of these challenges on our operating and capital expenditure forecasts is discussed briefly below. More detail is provided in our regulatory proposals and the respective business cases for each project.

3.1 Our forecasts reflect new requirements and challenges

Operating expenditure

Our operating expenditure forecasts are based on our efficient 2019 actual operating expenditure which embeds the savings achieved through our World Class program. This ensures customers receive the benefits we derived in the current regulatory period.

Our operating expenditure forecasts include a step up on recent history, primarily as a result of new regulatory obligations and changes in our operating environment, including:

- amendments to the Environmental Protection Act and associated draft Regulations which require a more proactive approach to environmental management
- security of critical infrastructure requirements to increase data protection
- Australian Energy Market Commission (**AEMC**) Rule change to introduce five minute financial settlement for wholesale market trading
- reclassification of the Victorian food belt, through the Shepparton to Mildura area, to High Bushfire Rated Areas resulting in increased obligations relating to vegetation management and asset inspection
- annual rebalancing and testing costs for managing rapid earth fault current limiters
- the relocation of pole top assets as a result of Yarra trams pole relocation program

Our operating expenditure forecasts are also driven by continued strong customer and demand growth, especially in the western corridor of Victoria.

Capital expenditure

The efficiencies derived in delivering our capital expenditure program in 2016-2020 ensure we will continue to efficiently deliver our capital expenditure initiatives for the forthcoming 2021-2026 period. Our capital expenditure forecasts are a step up on recent historical spend. This reflects new investments required to meet regulatory obligations or deliver greater customer benefits through improved safety, maintaining reliability and enabling our customers. Key new investments include:

- digital network - investment in innovative technology providing better visibility of the low voltage network, enabling us to more effectively manage the network and defer network augmentation
- five minute settlement - requires major changes to our IT systems and communications network to retrieve, process and deliver energy data to market in 5 minute (rather than 30 minute) intervals in accordance with the AEMC Rule change
- solar enablement - enabling solar exports by removing over 95% of solar constraints on the network, where customer benefits exceed the cost. This involves a relatively modest program of investment including applying new inverter settings, developing a dynamic voltage management system, tapping and targeted augmentations
- pole replacements - to maintain the safety and reliability of the network with an aging pole population, we are proposing an enhanced risk-based approach to asset management which addresses concerns raised by ESV and the community regarding the long term sustainability of our wood pole replacement practices
- environmental - amendments to the Environmental Protection Act and draft Regulations which require a more proactive approach to environmental management
- bushfire mitigation - meeting our bushfire mitigation compliance obligations through the deployment of REFCLs at designated zone substations and maintaining specified technical performance levels at existing REFCL zone substations
- demand driven augmentation - meeting demand growth in the Powercor supply areas of Tarneit and Bacchus Marsh and the CitiPower supply areas of Brunswick, Port Melbourne and Russell Place.

A.1 2016-2020 expenditure savings

As a result of our World Class program, discussed above, we have generated significant expenditure savings over the 2016-2020 regulatory period compared with the AER's regulatory allowances, as shown in the table and figures below.

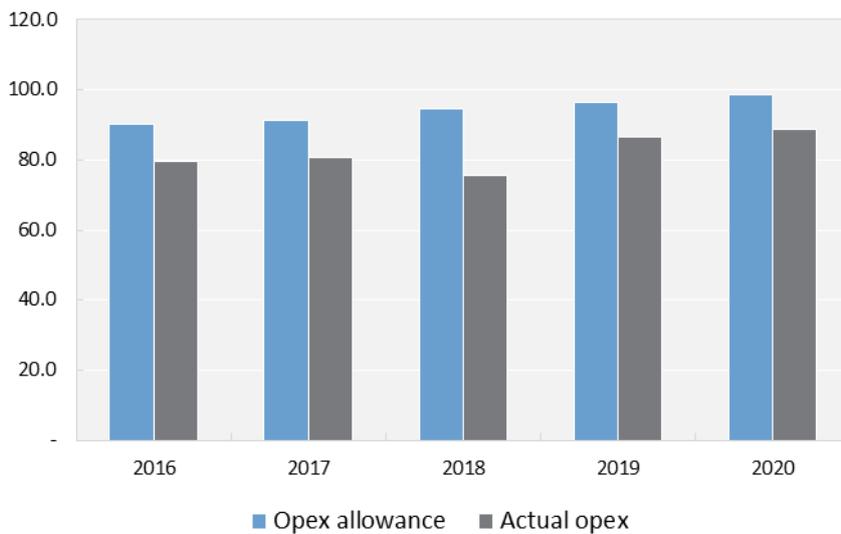
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Operating expenditure savings

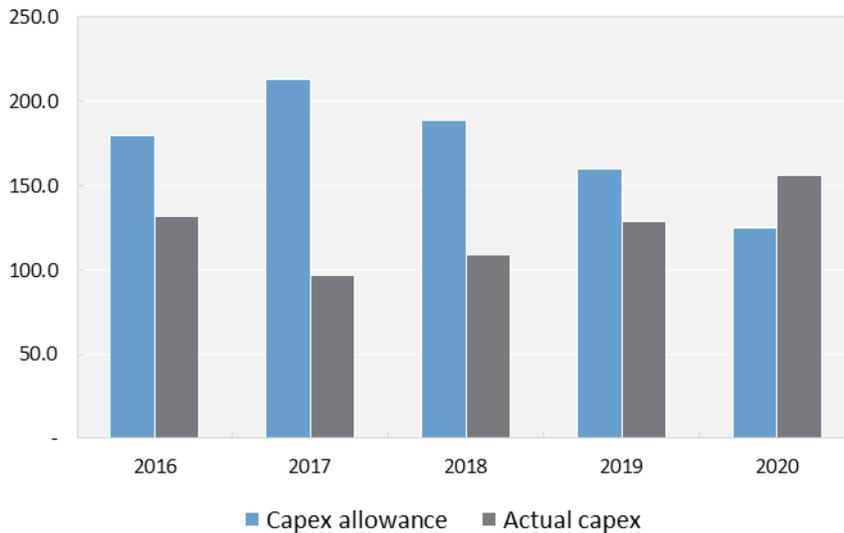
Figure 6 CitiPower 2016-2020 operating expenditure actual spend and AER allowance (\$ million, 2021)



Source: CitiPower

Capital expenditure savings

Figure 7 CitiPower 2016-2020 capital expenditure actual spend and AER allowance (\$ million, 2021)



Source: CitiPower

The resulting carry over amounts under the Efficiency Benefit Sharing Scheme (**EBSS**) and Capital Expenditure Sharing Scheme (**CESS**) are set out in the tables below.

Table 3 Efficiency benefit sharing scheme calculations, \$m 2021

	2016	2017	2018	2019	2020
Adjusted benchmark EBSS operating expenditure	90.0	91.3	94.7	96.3	98.5
Actual EBSS operating expenditure	79.6	80.7	75.7	86.7	88.9
Incremental efficiency	7.6	0.2	8.4	-9.4	-

Source: CitiPower

Table 4 Efficiency benefit sharing scheme carryover, \$m 2021

	2021/22	2022/23	2023/24	2024/25	2025/26
EBSS efficiency carryover	3.0	-0.9	-5.2	-4.7	-

Source: CitiPower

Table 5 Capital expenditure sharing scheme calculation, \$m 2021

	Present value
Total efficiency gain	273.7
Network service provider share (30%)	82.1
Financing benefit	26.1
CESS payment in 2021 - 2026	56.0

Source: CitiPower

A.2 Deferred capital projects

We have deferred capital expenditure projects from 2016-2020 into the 2021-2026 regulatory period where it is efficient to do while maintaining network safety and reliability.

The following table describes the deferred projects and explains the reason for the deferral.

Table 6 CitiPower - description of deferred projects

Deferred project	Explanation of deferral
WMTS 22kV Retirement - BQ 3rd 55MVA Transformer	<p>For the 2016-2020 regulatory period we proposed retiring the 22kv network connected to the West Melbourne Terminal Station (WMTS) and transferring load to the more efficient 66kv subtransmission network. Within this project we proposed transferring load from BS to BQ zone substation and installing a third transformer at BQ in 2017 to meet growth in demand.</p> <p>In 2020 we are installing a new switchgear at BQ which will enable us to connect new load to a third transformer in future. Due to softer than forecast demand growth we efficiently deferred installing the third transformer.</p> <p>For 2021-2026 regulatory period we propose installing the third transformer at BQ during 2023/24 and 2024/25. The delayed timing reflects our updated forecasts of demand growth.</p>
WMTS 22kV Retirement - Upgrade WMTS-DA sub-transmission lines to 66kV	<p>For the 2016-2020 regulatory period we proposed retiring the 22kv network connected to WMTS. Within this project we proposed to upgrade the DA 22kv sub transmission line to 66kv subtransmission.</p> <p>The timing for upgrading DA to 66kv is dependent on the AusNet Transmission to redevelop WTMS which has been delayed.</p> <p>In 2019 we installed the WMTS-DA 66kv cables as part of the West Gate Tunnel Asset Relocation Project but will run these cables at 22kv until AusNet's WTMS redevelopment project installs the new 66kv switchgear. We expect to complete the majority of the project by June 2021.</p> <p>For 2021-2026 we propose to complete the remaining works by converting the installed cables to 66kv in 2021/22.</p>
WMTS 22kV Retirement - VR Nth Melbourne 66kV Connection	<p>For the 2016-2020 regulatory period we proposed retiring the 22kv network connected to WMTS. Within this project we proposed to convert supply to the VR substation, owned by VicTrack, to 66kv in 2018.</p> <p>The timing for transferring VR to supply from WTMS is dependent on the timing for AusNet Transmission to redevelop WTMS which has been delayed. The project scope has also altered as VicTrack have recently indicated that VR Nth Melbourne 22kv substation will not be required once AusNet Transmission redevelop WMTS.</p> <p>For the 2021-2026 regulatory period we propose to complete transfer of VR to WTMS and decommission our 22kv subtransmission line in 2021.</p>
VM1 Transformer	<p>For 2016-2020 regulatory period, we proposed to replace the VM1 transformer in 2017 on the basis of the results of an asset health index assessment. In 2017 we replaced the oil brush filings which lowered the health index rating.</p> <p>Through the introduction of risk monetisation and calibration of our condition based replacement model to take account recent asset performance, we determined replacement of VM1 can be deferred until 2022/23.</p>

Source: CitiPower

The table below provides the value of deferred projects which are repropsoed for 2021-2026.

Table 7 CitiPower -deferred projects value (\$million, 2021)

Project	2016-2020 Allowance	2016-2021 Expenditure	Unspent allowance	2021-2026 Proposal
WMTS 22kV Retirement - BQ 3rd 55MVA Transformer	12.9	0.0	12.9	4.0
WMTS 22kV Retirement - Upgrade WMTS-DA sub-transmission lines to 66kV	5.5	4.3	1.2	0.3
WMTS 22kV Retirement - VR Nth Melbourne 66kV Connection	1.7	0.3	1.4	0.3
Transformer replacement VM1	3.4	0.0	3.3	3.9
Total	23.4	4.6	18.8	8.4

Source: CitiPower

We have not adjusted the CESS calculation to exclude the deferred projects because:

- the decision to defer was efficient, reducing costs for customers while maintaining network safety and reliability
- the deferrals do not materially increase our capital expenditure forecasts.