

Wood pole asset management

Customer Advisory Panel Pre-read

October 2020



Our wood poles management practices are changing

To date our asset management practices have effectively sustained pole integrity and network safety objectives

- We have a robust and extensive inspection regime in line with strict regulations and audited by Energy Safe Victoria (ESV). Our inspection regime exceeds the frequency required by regulatory standards
- We have historically taken an asset condition-based approach to pole maintenance and replacements
- These standards were extensively reviewed as part of the 2009 VBRC and the Grimes Review

We propose a more preventative approach in line with changing customer expectations, regulatory standards and increasing risk. This shifts the focus to managing risk and compliance.

- Following the St Patricks Day fires in March 2018, communities across all networks raised concerns about pole management practices
- Customer consultation indicated safety should be prioritised and costs need to balance both short term and long-term objectives
- We have worked with ESV in amending our asset management policies to include condition and visual appearance as criteria for remedial action. The policies have been recognised by ESV as being fit for purpose
- We are concerned that without an escalated replacement strategy, the average total wood pole population age will increase to unsustainable levels leading to greater replacement costs in future regulatory periods

We have modified our pole replacement proposal but are concerned any further reductions could increase risk

- The substitute forecasts recommended by AER are lower than our forecast compliance obligations
- Our pole trial is refining our volume forecasts and in turn network proposals which will ensure investments are prudent
- In addition to our compliance driven interventions, we have proposed for Powercor a risk-driven intervention program which recognises that in high-risk locations the consequence of a pole failure can be significant
- EA Technologies has undertaken an economic assessment which demonstrates the benefits of the risk-driven interventions are greater than the cost

Our communities benefit from our poles program

Meeting community expectations

- Our poles program meets community expectations of enhancing **safety** around our poles and taking **amenity** into account when managing poles

Maintaining safety around our poles

- As poles age and their condition worsens over time, our program ensures the high level of **safety around our poles for our communities is sustained**

Reducing bushfire risk in areas where economic to do so

- In Powercor's network, our program also **reduces bushfire risk** in areas where it is economic to do so, like the High Bushfire Risk Areas (HBRA)

Our wood pole asset management practices

Our wood pole asset management objectives

Our asset management practices are designed to meet our asset management objectives

Wood pole asset management objectives

- Our wood pole management objectives are to:
 - achieve a sustainable pole lifecycle management program
 - maintain acceptable performance levels
 - address the right poles at the right time
 - meet community and stakeholder expectations

Wood pole asset management policies

- Our wood pole asset management practices are designed to ensure we meet our wood pole asset management targets, and include leading and lagging indicators
- We must comply with our asset management policies, consistent with our Electricity Safety Management Scheme (ESMS) and Bushfire Mitigation Plan (BMP):
 - our ESMS sets out how we will comply with our general duties obligations under the Electricity Safety Act
 - our ESMS refers directly to our pole asset management policies, and has been accepted by ESV
 - our BMP has also been accepted by ESV

CitiPower & Powercor asset class strategy: wood pole performance measures

Type	Performance measure	Target
Leading	Serviceability index	Manage poles population within serviceability-index based serviceability criteria
	Average age	Manage average timber pole age at existing levels through implementation of condition and risk-based intervention
Lagging	Asset failures	Minimise asset failures as far as practicable within RBAM implementation Monitor 5 yearly rolling average to identify emerging trends
	STPIS reliability impacts	Monitor 5 yearly rolling average to identify emerging trends
	Significant HSE incidents	Zero incidents as a result of asset performance (excludes third party causes)
	Public safety	Zero incidents as a result of asset performance (excludes third party causes)
	F-factor impact	Target to be established – F-factor reporting at asset class level is required

Understanding of the condition of our wood poles is critical to effective asset management outcomes

Powercor's wood pole management practices prior to 2019

Our previous wood pole management practices would not deliver sustainable outcomes for the future

- In March 2018, a high wind event passing through Victoria's south west caused a fault on the electrical network and a fire in the Terang area, known as the Garvoc Fire that resulted in significant property damage
- ESV conducted a technical investigation into the fire and concluded in July 2018 (among other things) that:
 - the most likely source of ignition for the Garvoc Fire was the failure of a wood pole on Powercor's distribution network and the subsequent contact of the high voltage conductor with the ground and vegetation
 - a competent inspection and sound test of the pole in November 2017 would have identified the material degradation present when the pole failed
- ESV also initiated a further investigation into our wood pole management practices (discussed later), and determined that our wood pole management practices would not deliver sustainable outcomes for the future
- Concurrent with ESV's review, we engaged ARMS Reliability to undertake an independent assessment of our reliability centred maintenance (RCM) practices. This review highlighted the following:
 - the historical trend in pole failures was increasing, whereas the number of poles classified as 'unserviceable' was declining sharply
 - a higher than expected number of poles were transitioning directly from serviceable to unserviceable between inspection cycles
- These trends were also inconsistent with an ageing wood pole population, and suggested a clear need to address our existing practices

Pole condition assessment

- A new wood pole's actual strength is well above its rated strength (i.e. 2.5 times)
- A pole's strength will typically reduce with age
- When we inspect a pole, inspection data is entered into our 'pole calculator' to determine its residual strength (i.e. the condition, or 'serviceability' of a pole)
- Our wood pole inspections use industry standard 'dig and drill' methods, as well as 'Woodscan' where a pole is identified as unserviceable
- Our objective is to replace the pole prior to it reaching its rated strength
- If a pole's residual strength falls below its rated strength it is at risk of failing in service

Pole condition classifications

- When a pole is inspected it is assigned one of three classifications depending on its condition:
 - serviceable
 - serviceable with additional control (AC), previously referred to as 'limited life' poles – these pole are subject to more frequent inspections, due to their deteriorated condition
 - unserviceable – requires intervention

Changing community expectations - dodgy poles campaign

Dodgy Poles campaign

- In November 2018 a social media campaign commenced on Twitter, supported by the Warrnambool Standard and farmers affected by the St Patrick's Day fires
- It encouraged people to photograph power poles they perceived as unsafe
- The campaign demonstrated the significant concern expressed by the Southwest community

Outcomes

- As a result of the campaign, 15 poles on the properties of farmers affected by the fires were replaced proactively despite being assessed as not needing urgent repairs
- All reported 'dodgy poles' were fully investigated
- Powercor committed to bring forward inspections on 19,000 poles in an area from Warrnambool to Port Campbell and Hamilton – resulted in 10 poles being immediately replaced (due to sound wood, lightning strikes and visual appearance)
- Powercor changed its pole inspection policy, including the introduction of 'public opinion test' based on appearance of poles
- There were also further changes to Powercor's asset management policy, discussed on next slide



Changes have been in place since early 2019

- Within the 2016-2020 period, we introduced changes to our inspection practices, including the introduction of Woodscan and the use of diameter tape (rather than calipers) to assess the condition of our wood poles
- These changes are important measures to accurately assess the integrity of our assets, but reduced intervention volumes observed in recent years
- We listened to the feedback and concerns from our customers and communities (including through the dodgy pole campaign), and in March 2019, we made the following enhancements to our asset management practices:
 - we increased the frequency of our inspection and testing process from 30 months to 12 months for all 'added control – serviceable' (ACS) poles
 - we increased the pole residual strength safety factor from 1.25 to 1.40 for all poles
 - we introduced an assessment criterion to address defects only identifiable by visual inspections
- The increased inspection frequency for ACS poles means we are more likely to identify unserviceable poles before they fail (i.e. prior to the next inspection)
- The more conservative safety factor threshold for unserviceable poles means an additional 5mm of 'good' or 'sound' wood is required, and provides greater assurance that the residual strength of our poles is sufficient
- Historically, our visual inspection criteria identified poles requiring replacement due to termites, fungal fruiting bodies, above-ground rot, or fire/lightning damage. Our additional visual criteria now includes large, visible cracks or holes—these visual traits were concerning our customers, leading to the 'dodgy poles' campaign
- However, the subsequent findings from ESV's review (discussed on the next slide), which had regard to these enhancements, concluded that further changes were required (see quote)

“

Since March 2018, Powercor has improved its wood pole management system, which has the effect of increasing the volume of wood pole replacements and reinforcements. However, these changes alone will not deliver sustainable wood pole safety outcomes

ESV findings and recommendations: technical review

After conducting a technical review in 2019, ESV concluded that our wood pole management practices would not deliver sustainable outcomes for the future. Its findings resulted in 13 key recommendations (refer to table), ten of which required action from us

- 1 Powercor is to develop a wood pole management improvement plan incorporating all recommendations and initiatives, and submit it to ESV. The plan is to include clear and measurable milestones that can be monitored through evaluation and reporting. When the plan is accepted by ESV, the plan commitments must be incorporated into an updated BMP for ESV to monitor and enforce compliance
- 2 ESV is to, in consultation with Powercor, establish a regulatory reporting protocol for monitoring Powercor's progress against its wood pole management improvement plan (as referenced in the updated BMP). Powercor will report progress to ESV quarterly until all recommendations have been delivered
- 3 Powercor is to update its wood pole management documentation to incorporate its revised wood pole objectives, strategies, performance measures, forecast, plans and improvement initiatives (and to otherwise address ESV's findings regarding the shortcomings of its Asset Class Strategy document)
- 4 Powercor is to revise its Asset Inspection and Training Manual (or equivalent) to clearly articulate the 'sound test' procedures and practices to provide a rigorous basis for inspector training, application in the field, and auditing
- 5 Powercor is to revise its inspection auditing process and performance reporting to improve the quality and consistency of inspections
- 6 Powercor is to provide evidence to ESV that the asset inspector training and competency modules and assessment undertaken by the asset inspection service provider comply with National Certificate II accreditation and with Powercor's asset inspection standards
- 7 Powercor is to complete the development and implementation of its Serviceability Index (SI)-based serviceability assessment methodology, to lead to a more accurate representation of the likelihood of pole failure over time
- 8 Powercor is to proactively explore (if feasible with broader industry), the development of non-destructive wood pole inspection technology to improve the accuracy of pole condition assessments
- 9 Powercor is to complete the development of its pole risk-based asset management intervention methodology to improve the management of pole risk. If implemented appropriately, this approach will enable Powercor to prioritise the poles for intervention in higher risk areas by considering the consequence of failure to the community
- 10 Powercor is to improve its asset performance monitoring by developing pole asset performance metrics and health reporting dashboards, with appropriate targets to monitor and review performance levels
- 11 ESV, in consultation with MECs, is to revise the reporting guidelines to include performance indicators relating to wood pole management in the quarterly and annual performance reporting. This will include the establishment of leading and lagging indicators and clarification for the classification of assisted and unassisted pole failures, allowing ESV to monitor wood pole performance. This should build on and extend existing safety performance reporting by ESV
- 12 Powercor is to finalise its proposed forecasting methodology, its forecast pole replacements/reinforcements and include the forecast pole interventions in its BMP
- 13 ESV is to monitor quarterly wood pole performance and delivery of Powercor's forecast intervention volumes (up to and including 2025/26). The approved volumes are to be included in the updated Bushfire Mitigation Plan, with ESV using its powers to hold Powercor to account for delivery.

Our pole management improvement program implements ESV recommendations and has been accepted by ESV

- We have accepted all of ESV's findings and recommendations
- Our pole management improvement plan builds on asset management changes implemented in March 2019, and includes the following:
 - changes to support the assessment of the condition of our poles:
 - independent auditing of external pole inspection contractors, and updated work instructions
 - enhancements to our pole calculator to recognise that wood pole fibre strength will degrade over time—as outlined by ESV, like many distributors, our previous wood pole serviceability assessment criteria did not recognise the cumulative effect of significant loss of pole strength through degradation of the fibre strength (i.e. standard industry practice has been to assume the fibre-strength of a wood pole was the same in year one as it would be in year 100)
 - changes to ensure sustainable safety outcomes are achieved:
 - adoption of a risk-based asset management approach
 - transition to Australian Standards: AS7000
- Our pole management improvement plan also includes a **trial of over 4,500 wood poles across our network** to validate risk assumptions included in our pole intervention forecasts. In response to stakeholder feedback, we brought forward the timing of this trial, which is now due to be completed in October 2020 – **our revised proposal will include results from this trial**
- The implementation of our pole management improvement program, based on a more comprehensive risk assessment and better inspection practices, will deliver sustainable safety outcomes to the community.

Our proposed poles program in January 2020, stakeholder feedback and AER draft decision

Powercor and CitiPower proposed program (JAN 2020)

In our regulatory proposal to the AER, we proposed a pole management program that encompasses:

- compliance-driven interventions – interventions across the network that are based on measured condition and asset management policies, accepted by ESV
- risk-driven interventions – interventions that are planned by assessing the risk and consequence of failure.

Both the condition and risk driven interventions include improvements we have made in assessing and monitoring the condition of our poles. Having the two programs separate demonstrates to customers and stakeholders the different drivers for interventions, and how we've used risk-modelling to focus our investment on areas of highest risk

Compliance-driven

- Our Electricity Safety Management Scheme (ESMS) sets out how we will comply with the Electricity Safety Act through our pole management policies
- Compliance-driven interventions are based on the forecast condition of the pole (i.e. irrespective of the consequences of the pole failing); forecast condition of our entire wood pole population is simulated using our 'enhanced pole calculator'
- Compliance-driven interventions also include interventions due to visual factors (e.g. presence of termites), with these based on historical volumes

\$ million, 2021	CitiPower	Powercor
Compliance-driven	49.0	183.3
Risk-driven	4.7	50.0
Total (2021-2026)	53.6	233.2
Total (2016-2020)	15.3	80.1

Risk-driven

- Risk-driven interventions recognise that in high-risk locations, the consequences of a pole failure can be significant, such that earlier intervention may be prudent (in comparison to similar condition poles in lower-risk locations)
- Our risk model used what we know about our poles to generate a health index for each pole. The health index represents how close an asset is to the end of its life
- For our regulatory proposal, this health assessment was overlaid with asset location data to determine risk-driven volumes. As outlined further in this document, our risk-modelling has since become more sophisticated (due to additional data now being available)
- Pole replacements forecast from our risk-modelling are additional to our compliance-driven replacements, and there is no overlap

United Energy proposed program (JAN 2020)

United Energy applies different asset management practices to CitiPower and Powercor (albeit with many similarities), and accordingly, has forecast its proposed wood pole replacement program on a different basis

Compliance-driven

- United Energy’s existing asset management approach for poles reflects a condition-based replacement program
- Our general pole inspection and intervention framework has not materially changed over the previous two regulatory periods, meaning historical data is a reasonable basis for forecasting our condition-based program
- Our condition-based pole replacement volumes, including staking, have therefore been forecast **based on a 9-year linear trend of historical replacement volumes**. The upward trend in condition-based replacements is consistent with the observed ageing of our wood population

\$ million, 2021	2016-2020	2021-2026
Condition-based pole interventions (replacement and reinforcement)	53.4	75.1
Concrete poles	0.4	3.9
Risk-based pole replacement program	-	11.2
Total	53.8	90.2

Risk-driven

- Recent industry experience and ESV’s findings for Powercor demonstrate heightened probabilities and consequences of failures focused on lower durability pole types. ESV supported changes to assumptions regarding the fibre-strength of wood poles for Powercor (e.g. it has been long-standing industry practice to assume the fibre-strength of a wood pole would be the same in year one as it would be in year 100)
- As a result of these new findings, we supplemented our condition-based replacement and reinforcement program with age-based risk-modelling to recognise that the fibre-strength of a wood pole will deteriorate over time. The focus of this incremental program was targeted on **lower durability poles located in high bushfire risk areas**

Stakeholders supported the need for change but questioned the proposed approach

Victorian Government

- The Victorian Government supported the proposals from CitiPower, Powercor and United Energy to increase pole replacement
- The Government noted the significance of Energy Safe Victoria's (ESV's) findings and recommendations from its recent investigation into Powercor's wood pole management and the subsequent proposals from CitiPower, Powercor and United Energy to increase their investment in pole replacements
- They also noted that network management activities undertaken to reduce risk as far as practicable need to be at an acceptable cost to consumers

Energy Consumers Australia (ECA)

- ECA welcomed further clarity on how pole management and the REFCL programs are linked and work together to reduce risk, ultimately reducing the cost to customers
- ECA supported an increase in pole replacement with evidence of an asset management system that has been lacking, asking the AER review the modelling to assure itself that the parameters have been correctly applied
- Due to ESV's identified gaps in Powercor's asset management system ESV support a review of Powercor's RCM methodology for other asset classes
- ECA also stated it is in customers' interests that replacement expenditure does not follow a boom-bust cycle

Consumer Challenge Panel (CCP17)

- The CCP17 supported a review of asset management practices but questioned if Powercor is doing 'just enough' to respond to the ESV requirements, if Powercor is reinvesting its CESS benefit towards the pole safety program, if Powercor is 'getting onto it straight away'
- The CCP17 rejected the CitiPower/United Energy proposed uplift due to use of Powercor's criterion for the probability of asset failure and consequence. Improved rapid crew response, active vegetation management, enhanced low voltage network fault protection and effective public safety information campaigns are likely to be more effective in reducing public risk related to pole failures in populated urban areas

Victorian Community Organisations

- There was concern the rural pole management practices were being applied to CitiPower and United Energy
- There was concern that the high uplift in expenditure despite the current underspend is likely to exceed actual requirements, so that consumers may pay the cost of unmerited incentive scheme rewards and financing costs

ESV

- Informed by Powercor's review, and the resultant need to increase pole interventions, ESV supported Powercor's increased levels of intervention
- ESV will complete sustainable wood pole management reviews of all Victorian distributors during the 2020-21 financial year and is generally supportive of the increased forecast pole interventions for all Victorian distributors

AER draft decision

Powercor
Proposed \$261m
AER draft \$137m

CitiPower
Proposed \$63m
AER draft \$15m

United Energy
Proposed \$90m
AER draft \$57m

- | | | |
|---|---|---|
| <ul style="list-style-type: none"> • Recognised findings from ESV review, and that an increase on historical volumes is required • However, characterised forecast increase as addressing ‘backlog’ issue (e.g. if we had replaced more poles in the period 2014–2018, an additional uplift today would not be required) • Substitute forecast based on volumes achieved in 2013, plus the ‘balance’ of poles not replaced in 2014–2018 • Substitute forecast is lower than our forecast compliance obligations | <ul style="list-style-type: none"> • Recognised CitiPower and Powercor apply the same management strategy, such that ESV review findings are likely applicable to CitiPower • However, rejected forecast as ‘not satisfied that there is likely to be a substantial escalation of risk over the forecast period’ • Substitute forecast based on 10-year average of intervention volumes • Substitute forecast is lower than our forecast compliance obligations | <ul style="list-style-type: none"> • Recognised strong historical performance, citing low pole failures • However, rejected condition-based forecast using a 9-year historical trend, as this is ‘inconsistent with the majority of repex programs’ • Substitute forecast based on 4-year average of intervention volumes • Substitute forecast is lower than our forecast compliance obligations |
|---|---|---|

We do not believe the AER’s draft decision represents a prudent and efficient pole management program:

- **for CitiPower and Powercor, it is based on asset management practices that ESV rejected—if implemented, it requires a reversion to out-dated asset management practices that are no longer best-practice**
- **it infers that pole failures are a leading indicator of underlying intervention forecasts—low historical failure rates do not necessarily infer that pole condition (which is the driver of intervention volumes) are stable over time**
- **applies inconsistent averaging periods (e.g. substituted a 10-year average for CitiPower but rejected a 9-year period for United Energy).**

Our revised proposal will be based on further stakeholder engagement, and updated modelling and economic assessments.

Further stakeholder engagement and revised proposal

We are addressing stakeholders and the AER's concerns in our revised proposals

Stakeholders wanted to see the differences between the networks and more network-specific modelling

Network

What we are doing

CitiPower and Powercor are undertaking a trial to better inform modelling assumptions, and conducting network-specific cost-benefit analysis

United Energy is improving its forecast modelling

- The serviceability of CitiPower and Powercor's wood poles are forecast using our 'enhanced pole calculator'. The modeling is sensitive to the assumption of how heavily loaded a pole is—this loading is reflected at the 'tip' of the pole
- We do not have actual data for the 'tip load' of each pole; rather, for our regulatory proposal we assumed a loading based on the location of the pole for our regulatory proposal
- In response to stakeholder feedback, we brought forward the timing of our wood pole trial of 4,500 poles across our network. Our wood pole trial is now due to be completed in October, and will be used to re-calibrate our modelling for the revised proposal
- We also engaged EA Technologies to bring forward updates to our condition-based risk management (CBRM) tool that will allow us to undertake cost-benefit analysis of our proposed risk-driven interventions (slide 19)
- For United Energy, forecast pole intervention volumes are based on a linear trend. We have further tested our pole condition and decay rate data to assess the reasonableness of our trend forecast:
 - more poles with less 'sound-wood' now than in 2016
 - decay rates initially estimated 23,000 wood poles to transition to <70mm of sound-wood by 2026
 - scrutinised decay rates, and removed erroneous inputs for young poles (i.e. lowering decay rates)
 - calibrated decay rate data to actual volumes in 2016–2020 (i.e. further lowering decay rates)
 - revised forecasts support between 14,966 and 19,429 interventions over 2021–2026 (compared to our regulatory proposal submission of 14,779 condition-based, and 943 risk-driven interventions)

Confidence in the modelling is very important to stakeholders...

“

Further to the greater need for better understanding of the inputs to the model, there were **many other factors that stakeholders felt needed to be included in the model.**

Most notably, stakeholders asked for further consideration to be given to:

- Affordability;
- Reliability; and
- Insurance impacts.

For stakeholders representing stakeholders from regional areas, elements such as safety and risk-management such as bushfire risk should needed to already be in the model.

There were also calls for **more consumer-based research** to be conducted to understand residential consumer preferences and for these preferences to be reflected in the model.

*“Show the regulatory and risk components. If the risk component is much less, show it. What difference the risk assessment is making to cost-benefit analysis?
How those benefits are being included?”*

Workshop Stakeholder

“

Many stakeholders **struggled to answer** when prompted with the question: *What should the networks response be if asset replacement forecasting states that intervention doesn't deliver net benefits?*

There was a need for **greater interrogation of the data.** Many wanted to know more about the model itself and the inputs that went into the model before answering the question. Further to this, many wanted to check the model against the regulator's requirements and expectations.

Some also questioned why net benefits did not outweigh or equal net cost in the first place.

Despite this, there was a common view that if net costs outweighed net benefits, **the government or state should bear the cost**, rather than the customer or the networks.

“

Despite the positivity however, stakeholders felt that rural communities and those vulnerable to fire risk had not been given due consideration.

Questions were also raised regarding projections in the proposal with assertions that the data used needed to be interrogated further. As the targets were based on data from a previous period, stakeholders were interested in reasons as to why targets were not met in previous periods, and how these targets were going to be met in the current period.

There was also a need for greater consideration regarding implementation of alternative power sources and technologies. Stakeholders questioned how the current strategy would fit into a greater plan for mitigating risk factors such as climate change, and incorporate technological advances moving forward.

On 7 October 2020 we engaged with around 25 industry stakeholders on how we can improve our proposal

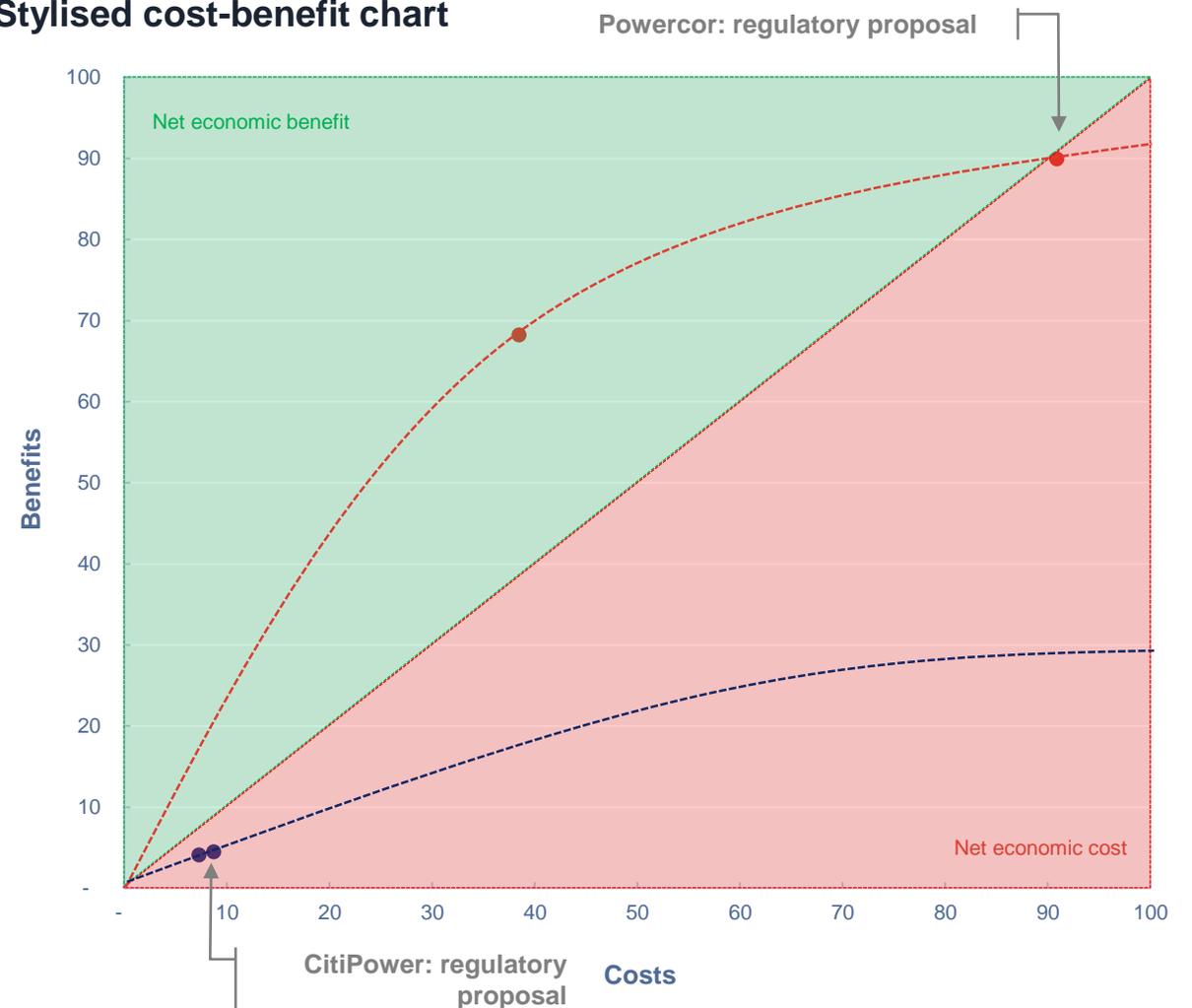
Demonstrating prudent investment

Stakeholders want us to demonstrate we are doing 'just enough' and not spending a dollar more than necessary

Stylised cost-benefit chart

- We have used a stylised cost-benefit chart to demonstrate how we will assess the net economic benefit of our risk-driven program for CitiPower and Powercor for the revised proposal (once the pole trial is complete)
- Costs reflect investment in risk-mitigation measures (i.e. pole intervention) and benefits reflect a reduction in risk that can have economic consequences (the stylised example includes up to \$100 of costs and benefits). Risks modelled include the potential consequence of a pole failure in terms of bushfire, safety (public and employee), supply reliability (VCR), financial (i.e. unplanned replacement costs) and environmental costs
- The red line reflects that for Powercor, which has areas of high bushfire risk, as investment in risk-mitigation increases, benefits grow fast at first but level off at a certain point after the riskiest areas are addressed
- For CitiPower, there is no risk-mitigation investment that results in net economic benefit
- Our revised proposal will be to reduce safety risk for Powercor up to the point of the highest net benefit (top left red dot) and not invest in risk-mitigation for CitiPower

Stylised cost-benefit chart



The final model assumptions will be available to stakeholders for assessment, as part of our revised proposal

Our revised poles management proposal

Stakeholders believe there is no basis to uplifts on historical expenditure for CitiPower and United Energy

We will provide additional evidence to support our compliance-driven pole interventions

Stakeholders want confidence our new pole management practices are prudent and efficient, and that the modelling is best-practice

We are testing assumptions in our compliance-driven forecasts, and providing updated modelling to support Powercor's risk-driven pole interventions

We expect to reduce pole replacements for all networks

- Stakeholders, including the AER, raised concerns that our pole intervention forecasts were increasing, notwithstanding a history of strong performance (e.g. low failure rates)
- Pole failures, however, are linked more closely to condition assessment techniques, not intervention volumes. That is, poles fail if we don't inspect/intervene on schedule, inspect poorly, or if inspection techniques do not identify a failure mode
- Powercor (and CitiPower, albeit, from low volumes due to its smaller population) have experienced increasing failures, so changed their inspection techniques/criteria. But just because United Energy has experienced fewer failures, this shouldn't infer that intervention volumes will remain stable (e.g. inspection practices/methods can drive low failure rates, but you may still have high and increasing intervention volumes if the underlying asset condition of the population is deteriorating)—ultimately it's condition that drives the replacement or reinforcement of a pole)
- As a result of the cost-benefit analysis (discussed later), we will not be proposing risk-driven pole interventions for CitiPower or United Energy. Our preliminary analysis indicates these components of our forecasts would not be economic
- For CitiPower and Powercor, the outcomes of our pole trial will be used to re-calibrate our enhanced pole calculator, and is expected to result in a reduced forecast
- We are considering the existing uncertainty regime within the regulatory framework will allow us to implement any material findings from future ESV reviews (i.e. ESV has already reviewed Powercor's wood pole management practices, but will continue reviewing all of the Victorian distributors throughout 2020 and 2021)

Our revised poles management proposal

Stakeholders do not want customers to pay twice

We accept the AER's CESS adjustments

Stakeholders want to understand how we have regard to the changing nature of the electricity sector when replacing long-lived assets

We have developed a strategic asset management plan

- Our stakeholders were clear that customers should not pay for deferrals of pole replacements that were due to inaccuracies in inspection data or other asset management decisions
- The AER's draft decision applied a CESS reduction to Powercor due (in part) to underspends evident in our pole replacement program
- We accept the position of stakeholders, and will accept the AER's CESS adjustment in our revised proposal
- Our strategic asset management plans take a longer-term view of alternative future scenarios that may impact how we deliver services to our customers. This includes the impact of electric vehicles, but also considerations such as customers potentially shifting to more localised and/or off-grid generation
- We expect to consult further in the future on our strategic asset management plans
- Importantly, the wood poles we will replace in the shorter-term are expected to all be significantly deteriorated, and approaching or at the end of their life (based on inspection). In this context, we consider our immediate asset replacement activities are undertaken on a 'no-regrets' basis

Our revised poles management proposal

Stakeholders want us to 'get straight into it'

- CitiPower and Powercor are already applying our new pole management policies, and this has driven increased investment in wood poles since 2019. Additional changes, as required by ESV, will be implemented as soon as possible (i.e. we are testing our enhanced pole calculator works as intended prior to implementing 'live' in the field)
- Based on stakeholder feedback, we brought forward initiatives included in our pole management improvement program (e.g. our pole trial, and CBRM modelling) to better ensure our pole intervention forecasts are robust

Stakeholders want to know what other low-cost measures we are taking to reduce risk of pole failure

- In addition to amending our serviceability criteria, we have improved our inspection and governance practices. These include low cost initiatives, such as requiring independent audits of our external pole inspection contractors, and providing better work-practices instructions for inspectors
- We are also exploring alternative non-destructive pole inspection techniques. If successful, these will help avoid damaging the integrity of our wood poles during the inspection process (e.g. rather than drilling a hole into the wood), and all else equal, will increase the life of our wood poles

Stakeholders want to better understand how REFCLs and pole management work together to reduce bushfire risk

- The impact of REFCLs is explicitly captured in the risk-based modelling being undertaken for Powercor. This modelling assumes that a fire-start is more likely to be 'suppressed' in a REFCL area than in non-REFCL areas
- The inclusion of bushfire risk reduction as a benefit stream in our risk-based modelling also ensures that our pole intervention program will, all else equal, target risk-based interventions towards the highest bushfire risk locations in our network

How the poles management proposal has changed

Original proposal for Powercor

We proposed:

- 24,214 poles replaced or reinforced for compliance
- 15,556 poles replaced on risk-modelling

Total cost: \$233.2m over 2021-2026

Original proposal for CitiPower

We proposed:

- 2,316 poles replaced or reinforced for compliance
- 2,617 poles replaced on risk-modelling

Total cost: \$53.6m over 2021-2026

Original proposal for United Energy

We proposed:

- 14,779 poles replaced or reinforced on condition
- 943 poles replaced on risk-modelling

United Energy cost: \$90.2m over 2021-2026



There is a reduction in expenditure for all three networks

United Energy reduction of \$10.7m

CitiPower and Powercor still being modelled



Revised proposal for CitiPower and Powercor

We propose:

- a reduction in poles replaced or reinforced for compliance (volume TBD)
- a reduction in poles replaced on risk-modelling (volume TBD)

Total cost reduction over 2021-2026 TBD

Revised proposal for United Energy

We propose:

- maintain condition-driven forecast, as per regulatory proposal
- remove risk-driven pole intervention forecast

United Energy cost: \$79.5m over 2021-2026